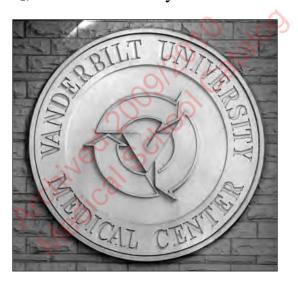
# ♥ Vanderbilt University Medical Center







School of Medicine Medical Center Hospital and Clinic

H.

Vanderbilt University 2009/2010

Containing general information and courses of study for the 2009/2010 session corrected to 30 June 2009 Nashville The university reserves the right, through its established procedures, to modify the requirements for admission and graduation and to change other rules, regulations, and provisions, including those stated in this bulletin and other publications, and to refuse admission to any student, or to require the withdrawal of a student if it is determined to be in the interest of the student or the university. All students, full- or part-time, who are enrolled in Vanderbilt courses are subject to the same policies.

Policies concerning noncurricular matters and concerning withdrawal for medical or emotional reasons can be found in the *Student Handbook*, which is on the Vanderbilt Web site at <a href="https://www.vanderbilt.edu/student\_handbook">www.vanderbilt.edu/student\_handbook</a>.

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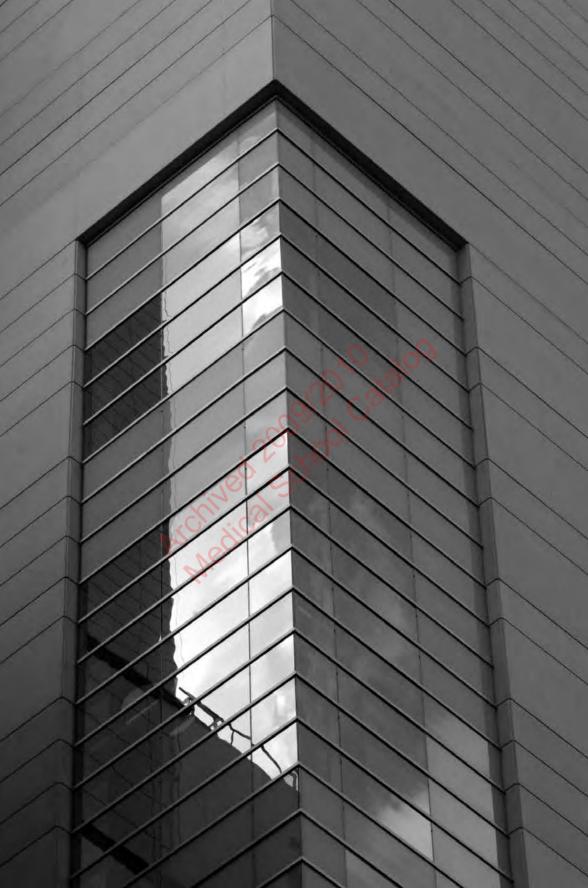


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Medical Center

#### Medical School Calendar 2009/2010

#### FALL SEMESTER 2009

Registration and classes begin 4th year / Monday 6 July
First intersession 3rd year / Monday 6 July to Friday 10 July
Registration 1st and 2nd years / Thursday 30 July to Friday 31 July
Classes begin 1st and 2nd years / Monday 3 August
Labor Day holidays all classes / Monday 7 September
Second intersession 3rd year / Monday 28 September to Friday 2 October
Fall break 1st and 2nd years / Saturday 17 October to Tuesday 20 October
Thanksgiving holidays all classes / Thursday 26 November to Sunday 29 November
Fall semester ends 1st and 2nd years / Friday 18 December
Fall semester ends 3rd and 4th years / Friday 18 December
Holiday break all classes / Saturday 19 December to Sunday 3 January

#### SPRING SEMESTER 2010

Spring semester begins 1st and 2nd and 4th year classes / Monday 4 January
Third intersession 3rd year / Monday 4 January to Friday 8 January
Spring holidays 1st and 2nd years / Saturday 6 March to Sunday 14 March
Spring holidays 3rd year / Saturday 27 March to Sunday 4 April
Spring holidays 4th year / Friday 19 March to Sunday 21 March
Fourth intersession / Monday 15 March to Friday 19 March
Instruction ends 4th year / Friday 25 April
Instruction ends required courses 1st year / Monday 10 May
Instruction ends required courses 2nd year / Friday 7 May
Commencement / Friday 14 May
Instruction ends 3rd year / Friday 25 June

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## Medical Center

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## **Chemical Safety**

The Chemical Safety Committee considers policies and procedures pertaining to the safe handling, transport and use of chemicals and recommends adoption of new or revised policies for the Vanderbilt University Medical Center (VUMC) and Vanderbilt University Campus (VUC) administration through Vanderbilt Environmental Health & Safety (VEHS). It monitors and interprets regulations and/or guidelines of the Environmental Protection Agency (USEPA), the Occupational Safety and Health Administration (OSHA), National Institutes of Occupational Safety Health (NIOSH) and others pertaining to hazardous chemicals and provides technical assistance to Vanderbilt Environmental Health and Safety (VEHS) on these matters. The committee reviews proposed or enacted legislation concerning chemical safety impacting the VUMC and VUC community and informs Departments, Schools and Colleges of legislation, including potential implications and business impact. It assists VUMC and VUC Colleges, Schools and Departments with their internal chemical safety committees and/or programs, in conjunction with Vanderbilt Environmental Health & Safety (VEHS).

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#### Institutional Review Board for Human Research Protections

The Institutional Review Board is composed of three Health Sciences Committees, one Behavioral/Social Science Committee, and an administrative support staff. It is the IRB's responsibility to exercise appropriate administrative oversight to assure that Vanderbilt University's policies and procedures designed for the protection of the rights, safety, and welfare of human participants are effectively applied in compliance with its Federalwide Assurance. The Boards review all research proposals involving human subjects for scholarly and scientific merit, risk-potential benefit profile, and legally effective informed consent. Approval of the Board is required prior to the commencement of any human research activities.

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### Health Sciences Committee, #2

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## Health Sciences Committee, #3

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#### Medical Center Appointments and Tenure Review Committee

The Medical Center Appointments and Tenure Review Committee reports to the Vice Chancellor for Health Affairs. Its membership is made up of representatives from the School of Medicine and the School of Nursing, and the Dean for Graduate Studies and Research. The committee is responsible for review of all appointments and tenure in the Medical Center.

Naji N. Abumrad, Dean W. Ballard, Graham F. Carpenter, Jayant K. Deshpande, Stephan H. W. Heckers, Laurence E. Lancaster, Ann F. Minnick, Herbert S. Schwartz, Kenneth A. Wallston.

#### Vanderbilt University Institutional Animal Care and Use Committee (IACUC)

The VU Institutional Animal Care and Use Committee (IACUC) is responsible for ensuring that all animals in experimental research and teaching, under the jurisdiction of Vanderbilt University and the Veterans Administration Tennessee Valley Healthcare System (VA), are used appropriately and in accordance with the highest standards of humane care, and that research involving animals is conducted in an ethical manner.

The IACUC oversees the institutions' animal care and use program, facilities and procedures, as mandated by the Animal Welfare Act and the Public Health Service Policy.

Committee members include: Ronald Emeson, Chair, Eric Delpire, Vice Chair, Gregory "Dan" Ayers, Chin Chiang, Jeffrey Davidson, Mark Does, Gary Faulhaber, Sylvia Gografe, Rizwan Hamid, Simon Hayward, Carrie Jones, Spyros Kalams, Ela Knapik, Tsutomu Kume, Kirk Lane, Steve McElroy, Ray Mernaugh, Geraldine Miller, Pamela Pigg, David Piston, Ambra Pozzi, Jeff Reese, Ana Roe, Earl Ruley, Ken Salleng, Jeanne Wallace, Alissa Weaver, and Shin Yamazaki.

Alternate members include: Yasin Kokoye and Frederich Schuening.

Non-voting, *ex-officio* members include LouAnn Burnett, Karen Jackson, Ruth Nagareda, Mike Walsh, Virginia Wiley, and Annette Williams.

## VA Academic Partnership Council for the Department of Veterans Affairs, Tennessee Valley Healthcare System (VA TVHS) (formerly Vice Chancellor's Committee for the Veterans Administration)

The VA Academic Partnership Council is the fundamental administrative unit for policy development and evaluation of educational and research programs at the affiliated Department of Veterans Affairs, Tennessee Valley Healthcare System (TVHS). It is composed of senior faculty members of the School of Medicine and others who are associated with TVHS. Vanderbilt members are appointed by the Health System Director of TVHS on nomination by the Vice Chancellor for Health Affairs.

Jeffrey R. Balser, M.D., Dean. David Raiford, M.D., Chair; Janice Cobb, R.N.; Colleen Conway-Welch, Ph.D., C.N.M.; Stephan Heckers, M.D.; Sam Sells, M.D.; R. Daniel Beauchamp, M.D.; William Nylander, M.D.; Donald Brady, M.D.; Michael Doukas, M.D.; Eric Neilson, M.D.; Juan A. Morales, R.N., M.S.N.; Joyce Jones, M.D.; Bonnie M. Miller, M.D.; Emma Metcalf, R.N., M.S.N.

Medical Center

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## Medical Center Overview

ANDERBILT University Medical Center (VUMC) has a three-fold mission—the education of health professionals, research in medical sciences, and patient care. This mission is carried out in five primary operating units—the School of Medicine, the School of Nursing, The Vanderbilt Clinic, Vanderbilt University Hospital, and the Monroe Carell Jr. Children's Hospital at Vanderbilt, all places in which patients receive exemplary care from physicians and nurses who are creative teachers and scholars.

Members of the faculty participate directly in patient care. Their practice encourages the free flow of ideas among the School of Medicine, the School of Nursing, and the clinical units, facilitating joint research activities. As a result, the Medical Center can undertake significant, innovative programs that set the standards for health care in the region.

Outstanding patient care and technological innovation have established Vanderbilt's reputation as a leading referral center in the Southeast. Physicians from other states and foreign countries refer to Vanderbilt those patients whose health problems demand interdisciplinary skills and expert knowledge. Consequently, students in the Medical Center encounter a wider range of diseases than they would be likely to see in many years of private practice.

The Medical Center has combined programs of study with a number of other schools including divinity, business, engineering, and law—and makes possible the Ann Geddes Stahlman professorship in medical ethics as well as interdisciplinary programs in philosophy, religion, and the social sciences.

Through the education of physicians, nurses, biomedical scientists, and technicians in allied health professions—and an overriding concern for the care of patients—Vanderbilt University Medical Center strives to improve the health of the individual. Through scholarship and research leading to new knowledge about the nature, treatment, and prevention of disease, the Medical Center contributes to the improvement of the health of our society.

#### **Facilities**

Vanderbilt University Hospital

The hospital is dynamic, growing, and dedicated to meeting the most critical and complex needs of our region, continuing Vanderbilt's more than century-old tradition of offering the best in patient care.

Routinely, more than 25 percent of patients seen in the hospitals are from states other than Tennessee, with the majority coming from Kentucky, Alabama, and Mississippi.

## The Monroe Carell Jr. Children's Hospital at Vanderbilt

The Monroe Carell Jr. Children's Hospital at Vanderbilt is a place of hope and healing for patients and their families. Recognized as one of the premier children's hospitals in the nation by *U.S. News and World Report* in 2008, Vanderbilt Children's Hospital cares for the sickest patients in the region and beyond.

Vanderbilt Children's Hospital is the most comprehensive children's hospital in the state, providing pediatric services from neurosurgery, cancer treatments, and organ and bone marrow transplants to repairing broken legs and everything in between. All children regardless of ability to pay are welcomed. Vanderbilt Children's Hospital has the only pediatric emergency department in Middle Tennessee; this department had more than 41,000 visits in FY08, and more than 161,000 patients were seen in outpatient clinics the same year.

Constructed in 2004, the new freestanding Vanderbilt Children's Hospital is filled with state-of-the-art equipment and information systems to provide the best treatment for patients and offers a variety of family accommodations to help fulfill its mission of family-centered care. Vanderbilt Children's Hospital is a nonprofit teaching and research hospital that relies on the support of individuals and others to help children get well and on their way.

## The Psychiatric Hospital at Vanderbilt

This facility provides provides inpatient, partial hospitalization services to children, adolescents, and adults with psychiatric and substance abuse problems. Services include 24-hour crisis assessment and a year-round accredited school for children and adolescents.

#### The Vanderbilt Clinic

The 900,000 square foot Vanderbilt Clinic and Medical Center Easthouses more than 100 medical specialty practice areas, the clinical laboratories, a center for comprehensive cancer treatment, a day surgery center. The clinic was opened in February 1988.

## Vanderbilt Stallworth Rehabilitation Hospital

Vanderbilt Stallworth provides comprehensive inpatient and outpatient rehabilitation services for adult and pediatric (age 6+) patients with neurological, orthopaedic, and other injuries, as well as chronic conditions and disabilities. With state-of-the-art treatment technology, the hospital specializes in the treatment of stroke, brain, and spinal cord injury; multiple traumas; amputees; hip fracture; and other diagnoses. A designated Stroke Center of Excellence within its ninety-four hospital rehabilitation network, Stallworth repeatedly exceeds the national benchmarks for patient satisfaction and functional outcomes. It is also home to the Vanderbilt Center for Multiple Sclerosis. This hospital is a joint venture with HealthSouth Corporation.

## Vanderbilt-Ingram Cancer Center

The Vanderbilt Ingram Cancer Center is Tennessee's only Comprehensive Cancer Center designated by the National Cancer Institute and one of only forty such centers in the country. In 2007, the Cancer Center was invited to join the prestigious National Comprehensive Cancer Network, a nonprofit alliance of twenty-one of the world's elite cancer centers collaborating on improving the quality and effectiveness of cancer care for patients everywhere. The center unites nearly 300 physicians and scientists in seven research programs in breast cancer, gastrointestinal cancer, experimental therapeutics, genome maintenance, host-tumor interactions, signal transduction, and cell proliferation, as well as cancer-prevention and population-based research. These scientists generate more than \$180 million in annual support from public and private sources. The center includes a long list of large "team science" grants from the NCI and other sources, including three Specialized Programs of Research Excellence (SPOREs) in breast, gastrointestinal, and lung cancers, the Southern Community Cohort Study, a Digestive Disease Center grant, a Tumor Microenvironment Network grant, a Mouse Models Consortium grant, a Molecular Signatures of Lung Cancer grant, a Clinical Proteomic Technology assessment grant, a Minority Partnership grant (with Meharry Medical College), and a Multiscale Mathematical Modeling for Cancer grant. The center's clinical trials program includes robust work in Phase I drug development and designation by the NCI as sites for Phase I and Phase II clinical trials. The center also boasts several donor-supported research initiatives, including the Frances Williams Preston Laboratories of the T.J. Martell Foundation, the A. B. Hancock Jr. Memorial Laboratory for Cancer Research, the Jim Ayers Institute for Pre-Cancer Detection and Diagnosis, and the Robert J. Kleberg and Helen C. Kleberg Center for Cancer Genetics and Genomics.

## Vanderbilt Kennedy Center for Research on Human Development

The mission of the Vanderbilt Kennedy Center is to improve the quality of life of persons with disorders of thinking, learning, perception, communication, mood, and emotion caused by disruption of typical development. It is dedicated to improving the lives of children and adults with disabilities by embracing core values that include the pursuit of scientific knowledge with creativity and purpose; the dissemination of information to scientists, practitioners, families, and community leaders; the facilitation of discovery by Kennedy Center scientists; and the translation of knowledge into practice. The center is one of fourteen nationally designated National Institutes of Health research centers on mental retardation and other developmental disabilities supported in part by the National Institute of Child Health and Human Development. In 2005, it was designated a University Center for Excellence on Developmental Disabilities Education, Research, and Service by the federal Administration on Developmental Disabilities. The center is an interdisciplinary research, training, diagnostic, and treatment institute, embracing faculty and resources available through Vanderbilt University Medical Center, the College of Arts and Science, and Peabody College. The center brings together scientists and practitioners in behavior, education, genetics, and neuroscience to work together in unique ways to solve the mysteries of development and learning.

## Vanderbilt Diabetes Center

The Vanderbilt Diabetes Center provides a comprehensive approach to diabetes. Programs dealing with education and training of students and fellows provide the next generation of caregivers and scholars. Other programs support the diabetes-related research of more than eighty VUMC faculty members. Several sophisticated core resources are of particular importance in this regard. Finally, the VDC, through the recently established Vanderbilt-Eskind Diabetes Clinic, provides comprehensive clinical care, including addressing complications of the disease, for diabetics of all ages.

## Rudolph A. Light Hall

Completed in 1977, Light Hall provides classroom and laboratory space for students in the School of Medicine. It houses the Department of Biochemistry, the Department of Molecular Physics and Biophysics, and the Howard Hughes Medical Institute. Named for Dr. Rudolph A. Light, former professor of surgery and member of the Board of Trust, Light Hall is connected by tunnels to Medical Center North and to the hospital and by bridge to the Medical Research Buildings and the Veterans Administration Medical Center.

## Ann and Roscoe Robinson Medical Research Building

Laboratories and academic space for pharmacology, biochemistry, and molecular physiology and biophysics are housed in the Ann and Roscoe Robinson Medical Research Building. The eight-story building, opened in 1989, is also home to the A. B. Hancock Jr. Memorial Laboratory for Cancer Research and the positron emission tomography (PET) scanner.

The building is linked to Light Hall and shares an underground level with The Vanderbilt Clinic. The Vanderbilt Clinic and the Veterans Administration Medical Center are connected to the Medical Research Buildings by a bridge.

## Frances Preston Medical Research Building

This building is named in honor of Frances Williams Preston, President and CEO of Broadcast Music, Incorporated, and was formerly known as Medical Research Building II. The purpose of this building is to consolidate the Vanderbilt-Ingram Cancer Center programs into one primary location with a distinct presence within the Vanderbilt Medical Center campus. The project consists of a new two-story lobby at grade with a patient drop-off area, five office floors, and a conference center floor.

## Medical Research Building III

The MRB III building houses sixty-six research laboratories, four teaching laboratories, research support areas, offices, conference rooms, classrooms, and an 8,650-square-foot greenhouse for research and teaching.

The landmark project—a 350,000-square-foot facility designed to promote study between diverse scientific disciplines—is a joint undertaking of the College of Arts and Science and the Medical Center.

## Medical Research Building IV

Medical Research Building IV (MRB IV) adds 389,000 square feet of wet lab space to the Medical Center Campus. The building has two separate but linked parts consisting of a three-story, vertical addition to Light Hall and a seven-story addition above Langford Auditorium. The new facility supports continued growth in VUMC research programs. The project site incorporates the existing Light Hall structure and Langford Auditorium and the existing land area immediately west and behind Langford for a distance of 75 feet to the shared VUMC/VA property line.

The concrete-framed Light Hall addition, which was completed and occupied in September 2005, is now home to approximately eighteen principal investigators and associated staff. The Langford overbuild, also designed as a concrete frame with an exterior glass skin, was completed in March 2008, while early occupancy of the lab spaces began in the fall of 2007. The exterior skin closely matches the architectural design of the existing Eskind Library. Twenty-four-foot-high concrete trusses span Langford Auditorium and transfer column loads for the upper portion of the new building. The Langford Auditorium exterior is completely enveloped within the new design; the interior of the auditorium has been completely renovated.

#### Medical Center North

The 21-bed Newman Clinical Research Center, an inpatient orthopaedic unit, and a general-care unit are located in Medical Center North. The complex also houses administrative support services for the hospital and Medical Center.

Faculty and administrative offices and research space for Medical School departments are in Medical Center North. The original portions of the building were completed in 1925. Since that time a number of connecting wings and buildings have been added.

#### Vanderbilt Health 100 Oaks

Opened in spring 2009, this 400,000-square-foot doctors office suite is designed for convenience from easy access off the interstate highway system to easy surface parking, automated check-in, and integrated services, labs, and radiology. It houses twelve specialty clinics, primary care, advanced imaging, and a 70,000-square-foot health and wellness facility.

## Vanderbilt Medical Group Williamson County

Vanderbilt Medical Group Williamson County is the largest group practice in suburban Williamson County with nearly 100 physicians in practices ranging from primary care to sports medicine, GI, cancer care, imaging, and pediatrics.

## Mary Ragland Godchaux Hall

Built in 1925, Mary Ragland Godchaux Hall is located between the Jean and Alexander Heard Library and MRB III of the Vanderbilt University Hospital. Faculty and administrative offices and research space for the Nursing School are located within this building. Godchaux Hall has recently completed a two-year renovation to update the building infrastructure.

Godchaux Hall contains a state-of-the-art IP-based videoconferencing classroom, four research interview rooms with video and audio recording options, a research observation room with video and audio recording controls, three equipped small seminar/conference rooms, one moderate-size electronic classroom for use with laptops, and an audiovisual-equipped living room. Together with a sunlit atrium connecting the building with others in the nursing complex, Godchaux Hall comprises 34,421 square feet. The facility includes two large- and two medium-size lecture halls, as well as four seminar-size classrooms. All can be quickly equipped for audio and video recording to tape or broadcast via streaming media. All classrooms have permanently installed projection devices and an up-to-date presentation computer. All afford wireless access to the Internet. The four larger halls are equipped with Smart technology at the lectern. The facility has a commons area that brings the total space for the Annex to 13,175 square feet.

Center for Research Development and Scholarship (CRDS). Housed on the fourth floor of Godchaux Hall, CRDS provides research consultation, support, and resources for scholarly and research projects. CRDS assists with grant proposal development, Institutional Review Board application, paper and poster presentation, database management, instrument development, use of computers, literature searches, reference retrieval, and manuscript preparation. CRDS resources are available to all School of Nursing faculty investigators.

## Patricia Champion Frist Hall

In 1998 the 20,259-square-foot Patricia Champion Frist building, located adjacent to Godchaux Hall, was completed. This building houses the Frist Nursing Informatics Center, a multi-media classroom with installed networking for seventy-five students, a health assessment/multi purpose classroom, a student lounge, a reception area, and fifty faculty offices. Two of the larger classrooms have installed infrastructure capable of video streaming live lectures that are then converted to CD-ROM format. Godchaux Hall, the Annex, and Frist Hall are joined by a common Atrium. Thus, the three buildings of the School of Nursing and the Atrium form a self-contained, cohesive instructional and social complex.

The Frist Nursing Informatics Center (FNIC). The FNIC student computer labs, located in Patricia Champion Frist Hall, are equipped with twenty-five HP dc5750 computers (AMD Athlon 64x2 Dual Core 1.8 GHZ, with 2 GB memory, 80 GB hard drives, and DVD writers), two scanners, and three laser printers. An additional eight units are installed in a Testing Lab to accommodate the growth of proctored Web-based testing in a quiet environment. All computers are placed on a three-year rotation cycle. Students schedule testing dates in order to suit individual needs within a range of dates allowed by course faculty.

A full range of software is available for document preparation; however, fewer tools are available on computers dedicated to testing. Instructional software packages are also available. Faculty and students use a Web-based course management system called OAK (built on Blackboard) for most course communication, group activities, and the sharing of course resources. In addition, two-way synchronous audio and graphic collaboration is available using a Web conferencing system called Centra. Experts in interactive educational design and information technology are available through the FNIC. Consultation and troubleshooting activities include assistance with design and development of instructional strategies, development of specialized interactive computer-based programs and Web pages, design and maintenance of databases, design and development of instructional materials, video production, and audiovisual editing services. The FNIC implements and maintains quality assurance for School of Nursing Web pages with assistance from designated departmental staff and program faculty.

## Vanderbilt Dayani Center for Health and Wellness

The Kim Dayani Center is a medically based fitness/health promotion center which specializes in the modification of risk factors, including those related to cardiovascular disease, weight management, stress, sedentary lifestyle, and smoking.

## Vanderbilt Center for Better Health

The Vanderbilt Center for Better Health's mission is to accelerate change in health care. To accomplish this mission, the center convenes diverse stakeholders to accomplish critical path planning, provides methods for reducing time to results, conducts research through demonstration projects, and supports active learning through sessions that leverage facts during solution design. The VCBH innovation center is one tool used by our clients to achieve this mission and focuses on leveraging our strengths in the areas of strategies and skills for health care and clinician adoption of health information technology. Our research programs include the Regional Informatics Initiative and the Health Care Solutions Group—a think-and-act tank jointly sponsored by Vanderbilt Medical Center and the Nashville Health Care Council. We are currently researching future programs focused on personal health record (PHR) and applications (PHA), as well as consumerism in health care.

## Vanderbilt Heart and Vascular Institute

The Vanderbilt Heart and Vascular Institute is a comprehensive and integrated heart and vascular program offering diagnosis, medical treatment, minimally invasive therapies, surgical intervention, and disease management, state-of-the-art techniques, and personalized treatment programs to meet each individual's unique needs.

Vanderbilt Bill Wilkerson Center for Otolaryngology and Communication Sciences

The Vanderbilt Bill Wilkerson Center is devoted to comprehensive patient care, education, and research in the field of communication disorders and diseases, as well as ailments of the ear, nose, and throat, and head and neck. Its programs are highly regarded nationally; *U.S. News & World Report*'s 2007 survey of the nation's "Best Hospitals" ranked VUMC's otolaryngology program at number 16 nationally. In 2004, the last time these programs were ranked by *U.S. News*, the Wilkerson Center's audiology program ranked first among 118 programs and its speech pathology tied for sixth out of 225 other programs.

## Vanderbilt Transplant Center

The Vanderbilt Transplant Center is a multidisciplinary alliance of transplant specialists. Each transplant program within the center represents a collaboration of medical and surgical professionals working together in the best interests of the transplant patient.

#### Libraries

The Jean and Alexander Heard Library

This is the collective name for all the libraries at Vanderbilt, which have a combined collection of more than 2.8 million volumes. It comprises the Central, Biomedical, Divinity, Law, Management, Music, Peabody, and Science and Engineering libraries, each of which serves its respective school and disciplines. Special Collections, the University Archives, and the Television News Archive are also part of the library system. The facilities, resources, and services of these divisions are available to all Vanderbilt faculty and staff members, students, and alumni/ae. Most materials are shelved in open stacks and are available to users through Acorn, the library's integrated, automated system. Acorn also provides access to a growing number of full-text journals, as well as indexes and other research resources. Acorn and the library homepage (www.library.vanderbilt.edu/) are accessible via the campus network and from workstations in each library.

The Annette and Irwin Eskind Biomedical Library

The Eskind Biomedical Library (EBL) is a modern 78,000-net-square-foot facility, dedicated in April 1994. The construction of this award-winning library building was made possible by a gift from Vanderbilt Alumnus Irwin Eskind and his wife, Annette. With a staff of forty, the library collects and provides access to materials to support the teaching, research, and service missions of Vanderbilt University Medical Center.

Digital Resources. To facilitate information access at the point of need, EBL's practice philosophy centers on the provision of electronic resources related to medicine, nursing and the biosciences and services that integrate evidence seamlessly into VUMC workflow. EBL's comprehensive, multidimensional Digital Library (www.mc.vanderbilt.edu/diglib) offers fast, targeted access to online books, journals, databases and Web sites. Through this portal, EBL provides access to more than 3,754 full-text electronic journal titles, a number that is continually expanding. It also makes available seminal online texts (e.g., Harrison's Online and Nelson Textbook of Pediatrics) in a wide range of biomedical specialties. In addition, EBL offers the Books@Ovid collection which includes 72 titles and AccessMedicine which includes 44 book titles. The library subscribes to a wide variety of information sources to promote evidence-based practice: MDConsult<sup>TM</sup>, STAT!-Ref.<sup>TM</sup>, and Current Protocols Online are collections of full-text electronic resources. CRL Online (Clinical Reference Library<sup>TM</sup>) and EpocratesRX are comprehensive clinical drug information databases. BMJ's Clinical Evidence provides summaries of current knowledge on medical treatment for a range of conditions, developed through literature searching and assessment of systematic reviews. UpToDate® is a database of clinical topic reviews based on clinical evidence. InfoRetriever provides a cross-database search engine and displays full-text documents from a variety of evidencebased resources, including the InfoPOEMs database. Global Infectious Disease and Epidemiology Network (GIDEON) is an online diagnosis and reference tool for the tropical and infectious diseases, epidemiology, microbiology and antimicrobial chemotherapy fields. Ovid<sup>TM</sup> Technologies provides access to several databases, including MEDLINE, CINAHL<sup>TM</sup> (nursing and allied health), Ovid<sup>TM</sup> Evidence-Based Medicine Reviews, EMBASE Drugs & Pharmacology<sup>TM</sup>, and HaPI<sup>TM</sup> (health and psychosocial instruments). Multimedia programs, such as A.D.A.M. Online Anatomy<sup>TM</sup>, support just-in-time education needs.

To promote biosciences research, the library also provides Web access to the ScienceDirect® and Web of Knowledge<sup>TM</sup> which includes BIOSIS®, Current Contents Connect®, ISIHighly Cited<sup>TM</sup> and Science Citation Index Expanded. Access to key National Center for Biotechnology Information resources including PubMed, GenBank<sup>TM</sup>, Entrez Gene <sup>TM</sup>, Map Viewer<sup>TM</sup>, and OMIM<sup>TM</sup>. In addition, the Medical Center information systems are accessible via the Digital Library.

Using its flexible Digital Library shell, EBL has also created specialized Digital Libraries for Children's Hospital, bioresearch, nursing, public health,

Vanderbilt Medical School, and consumer health users, as well as Medical School alumni, to customize the electronic delivery of information to these specific user groups.

Evidence-based Practice Support. The library employs a matrix of strategies to foster evidence-based medicine practice. The EBL provides access to a list (www.mc.vanderbilt.edu/diglib/ebm.html) of commercially-produced evidence-based databases through a primary navigation button within the Digital Library. This list encompasses critical resources such as UpToDate®; Cochrane Database of Systematic Reviews, Review of Effects and Register of Controlled Trials; HealthGate; ACP Journal Club; and links to globally accessible EBM resources such as the National Guideline Clearinghouse<sup>TM</sup>. The site also features EBL's internally-developed EBM databases such as the Clinical Informatics Consult Service (CICS) Evidence Based Site and the Outpatient Clinical Informatics Consult Service (OCICS) Site, which house evidence syntheses created in response to complex clinical queries, and the Pathway/Order Set Literature Locator, which contains expert search strategies and literature summaries to support evidence-based development of clinical pathways and clinical order sets.

EBL has developed proactive mechanisms to integrate evidence into clinical and research workflow through linkages of patient care guidelines within the electronic medical record. Further leveraging VUMC's informatics tools, the library has extended the CICS evidence-provision model to incorporate an evidence-request function into the patient record system to which clinicians can post complex questions and receive an expert summary of the relevant literature. Summaries are integrated into the permanent patient record.

In addition to working as clinical and research informationists, EBL librarians participate in multidisciplinary teams throughout the medical center, supporting a variety of programs such as pathways/order sets development, IRB, and patient information services. EBL team members contribute vetted patient information links addressing diseases/conditions and lab findings/vital signs to the Medical Center's online patient portal, MyHealthAtVanderbilt, and the Medical Center's electronic medical record system, StarPanel.

Programs and Services. The library is committed to service, and its most important resource is the expertise of its staff. Librarians help students, residents, and faculty stay abreast of the latest findings in the literature by actively participating on clinical rounds and providing targeted support to researchers. Bioinformatics support is provided through regular training classes and individualized consultations. Members of the collection development team are available to meet with faculty developing new courses or programs to assess the information needs of those endeavors and determine the most appropriate way to fulfill those needs. EBL assistance with comprehensive literature reviews is available to researchers developing IRB protocols and to IRB protocol analysts.

The library has also established a Patient Informatics Consult Service (PICS) program to provide VUMC patients and their families with the latest in health information. Information provision to this patron group includes comprehensive information packets tailored to patient needs, access to the

EBL's consumer health materials collection, and access to the EBL's online Consumer Health Digital Library.

Through AskELIS asynchronous services (Library Information Desk, SearchDoc, the Librarian On Call, and Learning Site), staff expertise is electronically available 24/7. Online knowledge modules provide 24-hour interactive instruction in health science resources and bibliographic management tools. Other services include circulation of books, management of reserve materials, document delivery to obtain needed material held by other institutions, reference and research services, and guidance in the use of new information technologies. As part of the Informatics Center, library staff work in partnership with researchers in the Division of Biomedical Informatics and the Information Management Department to innovate the delivery of health information to Vanderbilt and to the larger regional community.

Just-in-Time Learning Support. The library offers formal orientations and training sessions on electronic resources regularly in the state-of-the-art Training Room. The Training Room features fourteen training stations, a master station for the trainer, and multimedia projection capabilities. Classnet®, an integrated hardware utility, allows the trainer to assume control of trainees' computers, the multimedia player, and the classroom projector, which facilitates interactive instruction and demonstration. EBL staff also actively exploit opportunities for informal, just-in-time training in all interactions with Medical Center professionals.

EBL has also developed a medical education-focused digital library, Ask GALEN (General Assistance for Learning and Education Needs) that links targeted electronic resources (electronic books, suggested course readings, relevant web sites, etc.) directly to lectures housed in the medical school's web-based course management system. Ask GALEN allows students to move seamlessly between lecture notes and supplementary study materials to support medical education at the point of need.

The EBL provides Medical Center patrons with the computer equipment needed to support their information needs. Most public workstations in the library have the same desktop and functionality as other "shared" workstations throughout the Medical Center. All fifty-four publicly available computers in the library are connected to the Medical Center network. In addition, fifteen wireless laptop computers and four wireless Airpanel monitors can be used in the library.

Knowledge Management. EBL has long focused on integrating knowledge management approaches into information provision. A knowledge management focus on designing reusable tools is central to EBL-created tools (www.mc.vanderbilt.edu/kmt/index.html) such as the Learning Framework, the Learning Module Shell, the Publishing and Directory Shells, and the Informatics Center Tools Finder. Moreover, EBL actively seeks opportunities to integrate information into existing medical center tools and processes.

EBL Research. EBL's research interests include integrating evidence into the patient care and research workflow using informatics applications; evaluating and formalizing the informationist concept; education, skills development, and leadership development of librarians; optimal selection and use of information resources; and digital library development. (www.mc.vanderbilt.edu/biolib/research/index.html)

Print Resources. For materials not available in digital format or of historical value, the library maintains a print collection of more than 203,028 volumes, of which about 80,066 are monographs and 122,962 are serials. The library receives ~116 print serial titles and has a small collection of non-print material. Most materials are shelved in open stacks and are available to users through Acorn, the library's web-based catalog. A unique collection of rare books, photographs, and historical items can be found in the Historical Collections Room. The EBL Medical Center Archives is a repository for manuscripts and institutional records reflecting the history of the Medical Center and the history of medicine. The EBL's Records Center serves as a model archives and records program, providing access to materials with possible long-term administrative and historical value to the institution.

More details are provided at www.mc.vanderbilt.edu/biolib/. The site includes a succinct description of the library's collection, programs and services and a responsibility chart (in the "Who's Who at Eskind" section).

## Professional and Supervisory Staff

DEBORAH BROADWATER, M.L.S., Assistant Director for Collection Development JOHN CLARK, M.S., Health Systems Analyst Programmer MARK DESIERTO, M.S.L.I.S., Library Intern MARCIA EPELBAUM, M.A., Assistant Director for Library Operations

GAYLE GRANTHAM, Health Information Specialist

NUNZIA GIUSE, M.D., M.L.S., Director REBECCA JEROME, M.L.I.S., Assistant Director for Filtering and Evidence-Based Services

TANEYA KOONCE, M.S.L.S., Assistant Director for Web Development

QINGHUA KOU, M.S., Health Systems Analyst Programmer

PATRICIA LEE, M.L.S., Assistant Director for Fee-Based Services

FRANCES LYNCH, M.L.S., Associate Director for Administration

JENNIFER LYON, M.L.I.S., M.S., Coordinator, Research Informatics Consult Service

SANDRA L. MARTIN, M.L.S., Ed.S., Ed.D., Assistant Director for Children's Hospital Services

DAN E. MCCOLLUM, Administrative Assistant Director for Auxiliary Centers

SHANNON A. MUELLER, M.L.I.S., Librarian

JEREMY NORDMOE, M.A., Coordinator, Medical Center Archives

CHRISTOPHER RYLAND, M.S.I.S., Coordinator for Special Collections

NILA SATHE, M.A., M.L.I.S., Assistant Director for Research

MARY H. TELOH, M.A., Coordinator, Historical Collections

PAULINE TODD, M.S., Librarian

MARGARET W. WESTLAKE, M.L.S., Assistant Director for Staff Training

ANNETTE M. WILLIAMS, M.L.S., Associate Director

TAO YOU, M.L.I.S., Librarian

JERRY ZHAO, M.S., M.L.I.S., Systems Software Specialist

#### **Affiliated Facilities**

Vanderbilt is closely affiliated with the 485-bed Veterans Administration Medical Center—a Vice Chancellor's Committee hospital containing 439 acute-care beds and outpatient facilities.

The Medical Center uses the facilities of Baptist Hospital, Meharry Medical School/Nashville General Hospital, the Luton Community Mental Health Center, the Middle Tennessee Mental Health Institute, the Metro Nashville–Davidson County Health Department, Southern Hills Hospital, and Centennial Medical Center.

## Information Technology Services (ITS)

Information Technology Services (ITS) offers voice, video, data, computing, and conferencing services to Vanderbilt students, faculty, and staff. ITS provides free anti-spyware and antivirus downloads.

ITS maintains and supports VUnet, the campuswide data network that provides access to the Internet, and VUnet ID, the authentication service that enables Vanderbilt users to securely identify themselves to many services on VUnet. Those services include OASIS, the university's course registration system; Online Access to Knowledge (OAK); VUspace, the university's network file storage system; and VUmail, the university's e-mail system. VUmail also includes VUmailguard, designed to protect your e-mail from viruses, unwanted mail (spam), and high-risk attachments.

ITS maintains the campus phone (voice) network, including a personal phone line for each resident student. Optional services include voice mail and long-distance calls from campus (V-net). ITS also partners with Sprint, Verizon, and AT&T to offer discounts for cellular phone service.

For campus residents, ITS supports ResNet, which provides a direct connection to VUnet and the Internet. Phone and cable television ports are provided in each campus residence. For more information about ResNet, see digitallife.vanderbilt.edu/resnetstart.html. Through the Digital Life initiative, Vanderbilt highlights VUmix, legal, safe, inexpensive, and easy ways to explore and share music and digital content. See digitallife.vanderbilt.edu and www.vanderbilt.edu/vumix for details.

The ITS Help Desk provides information to students, faculty, and staff about VUnet and VUnet services. Help Desk locations, hours, contacts, and other information can be found at www.vanderbilt.edu/helpdesk.

For more information on IT services, go to its.vanderbilt.edu.

Visit www.vanderbilt.edu/technology.html for more information on computing at Vanderbilt.

## **Canby Robinson Society**

In 1978, Vanderbilt established the Canby Robinson Society in honor of George Canby Robinson, M.D., dean of the Medical School from 1920 to 1928. It was through Dr. Robinson's leadership that the teaching hospital

and the research laboratories were placed under one roof, thrusting Vanderbilt to the forefront of medical education. His innovation regarding the diversity of the Medical School's curriculum, with emphasis on biomedical research and improved health care, is a legacy that continues today.

With a membership of more than 2,500 and a working thirty-two-member board, this donor society promotes both unrestricted and restricted gifts in support of the Medical Center's programs. Through the leadership of this group, private support to the Medical Center continues to increase. The Canby Robinson Society had sixteen M.D. scholars and thirteen M.D./Ph.D. scholars this past year.

#### Founders Circle

MRS. BEN J. ALPER Nashville MR. AND MRS. JAMES W. AYERS Nashville MR. AND MRS. BARRY BAKER Park City, Utah DR. DIXON N. BURNS Yarmouth, Maine MRS. MONROE J. CARELL, JR. Nashville MR. AND MRS. THOMAS FITE CONE

MRS. CAROLYN PAYNE DAYANI Lake Ozark, Missouri MRS. WILLIAM R. DELOACHE Greenville, South Carolina MRS. IRWIN B. ESKIND Nashville

MR. AND MRS. THOMAS O. FLOC Brentwood, Tennessee DR. AND MRS. EDWARD P. FODY, JR

Holland, Michigan

MR. AND MRS. JOHN R. HALL Lexington, Kentucky

MR. AND MRS. H. RODES HART Brentwood, Tennessee

MISS VIRGINIA E. HOWD Cincinnati, Ohio

MR. AND MRS. DAVID B. INGRAM Nashville

MRS. E. BRONSON INGRAM Nashville

MR. AND MRS. JOHN R. INGRAM

MR. AND MRS. ORRIN H. INGRAM II Nashville

DR. AND MRS. HARRY R. JACOBSON Nashville

MRS. GEORGE C. LAMB, JR.

Alpharetta, Georgia

MRS. BARBARA NELSON LAMBERSON

Lebanon. Tennessee

DR. AND MRS. JAMES R. LEININGER

San Antonio, Texas MRS. JACK C. MASSEY

Nashville MRS, JOHN S. ODESS

Chelsea, Alabama MR. AND MRS. RICHARD C. PATTON

Nashville

DR. THEODORE P. PINCUS Hastings on Hudson, New York MRS. DAVID Y. PROCTOR, JR.

Nashville

DR. AND MRS. KARL E. RATHJEN

Dallas, Texas

MR. AND MRS. WILLIAM B. SNYDER Dallas, Texas

MR. AND MRS. DONALD N. TEST, JR. Dallas, Texas

MRS. LYDIA BRYANT TEST

Dallas, Texas

MR. AND MRS. CAL TURNER, JR.

Franklin, Tennessee

MR. AND MRS. STEVE TURNER

Nashville

MRS. LESTER F. WILLIAMS

Nashville

MRS. DAVID K. WILSON

Nashville

MR. AND MRS. THOMAS L. YOUNT

Nashville

#### Stewards Circle

MR. AND MRS. HOWELL E. ADAMS, JR. Atlanta, Georgia MRS. SAM A. BROOKS, JR. Nashville MR. AND MRS. LUCIUS E. BURCH III Nashville DR. KENNETH CHASTAIN Kennewick, Washington MRS. CORNELIUS A. CRAIG II Nashville DR. AND MRS. E. WILLIAM EWERS DR. AND MRS. GERALD M. FENICHEL R. AND MRS. WILLIAM A. HEWLETT Nashville DR. AND MRS. JACK E. KEEFE III Pawleys Island, South Carolina MR. AND MRS. LEO KING Henderson, Kentucky

DR. AND MRS. JAMES TRUE MARTIN Tallahassee. Florida MR. AND MRS. GLENN H. MERZ Tullahoma. Tennessee MR. AND MRS. WILLIAM C. NOLAN, JR. El Dorado, Arkansas DR. AND MRS. HARRY L. PAGE, JR. Nashville MR. AND MRS. GEORGE RAWLINGS. Louisville, Kentucky MRS. BARBARA L. ROGERS Princeton, New Jersey DRS. JOHN L. AND JULIA E. SAWYERS Nashville MR. SARGENT SHRIVER Washington, D.C. MRS. HILLIARD TRAVIS Nashville DR. AND MRS. JOHN S. WARNER Nashville MRS. ELTON YATES Pinehurst, North Carolina

### The University

When Commodore Cornelius Vanderbilt gave a million dollars to build and endow Vanderbilt University in 1873, he did so with the wish that it "contribute to strengthening the ties which should exist between all sections of our common country."

A little more than a hundred years later, the Vanderbilt Board of Trust adopted the following mission statement: "We reaffirm our belief in the unique and special contributions that Vanderbilt can make toward meeting the nation's requirements for scholarly teaching, training, investigation, and service, and we reaffirm our conviction that to fulfill its inherited responsibilities, Vanderbilt must relentlessly pursue a lasting future and seek highest quality in its educational undertakings."

Today as Vanderbilt pursues its mission, the University more than fulfills the Commodore's hope. It is one of a few independent universities with both a quality undergraduate program and a full range of graduate and professional programs. It has a strong faculty of more than 2,000 full-time members and a diverse student body of about 10,000. Students from many regions, backgrounds, and disciplines come together for multidisciplinary study and research. To that end, the University is the fortunate recipient of continued support from the Vanderbilt family and other private citizens.

The 330-acre campus is about one and one-half miles from the downtown business district of the city, combining the advantages of an urban location with a peaceful, park-like setting of broad lawns, shaded paths, and quiet plazas. Off-campus facilities include the Arthur J. Dyer Observatory, situated on a 1,131-foot hill six miles south.

The schools of the University offer the following degrees:

College of Arts and Science. Bachelor of Arts.

*Graduate School.* Master of Arts, Master of Arts in Teaching, Master of Fine Arts, Master of Liberal Arts and Science, Master of Science, Doctor of Philosophy.

Blair School of Music. Bachelor of Music.

Divinity School. Master of Divinity, Master of Theological Studies.

School of Engineering. Bachelor of Engineering, Bachelor of Science, Master of Engineering.

Law School. Doctor of Jurisprudence, Master of Laws.

School of Medicine. Doctor of Medicine, Doctor of Audiology, Doctor of Medical Physics, Master of Science in Medical Physics, Master of Public Health, Master of Science in Clinical Investigation, Master of Laboratory Investigation, Master of Science (Speech-Language Pathology), Master of Education of the Deaf.

School of Nursing. Master of Science in Nursing, Doctor of Nursing Practice.

Owen Graduate School of Management. Master of Business Administration, Master of Accountancy, Master of Science in Finance.

Peabody College. Bachelor of Science, Master of Education, Master of Public Policy, Doctor of Education.

No honorary degrees are conferred.

#### Accreditation

Vanderbilt University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award bachelor's, master's, education specialist's, and doctor's degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097 or call (404) 679-4500 for questions about the accreditation of Vanderbilt University.





## Life at Vanderbilt

ANDERBILT provides a full complement of auxiliary services to meet the personal needs of students, to make life on the campus comfortable and enjoyable, and to provide the proper setting for academic endeavor.

#### **Graduate Student Council**

The Graduate Student Council (GSC) exists to enhance the overall graduate experience at Vanderbilt by promoting the general welfare and concerns of the graduate student body, creating new programs and initiatives to provide opportunities for growth and interaction, and communicating with the Vanderbilt faculty and administration on behalf of graduate students. These goals are accomplished through a structure of elected representatives, standing committees, and officers. Meetings, which are open to all graduate students, are held monthly. Council meetings provide a forum in which to address many types of concerns. In the recent past, the GSC has helped change policies involving the process for approving dissertations, TA advocacy, parking, student health insurance coverage, housing, and the student-funded recreation center. The GSC is also a member of the National Association of Graduate and Professional Students (NAGPS).

In addition to its representative function, the GSC also organizes a number of events and hosts/sponsors various projects during the year. Some examples include co-sponsoring seminars and panels with individual departments, Graduate Student Research Day (early spring semester), the Graduate Student Honor Council, community outreach activities, and social opportunities. The GSC also awards travel grants to graduate students who wish to present their research at conferences throughout the year. All Vanderbilt graduate students are welcome to attend GSC's monthly meetings and to get involved. For more information, go to <a href="https://www.vanderbilt.edu/gradschool">www.vanderbilt.edu/gradschool</a>.

#### Housing

To support the housing needs of new and continuing graduate and professional students, the Office of Housing and Residential Education provides a Web-based off-campus referral service (apphost1a.its.vanderbilt .edu/housing/Main/). The referral service lists information on housing accommodations off campus. The majority of rental property is close to the campus. Cost, furnishings, and conditions vary greatly. For best choices, students seeking off-campus housing should visit the office or consult the Web site by early July for suggestions and guidance. The Web site includes advertisements by landlords looking specifically for Vanderbilt-affiliated tenants, as well as by Vanderbilt students looking for roommates. Listings

are searchable by cost, distance from campus, number of bedrooms, and other parameters. Students may also post "wanted" ads seeking roommate or housemate situations. On-campus university housing for graduate or professional students is not available.

## Change of Address

Students who change either their local or permanent mailing address are expected to notify school and university registrars immediately. Candidates for degrees who are not in residence should keep the school and University Registrar informed of current mailing addresses. To change or update addresses, go to registrar.vanderbilt.edu/academicrec/address.htm.

#### The Commodore Card

The Commodore Card is the Vanderbilt student ID card. It can be used to access debit spending accounts, VU meal plans, and campus buildings such as residence halls, libraries, academic buildings, and the Student Recreation Center.

ID cards are issued at the Commodore Card Office, 184 Sarratt Student Center, Monday through Friday from 8:30 a.m. to 4:00 p.m. For more information, go to www.vanderbilt.edu/commodorecard.

### **Eating on Campus**

Vanderbilt Dining operates several food facilities throughout campus that provide a variety of food and services. The two largest dining facilities are Rand Dining Center (behind Sarratt Student Center) and The Commons Dining Center. Six convenience stores on campus offer grab-and-go meals, snacks, beverages, and groceries. All units accept the Commodore Card. For hours and menus, go to <a href="https://www.vanderbilt.edu/dining">www.vanderbilt.edu/dining</a>.

#### Obtaining Information about the University

Notice to current and prospective students: In compliance with applicable state and federal law, the following information about Vanderbilt University is available:

Institutional information about Vanderbilt University, including accreditation, academic programs, faculty, tuition, and other costs, is available in the catalogs of the colleges and schools on the Vanderbilt University Web site at <a href="https://www.vanderbilt.edu/catalogs">www.vanderbilt.edu/catalogs</a>. A paper copy of the <a href="https://www.vanderbilt.edu/catalogs">Undergraduate Catalog</a> may be obtained by contacting the Office of Undergraduate Admissions, 2305 West End Avenue, Nashville, Tennessee 37203-1727, (800) 288-0432, (615) 322-2561, <a href="mailto:admissions@vanderbilt.edu">admissions@vanderbilt.edu</a>. Paper copies of the catalogs for the graduate and professional schools may be available from the individual schools.

Information about financial aid for students at Vanderbilt University, including federal and other forms of financial aid for students, is available from the Office of Student Financial Aid on the Vanderbilt University Web site at <a href="https://www.vanderbilt.edu/financialaid">www.vanderbilt.edu/financialaid</a>. The Office of Student Financial Aid is

located at 2309 West End Avenue, Nashville, Tennessee 37203-1725, (615) 322-3591 or (800) 288-0204.

Information about graduation rates for students at Vanderbilt University is available on the Vanderbilt University Web site at *virg.vanderbilt.edu*. Select "Factbook," then "Student," then "Retention/Graduation Rates." Paper copies of information about graduation rates may be obtained by writing the Office of the University Registrar, Vanderbilt University, PMB 407701, 2301 Vanderbilt Place, Nashville, Tennessee 37240-7701 or by calling (615) 322-7701.

The Vanderbilt University Annual Security Report on university-wide security and safety, including related policies, procedures, and crime statistics, is available from the Vanderbilt Police Department on the university Web site at *police.vanderbilt.edu/security\_report*. A paper copy of the report may be obtained by writing the Vanderbilt Police Department, 2800 Vanderbilt Place, Nashville, Tennessee 37212 or by calling (615) 343-9750. For more information, see "Vanderbilt Police Department" in the following section of this catalog.

A copy of the annual *Equity in Athletics Disclosure Act Report* on the Vanderbilt University athletic program participation rates and financial support data may be obtained by writing the Vanderbilt University Office of Athletic Compliance, 2601 Jess Neely Drive, P.O. Box 120158, Nashville, Tennessee 37212 or by calling (615) 322-7992.

Information about your rights with respect to the privacy of your educational records under the Family Educational Rights and Privacy Act is available from the Office of the University Registrar on the Vanderbilt University Web site at <a href="https://www.registrar.vanderbilt.edu/academicrec/privacy.htm">www.registrar.vanderbilt.edu/academicrec/privacy.htm</a>. Paper copies of this information about educational records may be obtained by writing the Office of the University Registrar, Vanderbilt University, PMB 407701, 2301 Vanderbilt Place, Nashville, Tennessee 37240-7701 or by calling (615) 322-7701. For more information, see "Confidentiality of Student Records" in the following section of this catalog.

#### Services to Students

#### **Confidentiality of Student Records (Buckley Amendment)**

Vanderbilt University is subject to the provisions of federal law known as the Family Educational Rights and Privacy Act (also referred to as the Buckley Amendment or FERPA). This act affords matriculated students certain rights with respect to their educational records. These rights include:

The right to inspect and review their education records within 45 days of the day the university receives a request for access. Students should submit to the University Registrar written requests that identify the record(s) they wish to inspect. The University Registrar will make arrangements for access and notify the student of the time and place where the records may be inspected. If the University Registrar does not maintain the records, the student will be directed to the university official to whom the request should be addressed.

The right to request the amendment of any part of their education records that a student believes is inaccurate or misleading. Students who wish to request an amendment to their educational record should write the university official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading. If the university decides not to amend the record as requested by the student, the student will be notified of the decision and advised of his or her right to a hearing.

The right to consent to disclosures of personally identifiable information contained in the student's education records to third parties, except in situations that FERPA allows disclosure without the student's consent. These exceptions include:

- Disclosure to school officials with legitimate educational interests. A "school official" is a person employed by the university in an administrative, supervisory, academic, research, or support staff position (including university law enforcement personnel and health staff); contractors, consultants, and other outside service providers with whom the university has contracted; a member of the Board of Trust; or a student serving on an official university committee, such as the Honor Council, Student Conduct Council, or a grievance committee, or assisting another school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility.
- To parents if the student is a dependent for tax purposes.
- To appropriate individuals (e.g., parents/guardians, spouses, housing staff, health care personnel, police, etc.) where disclosure is in connection with a health or safety emergency and knowledge of such information is necessary to protect the health or safety of the student or other individuals.
- Information to a parent or legal guardian of a student regarding the student's violation of any federal, state, or local law, or of any rule or policy of the institution, governing the use or possession of alcohol or a controlled substance if the university has determined that the student has committed a disciplinary violation with respect to the use or possession and the student is under the age of twenty-one at the time of the disclosure to the parent/quardian.

The Buckley Amendment provides the university the ability to designate certain student information as "directory information." Directory information may be made available to any person without the student's consent unless the student gives notice as provided for below. Vanderbilt has designated the following as directory information: the student's name, addresses, telephone number, e-mail address, student ID photos, date and place of birth, major field of study, school, classification, participation in officially recognized activities and sports, weights and heights of members of athletic teams, dates of attendance, degrees and awards received, the most recent previous educational agency or institution attended by the student, and other similar information. Any new entering or currently enrolled student who does not wish disclosure of directory information should notify the University Registrar in writing. No element of directory information as defined above is released for students who request nondisclosure except in situations allowed by law. The request to withhold directory information will remain in effect as long as the student continues to be enrolled, or until the student files a written request with the University Registrar to discontinue the withholding. To continue nondisclosure of directory information after a student ceases to be enrolled, a written

request for continuance must be filed with the University Registrar during the student's last term of attendance.

If a student believes the university has failed to comply with the Buckley Amendment, he or she may file a complaint using the Student Complaint and Grievance Procedure as outlined in the *Student Handbook*. If dissatisfied with the outcome of this procedure, a student may file a written complaint with the Family Policy and Regulations Office, U.S. Department of Education, Washington, D.C. 20202; (800) 872-5327.

Questions about the application of the provisions of the Family Educational Rights and Privacy Act should be directed to the University Registrar or to the Office of the General Counsel.

## Vanderbilt Directory Listings

Individual listings in the online *People Finder Directory* consist of the student's full name, school, academic classification, local phone number, local address, box number, permanent address, and e-mail address. The printed *Vanderbilt Directory* also contains these items unless the student blocks them by September 1 using the update option of the *People Finder Directory*. Student listings in the *People Finder Directory* are available to the Vanderbilt community via logon ID and e-password. Students have the option of making their *People Finder* listings available to the general public (viewable by anyone with access to the Internet), of adding additional contact information such as cellular phone, pager, and fax numbers, and of blocking individual directory items. Students who have placed a directory hold with the University Registrar will not be listed in the online directory. To avoid being listed in the printed directory, the request for a directory hold must be on file prior to September 1.

Directory information should be kept current. Students may report address changes via the Web by going to <a href="https://webapp.mis.vanderbilt.edu/student-search">https://webapp.mis.vanderbilt.edu/student-search</a> or <a href="https://www.vanderbilt.edu/swa">www.vanderbilt.edu/swa</a> and selecting the <a href="https://www.vanderbilt.edu/swa">Address Change</a> icon.

### Psychological and Counseling Center

The Psychological and Counseling Center is a broad-based service center available to full-time students, faculty, staff, and their partners and dependents. Services include: 1) family, couples, individual, and group counseling and psychotherapy; 2) psychological and educational assessment; 3) career assessment and counseling; 4) programs such as assertiveness training; marital communication; individual reading and study skills/test-taking techniques; body image, stress, and time management; group support programs for acquiring skills such as relaxation; 5) administration of national testing programs; 6) outreach and consultation; 7) special programming related to diversity issues; 8) campus speakers and educational programs.

Eligible persons may make appointments by visiting the Psychological and Counseling Center or by calling (615) 322-2571. Services are confidential to the extent permitted by law. For more information, see the Web site,

www.vanderbilt.edu/pcc. The site also contains self-reflection questions and information resources for counseling services.

#### **Career Center**

The Vanderbilt Career Center (VCC) serves graduate students enrolled full time in master's or Ph.D. programs interested in pursuing opportunities in industry, government, and/or nonprofits. Students pursuing academic employment should contact their faculty advisers or the departments in which they are currently enrolled for career advising and job search assistance. Graduate students who are undecided about their career goals are encouraged to contact the Vanderbilt Psychological and Counseling Center (VPCC) for career assessment and counseling and then be referred to the VCC for appropriate follow-up. For detailed information about the VCC, go to www.vanderbilt.edu/career.

Additionally, the VCC partners with the Peabody Career Center, Owen Career Management Center, and Owen Special Programs to support students enrolled in a professional master's program in Peabody College or in the MS Finance program in the Owen Graduate School of Management who are pursuing their first full-time professional opportunity. Services to these students include access to the VCC job and internship database, industry career days and networking events, and campus recruiting.

#### Student Health Center

The Vanderbilt Student Health Center (SHC) in the Zerfoss Building is a student-oriented facility that provides routine and acute medical care similar to services rendered in a private physician's office or HMO.

The following primary care health services are provided to students registered in degree-seeking status: visits to staff physicians and nurse practitioners; personal and confidential counseling by mental health professionals; routine procedures; educational information and speakers for campus groups; and specialty clinics held at the SHC. Most visits are free of charge, but there are small co-pays for some procedures, and for medications or supplies purchased at the Student Health Center.

These SHC primary care services are designed to complement the student's own insurance policy, HMO, MCO, etc., coverage to provide comprehensive care. Students are billed for any services provided outside the SHC or by the Vanderbilt University Medical Center.

The entire medical staff is composed of physicians and nurse practitioners who have chosen student health as a primary interest and responsibility.

The Zerfoss Student Health Center is open from 8:00 a.m. to 4:30 p.m., Monday through Friday, and 8:30 a.m. until noon on Saturday (except during scheduled breaks and summer). Students should call ahead to schedule appointments, (615) 322-2427. A student with an urgent problem will be given an appointment that same day, or "worked in" if no appointment is available. When the Student Health Center is closed, students needing acute medical care may go to the Emergency Department of Vanderbilt University Hospital. They will be charged by the VU Medical Center for Emergency Department services.

Students may also call (615) 322-2427 for twenty-four-hour emergency phone consultation, which is available seven days a week (except during summer and scheduled academic breaks). On-call Student Health professionals take calls after regular hours. Calls between 11:00 p.m. and 7:00 a.m. are handled by the Vanderbilt University Emergency Department triage staff. More information is available on the Web (www.vanderbilt.edu/student\_health).

## Immunization Requirements

The State of Tennessee requires certain immunizations for all students (undergraduate, graduate, and professional) on university campuses. As such, Vanderbilt University will block student registration for those who are not in compliance with the requirements. In order to accommodate students who have difficulty acquiring their records or needed vaccinations, incoming students not in compliance with the state laws will be enrolled for their first semester, but if they fail to comply within two months of enrollment, registration for the second semester will not be permitted.

The requirements include:

- 1. Meningococcal meningitis vaccine (one injection) for all incoming students living in on-campus housing. The law does allow a student to sign a waiver stating that he/she does not wish to receive this vaccination (see below).
- 2. Hepatitis B vaccine series (three injections) for all incoming students, regardless of housing status. The law does allow a student to sign a waiver stating that he/she does not wish to receive this vaccination (see below).
- 3. Measles, mumps, and rubella (two injections) for all incoming students. Any waivers for this vaccine are very strict, and include only certain religious or medical exemptions that must be approved by the medical director of the Student Health Center.

The Student Health Center asks all incoming students to complete a Health Questionnaire that includes further information regarding the state-mandated vaccinations, as well as information on other strongly recommended vaccinations. Information regarding this Health Questionnaire is communicated to students by regular mail and by e-mail after admission to Vanderbilt University. This Health Questionnaire must be returned to the Student Health Center with vaccination or waiver information. Waivers for hepatitis B and the meningococcal vaccine are also included with the Health Questionnaire, should a student decide to forgo these vaccinations. However, waiver of the MMR (measles, mumps, rubella) vaccine requires special documentation of religious or medical exemption so students seeking that waiver should contact the medical director of the Student Health Center at (615) 322-2254.

To access more information about immunization requirements, visit www.vanderbilt.edu/student\_health/link/immunization-requirements. This site also contains links to the PDFs of the required forms and has information regarding an online entry form that is available for the state-mandated vaccinations.

All vaccines can be administered at either a private provider office or at the Student Health Center.

Student Injury and Sickness Insurance Plan

All degree-seeking students registered for 4 or more credit hours or actively enrolled in research courses that are designated by Vanderbilt University as full-time enrollment are required to have adequate health insurance coverage. The university offers a sickness and injury insurance plan that is designed to provide hospital, surgical, and major medical benefits. A brochure explaining the limits, exclusions, and benefits of insurance coverage is available to students in the Office of Student Accounts or at the Student Health Center.

The annual premium is in addition to tuition and is automatically billed to the student's account. Coverage extends from August 12 until August 12 of the following year, whether a student remains in school or is away from the university.

A student who does not want to subscribe to the insurance plan offered through the university must notify the Office of Student Accounts of adequate coverage under another policy. All new and returning students must complete an online selection/waiver process through the Office of Student Accounts (www.vanderbilt.edu/stuaccts) or via the insurance company (www.kosterweb.com). This process must be completed by August 1 for students enrolling in the fall for annual coverage. Newly enrolled students for the spring term must complete the online waiver process by January 1. The online selection/waiver process indicating comparable coverage must be completed every year in order to waive participation in the Student Injury and Sickness Insurance Plan.

Family Coverage. Students who want to obtain coverage for their families (spouse, children, or domestic partner) may secure application forms by contacting the on-campus Student Insurance representative, (615) 322-4688. Additional premiums are charged for family health insurance coverage.

## International Student Coverage

International students and their dependents residing in the United States are required to purchase the university's international student health and accident insurance plan. If you have other comparable insurance and do not wish to participate in the Student Injury and Sickness Insurance Plan offered through the university, you must complete an online waiver form (www.gallagherkoster.com) indicating your other insurance information. This online waiver form must be completed no later than September 7 or you will remain enrolled in the plan offered by the university and will be responsible for paying the insurance premium. This insurance is required for part-time as well as full-time students. Information and application forms are provided through the Student Health Center.

### Vanderbilt Child and Family Center

The Vanderbilt Child and Family Center supports the health and productivity of the Vanderbilt community by providing resource and referral services, quality child care, and early childhood education to the children of faculty, staff, and students. The center's Web site at <code>www.vanderbilt.edu</code> <code>/HRS/wellness/cfctr.html</code> provides information on resources for child care, adult care, summer programs (both day camps and overnight camps), tutoring services (including test preparation and skill building), and before and after care.

The Child Care Center serves children from six weeks to five years of age and offers placement through a waiting list. Applications may be downloaded from the Web site.

#### Services for Students with Disabilities

Vanderbilt is committed to the provisions of the Rehabilitation Act of 1973 and Americans with Disabilities Act as it strives to be an inclusive community for students with disabilities. Students seeking accommodations for any type of disability are encouraged to contact the Equal Opportunity, Affirmative Action, and Disability Services Department. Services include, but are not limited to, extended time for testing, assistance with locating sign language interpreters, audiotaped textbooks, physical adaptations, notetakers, and reading services. Accommodations are tailored to meet the needs of each student with a documented disability. The EAD also investigates alleged violations of Vanderbilt's nondiscrimination and antiharassment policies.

Specific concerns pertaining to services for people with disabilities or any disability issue should be directed to the Disability Program Director, Equal Opportunity, Affirmative Action, and Disability Services Department, PMB 401809, 2301 Vanderbilt Place, Nashville, Tennessee 37240-1809; phone (615) 322-4705 (V/TDD); fax (615) 343-0671; www.vanderbilt.edu/odc.

#### Vanderbilt Police Department

The Vanderbilt Police Department, (615) 322-2745, is a professional law enforcement agency dedicated to the protection and security of Vanderbilt University and its diverse community.

The Vanderbilt Police Department comes under the charge of the Office of the Vice Chancellor for Administration. As one of Tennessee's larger law enforcement agencies, the Vanderbilt Police Department provides comprehensive law enforcement and security services to all components of Vanderbilt University including the academic campus, Vanderbilt Medical Center, and a variety of university-owned facilities throughout the Davidson County area. Non-commissioned and commissioned officers staff the department. Commissioned officers are empowered to make arrests as "Special Police Officers," through the authority of the Chief of Police of the Metropolitan Government of Nashville and Davidson County. Vanderbilt officers with Special Police Commissions have the same authority as that of

a municipal law enforcement officer while on property owned by Vanderbilt, on adjacent public streets and sidewalks, and in nearby neighborhoods.

The Vanderbilt Police Department includes a staff of more than one hundred people. All of Vanderbilt's commissioned officers have completed officer training at a state-certified police academy. Those officers hold Special Police Commissions and are required to attend annual in-service, as well as on-the-job training. The department also employs non-academy-trained officers for security-related functions.

The Vanderbilt Police Department provides several services and programs to members of the Vanderbilt community:

Vandy Vans—The Vanderbilt Police Department administers the Vandy Vans escort system at Vanderbilt University. The Vandy Vans escort system provides vehicular escorts to designated locations on campus. The service consists of vans that operate from 5:00 p.m. to 5:00 a.m.

Stop locations were chosen based on location, the accessibility of a secure waiting area, and student input. Signs, freestanding or located on existing structures, identify each stop. A walking escort can be requested to walk a student from his/her stop to the final destination. A van is also accessible to students with mobility impairments. Additional information about Vandy Vans and specific stop locations can be found at *police.vanderbilt.edu* /vandy\_vans or by calling (615) 322-2558.

As a supplement to the Vandy Vans van service, walking escorts are available for students walking to and from any location on campus during nighttime hours. Walking escorts are provided by VPD officers. The telephone number to call for a walking escort is 421-8888 (off campus) or 1-8888 (on campus).

*Emergency Phones*—Emergency telephones (Blue Light Phones) are located throughout the university campus and medical center.

Each phone has an emergency button that when pressed automatically dials the VPD Communications Center. An open line on any emergency phone will activate a priority response from an officer. An officer will be sent to check on the user of the phone, even if nothing is communicated to the dispatcher. Cooperation is essential to help us maintain the integrity of the emergency phone system. These phones should be used *only* for actual or perceived emergency situations.

An emergency response can also be received by dialing 911 from any campus phone. Cell phone users can use (615) 421-1911 to elicit an emergency response on campus. Cell phone users should dial 911 for off-campus emergencies. All callers should be prepared to state their location.

*Crime Alerts*—Crime Alerts are distributed throughout Vanderbilt to make community members aware of significant unsolved crimes that occur at the university. They are distributed by mail, through Vanderbilt e-mail lists, and through the department's Web page, *police.vanderbilt.edu*.

Educational and Assistance Programs—The Community Relations Division of Vanderbilt Police Department offers programs addressing issues such as sexual assault, domestic violence, workplace violence, personal safety, RAD (Rape Aggression Defense) classes, and victim assistance.

For further information on available programs and services, call (615) 322-2558 or visit *police.vanderbilt.edu*. Additional information on security measures and crime statistics for Vanderbilt is available from the Vanderbilt Police Department, 2800 Vanderbilt Place, Nashville, Tennessee 37212. Information is also available at *police.vanderbilt.edu*.

## Campus Security Report

In compliance with the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act and the Tennessee College and University Security Information Act, Vanderbilt University will provide you, upon request, an annual security report on university-wide security and safety, including related policies, procedures, and crime statistics. A copy of this report may be obtained by writing or calling the Vanderbilt Police Department, 2800 Vanderbilt Place, Nashville, Tennessee 37212 or by telephone at (615) 343-9750. You may also obtain this report on the Web site at police.vanderbilt.edu/security\_report.

### Parking and Vehicle Registration

Parking space on campus is limited. Motor vehicles operated on campus at any time by students, faculty, or staff must be registered with the Office of Traffic and Parking located in the Wesley Place garage. A fee is charged. Parking regulations are published annually and are strictly enforced. More information is available at <a href="https://www.vanderbilt.edu/traffic\_parking">www.vanderbilt.edu/traffic\_parking</a>.

Bicycles must be registered with the Vanderbilt Police Department.

## **Graduate Development Network**

The Graduate Development Network (GDN) is an informal network of faculty, administrators, and students at Vanderbilt University that seeks to facilitate the awareness and use of the many programs that can help students become productive and well-rounded scholars. The network's Web site (www.vanderbilt.edu/gradschool/gdn) provides links to various offices and groups at Vanderbilt that support graduate student development. These offices and organizations also jointly sponsor a number of seminars, workshops, and similar events that support student development.

#### Bishop Joseph Johnson Black Cultural Center

The Bishop Joseph Johnson Black Cultural Center (BJJBCC) represents one of Vanderbilt University's numerous efforts at acknowledging and promoting diversity. It does so by providing educational and cultural programming on the black experience for the entire Vanderbilt community. Dedicated in 1984, the center is named for the first African American student admitted to Vanderbilt University in 1953, Bishop Joseph Johnson (B.D. '54, Ph.D. '58).

One of the center's aims is to provide cultural programming. It sponsors lectures, musical performances, art exhibitions, films, and discussions on African and African American history and culture. The center also provides

an office space for a scholarly journal, the *Afro-Hispanic Review*, edited by Vanderbilt faculty and graduate students.

Another of the center's aims is student support and development. The center provides meeting spaces for numerous Vanderbilt student groups, including the Black Student Alliance, the Presbyterian Fellowship, the Muslim Student Association, and Vanderbilt Spoken Word. The center works with students on a wide range of campus projects and community service opportunities. The center also serves as an informal haven for students, with plenty of opportunities for fellowship and food.

One additional aim of the center is community outreach and service. To this end, the center reaches out to civic and cultural groups. The BJJBCC facilitates tutoring and mentoring activities for young people from the Metro Nashville Public Schools, the YMCA, and other community agencies. VU students serve as tutors and mentors. The center also helps promote student recruitment by hosting various pre-college groups.

The center houses a computer lab, a small library, a seminar room, an auditorium, a student lounge area, and staff offices. The center is open to all Vanderbilt students, faculty, and staff for programs and gatherings.

#### International Student and Scholar Services

International Student and Scholar Services (ISSS), located in the Student Life Center, fosters the education and development of nonimmigrant students and scholars to enable them to achieve their academic and professional goals and objectives. ISSS provides advice, counseling, and advocacy regarding immigration, cross-cultural, and personal matters. ISSS supports an environment conducive to international education and intercultural awareness via educational, social, and cross-cultural programs.

ISSS provides immigration advising and services, including the processing of immigration paperwork, to more than 1,500 international students and scholars. The office works with admission units, schools, and departments to generate documentation needed to bring nonimmigrant students and scholars to the U.S. Further, ISSS keeps abreast of the regulations pertaining to international students and scholars in accordance with the Department of Homeland Security (Bureau of Citizenship and Immigration Services) and the Department of State. ISSS coordinates biannual orientation programs for students and ongoing orientations for scholars, who arrive throughout the year.

To help promote connection between international students and the greater Nashville community, ISSS coordinates the First Friends program, which matches international students with Americans both on and off campus for friendship and cross-cultural exchange. The weekly World on Wednesday presentations inform, broaden perspectives, and facilitate cross-cultural understanding through discussions led by students, faculty, and staff. International Education Week in the fall and International Awareness Committee Food Day in the spring provide the campus with additional opportunities to learn about world cultures and to celebrate diversity.

ISSS provides a range of programs and activities throughout the year to address a variety of international student needs and interests. These programs include Vanderbilt International Volunteers, an International Stress Fest, and a selection of holiday parties. Additionally, ISSS staff have been instrumental in developing and implementing the Tennessee Conference for International Leadership which brings together international and study abroad students from across the state for workshops and activities.

### Margaret Cuninggim Women's Center

The mission of the Margaret Cuninggim Women's Center is to advance equity at Vanderbilt and in the larger community through advocacy, education, and empowerment. The women's center has two main program areas. Gender Matters offers lectures, workshops, special events, and groups on various topics related to gender. Project Safe is a campuswide effort aimed at education, prevention, and response services for members of the Vanderbilt community affected by sexual assault, intimate partner abuse, and stalking. Programs are open to students, faculty, staff, and members of the community. The center also houses a library of about 4,000 volumes related to gender issues and publishes a monthly newsletter, *Women's VU*, which covers various campus, community, and national gender topics and includes a listing of all the center's programs and events.

#### Office of LGBTQI Life

As a component of Vanderbilt's Office of the Dean of Students, the Office of Lesbian, Gay, Bisexual, Transgender, Queer, and Intersex (LGBTQI) Life is a welcoming space for individuals of all identities and a resource for information and support about gender and sexuality. LGBTQI Life serves the entire Vanderbilt community through education, research, programming, support, and social events. Visitors are invited to use our everexpanding resource library for research around LGBTQI issues and culture. In addition, LGBTQI Life conducts tailored trainings and consultations for the campus and community. In all cases the office staff provides confidentiality. The Office of LGBTQI Life is located in the K. C. Potter Center, Euclid House, 312 West Side Row. For more information, please call (615) 322-3330.

#### Schulman Center for Jewish Life

The 10,000-square-foot Ben Schulman Center for Jewish Life is the home of Vanderbilt Hillel. The goal of the center is to provide a welcoming community for Jewish students at Vanderbilt and to further religious learning, cultural awareness, and social engagement. Vanderbilt Hillel is committed to enriching lives and enhancing Jewish identity. It provides a home away from home, where Jews of all denominations come together, united by a shared purpose. The Schulman Center is also home to Grin's Cafe, Nashville's only kosher and vegetarian restaurant. For further information about the Schulman Center, please call (615) 322-8376 or e-mail hillel@vanderbilt.edu.

#### Religious Life

The Office of Religious Life (www.vanderbilt.edu/religiouslife) exists to provide occasions for religious reflection and avenues for service, worship, and action. There are many opportunities to clarify one's values, examine personal faith, and develop a sense of social responsibility.

The Holocaust and Martin Luther King Jr. lecture series, as well as Project Dialogue, provide lectures and programs investigating moral issues, political problems, and religious questions.

Baptist, Episcopal, Jewish, Muslim, Presbyterian, Reformed University Fellowship, Catholic, and United Methodist chaplains work with individuals and student groups. Provisions for worship are made for other student religious groups. Counseling and crisis referrals are also available.

## **Extracurricular Activities**

#### Sarratt Student Center

The Sarratt Student Center (www.vanderbilt.edu/sarratt), named for former mathematics professor and dean of students Madison Sarratt, provides a variety of facilities, programs, and activities. The center houses a cinema, an art gallery, art studios and darkrooms for classes and individual projects, work and office spaces for student organizations, comfortable reading and study lounges fully wired for Internet access, large and small meeting rooms, and large, open commons and courtyard areas for receptions or informal gathering. The center also houses The Pub at Overcup Oak restaurant and Center Smoothie, and leads directly to Rand Dining Center, the Varsity Market, and the Vanderbilt Bookstore. The Vanderbilt Program Board plans concerts, film screenings, classes, speakers, receptions, gallery showings, and many other events throughout the campus. The center's Info Desk serves as a campus information center and is a Ticketmaster<sup>TM</sup> outlet, handling ticket sales for most of the university's and Nashville's cultural events. Sarratt Student Center is home to the Office of the Dean of Students, Greek Life, the Commodore Card Office, and Vanderbilt Student Communications (including student newspaper, radio station, and yearbook).

#### Student Life Center

The Vanderbilt Student Life Center (www.vanderbilt.edu/studentlifecenter) is the university's community keystone. It is both the fulfillment of students' vision to have a large social space on campus and a wonderful complement to Sarratt Student Center.

The Student Life Center has more than 18,000 square feet of event and meeting-room space. The 9,000-square-foot Commodore Ballroom is one of the most popular spaces to have events on campus.

The center is also home to Starbucks, the Career Center, International Student and Scholar Services, Health Professions Advisory Office, Office of Honor Scholarships, Office of International Services, and Global Education Office.

#### **Recreation and Sports**

Graduate and professional students are encouraged to participate in the many physical activity classes, intramurals, and sport clubs offered by the university. All students pay a mandatory recreation fee which supports facilities, fields, and programs (see the chapter on Financial Information). Spouses must also pay a fee to use the facilities.

Physical activity classes offered include racquetball, fly fishing, and scuba, along with rock climbing and kayaking. Forty sport clubs provide opportunity for participation in such favorites as sailing, fencing, rugby, and various martial arts.

The university recreation facilities include gymnasiums, tracks, and four softball diamonds. The four lighted multipurpose playing fields are irrigated and maintained to assure prime field conditions.

The Student Recreation Center houses a 36 meter x 25 yard swimming pool; three courts for basketball, volleyball, and badminton; six racquetball and two squash courts; a weight and fitness room; a wood-floor activity room; a rock-climbing wall; an indoor track; a mat room; locker rooms; and a Wellness Center. Lighted outside basketball and sand volleyball courts and an outdoor recreation facility complement the center.

For additional information, please see the Web site at www.vanderbilt.edu/campusrecreation.



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## School of Medicine



JEFFREY R. BALSER, M.D., Ph.D., Vice Chancellor for Health Affairs and Dean, School of Medicine

SUSAN WENTE, Ph.D., Associate Vice Chancellor for Research; Senior Associate Dean for Biomedical Sciences

LYNN E. WEBB, Ph.D., M.B.A., Assistant Vice Chancellor for Health Affairs

G. ROGER CHALKLEY, D.Phil., Senior Associate Dean for Biomedical Research, Education, and Training

BONNIE M. MILLER, M.D., Senior Associate Dean for Health Sciences Education

GERALD B. HICKSON, M.D., Associate Dean for Clinical Affairs and Director of the Vanderbilt Center for Patient and Professional Advocacy

GEORGE C. HILL, Ph.D., Associate Dean for Diversity in Medical Education

NANCY J. BROWN, M.D., Associate Dean for Clinical and Translational Scientist Development

DAVID S. RAIFORD, M.D., Associate Dean for Faculty Affairs

SCOTT M. RODGERS, M.D., Associate Dean for Medical Student Affairs JOHN A. ZIC, M.D., Associate Dean for Admissions

P. DAVID CHARLES, M.D., Assistant Dean for Admissions

J. ANN RICHMOND, Ph.D., Assistant Dean for Biomedical Research, Education, and Training

CRAIG R. CARMICHEL, M.S., C.P.A., Director of Finance, Academic, and Research Enterprise

DONALD E. MOORE, JR., Ph.D., Director, Division of Continuing Medical Education JOHN H. SHATZER, Ph.D., Director, Office of Teaching and Learning in Medicine

VICKY L. CAGLE. Director. Student Financial Services

JOSEPH M. GOFF, Director, Multimedia Support

TERENCE S. DERMODY, M.D., Director, Medical Scientist Training Program

MICHELLE GRUNDY, Ph.D., Assistant Director, Medical Scientist Training Program

PATRICIA F. SAGEN, Ph.D., Director, Medical School Admissions

MARILYN O'DELL, M.A., M.S., Registrar

JANELLE CAREY OWENS, Executive Assistant, Medical School Programs and Special Projects

## **Executive Faculty**

Jeffrey R. Balser, Chair. R. Daniel Beauchamp, Fred H. Bess, Randy Blakely, Richard Caprioli, Walter J. Chazin, Alan D. Cherrington, Larry R. Churchill, Richard T. D'Aquilla, Robert Dittus, Alfred L. George, John C. Gore, Daryl K. Granner, Jonathan Haines, Heidi Elizabeth Hamm, Frank E. Harrell, Jacek Hawiger, Stephan H. W. Heckers, Michael S. Higgins, Jeremy Kaye, Robert L. Macdonald, Mark A. Magnuson, Lawrence J. Marnett, Daniel R. Masys, Lynn M. Matrisian, Eric G. Neilson, Robert H. Ossoff, Jennifer Pietenpol, C. Wright Pinson, David W. Piston, David Robertson, Dan M. Roden, Samuel A. Santoro, William Schaffner, Corey M. Slovis, Joseph A. Smith, Dan M. Spengler, Paul J. Sternberg, Sten H. Vermund, Michael R. Waterman, Susan Rae Wente. Regular Non-Voting Members: Andrea Baruchin, Gordon Bernard, Nancy J. Brown, Craig R. Carmichel, G. Roger Chalkley, Colleen Conway-Welch, Gerald B. Hickson, George C. Hill, Jeff M. S. Kaplan, Frederick Kirchner, Jr., Bonnie M. Miller, Donald E. Moore, Jr., Jason D. Morrow, Linda D. Norman, David S. Raiford, J. Ann Richmond, Scott M. Rodgers, Martin P. Sandler, John H. Shatzer, William W. Stead, Jeanne Wallace, Lynn E. Webb.

## Standing Committees

(The Dean is an ex officio member of all standing and special committees.)

#### **Admissions**

The Admissions Committee has the responsibility of reviewing Medical School applications for admission and making recommendations to the Dean for the admission of those students who are considered best qualified.

# Vanderbilt Institute for Clinical and Translational Research (VICTR) Scientific Review Committee

The VICTR Scientific Review Committee meets regularly to act upon research proposals requesting support for the ise of the VICTR resources including the Clinical Research Center, Health Services Research, Biomedical Informatics, Biomedical Statistics, Research Cores, and Research Support Services.

Raymond F. Burk, Chair. Ayman Al-Hendy, Shari Barkin, Jeffrey Canter, David W. Haas, Katherine Hartmann, T. Alp Ikizler, Kirk B. Lane, Ronald M. Salomon, Alan Storrow, Michael W. Vollman. *Ex officio:* Gordon R. Bernard, Italo Biaggioni, Frank E. Harrell, David Robertson.

## **Faculty Advisory Council**

The Faculty Advisory Council is made up of departmentally elected faculty from all of the departments of the School of Medicine and serves as an advisory committee to the Dean and Executive Faculty. The council is to be invited by the administration to participate in the formulation of major policies of the school and may present other recommendations to the Dean at its discretion.

James A. Duncavage, Chair. Christopher R. Aiken, John T. Algren, Patrick G. Arbogast, Daniel H. Ashmead, Bruce Beyer, David J. Calkins, Arthur F. Dalley, Jeffrey M. Davidson, Ariel Y. Deutch, Josiane Eid, Ronald B. Emeson, Michael L. Freeman, Marie R. Griffin, Tina V. Hartert, Robin R. Hemphill, Alice A. Hinton, Richard L. Hock, Kevin B. Johnson, John E. Kuhn, Matthew Ninan, Neil Osheroff, Donald H. Rubin, Richard C. Shelton, Subramaniam Sriram, Marshall L. Summar, Rebecca Swan, P. Anthony Weil, J. Kelly Wright, Jr. Ex officio: Steven G. Gabbe, Gerald S. Gotterer, David S. Raiford.

#### **Faculty Appointments and Promotions**

The committee, appointed by the Dean, is responsible for consideration of faculty promotions in the School of Medicine and for examination of credentials of candidates for appointment to faculty positions.

J. Ann Richmond, Chair. Paul Sternberg, Jr., Co-Chair. Naji N. Abumrad, William D. Dupont, Stephan H. W. Heckers, Steven G. Meranze, Geraldine G. Miller, Jean F. Simpson, Roland W. Stein, William F. Walsh. *Ex officio*: David S. Raiford.

#### **Graduate Education**

The Graduate Education Committee is the faculty body concerned with graduate student affairs and graduate programs in the Medical Center.

David M. Miller, Chair. Fred H. Bess, Richard Caprioli, Jin Chen, Louis J. DeFelice, Ronald B. Emeson, Walter Gray Jerome III, Sebastian Joyce, Richard M. O'Brien. *Ex officio:* G. Roger Chalkley.

### **Interdisciplinary Graduate Program**

The Interdisciplinary Graduate Program Executive Committee is concerned with graduate student affairs and graduate programs in the Medical Center. It is responsible for admitting students to the Interdisciplinary Graduate Program in the Biomedical Sciences; for recommending candidates for fellowships and other funds available for the program; for reviewing activities and progress of the students in the program and recommending students to the Departments of Biochemistry, Cell Biology, Microbiology and Immunology, Molecular Physiology and Biophysics, Pathology, and Pharmacology for the completion of the Ph.D. degree.

James G. Patton, Chair. Sarki Abdulkadir, Ariel Deutch, Brandt Eichman, Seva Gurevich, Alyssa Hasty, Sebastian Joyce, Charles Lin, David M. Miller, Richard M. O'Brien, Charles Sanders. *Ex officio:* G. Roger Chalkley, Michelle Grundy.

## International Medical Educational Experiences

The International Medical Educational Experiences Committee acts as a channel for exchange of students and faculty in areas of international education.

Peter F. Wright, Chair. Mark R. Denison, Robert S. Dittus, Christopher S. Greeley, Jeffry P. McKinzie, Mario R. Rojas, William Schaffner, John L. Tarpley, Sten H. Vermund, George C. Hill. *Ex officio:* Bonnie M. Miller, Scott M. Rodgers; Janelle Carey Owens, Coordinator.

#### Medical Center Conflict of Interest

The Conflict of Interest Committee is appointed by and advisory to the Dean of the School of Medicine. It is charged to review individual faculty circumstances where a possible conflict of interest or commitment might exist. The committee makes recommendations to the department chairs and the Dean concerning their review.

David S. Raiford, Chair. Italo Biaggioni, Lonnie S. Burnett, Richard Caprioli, Fred Goad, Thomas P. Graham, Jr., Rebecca R. Keck, Donald H. Rubin, Michael G. Stabin, Marshall L. Summar, Alastair J. J. Wood. *Ex officio:* Kenneth Holroyd, Diana Marver, Leona Marx, Christopher McKinney.

#### Medical Scientist Training Program Faculty Advisory Committee

Terence S. Dermody, Director. Susan R. Wente, Associate Director. Michelle M. Grundy, Assistant Director. H. Scott Baldwin, R. Daniel Beauchamp, Mark R. Boothby, Nancy J. Brown, Bruce D. Carter, Walter J. Chazin, Maureen A. Gannon, James R. Goldenring, Kathleen Gould, Heidi E. Hamm, Robert L. Macdonald, Eric G. Neilson, Vito Quaranta, Dan M. Roden, P. Anthony Weil, Mary M. Zutter. Student members: Andrew Misfeldt, Sunita Misra. Ex officio: Roger Chalkley, Steven G. Gabbe, George C. Hill, Fatima Lima, Bonnie M. Miller, Scott M. Rodgers, John A. Zic.

#### **Student Promotions Committees**

Each promotions committee will have the responsibility for making recommendations to the Dean and the Executive Faculty concerning promotion, remedial action, or dismissal as appropriate for each student in the class for which it is responsible.

## Class of 2010

Kevin B. Johnson, Chair. Barbara Clinton, D. Catherine Fuchs, Stephan H. W. Heckers, Jeanette J. Norden. Ex officio: George Hill, Bonnie M. Miller, Scott M. Rodgers.

## Class of 2011

Jayant P. Shenai, Chair. David M. Bader, Tamara L. Callahan, Natasha B. Halasa, Sandra J. Hoesli. Ex officio: George Hill, Bonnie M. Miller, Scott M. Rodgers.

## Class of 2012

Charlene M. Dewey, Chair. Ellen Wright Clayton, Joshua C. Denny, G. Walden Garriss III, Alexander A. Parikh. Ex officio: George Hill, Bonnie M. Miller, Scott M. Rodgers.

## Class of 2013

Wonder P. Drake, Chair. Colleen M. Brophy, Cynthia S. Gadd, Tyler Reimschisel, Laurence M. Solberg. Ex officio: George Hill, Bonnie M. Miller, Scott M. Rodgers.

## Undergraduate Medical Education

The Undergraduate Medical Education (UME) committee is appointed by the dean and consists of faculty and students. It is charged with the complete management of the undergraduate curriculum, including content, pedagogy, and assessment of both students and the curriculum itself. The committee reports to the dean and the executive faculty, and can offer recommendations for major changes in curricular programs and policies.

The UME executive committee is composed of six department chairs, three from the basic sciences and three from the clinical disciplines. In addition, there is one faculty representative from each of the four years of medical school. The chair of the student curriculum committee also sits on the UME executive committee. The UME executive committee is chaired by a faculty member appointed by the dean. This committee meets monthly to review courses, to review policy, and to guide the development of new curricular offerings. Each year the UME executive committee sponsors a curriculum summit to share information with all members of the UME committee regarding student and curricular outcomes for that year.

Kim Lomis, Chair. James B. Atkinson, Jonathan D. Gitlin, Heidi Hamm, Frank E. Harrell, Eric Neilson, Marilyn Y. O'Dell, Neil Osheroff, Samuel A. Santoro, Corey Slovis, Anderson Spickard III, Lynn Webb. Ex officio: George Hill, Bonnie M. Miller, Emil Petrusa, Scott M. Rodgers, Regina Russell, John Shatzer.

Year Teams consist of the course directors and major teachers responsible for implementation of the curriculum for each of the years in medical school.

- Year 1 Team: Neil Osheroff, Chair. Al George, Catherine Pettepher, Arthur Dalley, Sebastian Strom, Luc Van Kaer, Larry Churchill, Denis O'Day, Bonnie Miller, Scott Rodgers, James Powers, Lillian Nanney, Terry Dermody, Ban Allos, Toby Fishel, Lynn Webb, Natasha Halasa, Jennifer Najjar..
- Year 2 Team: James Atkinson, Chair, Joyce Johnson, Kathy Murray, Joseph Awad, Jeanette Norden, Derek Riebou, Larry Churchill, Denis O'Day, Agnes Fogo, Richard Stein, Stephan Heckers, Walter Smalley.
- Years 3 and 4 Team: Anderson Spickard III, Chair. Kim Lomis, Joseph Gigante, Heather Harris, Cathy Fuchs, Adrian Jarquin-Valdivia, Charles Rush, Ban Allos, Ron Salomon, Amy Fleming.

Year Evaluation Teams consist of faculty members who review and evaluate courses offered in that year of the curriculum.

- Year 1 Evaluation Team: Terry Dermody, Oscar Guillamondagui, Michael Richardson, Jayant Shenai.
- Year 2 Evaluation Team: James Powers, Lynette Gillis, David Kaylie, David Bader, Barron Patterson
- Year 3 Evaluation Team: Nick Desai, Tamara Callahan, Agnes Fogo, Kenneth Palm, Elizabeth Anne Sastre, Alex Townes.



## Medical Education at Vanderbilt

THE Vanderbilt University School of Medicine seeks to administer a four-year educational program toward the M.D. degree that provides students with the knowledge, skills, attitudes, and habits they will need to practice safe, effective, ethical, evidence-based, and patient-centered medicine in the 21st century. It is grounded in the principle that the health of populations can and should be related to the education of health professionals and is aligned with Vanderbilt's overarching mission to produce leaders and scholars in medicine.

The following topics receive special emphasis in our curriculum: professionalism, cultural competence, communication skills, evidence-based medicine, information technology, interdisciplinary teamwork, lifelong learning, and patient-centered care. These topics run as longitudinal themes throughout the four years of the curriculum.

The medical school's major strength lies in the quality of its students and faculty. The school provides a supportive, positive environment in which students are treated individually in their pursuit of excellence in medical careers. The student body is diverse, with students from a wide variety of major universities nationwide. The medical school has an unusually low attrition rate and its graduates traditionally gain entrance to residency programs of high quality throughout the country.

The faculty, which represents a variety of specialties and many strong research programs, has a national and international reputation for excellence in the biomedical sciences and clinical care. House staff officers who have teaching duties consistently receive commendation for their contribution to the educational program.

Through its core and elective components, the curriculum provides students opportunities to explore the full spectrum of medicine. There is enough structure to ensure consistency and enough flexibility to permit the pursuit of individual interests. The core curriculum of the first two years presents fundamental concepts of biomedicine in an interdisciplinary fashion. Students also take at least three elective courses in order to acquire greater depth of understanding in areas of their interest. Electives cover wide-ranging topics, such as history of medicine and Spanish, and also provide an opportunity to investigate a variety of medical specialties. All students pursue in-depth scholarly projects during the first two years, through the Emphasis Program.

From the 5,000 applications received each year at the School of Medicine, approximately a hundred students matriculate into the first-year class. A hallmark of the School of Medicine admissions process is the personal attention to detail exercised by the administrative staff and the Admissions Committee. The involvement of more than a hundred faculty members in the interview and evaluation process reflects the importance placed on the

selection process and leads to a personal interest in each applicant. An important part of the admissions process is the applicant's tour of the medical school facilities with a member of the student body as a guide.

The school seeks to attract qualified minority and disadvantaged students. This goal is based not only on a commitment to equal opportunity, but also on the belief that a diverse student population provides the best learning environment for all students.

Medical school is but the beginning of a continuing process. Following graduation from medical school, residency provides a period of further formal training in specialized areas of medicine. For the physician who aspires to a career in academic medicine, additional fellowship training in research is usually needed. The Vanderbilt program in medical education provides a sound basis for the physician graduate to enter any field of medicine. Vanderbilt's commitment to medical education as a lifelong pursuit is supported by programs of continuing education offered to alumni and to physicians practicing locally as well as those practicing in other parts of the country.

#### Mission of the School

The mission of the Vanderbilt University School of Medicine is:

- 1. To develop outstanding clinicians, scientists, and teachers in an environment that stimulates learning and discovery and cultivates empathy and compassion.
- 2. To advance the knowledge base of medicine by continuing our role as a leading research institution.
- 3. To disseminate knowledge through continuing education of our students, graduates, faculty members, and colleagues.
- To promote exemplary patient care and to serve our local and extended community.
- To maintain our atmosphere of cooperation, collegiality, and mutual respect.
- 6. To recognize individuality and to foster personal growth of all who work and learn with us.

#### Education

The school's mission includes the education of physicians at all levels of their professional experience: medical school; postgraduate education, including basic science and clinical training; and continuing education for the practicing physician. The faculty seeks to provide students with the attitudes and background, based on sound biomedical science and the core values of the medical profession, to continue their education lifelong. At Vanderbilt, every medical student has access to examples of the highest standards of biomedical investigation and compassionate clinical practice. The desired end is a graduate who has been challenged and stimulated in

as many areas of medicine as are feasible within the limits of a four-year course of study.

## Patient Care

A teaching hospital and its associated outpatient facilities constitute a classroom for trainees based on high academic standards. The clinical facility also serves as a laboratory for clinical research. Faculty members, serving as role models for young physicians, teach the practice of exemplary patient care at all levels. Model programs of health care delivery, at primary, secondary, and tertiary levels, fulfill the school's responsibility for community service in its fullest context.

#### Research

In addition to teaching, members of the medical school faculty have a second and complementary responsibility to generate new knowledge through research. Exposure to an inquiring faculty sparks the spirit of inquiry in students. At Vanderbilt, research encompasses basic scientific questions, issues in clinical care, and problems related to the health care system itself. Vanderbilt is recognized as one of the leaders in research among medical schools in the United States.

## **Honor System**

The Honor System at Vanderbilt University School of Medicine is conducted by students for the benefit of students, faculty, staff, and patients. The Honor System, as delineated by the Honor Code, requires students to conduct themselves with honor in all aspects of their lives as physicians-in-training. By demanding great responsibility, the Honor System fosters an environment of freedom and trust that benefits the entire Medical School. In signing this statement upon enrollment, each student agrees to participate in the Honor System and abide by its code.

As representatives of the Vanderbilt University School of Medicine and the medical profession, students pledge to conduct themselves with honor and integrity at all times. Both the Promotions Committees and Honor Council serve to protect the environment of trust created by this Honor System. The Promotions Committees periodically evaluate each student's performance with special attention to work and conduct appropriate for the practice of medicine. The Honor Council serves to educate the student body about their responsibilities outlined in the written code; to conduct investigations and hearings regarding reported violations of the code; and to decide the nature of penalties deemed appropriate for such violations. Decisions reached by the Honor Council do not preclude the discussion of reported violations by the Promotions Committee, as the Committee may examine these incidents in the larger context of a student's general performance.

#### The Honor Code

All students pledge to conduct themselves honorably, professionally, and respectfully in all realms of the medical center and in all aspects of medical education and patient care. Under the Honor System, the student pledges that he or she neither gives nor receives unauthorized aid nor leaves unreported any knowledge of such aid given or received by any other student. Unauthorized aid includes the use of any examinations from previous semesters that have not been pre-approved by the course director and made readily available to all other students taking the course. This pledge applies to all course work, examinations, and presentations, or any other activities required for the awarding of the M.D. degree. This pledge encompasses all clinical work involving patient care and representations of patient care information. Any student taking a course in the School of Medicine, regardless of where registered, is under the jurisdiction of the Honor Council of Vanderbilt University School of Medicine (VUSM) and subject to the penalties it may impose.

## Constitution of the Honor Council

#### Article I - Name

The name of the council shall be the Honor Council of Vanderbilt University School of Medicine.

## Article II - Purpose

- 1. To receive and evaluate evidence of Honor Code violations and to assure against false accusations.
- 2. To determine guilt or innocence.
- 3. To forward to the Dean of the School of Medicine appropriate penalties for the guilty.

## Article III – Membership and Officers

- 1. A faculty member shall be appointed by the Dean of the School of Medicine as the Honor Council advisor. His/her roles include ensuring that all the rules are followed. In the case of an accusation, he/she will decide with the chair of the Honor Council whether there is sufficient evidence to proceed with a trial after a formal investigation has been carried out
- 2. The first, second, third, and fourth year classes shall elect two representatives to the Honor Council. These representatives may hold additional offices in the class.
- The vice president of the fourth year class shall be chair of the Honor Council. He or she will appoint the secretary of the Honor Council from among the eight elected representatives.

## Article IV – Duties of Officers

1. It shall be the duty of the chair to preside at all meetings of the honor council, to arrange for the hearing of any student accused, and to perform all duties common to his or her office.

2. The secretary shall keep full minutes of all meetings and full proceedings of all hearings, which must be kept in permanent files. The secretary shall notify all members of all hearings, meetings, and retreats and shall perform any other related duties.

## *Article V – Meetings*

- One regular meeting shall be held within four weeks of the start of the school year. At
  this meeting, the chair of the Honor Council and the faculty advisor will explain the duties and procedures of the Honor Council to the members.
- 2. Special meetings may be called by the chair at any time and must be called within ten (10) working days when requested by two or more members of the Honor Council.
- 3. All meetings shall be conducted according to Roberts Rules of Order, Newly Revised.
- 4. A meeting by the Honor Council to re-evaluate and review the Honor Code should be convened a minimum of every four years.

### Article VI – Quorum

Five members of the Council of nine shall constitute a quorum.

## Article VII – Hearings

- 1. A hearing shall be called by the chair of the Honor Council, if appropriate.
- The accuser and the accused must be present at all hearings during the presentation of evidence and the accused has a right to question the accuser and any witnesses and make a statement to the Council.
- Legal counsel will not be allowed for any party at a hearing, but the accused may have present a character witness or non-legally trained faculty advisor if he or she so chooses.
- 4. Any member of the Honor Council related by birth or marriage to the accused or the accuser or who has any other personal interest in the hearing shall relieve himself/herself from participation in that hearing.
- 5. The proceedings of the hearing are confidential and any member present at the hearing is not at liberty to discuss them with anyone other than the members of the Honor Council present at the hearing or other persons with a legitimate need to know, e.g., law enforcement agents.
- 6. Upon completion of the review of evidence, the Honor Council in closed executive session shall reach a decision of "guilty" or "not guilty" of violation of the Honor Code by simple majority vote. The chair has a vote in all decisions unless contraindicated by Roberts Rules of Order.
- 7. Written notice of the decision will be sent to the accused and to the Dean of the School of Medicine. The Dean will also receive the vote count, a written summary of the case, and an oral report of the case from the chair. The Promotions Committee will not be notified unless a verdict of "guilty" has been found. In the case of a "guilty" verdict, the Promotions Committee will receive a written summary of the proceedings. The written summary also will be kept in the permanent records of the Honor Council.
- 8. When the Honor Council reaches a decision of "guilty," the penalty, representing the majority opinion of the Honor Council, shall be sent to the Dean of the School of Medicine. The recommended penalties should conform to the severity of offenses and may include expulsion from the School of Medicine.

## *Article VIII – Publicity*

- Each new student entering the School of Medicine will be informed by the Honor Council as to the functions of the Honor System and his or her obligations to the Honor Code. Each student will be provided a copy of the Constitution and Bylaws of the Honor System and the Honor Code.
- At the commencement of each academic year, all students shall reaffirm their commitment to the Honor System by signing the Honor Code.
- 3. Names of the members of the Honor Council will be made known to all students upon commencement of each academic year. The Honor Council members will be accessible to any student to address concerns or questions regarding protocol, violations, or other Honor Council issues.
- 4. All written examinations will include a blank space where students will be required to free-hand write the statement, "I continue to abide by the Honor Code." The student must sign below the statement. All written examinations must contain the student's written statement and signature to be considered complete.

#### Article IX – Miscellaneous

In case a student withdraws from the School after a charge has been made against him or her and before the hearing, the Honor Council shall record the facts and the accused shall not be allowed to re-enter until he or she has had a hearing before the Honor Council.

#### *Article X – Amendments*

Amendments to this Constitution shall require for their adoption the approval of a majority of the total membership of the Honor Council and ratification by a majority of the voting student body. These amendments must be approved by the Dean of the School of Medicine and the faculty advisor before becoming final.

## Bylaws

## Article I - Reporting an Incident

- 1. If a student or instructor has reason to believe that a breach of the Honor Code has been committed, he/ she must, within seven class days, report the incident in signed written form in one of the following ways:
  - A. Directly to the chair of the Honor Council, or
  - B. By way of the faculty advisor who will notify the chair of the Honor Council, or
  - C. To any member of the Honor Council, who will report directly and only to either the chair or the faculty advisor.
- 2. Failure to take action on an incident is a breach of the Honor Code. Students are required to report in writing any suspected violations of the Honor Code.
- 3. Once an incident is reported, it shall be the responsibility of the Honor Council, not the student or instructor, to investigate the incident and determine the next course of action. The student or instructor who reports a violation is charged with maintaining confidence of his or her accusation; the accused is also required to maintain the confidence of the accusation and the hearing. Such confidence can be broken only as required in response to law enforcement agencies and to assure access to appropriate advice.
- Perjury before the Dean or any Honor Council member regarding the reporting of or investigation of an incident is a breach of the Honor Code and is subject to punishment.

- 5. Once an incident has been reported, the chair and the faculty advisor will meet to discuss the incident. The chair may appoint a committee of two members from the Honor Council to investigate the case and report its findings to the faculty advisor and the chair. These two members shall be ineligible to vote. With the advice of the faculty advisor, the chair will then decide whether to convene the Honor Council. If the decision is made to convene the Honor Council, the student in question will be notified that he/she has been formally accused of a violation of the Honor Code. The Honor Council should be convened within ten class days from the initial reporting of the incident. Both the accuser and the accused will be notified of the nature of the charge as well as the time and place of the assembly of the Honor Council.
- 6. Once the Honor Council is assembled, the accusation will be presented by the chair, and a hearing will be held by the Honor Council.
- 7. A student who reports a personal Honor Code violation will be given consideration for his/her initiative in reporting his/her own transgression. The chair, with advice of the faculty advisor, will decide if an investigation is warranted.

#### Article II – Penalties

- Penalties given to those declared "guilty" will be recommended by the Honor Council
  and enforced by the Dean of the School of Medicine as he or she sees fit. The final decision and penalty will be reported by the Dean to the student involved, to the reporting
  individual, and to the Honor Council.
- 2. Penalties may range from the minimum of failure of the assignment to the maximum of expulsion from the Vanderbilt University School of Medicine.
- 3. If the violation was committed under extenuating circumstances, the Honor Council may, by a majority vote, recommend a suspension of the sentence. However, suspension of the sentence shall in no way alter the findings of "guilt" under the Code.

## Article III – Appeals

Appeals to any final actions that result from Honor Council hearings can be made with a petition to the Vanderbilt University Appellate Review Board as follows:

- A. The appeals petition must be in writing.
- B. It must specify the grounds for appeal.
- C. It must be filed within seven class days or exam days of the original notification of the verdict or within two weeks if school is not in session for seven days following the notification.

### Article IV - Summer Honor Council

- The Summer Council will have official functions from the day following university Commencement exercises until the day class registration begins for the fall semester.
- The Summer Council will be composed of the representatives of the rising second through fourth year classes as designated. The eighth and ninth members will be appointed by the faculty advisor from the rising student body.
- 3. In the event that a designated member will not be in Nashville during the summer, then the respective class president should appoint a member of his or her class, who will be in Nashville, to be approved by the Honor Council,.
- 4. In the event that the designated chair will not be in Nashville during the summer, then the faculty advisor should recommend a chair from the members of the Summer Council subject to council approval.

#### Standards of Behavior for Interactions with Medical Students<sup>1</sup>

Statement of Standards

In practice, physicians are held to high standards of professionalism and patient care. The medical learning environment is expected to facilitate students' acquisition of the professional and collegial attitudes necessary for effective, caring, and compassionate health care. The development and nurturing of these attitudes requires mutual respect between teachers (including faculty, residents, and staff) and students, and between each student and his or her fellow students.<sup>2</sup> Mutual respect between student and teacher, and between fellow students, may be expressed in many ways but all interactions shall include honesty, fairness, and evenhanded treatment. Behavior which is inimical to the development of mutual respect shall be prohibited. Such behavior may include but is not limited to:

- (1) Harassment of a sexual nature;
- (2) Discrimination or harassment based on race, sex, religion, color, national or ethnic origin, age, disability, military service, or being or being perceived as homosexual, heterosexual, or bisexual.
- (3) Grading, promoting, or otherwise evaluating any student on any basis other than that student's performance or merit.
- 1 All Vanderbilt University policies concerning medical student interactions with faculty and staff as set forth in the Vanderbilt University Student Handbook, the Faculty Manual, and the Staff Manual remain in full force and effect.
- 2 By their express terms, these Standards apply only to interactions which involve one or more medical students; however, it is hoped that these Standards will serve as a guide to all members of the Vanderbilt University Medical Center community. The reporting procedure outlined herein shall apply only to allegations of the violation of these Standards in interactions involving medical student(s).

#### Comments

The following delineates more clearly the behavior enumerated above which may be inimical to the development of mutual respect between students and teacher and between fellow students. For purposes of these Comments, the term "person" shall refer to a student in interactions between fellow students or, in student-teacher interactions, to the student or teacher, as appropriate.

- (1) Harassment of a sexual nature may include:
- a. Denying the opportunity for training or rewards because of a student's gender;
  - b. Requesting sexual favors in exchange for grades or other awards;
  - c. Making unwanted sexual advances;
- d. Unreasonable and inappropriate sexual or sexist conduct directed towards any person;
- e. Displaying in an unreasonable and inappropriate manner sexually suggestive or pornographic materials; or
- f. Grading or evaluating a student based upon gender rather than performance and merit.

- (2) Discrimination and harassment may include:
- a. Denying the opportunity for training or rewards because of a student's age, race, religious affiliation, or any other attribute of the student other than merit or performance;
- b. Unreasonable and inappropriate conduct directed towards any person which is intended to insult or stigmatize that person;
- c. Exclusion of a student from any usual and reasonable expected educational opportunity for any reason other than as a reasonable response to that student's performance or merit;
- d. Requiring a student to perform personal services such as shopping or babysitting;
- e. Showing favoritism among students based upon any attribute of the student(s) other than performance or merit and thereby reducing educational opportunities available to the nonfavored student(s); or
- f. Grading or evaluating a student based upon any attribute of a student other than that student's performance and merit;
- g. Any physical mistreatment, such as hitting, slapping or kicking, or threatening such physical mistreatment;
- h. Requiring a student to perform menial tasks with the intent to humiliate the student.

Any perceived violation of these Standards of Behavior ("Standards") may be reported in accordance with the following procedure. Violations of these Standards may subject the offender to disciplinary action. These Standards may be amended at any time by the Executive Faculty. The Standards Committee shall be composed of such members as the Dean shall appoint from time to time.

## Reporting Procedure

Prior to filing a formal report as outlined below, the individual considering making a report should first, if at all possible, attempt to resolve the matter directly with the alleged offender. In addition, the reporting individual may consult informally with any member of the Standards Committee for information and assistance. Any such informal consultation will be confidential if so requested. The only written record of any such confidential consultation shall consist of a confidential memorandum retained in the files of the Chair of the Standards Committee.

To make a formal report of an alleged violation of these Standards, a written description of the alleged violation, signed by the individual making the report, shall be delivered to any individual on the Standards Committee. The Standards Committee shall conduct a preliminary investigation, giving the reporting individual, the alleged offender and any other persons as the Standards Committee shall determine a fair opportunity to express their views on the matter. Further, the Standards Committee shall make, in accordance with commonly held standards of conduct, any necessary preliminary determination of what does or does not constitute reasonable or appropriate

conduct and behavior. Thereafter, the Standards Committee shall issue a written statement of their preliminary findings to the individual making the report, to the alleged offender, and to the Dean. The Dean shall then take such further action on the matter as the Dean shall deem appropriate, consistent with Vanderbilt University policy on disciplinary actions as set forth in the Vanderbilt University Faculty Manual, Student Handbook, or Staff Manual, as applicable.

Alternatively, a student alleging sexual harassment or unlawful discrimination may make a complaint to Vanderbilt's Equal Opportunity, Affirmative Action, and Disability Services department in accordance with the procedure outlined in the *Student Handbook*. If the complaint to the Equal Opportunity, Affirmative Action, and Disability Services department does not resolve the matter to the satisfaction of the individual making the complaint, a formal grievance may be filed with the Office of the Chancellor in accordance with the procedure in the *Student Handbook*.

## Competencies for Learners across the Continuum

The following set of core competencies was adopted by the Undergraduate Medical Education Committee in May 2009. These competencies represent goals for medical education across the continuum, and while it is expected that students will be able to demonstrate some degree of mastery in all of them by the time of graduation, it is not expected that all graduating students will be expert in all of them. These core competencies replace the thirty learning objectives that previously guided our curricular efforts and are based on the six ACGME competencies that guide learning throughout postgraduate medical education.

## I. Medical Knowledge

Competency statement: Physicians must understand established and evolving biological, clinical, epidemiological, and social-behavioral sciences and must be able to apply this knowledge to patient care. Learners will be able to demonstrate the following at a developmentally appropriate level:

- 1. Understanding of the biological, behavioral, and social factors that promote health or predispose individuals to illness, and how these may be used in partnership with patients to predict, prevent, or mitigate the onset of disease.
  - 2. Understanding of the sciences essential for one's chosen field of practice.
- 3. Knowledge of the sciences that support other specialty fields as they relate to one's own practice.
- 4. Knowledge of the sciences underlying the common and important health and wellness issues affecting our society and other societies around the globe.
- 5. An appreciation for the importance of the sciences that underlie the effective practice of medicine and a resulting commitment to maintain an up-to-date fund of knowledge through continuous learning.

6. Knowledge of the scientific method, reproducible research, and experimental designs that are valid for the question of interest, and an understanding of how to collect, analyze, and interpret new information to enhance knowledge in the various disciplines related to medicine.

#### II. Patient Care

Competency statement: Physicians must consistently provide care that is compassionate, culturally competent, safe, efficient, cost sensitive, appropriate, and effective for the treatment of illness and the promotion of health. Learners will be able to demonstrate at their developmentally appropriate level the following:

- 1. Ability to perform a problem-focused or complete history and physical examination as indicated, and to obtain necessary diagnostic studies, including imaging, laboratory, and procedural tests.
- 2. Ability to interpret clinical information and formulate a prioritized differential diagnosis that reflects the use of medical knowledge in a probabilistic reasoning process.
- 3. Ability to formulate a management plan based on evaluation of the scientific evidence as well as on the patient's values, cultural background, beliefs, and behaviors. This requires the ability to critically review the literature with an understanding of the levels of evidence provided by typical experimental or study designs, measurement techniques, and analyses. Students should be able to recognize common forms of bias.
- 4. Ability to implement a comprehensive management plan that would include performing indicated procedures within the scope of one's training.
- 5. Ability to use knowledge support tools such as evidence-based diagnostic criteria, management guidelines, and point-of-care information resources.
- 6. Ability to use informatics and health information technology in support of patient care in a manner that reflects understanding of their capabilities, limitations, benefits, and risks. Examples include the electronic health record, computerized physician order entry, decision support systems, and messaging systems.
- 7. Ability to exercise clinical judgment that is safe and commensurate with the level of training.
- 8. Ability to re-examine and address prior decisions when desired outcomes are not achieved and/or the patient is dissatisfied.

## III. Interpersonal and Communication Skills

Competency statement: Physicians must be able to communicate in ways that result in safe, culturally sensitive, effective, and respectful information exchange and create beneficial partnerships with patients, their families, and other health professionals. Learners will be able to demonstrate the following at a developmentally appropriate level:

- 1. Understanding of the enduring value of effective relationships and the factors that can facilitate or impede their formation, including power imbalances and social, economic, and cultural differences.
- 2. Sensitivity to the diversity with which people perceive, think, learn, communicate, and make decisions, both individually and in groups, and an understanding of how these processes might be impacted by illness.
- 3. Understanding of the elements of a validated provider-patient communication model, and the ability to demonstrate appropriate components of the model during patient interactions.
- 4. Understanding of the strengths, limitations, and appropriate applications of various communication modalities, including verbal, non-verbal, written, electronic, graphic, synchronous, and asynchronous modalities.
- 5. Understanding of the challenges and opportunities created by crosscultural communications and their potential impact on patient care, health disparities, and health outcomes, and the ability to engage support systems that facilitate cross-cultural communication.
- 6. Understanding of the elements of effective team building and the ability to use appropriate techniques to create, participate in, and lead effective teams.
- 7. The ability to establish and utilize effective communication strategies with patients, families, and health care colleagues, regardless of their cultural backgrounds.
- 8. The ability to build and sustain effective relationships in a wide variety of settings and with persons from diverse backgrounds.
- 9. The ability to effectively manage interpersonal conflict and to provide and receive constructive feedback.
- 10. The ability to disclose medical error to patients, families, and health care providers in a manner that is truthful, sensitive, responsible, constructive, and supportive.

## IV. Professionalism

Competency statement: Physicians must possess the knowledge, skills, and attitudes necessary to carry out professional responsibilities, adhere to ethical standards, and establish and maintain productive, respectful relationships with patients and colleagues. Professionalism applies to formal and informal interactions in education systems, in health care practice settings, and in the wider community. Learners will be able to demonstrate the following at a level appropriate to their educational attainment:

- 1. Understanding of the duties and obligations of the medical profession, its health care institutions, and its individual practitioners to patients, communities and society.
  - 2. Commitment to the primacy of the patient in all health care endeavors.
- 3. Commitment to work for a more just health care system, including the ability to advocate effectively on behalf of individual patients and patient populations.

4. Understanding of the principles of biomedical ethics and skill in applying these principles in practical contexts.

5. Commitment to honesty and transparency in all dealings with patients,

learners, and colleagues.

- 6. Commitment to the professional and legal standards that safeguard patient confidentiality.
- 7. Understanding of the concepts surrounding conflict of interest and competing priorities, and the ability to identify and manage these in ways that maintain the primacy of patient interests and the health of the public.
- 8. Compassion and respect for all persons regardless of differences in values, beliefs and experiences.
- 9. Awareness of the vulnerability of patients and the inherent power differentials in organizational and interpersonal relationships including, especially, understanding of the boundaries that define therapeutic relationships.
  - 10. Commitment to excellence in all professional endeavors.

## V. Practice-Based Learning and Improvement

Competency statement: Physicians must be able to continuously improve patient care by investigating and evaluating outcomes of care and by engaging in learning activities which involve critical appraisal and assimilation of scientific evidence and application of relevant knowledge to individual patients and populations. To demonstrate competence in practice-based learning and improvement, each learner must demonstrate:

- 1. Ability to systematically collect, monitor, and analyze data describing current performance at the individual, team, and/or systems levels in an effort to achieve the highest possible quality of care.
- 2. Continuous pursuit of knowledge regarding best practices and optimal patient outcomes.
- 3. Ability to compare data about current performance at the individual, team, and/or systems level with expected outcomes, and identify and implement the learning strategies needed to improve performance.
- 4. Ability to develop and implement improvement projects using a systematic approach that employs the principles of improvement science.
- 5. Ability to recognize, acknowledge, and analyze medical errors and devise system-based strategies that would prevent similar errors in the future.

## VI. Systems-Based Practice

Competency statement: Physicians must understand and respond to the larger context and system of health care and effectively call on system resources to provide care that is of optimal value. Learners will be able to demonstrate the following at a developmentally appropriate level:

- 1. Understanding that health care of optimal value is safe, effective, patient-centered, culturally sensitive, timely, efficient, and equitable.
- 2. Understanding of the principles of systems science and the ways in which people, processes, technology, and policy combine to form systems.

- 3. Understanding of the basic organization of health care systems, including the various relationships between patients, providers, practices, institutions, insurers and benefits managers, community health organizations, federal and state regulators, accrediting bodies, professional organizations, licensing boards, the pharmaceutical and biotechnology industries, and legislators.
- 4. Understanding of the local systems in which acute patient care and health maintenance are provided, such as emergency departments, outpatient clinics, hospitals, mental health clinics, public health clinics, pharmacies, etc., and the ability to coordinate patient care within these systems.
- 5. Understanding of different health professionals' roles and responsibilities within the health care delivery system and the ability to maximally utilize the capabilities of all health care team members to achieve optimal patient outcomes.
- 6. Understanding of the key elements of leadership, management, and organizational behavior and how these elements apply in teams, health care organizations, and society.
- 7. Understanding of how public health and health policy shape the nature of our health care system and how and when clinicians must interact with public health officials and policymakers.
- 8. Understanding of risk, complexity, resilience, and related concepts that influence the performance of humans and the systems in which they work.
- 9. Ability to design, analyze, and evaluate health care microsystems and propose interventions that will improve quality, safety, and cost-effectiveness.

## **Advisory Colleges**

Becoming a physician in the 21st century requires having dedication, a strong sense of purpose, a love of science, an interest in taking care of people, and high levels of motivation. In order to survive, and ideally thrive, in medical school, students must be able to adapt quickly to a learning environment with many teachers, numerous clinical training sites, and long hours, all of which sometimes prevent students from maintaining the proper balance necessary for their overall mental and physical health. In addition to the daily coping required to succeed in medical school, students are also faced with the enormous challenge of choosing a specialty from among the more than 110 available to them. With these continued stresses due to both immediate demands and the process of making a major life decision of specialty choice, it is easy for the medical school experience to become overwhelming. The Advisory Colleges at Vanderbilt are designed to support students along the way such that they adapt successfully to medical school and make decisions for themselves that will give them long-term happiness.

Upon matriculation into the medical school, students in the regular M.D. program are assigned to one of four Advisory Colleges, each of which is led by two faculty directors. The Advisory Colleges comprise students in all

four years of medical school, as well as affiliated faculty advisers from a broad range of specialties. Additionally, senior students who have a strong interest in mentoring students in the preclinical years are invited to participate in the activities of the Advisory Colleges. Students in the Medical Scientist Training Program have a separate advisory system with six Advisory Colleges that provide support and address issues and concerns related to their training in the M.D./Ph.D. program.

#### **Advisers**

The Vanderbilt Medical School has one of the lowest attrition rates in the country. The faculty and administration take an active interest in assuring that each student achieves to maximum capability. Advisers, both student and faculty, and staff members of the office of the Dean are available to assist students toward successful development of their plans.

# Office for Teaching and Learning in Medicine (QTLM)

The Office for Teaching and Learning in Medicine (OTLM) supports the educational program of the School of Medicine by providing educational resources and expertise, professional development opportunities and research agendas that inform our best educational practices. OTLM faculty and staff work with the teaching faculty, administration and students to improve the design of our instructional methods, the rigor of our assessment of competence and the quality of student outcomes. To learn more about the Office for Teaching and Learning in Medicine, please visit our Web site at www.mc.vanderbilt.edu/medschool/otlm/index.php

# Center for Experiential Learning and Assessment (CELA)

The Center for Experiential Learning and Assessment (CELA) provides an educationally rich simulation environment for training our students and other health care professionals to practice the highest quality clinical care. It is informed by the best practices of teaching and clinical practice and grounded in theory-based research. CELA is also instrumental in conducting rigorous research that extends our knowledge and practice of experiential learning and assessment by simulations. The center consists of two programs: the Program in Human Simulations and the Simulation Technologies Programs. The first program brings the traditional standardized patient methods toward a broader use of simulations involving all aspects of human interaction in medicine. The Simulation Technologies Program emphasizes the sophisticated use of computers, task trainers, virtual reality and mannequin-based technologies to simulate clinical challenges. The programs provide both unique and integrated approaches to training our medical students in a safe and effective educational environment.

# **Advanced Training**

In addition to its primary responsibility of educating medical students, the School of Medicine has active programs for graduate students in the preclinical sciences, for postdoctoral interns and residents, and for postdoctoral research trainees.

# **Residency Training**

Students preparing for the practice of medicine usually spend three or more years in house staff training. Such experiences at Vanderbilt are particularly varied and well supervised. Applicants for positions are carefully chosen because of the competition for positions. As a result, the house staff makes up a competent and stimulating group, with considerable responsibility in medical student teaching.

The faculty of the School of Medicine has professional responsibilities at Vanderbilt, Veterans, Saint Thomas, and Baptist hospitals. Patients in these hospitals are cared for by members of the medical staff, assisted by the intern and resident staff.

Vanderbilt University Hospital is a referral center and consequently has a patient population with complex medical and surgical problems. The Veterans Administration Hospital, adjacent to the Vanderbilt Medical Center, serves veterans and their families from throughout the mid-south and is an important component of the teaching program. All physicians at the VA Hospital are full-time faculty members of the School of Medicine.

# Post-Residency Clinical Fellowships

Postdoctoral training programs have as their goal the training of physicians for practice and certification in a medical subspecialty. Fellows admitted to these programs must have completed an approved residency program. The fellow is expected to participate in departmental activities related to teaching, clinical services, and research.

# **Continuing Medical Education**

Vanderbilt University School of Medicine and Vanderbilt University Medical Center recognize a major commitment to the continuing education of physicians and others in the health professions. At Vanderbilt, continuing medical education is considered an important part of the continuum of medical education which is initiated in the undergraduate experience, progresses through graduate medical education, and matures in ongoing continuing medical education and continuing professional development. CME activities at Vanderbilt are designed to help physicians provide the very best possible care to the patients they serve by providing

the best combination of evidence-based information, information emerging from research at Vanderbilt and other academic centers, and the practical clinical wisdom of faculty. Accredited by the Accreditation Council for CME, the School of Medicine offers a broad spectrum of CME activities courses throughout the year to meet the learning needs of physicians in practice. Individual activities are planned and offered by departments and divisions of the school. Inquiries about accreditation should be directed to the Division of Continuing Medical Education or to departments and divisions about specific programming.

# History of the School

The first diplomas issued by Vanderbilt University were to sixty-one doctors of medicine in February of 1875, thanks to an arrangement that recognized the University of Nashville's medical school as serving both institutions. Thus, Vanderbilt embraced a fully-organized and functioning medical school even before its own campus was ready for classes in October of that year.

The arrangement continued for twenty more years, until the school was reorganized under control of the Board of Trust. In the early days, the School of Medicine was owned and operated as a private property of the practicing physicians who composed the faculty and received the fees paid by students—a system typical of medical education in the United States at the time. Vanderbilt made no financial contribution to the school's support and exercised no control over admission requirements, the curriculum, or standards for graduation. After reorganization under the Vanderbilt Board in 1895, admission requirements were raised, the course was lengthened, and the system of instruction was changed to include laboratory work in the basic sciences.

The famous report of Abraham Flexner, published by the Carnegie Foundation in 1910 and afterward credited with revolutionizing medical education in America, singled out Vanderbilt as "the institution to which the responsibility for medical education in Tennessee should just now be left." Large grants from Andrew Carnegie and his foundation, and from the Rockefeller-financed General Education Board, enabled Vanderbilt to carry out the recommendations of the Flexner Report. (These two philanthropies, with the addition of the Ford Foundation in recent years, have contributed altogether more than \$20,000,000 to the School of Medicine since 1911.) The reorganized school drew upon the best-trained scientists and teachers in the nation for its faculty. The full benefits of reorganization were realized in 1925 when the school moved from the old South Campus across town to the main campus, thus integrating instruction in the medical sciences with the rest of the university. The school's new quarters were called "the best arranged combination school and hospital to be found in the United States."

Rudolph A. Light Hall, completed in 1977, is a sophisticated facility providing much-needed space for medical education and other student activities. The seven-story structure contains 209,000 square feet of space housing the latest in laboratory equipment, audio-visual and electronic teaching tools, and multi-purpose classroom space. The second-floor student lounge is designed to foster medical student interaction and to permit informal educational experiences—leading to the development of physicians grounded in the sciences but enlightened by humanitarian interests and understanding. Light Hall is the physical manifestation of Vanderbilt University School of Medicine's ongoing commitment to excellence in all areas of medical education.

Beginning in 1996, several new degree programs became a part of the School of Medicine. These programs include courses of study in public health (1996), clinical investigation (2000), audiology (2002), medical physics (2002), laboratory investigation (2004), education of the deaf (2006), and speech-language pathology (2007).



# Admission



# Requirements for Entrance

Vanderbilt University School of Medicine seeks students with a strong background in both science and the liberal arts who will have the baccalaureate degree before matriculation. The Medical College Admission Test (MCAT) is required and used along with other observations to predict success in preclinical course work.

Applicants must present evidence of having satisfactorily completed all of the minimum requirements listed below by the completion of the fall semester of the application year. A semester hour is the credit value of sixteen weeks of work consisting of one hour of lecture or recitation or at least two hours of laboratory.

*Biology*. Eight semester hours, including laboratory, in either general biology, zoology, or molecular biology.

Chemistry. A minimum of 16 semester hours, 8 in general inorganic chemistry, including laboratory, and 8 in organic chemistry.

While a year of inorganic chemistry is designated, Vanderbilt will accept the additional 8 hours with lab in an upper level chemistry course(s) other than organic, especially if the student has placed out of the entry level course.

*English and Composition*. Six semester hours.

*Physics.* Eight semester hours, including laboratory.

Advanced placement credits, CLEP credits, and pass/fail credits are not acceptable in lieu of any requirements. Advanced courses in the same discipline may be substituted for the traditional requirements when the applicant has placed out of the entry level course.

The faculty of the Vanderbilt University School of Medicine recognizes its responsibility to present candidates for the M.D. degree who have the knowledge and skills to function in a broad variety of clinical situations and to render a wide spectrum of patient care. Candidates for the M.D. degree will ordinarily have the broad preliminary preparation to enter postgraduate medical education in any of the diverse specialties of medicine. All candidates for admission must possess sufficient intellectual ability, emotional stability, and sensory and motor function to meet the academic requirements of the School of Medicine without fundamental alteration in the nature of this program. The associate dean for admissions, in consultation with the Admissions Committee of the School of Medicine, is responsible for interpreting these technical standards as they might apply to an individual applicant to the School of Medicine.

#### **Recommendations for Entrance**

A broad experience in non-science courses is encouraged, especially experience beyond the introductory course level in areas such as English, the humanities, the arts, and the social and behavioral sciences. A major in non-science courses does not affect selection.

#### **Selection Factors**

Vanderbilt University School of Medicine (VUSM) seeks to matriculate a diverse group of academically exceptional students whose attributes and accomplishments suggest that they will be future leaders and/or scholars in medicine. To accomplish this goal, VUSM provides a review of each candidate by multiple members of the faculty who are broadly representative of the faculty body. The committee uses a holistic approach to evaluate an array of applicant attributes, including academic excellence, personal characteristics, accomplishments in research, leadership, service to others, contribution to diversity (gender, race, ethnicity, sexual preference, socio-economic background, geographic origin), and participation in extracurricular activities. A criminal background check is required before matriculation.

# **Medical College Admission Test**

The Medical College Admission Test is given under the auspices of the Association of American Medical Colleges and is required of applicants to Vanderbilt. It is given multiple times each year. Since the examination score is used by medical schools in the selection of applicants, candidates should take the test in the spring prior to the time application is submitted, if possible. Results of the September examination are acceptable, but will delay review of the application until scores are received.

# Application Procedure for Admission

As a convenience to the applicant, Vanderbilt University School of Medicine participates in the American Medical College Application Service. All application materials may be obtained on-line through AMCAS by going to <a href="http://aamc.org">http://aamc.org</a>. AMCAS applications are screened by four faculty screening committees in order to select applicants for interview. Interviews are conducted at Vanderbilt between August and March. Interviewers consist of sixty faculty trained in interviewing techniques.

The Committee on Admissions evaluates the initial application received through the application service. Applicants receiving a favorable initial review are invited to be interviewed and to request letters of evaluation. Applications are received on-line by AMCAS any time after 1 June and before 15 November preceding an anticipated fall semester enrollment date.

Vanderbilt participates in the Early Decision Program through the American Medical College Application Service.

Vanderbilt University School of Medicine has ten dual degree programs. For all dual degrees, except the M.D./Ph.D., the first three years are spent in the medical school program. In most cases, after year three, students begin work on their other degree program. Depending on the other program, students may complete the second degree before returning to the medical school. The dual degree program allows students to reduce the period of time required to complete each degree separately, usually eliminating one full year of study. Application is made to each program separately, and admission to both programs is required to enter a dual degree program.

A single application is made to the M.D./Ph.D. program by indicating M.D./Ph.D. degree on the AMCAS application to Vanderbilt University School of Medicine and completing the MSTP secondary application. The application will be reviewed by the MSTP and admissions committees.

#### **Transfer Students**

Acceptance for transfer is limited to the third year, filling places made by attrition only. Opportunities for transfer are rare because of the low attrition rate. Those students who have completed the second year in good standing at an LCME-accredited U.S. or Canadian medical school are eligible to apply. The deadline for applying is March 1.

# **Dual Degree Programs**

# Medical Scientist Training Program

The central goal of the Medical Scientist Training Program (MSTP) at Vanderbilt University is to train leaders in academic medicine. Our program is based on solid clinical and research training and is designed to foster the development of independent scientific careers. We provide students with an integrated curriculum comprising a strong core education in medicine and intensive training in scientific inquiry. Successful completion of the program leads to both the M.D. and Ph.D. degrees. MSTP students come from a diverse applicant pool drawn from throughout the nation and abroad.

#### MSTP Curriculum

The MSTP is a joint endeavor between the Vanderbilt University School of Medicine and the Vanderbilt University Graduate School. Trainees are required to fulfill all of the requirements for both the M.D. and Ph.D. degrees. The MSTP allows both joint and alternating enrollment in the School of Medicine and the Graduate School.

The cornerstone of the Vanderbilt MSTP is training in scientific inquiry afforded by a rigorous Ph.D. experience. MSTP trainees usually complete the first two years of the medical curriculum prior to the initiation of research training. Following completion of three laboratory rotations, trainees select a laboratory and department for graduate studies. This selection is formalized before the end of the second year of Medical School. Requirements for successful completion of the Ph.D. degree are the same for all students at Vanderbilt. The Ph.D. thesis must be successfully defended prior to reentry into medical school.

Most MSTP students will begin the third year of medical school in early July with the rest of the rising third-year class. In special circumstances, MSTP students may begin their third-year studies between July and December coinciding with the beginning of a clinical clerkship. A start date any later than that would preclude graduation with that class in May of the next academic year. Students beginning the M3 year in early July can participate fully in the Medical School elective program, including additional research, during the fourth year. Those beginning later must use elective time in the M4 year to complete the required M3 clinical clerkships.

To facilitate the training of clinical investigators, we developed a distinct track within the Vanderbilt MSTP called the MSTP-Clinical Investigation Track (MSTP-CIT). The goal of the MSTP-CIT is to provide comprehensive training in science for physician scientists engaged in translational and patient-oriented research. This program is intended for students who enter the MSTP after the third year of Medical School or during the later stages of residency or fellowship.

# MSTP Program Activities

There are a number of educational programs developed specifically for the training of physician scientists in the MSTP. A brief summary of the major activities follows.

Annual Retreat. The MSTP curriculum begins each year with a day-long retreat scheduled during the week that new students arrive on campus. The retreat provides an opportunity for interactions among MSTP students and faculty with a focus on cutting-edge science. Presentations are made by all students in the graduate phase of training.

Seminar Series. The MSTP Seminar Series is a student-driven course in critical thinking guided by three faculty preceptors. The weekly seminar series is interdisciplinary in scope, with topics drawn from all areas of biomedicine. Students select the manuscripts to be presented as centerpieces of the seminars.

Clinical Preceptorship Program. The MSTP Clinical Preceptorship Program provides our students with exposure to clinical medicine during the period of research training. Each class is assigned two clinical mentors, an internist and a pediatrician, who work with the class one afternoon per month for the duration of their graduate training. One half of the class works with the internist in the fall semester and the other works with the pediatrician, switching mentors for the spring semester.

Data Club. The MSTP Data Club provides a forum for students to discuss current research. All are invited to attend the monthly meetings, but the Data Club is particularly designed for graduate-phase MSTP students.

Leadership Workshop. The MSTP Leadership Workshop provides formal training in leadership for our students. The main objectives are to offer students an opportunity to assess their individual leadership styles, discuss cases in research and clinical leadership, and receive didactic instruction in core leadership competencies. The workshop is held biennially in even-numbered years.

Career Development Workshop. The MSTP Career Development Workshop provides formal exposure to the variety of career paths chosen by physician scientists. The main focus of the workshop is on the interval from MSTP graduation to the completion of clinical and research training. Panel discussions focus on career options for physician scientists, the transition to independence, and work-family balance. The workshop is held biennially in odd-numbered years.

Physician Scientist Speaker Series. The Physician Scientist Speaker Series was developed to enhance career development through interactions with renowned physician scientists who serve as excellent resources and role models for our students. Speakers are invited by the students each semester to present a research seminar to the Vanderbilt community and give an after-dinner talk to the MSTP class.

Community Outreach. MSTP students conceived and direct the annual "Mini-MSTP" for local public school students to promote interest in developing physician scientist careers. The students participate actively through exposure to clinical and research challenges duplicating real-life events in the hospital and the laboratory. Mini-MSTP activities include a visit to the Center for Experiential Learning and Assessment for an exciting encounter with simulation technology, laboratory experiments, and interaction with MSTP students.

Advising Colleges. The Vanderbilt MSTP is organized into six advising colleges that serve as the primary advising mechanism for students in the program. Each advising college is led by two faculty members and includes one or two members of each class across all years of the MSTP. We also include 3-4 M.D./Ph.D. Resident advisors in each college.

Student Advisory Committee (SAC). The MSTP SAC is appointed annually by the students to provide advice to the MSTP Leadership Team about all aspects of program administration and curriculum. Two-to-three students from each class serve for two-year terms on the SAC. The SAC has been instrumental in MSTP student recruitment and development of several new curricular programs for the MSTP.

# Financial Support

Special funding (tuition and stipend) is available for those who gain admission to the Medical Scientist Training Program. A training grant from the NIH supports about twenty-five percent of the expenses for the MSTP; the remainder comes from the Dean's office, basic science and clinical

departments, and philanthropy. The MSTP training grant is the largest training grant at Vanderbilt and provided more than \$1,000,000 to support students in academic year 2008/2009.

In addition to support from the NIH, there are a number of merit and institutional scholarships available to MSTP students. Every MSTP student is evaluated for award of these scholarships. They include the James T. and Olivia R. Allen Scholarship Fund, the Mary and William O. Inman Jr. Scholarship Fund, the Meade Haven Scholarship in Biomedical Sciences, the Canby Robinson Society Student Scholarship Benefactor Program, the Herbert M. Shayne Endowment, the Vanderbilt Prize in Biomedical Sciences Scholarship, and the Thomas Huggins Winn Scholarship.

# Other Dual Degree Programs

#### M.D./J.D.

Students must apply separately to both the Vanderbilt University School of Medicine and the Vanderbilt Law School and be accepted by both programs to pursue the dual M.D./J.D. degree.

Ideally, students will apply for joint degree status before enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the medical school. Law students who apply to the medical school during their first year in the law program may also be considered for the joint degree.

Joint degree students will complete both degrees in six years, saving one year in school, as medical school ordinarily takes four years and law school takes three.

#### M.D./M.S. in Biomedical Engineering

Students must apply separately to both the Vanderbilt University School of Medicine and the Department of Biomedical Engineering in the Vanderbilt University School of Engineering and be accepted by both programs to pursue the joint M.D./M.S. in biomedical engineering degree.

Ideally, students will apply for joint degree status before enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the Medical School.

Joint degree students will complete both degrees in five years, saving one year in school, since ordinarily medical school takes four years and the M.S. in biomedical engineering two years.

#### M.D./M.S. in Biomedical Informatics

Students must apply separately to both the Vanderbilt University School of Medicine and Vanderbilt's Biomedical Informatics Department and must be accepted by both programs to pursue the joint M.D./M.S. in biomedical informatics degree.

Ideally, students will apply for joint degree status prior to enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the medical school.

Joint degree students will complete both degrees in six years, saving one-half year in school, since medical school ordinarily takes four years and the M.S. in biomedical informatics two and one-half years.

#### M.D./M.Div. and M.D./M.T.S.

Students with interest in medical and divinity degrees will have the opportunity to enroll in one of two joint degree programs. Students must apply separately to the Vanderbilt University School of Medicine and the Vanderbilt Divinity School and be accepted by both to pursue the M.D./M.Div. (M.D./Master of Divinity) or the M.D./M.T.S. (M.D./Master of Theological Studies) degree.

Ideally, students will apply for joint degree status before enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the medical school. Divinity students who apply to the medical school during their first year in the divinity program may also be considered for the joint degree.

The M.D./M.Div. joint degree program will take a total of six years for completion. This saves one year as the M.D. degree ordinarily takes four years and the Master of Divinity takes three. The Master of Divinity is a professional degree and prepares students for the practice of ministry. This program has a required field education component as part of the Master of Divinity degree requirements. In this program, students will carry 15 credit hours per semester while in the Divinity School.

# M.D./M.S. in Computer Science

Students must apply separately to the Vanderbilt University School of Medicine and the Computer Science program in the Vanderbilt School of Engineering and be accepted by both programs to pursue the joint M.D./M.S. in computer science degree. Students must meet requirements of each program for admission.

Ideally, students will apply for joint degree status prior to enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the medical school.

Joint degree students will complete both degrees in five years, saving one year in school, since medical school ordinarily takes four years and the computer science program two years.

#### M.D./M.Ed.

Education is an integral part of medicine. The word "doctor" comes from the Greek word meaning "teacher." Whether a student chooses a career in research or clinical practice, there always will be a need to teach students, patients, and colleagues. Students who choose the M.D./M.Ed. joint degree program may be interested in patient education or in a career in an academic center working in medical education. They also may be interested in leadership positions at the national level that interface with health policy and education. Education will be a large part of prevention in future medical practice.

Students must apply separately to both the Vanderbilt School of Medicine and Peabody College of Education and Human Development and be accepted by both programs to pursue the joint M.D./M.Ed. degree.

Ideally, students will apply for joint degree status before enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the School of Medicine. Peabody students may apply for admission to the M.D. program during their first year in the master's program.

Joint degree students will complete both degrees in five years, saving on year in school, as medical school ordinarily takes four years and the Peabody program two years.

# M.D./M.P.H.

Students must apply separately to the M.D. and the M.P.H. programs in the School of Medicine and be accepted by both programs to pursue the joint M.D./M.P.H. degree. Medical students may elect to apply for admission to the joint degree program at any time during their first three years in the medical school.

An important component of the M.P.H. program is a mentored research investigation, which assumes a degree of student independence typically associated with fellowship or junior faculty status. Thus, acceptance into the M.P.H. program will be restricted to students who exhibit this capacity and will require pre-identification of a qualified faculty member willing to serve as the student's mentor.

Joint degree students will complete both degrees in five years, saving one year in school, since medical school ordinarily takes four years and the M.P.H. program two years.

#### M.D./MBA

Students must apply separately to both the Vanderbilt University School of Medicine and Vanderbilt's Owen Graduate School of Managementand be accepted by both programs to pursue the joint M.D./MBA degree.

Ideally, students will apply for joint degree status prior to enrolling in either program. However, medical students may elect to apply for admission to the joint degree program at any time during their first three years in the medical school. Owen students who apply to the medical school during their first year in the MBA program may also be considered for the joint degree program.

Joint degree students will complete both degrees in five years, saving one year in school, since medical school ordinarily takes four years and the Owen program two years. The first three years are spent in medical school. Students spend their fourth year at the Owen School and then spend the fall semester of year five in medical school and the spring semester of year five at the Owen School.

# M.D./M.A. in Medicine, Health, and Society

In 2008, the Vanderbilt University Faculty Senate approved a Master of Arts degree in Medicine, Health, and Society (MHS). The proposal for this fully interdisciplinary degree originated from the Vanderbilt University Center for Medicine, Health, and Society (CMHS), which was established in 2003. The goals of CMHS are to promote the study of health and health care in their social, cultural, and historical contexts, and to explore the interface of bioscience, technology, and the humanities.

In addition to educating outstanding clinicians, Vanderbilt University School of Medicine is committed to developing future leaders and scholars in medicine. We recognize that the current challenges facing health and health care demand leaders and scholars in many areas related to medicine, and this was the rationale behind the development of our Emphasis Program, with its nine areas of concentration. Five of those areas have potential links to MHS. They include: Community Health Initiatives, Medical Humanities, Law and Medicine, Health Services Research, and Global Health. The M.A. in MHS would allow selected students to extend their scholarly interests in those interdisciplinary areas, although prior work in one of those areas is not required. We feel that the MHS degree would provide our students with additional knowledge and research experience that would better prepare them for academic careers focused on the political, social, economic, and cultural contexts of the practice of medicine, as well as on biomedical ethics, patient-provider relationships, and health policy.

Students must be accepted by both the Vanderbilt University School of Medicine and the Graduate School, and acceptance to one program will not ensure acceptance to the other.

Dual degree students will be able to enter the M.A. program after any year of medical school. If students choose to begin their M.A. studies after the fourth year, they will be allowed to delay graduation until after completion of both degrees, as long as they are officially enrolled in the joint degree program. Requirements for the M.D. degree will be the same as those for non-joint-degree students. Students would be allowed to use two fourth-year elective credits to complete a thesis related to the M.A. degree. If students choose this route, then credit would be awarded jointly for those two months by both the School of Medicine and the Graduate School. In nearly all circumstances, students will be able to complete requirements for both degrees in a total of five years.

# Other Single Degree Programs

Hearing and Speech Sciences

# **Doctor of Audiology**

The Au.D. is a four-year post-baccalaureate degree which replaced the Master of Science degree as the requirement for the entry-level *practitioner* of audiology. The Doctor of Philosophy degree continues to be offered to students interested in becoming teacher/investigators.

The Au.D. program is CAA accredited by the American Speech-Language-Hearing Association. Practicum sites include the Vanderbilt Bill Wilkerson Center, Odess Otolaryngology Clinic, Veteran's Affairs Medical Center, and several hospitals and practices in the metropolitan Nashville area. At present, Vanderbilt's Au.D. program is ranked #1 in the nation by U.S. News and World Report.

The Au.D. program encourages applicants with backgrounds in such areas as communication disorders and other health-related professions, biomedical sciences, psychology, and psycholinguistics. All students must possess GRE scores consistent with Vanderbilt standards, a strong record of past academic achievement, a commitment to hearing health care, excellent oral and written communication skills, a willingness to work collaboratively, a strong work ethic, perseverance, and strong organizational and time management skills.

Please visit our Web site at www.vanderbiltbillwilkersoncenter.com for additional information.

#### Master of Education of the Deaf

The Department of Hearing and Speech Sciences (DHSS) offers a Master of Education of the Deaf degree. This one- to two-year program emphasizes

the development of spoken language and auditory skills for children who are able to develop those skills. The DHSS is home to a unique, interdisciplinary approach to teacher training by combining training in audiology, speech-language pathology, and deaf education. The Mama Lere Hearing School in our National Center for Childhood Deafness and Family Communication serves as the professional development school for the DHSS deaf education program. This auditory oral school for children who are deaf or hard of hearing is known for its outstanding work in the areas of speech development, auditory training, cochlear implant habilitation, language, and reading.

Students entering the Master of Education of the Deaf program are required to have an undergraduate degree in deaf education, special education, early childhood education, or general education and must have teacher certification in same. The program will be one year in length (three semesters including summer plus May Session) for those coming in with a background in deaf education and two years (five semesters including summer plus May Session) for those with no background in deaf education.

Please visit our Web site at www.mc.vanderbilt.edu/nccdfc for additional information.

# Master of Science (Speech-Language Pathology)

The master's degree program in speech-language pathology (SLP) is administered through the Vanderbilt University School of Medicine and is CAA (Council on Academic Accreditation) accredited by the American Speech-Language-Hearing Association. Further information regarding graduate programs in hearing and speech sciences may be found online at www.vanderbiltbillwilkersoncenter.com. The program provides clinical education leading to professional certification in speech-language pathology. The 1.5 to 2.0 calendar years (depending on background) covers at least five semesters (51-59 semester hours), including the summer session following the first calendar year of full-time study. Students without a background in communication disorders will require an extra semester. Many clinical opportunities are available throughout the program. The program culminates in a ten-week clinical or research externship at a site of the student's choosing. The program exceeds American Speech-Language-Hearing Association requirements. Cochlear implant, autism courses, and education courses are a part of the curriculum for students with interests in those areas. There is also a thesis option.

Students with backgrounds in such areas as communication disorders and other health related professions, biomedical sciences, psychology, and psycholinguistics are encouraged to apply. All students must possess GRE scores consistent with Vanderbilt's standards, a strong record of past academic achievement, a commitment to perseverance, and exceptional organizational and time-management skills.

# Graduate Programs in Medical Physics

#### M.P.D. and M.S.M.P.

Medical physics is an applied branch of physics devoted to the application of concepts and methods from physics to the diagnosis and treatment of human disease. Medical physicists are concerned with three primary areas of activity: clinical service and consultation, research and development, and teaching. Clinically, medical physicists are called upon to contribute scientific advice and resources to solve physical problems arising in radiological medical physics. Medical physics research typically involves the development of new instrumentation and technology, the development of new medical diagnostic and therapeutic procedures, and tests using existing technologies. Historically, this type of activity has been primarily in radiological imaging and radiation oncology, but now has a growing breadth of involvement throughout medicine. Many medical physicists not only provide clinical service, but also have faculty appointments at universities and colleges and are responsible for teaching future medical physicists, resident physicians, medical students, and hospital technical staff.

Vanderbilt University offers both the master of science degree and the professional doctoral degree in medical physics with a specialty in radiological medical physics. These interdisciplinary programs are administered through the Department of Radiation Oncology and the Department of Radiology and Radiological Sciences in the School of Medicine, and involve faculty and courses from the Vanderbilt University School of Medicine, the Department of Radiology and Radiological Sciences, the Department of Radiation Oncology, the College of Arts and Science, the Department of Physics and Astronomy, the Department of Mathematics, and the School of Engineering (Department of Biomedical Engineering).

The master of science program (M.S.M.P.) offers tracks in both radiotherapy medical physics and diagnostic medical physics. Both tracks offer a thesis and a non-thesis option. The thesis option requires 26 didactic credit hours in addition to the thesis research project; the non-thesis option requires 32 didactic credit hours and 6 credit hours in clinical practicum. The master of science program is a 24-month program.

The professional doctorate in medical physics (M.P.D.) also offers tracks in both radiotherapy medical physics and diagnostic medical physics. Degree requirements include 50 didactic credit hours, 6 research credit hours, and 36 hours of clinical practicum. The didactic and research hours are completed in years one and two, and the clinical practicum credit hours are completed in years three and four. The clinical medical physics experience gained in years three and four is equivalent to a two-year medical physics residency.

All visiting students and applicants may access this information and more online by visiting our Web pages at <a href="https://medschool.vanderbilt.edu/msmp">https://medschool.vanderbilt.edu/msmp</a> or <a href="https://medschool.vanderbilt.edu/dmp">https://medschool.vanderbilt.edu/dmp</a>.

# Other Programs

# **Master of Laboratory Investigation**

The Master of Laboratory Investigation program is a two-year program offered by the School of Medicine for Vanderbilt or Meharry staff who have a B.S. or B.A. degree from an accredited institution with a GPA of 2.5, have six months to one year of residency at VUMC or Meharry in a research laboratory, and who are nominated by the faculty mentor in whose lab they work with a strong letter of support.

The mission of the Master of Laboratory Investigation program is to provide a stronger academic base of knowledge for research personnel who will continue to work in an academic research environment; to foster the professional growth and increase the intellectual investment of the research assistant in the laboratory; and to improve the career growth potentials of our brightest and most qualified young researchers who do not wish to develop the full independent potential of the Ph.D.

Please visit our Web site at https://medschool.mc.vanderbilt.edu/mls for additional information.

# **Master of Public Health**

The Master of Public Health (M.P.H.) program is a two-year program offered by the School of Medicine for physicians and other doctoral-level health care professionals. The primary objective of the program is to provide training for clinical and patient-oriented researchers who will conduct non-experimental studies or clinical trials with large sample sizes. The M.P.H. includes didactic course work, public health practicum, and mentored research, the latter resulting in a thesis.

The M.P.H. program is open to physicians who have completed their residency training or other health care professionals at a comparable level. Normally, applicants will be clinical research fellows or faculty who seek training for a future career in epidemiologic, clinical, or health services research or health administration.

A five-year joint M.D./M.P.H. degree is offered for students interested in acquiring tools needed to conceptualize and conduct studies using the methods accepted by the premiere medical journals. Students in the joint degree program apply separately to the M.P.H. program and the M.D. program and must demonstrate a level of independence typically associated with fellowship or junior faculty status.

Please visit our Web site at www.mc.vanderbilt.edu/prevmed/mph/index.html for additional information.

# Master of Science in Clinical Investigation (M.S.C.I.)

The M.S.C.I. program trains investigators in the techniques and processes utilized in patient-oriented research. This program provides direct, mentored experience in clinical investigation and, through didactic work, provides trainees with a strong foundation in study design, biostatistics, biomedical ethics, clinical pharmacology, human genetics, and assay methods. The program typically takes two years to complete. Graduates successfully compete for grants such as the K-23, Clinical Associate Physician Award, R0-1, and major foundation grants.

Eligible candidates for the M.S.C.I. program include:

- board-eligible physicians enrolled in a fellowship program at Vanderbilt or Meharry Medical College
  - residents with protected time for research
  - Vanderbilt faculty members with the consent of their department
    - medical students in the Medical Scholars program
- postdoctoral Ph.D.'s anticipating a career in patient-oriented research, and
- Ph.D. candidates in the Nursing School anticipating a career in patientoriented research.

The M.S.C.I. program consists of four components:

Mentored Research Apprenticeship: The core of the M.S.C.I. program will be the completion of a mentored research project. The research must be patient-oriented and involve direct measurements on patient-derived samples or the use of investigational therapeutic or diagnostic techniques. The mentor must be an established physician-scientist with experience in patient-oriented research. Use of the Vanderbilt University General Clinical Research Center will be encouraged. The research project will account for 80 percent of the candidate's commitment to the program.

Didactic Work: Candidates must complete 31 hours of courses covering the essentials of study design, biostatistics, ethics, drug development, and data analysis. It is expected that course work will comprise 20 percent of the candidate's time commitment. Core courses will be provided in two formats: intense courses that meet three hours each day (e.g., 8:00 a.m. to 11:00 a.m.) for four weeks and courses that can be offered less intensively (two to four hours a week for several months). The course schedule is designed to maximize protected time for patient-oriented research.

Career Path Development: In addition to the formal curriculum, a monthly seminar series, "Clinical Career Seminars," will permit candidates to meet successful patient-oriented researchers. Topics of discussion will include academic "rules of the road," time management, promotion/tenure issues, grants management, and overall program evaluation. Candidates will hone their scientific communication skills through an annual presentation at this forum. The directors will host networking events with the candidates, clinical investigators, mentors, and visiting scientists.

*Master's Final Project:* The candidate will submit a manuscript to a peer-reviewed journal, provide a completed proposal for a federal or major foundation grant, or develop a master's thesis based on his or her research project. Completion of the thesis requirement will be evaluated by a thesis committee composed of the trainee's mentor, two other members selected by the candidate, and the directors of the M.S.C.I. program.

More information is available online at www.mc.vanderbilt.edu/msci/.

# Visiting Students (General Information)

Vanderbilt School of Medicine welcomes visiting senior medical students, space permitting, into clinical electives. The visitor must be an enrolled fourth-year medical student in good academic standing at a U.S. medical school. Each approved student must be taking the elective for credit from his/her own school with his/her dean's approval and must have adequate professional liability and health insurance coverage.

Visiting students may register for coursework in the School of Medicine, space permitting, with the approval of the appropriate department and with concurrence of the course instructor and the associate dean for medical student affairs. Visiting students should not contact the course directors directly. All inquiries must be made through the Registrar's Office. Failure to apply through this office may result in denial of credit for any elective work.

Students wishing to visit at Vanderbilt School of Medicine should submit a Visiting Student Application through the AAMC Visiting Student Application Service (VSAS) at least eight weeks in advance of the requested rotation. For more information on VSAS, visit <a href="www.aamc.org/vsas">www.aamc.org/vsas</a> or contact <a href="vsas@aamc.org">vsas@aamc.org</a>. Applications are accepted beginning on April 1 and should include a picture, CV, USMLE Step 1 Score, transcript, and the appropriate fees for your VSAS application to be complete. All accepted students must confirm their participation by submitting a non-refundable \$75 processing fee by check or money order payable to Vanderbilt University School of Medicine. Visitors are also required to participate in an orientation with the Registrar's Office on the first day of their rotation which will include a Bloodborne Pathogen Training Session. Visiting students may not enroll for more than eight weeks of elective work at Vanderbilt without special approval.

# Meharry Medical Students

The Vanderbilt School of Medicine has an alliance with Meharry Medical College which allows Meharry medical students to take an unlimited number of electives at Vanderbilt, space permitting, at no additional cost. Applications are currently available through the School of Medicine Web

site at www.mc.vanderbilt.edu/medschool/registrar/meharry.php. In 2010/11, all applications will be submitted through the VSAS application program at www.aamc.org/vsas.

# Osteopathic Students

Students from osteopathic medical schools may apply to Vanderbilt University School of Medicine through the Visiting Student Program. Applications will be sent to the appropriate course director for review and departmental approval. Osteopathic students are also required to submit a non-refundable processing fee of \$75 upon approval and placement in an elective course. Applications are currently available through the School of Medicine Web site at <a href="https://medschool.vanderbilt.edu/registrar/osteopathic-students">https://medschool.vanderbilt.edu/registrar/osteopathic-students</a>.

# International Visiting Students

Vanderbilt School of Medicine does not accept students through the Visiting Student Program who are not enrolled in LCME approved medical schools or who are not enrolled in affiliated student exchange programs with the Vanderbilt University School of Medicine.

# Academic Program and Policies

# Requirements for M.D. Degree

Candidates for the Doctor of Medicine degree must be mature and of good moral character. They must have spent at least four years of study or its equivalent as matriculated medical students at an accredited medical school. Students accepted with advanced standing must complete at least the last two years in the Vanderbilt University School of Medicine. All students must have satisfactorily completed the medical curriculum, have passed all prescribed examinations, and have no outstanding unpaid balances with the University other than sanctioned educational loans. Students fulfilling these requirements will be recommended for the degree Doctor of Medicine.

The curriculum is divided into required courses taken by all students and elective courses taken at the choice of the individual student. Required courses constitute the nucleus of medical education at Vanderbilt; elective courses are an integral part of each student's educational experience in the School of Medicine, providing considerable flexibility for individual programming. Students develop an elective program to meet individual needs with the help of the faculty and the approval of the associate dean for medical student affairs or a designee.

All electives are courses for credit. Electives in the first and second years are graded as Pass or Fail; electives in the fourth year are graded on the same basis as required courses. The format for electives includes lecture or seminar series, specialty clinics, clinical clerkships, or research experiences at Vanderbilt or other approved institutions; and, in special circumstances, Vanderbilt undergraduate or graduate courses may be counted as electives.

Students cannot be paid for any work done for required or elective credit. Exceptions to this policy include the summer stipend received by all students for work on their Emphasis projects and students who receive stipends as part of scholarships, fellowships, or joint degree programs.

The curriculum is under constant review by both faculty and students, and is subject to timely change as recommended by the Undergraduate Medical Education Committee and approved by the Executive Faculty.

# Academic Program

First Year

Required courses include Foundations of the Medical Profession; Patient, Profession and Society I; Molecular Foundations of Medicine; Structure, Function, and Development; Microbiology and Immunology; and

the Emphasis Program. Students participate in a clinical preceptorship as part of the Patient, Profession and Society I course, so that clinical experience begins immediately. Students are encouraged to take at least one of their three required electives during the first year.

# The Emphasis Program

The Emphasis Program requires that every student undertake a mentored scholarly project during the first two years of medical school. Projects are related to one of nine Emphasis areas: laboratory-based research, patient-oriented research, health services research and management, community health initiatives, medical education, medical humanities, health law and policy, global health, and informatics. Students choose their area and project during the first semester of first year, and embark on study design during second semester. During the summer between first and second years, all students devote eight weeks to their projects, supported by living stipends which are provided by the school. During the second year, students continue to work on their projects, analyze data, and prepare either poster or oral presentations for the annual Emphasis Forum, held each year in April. Students who are pursuing joint degrees through the Medical Scientist Training Program complete their laboratory rotations during time set aside for the Emphasis Program and also present their work at the Emphasis Forum.

#### Second Year

Required courses include Disease, Diagnosis, and Therapeutics; Brain and Behavior; Physical Diagnosis; Patient, Profession, and Society II; the Emphasis Program; and Introduction to Clinical Problem Solving. Students must also complete their electives requirement during the second year.

The School of Medicine offers a graduate certificate in global health to medical students who complete a formalized global health education curriculum during the first two years of their study. The curriculum includes a series of at least three electives offered by the Institute for Global Health (IGH), additional course work in the student's own discipline deemed relevant and approved by the IGH faculty, and a global health practicum which will include eight to twelve weeks of field work. This requirement may be satisfied through the Emphasis Program.

#### Third Year

Required clinical clerkships include Surgery, Medicine, Pediatrics, Obstetrics-Gynecology, Neurology, and Psychiatry. In addition, all students are required to participate in four intersessions, one of which proceeds each 11-week clerkship block. Half of each intersession is devoted to discussion of interdisciplinary topics, such as palliative care, geriatrics, nutrition, medical systems, and communication skills. During the last half of each intersession, students break into their clerkship groups to review the basic science concepts that are germane to that clerkship.

# Third Year Requirements

The following must be completed by June 30, 2010.

Medicine (504-5020) 11 weeks Surgery (517-5020) 11 weeks Pediatrics (511-5020) 5.5 weeks Obstetrics/Gynecology (507-5020) 5.5 weeks Psychiatry (515-5020) 5.5 weeks Neurology (506-5020) 5.5 weeks Four Intersessions (520-5320) one week each

Ordinarily students will complete all clerkships before proceeding to their fourth year, but under special circumstances, students may defer one clerkship to the fourth year to pursue specific research or clinical interests. Such plans must be approved by the associate dean for medical student affairs. MSTP students who enter the third year after the first clerkship block may defer one block to the fourth year, with the permission of the MSTP program director and the associate dean for medical student affairs. These students should make every effort to complete all intersessions during the third year clerkships.

#### **Transfer**

Acceptance for transfer is limited to the third year, filling places made by attrition only. Opportunities for transfer are rare because of the low attrition rate. Those students who have completed the second year in good standing at LCME-accredited U.S. or Canadian medical schools are eligible to apply. The deadline for applying is March 1.

Fourth Year

The flexibility of the fourth-year curriculum gives the student maximum opportunity for individual development. The year is divided into ten four-week academic units running from July through April.

# Fourth Year Requirements

Eight units (32 weeks of instruction) must be completed. Primary Care Medicine, 520-5100, Emergency Medicine, 502-5950, and the Capstone course, 520-5090, are required. In addition, all students must complete one subinternship.

Four additional elective units must be chosen to total eight units for the completion of the degree program. Students may elect to have course work in all ten units.

Students must keep in mind the following elective limits and recommendations:

- Students may not enroll in the same elective twice.
- With rare exception students should do no more than three clinical rotations in the same specialty.
- Students will need approval from the associate dean of medical student affairs to exceed this limit.
- Students are limited to two rotations away from Vanderbilt which require approval (7100—Special Study Clinical and 7150—Special Study Research). In addition, Primary Care may be taken away from Vanderbilt.
- Students are limited to two research rotations (6150—Special Study Research, VU or 7150—Special Study Research).
- Research rotations may last through two units. The approval process is required for each unit.
- MSTP students may receive credit for two fourth-year units of research if they begin their third year in October rather than July.
- Other dual degree students may receive credit for two fourth year units, representing work completed in satisfaction of the second degree requirements

Requests for exceptions to these requirements must be made to the Registrar in writing for administrative approval.

# Other Important Academic Policies

# **Honor Code**

Vanderbilt students are bound by the Honor System inaugurated in 1875 when the University opened its doors. Fundamental responsibility for the preservation of the system inevitably falls on the individual student. It is assumed that students will demand of themselves and their fellow students complete respect for the Honor System. All work submitted as a part of course requirements is presumed to be the product of the student submitting it unless credit is given by the student in the manner prescribed by the course instructor. Cheating, plagiarizing, or otherwise falsifying results of study are specifically prohibited under the Honor System. The system applies not only to examinations but also to written work and computer programs submitted to instructors. The student, by registration, acknowledges the authority of the Student Honor Council of the School of Medicine. (See page 61 for the full honor code.)

The University's Graduate Student Conduct Council has original jurisdiction in all cases of non-academic misconduct involving graduate and professional students.

The *Student Handbook*, available at the time of registration, contains the constitution and bylaws of the Honor System and the Honor Code, as well as an explanation of the functions of the Honor System.

# United States Medical Licensing Examination (USMLE)

It is the policy of Vanderbilt University School of Medicine that all medical students will take Step 1 and Step 2 (both Clinical Knowledge and Clinical Skills) of the United States Medical Licensing Examination (USMLE) prior to graduation, although passage of Step 2 is not a degree requirement.

#### **Excused Absences from Clinical Rotations.**

Students may take up to three excused absence days from a clinical rotation with proper documentation. If more than three days away are required for any purpose, arrangements for make-up time must be made with the associate dean for medical student affairs and the course director.

# **Medical Student Duty Hours Policy**

In order to encourage a well-rounded, balanced journey through the clinical years of medical school, it is the policy of Vanderbilt University School of Medicine that all third and fourth year students will be expected to take at least one day off in seven. It is also expected that supervising house staff and attending physicians will be sensitive to student fatigue and total number of hours spent on clinical and educational activities.

#### **Extracurricular Work**

The School of Medicine does not regulate the outside work of its students, although it does take the firm position of discouraging outside work. No outside commitments may be assumed by medical students that may compromise their responsibilities at the medical school. If the outside obligation creates a conflict of interest, the student may be required to discontinue it.

#### Leave of Absence

A leave of absence may be granted by the associate dean for medical student affairs for a period not to exceed one year for purposes of approved studies, recuperation from illness, or other special circumstances. Should it be necessary for a student to be absent for a period of more than one calendar year, the student must request approval from the associate dean for medical student affairs for each year thereafter. If a student requests a leave while on probation, approval by the Promotions Committee is required for both the leave and the re-entry.

# **Course Evaluation Policy**

We at Vanderbilt believe that medical education is a lifelong process. Learning may occur in solitary, thoughtful reflection, in patient-doctor interactions, in interactions with peers and with those more experienced than oneself, and in a host of other settings.

In the classrooms, laboratories, and patient care areas of the School of Medicine and the Hospital, we believe the most effective learning is a team endeavor in which teachers are learners and vice versa. This mutuality is reflected, for example, in the obligation of faculty members to provide grades and other constructive commentary on student performance and how it can be enhanced. And it is reflected in the expectation that students will provide evaluative feedback and commentary on each course in order to improve the quality of instruction at Vanderbilt. Both processes of evaluation are essential to the Vanderbilt educational experience.

The student curriculum committee and the undergraduate medical education committee endorse the following guidelines in order to elicit the meaningful participation of every student in the evaluation process.

- 1. Every required course/clerkship will be evaluated by students.
- 2. The evaluation instrument (e.g., questionnaire) should be the product of student-faculty collaboration and of reasonable length.
- 3. Every student is expected to respond in a professional manner to each item which she/he feels qualified to answer.
  - 4. Strict anonymity of responses must be assured.
- 5. Failure to respond will result in withholding the grade for the course. Further, repeated failure to respond in a timely and reasonable fashion will be brought to the attention of the appropriate Promotions Committee.

Grading and Promotion Policies for the School of Medicine

#### **Doctor of Medicine Degree**

The Doctor of Medicine program has established a series of learning objectives for its educational program that can be clustered into the following categories: (1) knowledge, (2) skills in accessing information, (3) skills for the diagnosis and management of patient problems, (4) clinical reasoning skills, (5) skills in communication and interpersonal relations, (6) professional development, (7) and professional values. The achievement of these educational objectives defines the successful development of the physician-in-training and occurs during the course of a student's progress in medical school.

#### All Years

Students will be evaluated on acquisition of knowledge and skills as well as professional development and values. Appropriate professional values are expected of medical students throughout all stages of professional training. In the category of professional values, students will be evaluated in each course as meeting standards, cause for some concern, or cause for major concern. Any student causing any level of concern should be promptly identified and brought to the attention of the Associate Dean for Medical Student Affairs so that counseling can be initiated. A student for whom major concern persists will be given a failing grade (F) for the course without regard to performance in other categories. Such students will be automatically reviewed by the Promotions Committee and will be subject to possible dismissal from school.

A grade of Incomplete is to be used only to reflect that work has not been completed and should not be used when work has been completed but at an unsatisfactory level and requiring remediation.

Students will not be permitted to be supervised or evaluated by a parent or relative in any academic setting.

#### Years One and Two

- 1. The basis for grading a course needs to be transparent to all students in the class. Therefore, students must be apprised of the grading policies for a course on the first day that the class meets. Standards should be provided in writing and it is preferable that course directors go over pertinent points (especially reasons for a failing or P\* grade) verbally as well.
- 2. Students in the first year who have completed a course will be awarded a final grade of Pass or Fail or the temporary grade of P\* (see point 5 below). Students in the second year who have completed a course will be awarded a final grade of Pass, Fail, or Honors or the temporary grade of P\*.
- 3. An Honors grade in the second year reflects superior or outstanding performance in all aspects os a course, including professional values. Ordinarily, honors grades will be given to no more than 25 percent of a class.
- 4. An important goal of the curriculum is to provide students with interdisciplinary courses that are integrated to the greatest possible extent. Therefore, the sole basis for failure in a course will be the final score in the course, assuming that there are no serious issues related to professionalism (see point 7 below) and that the student has satisfied all required course components. The passing mark in individual courses is set by the administration for that course. In most cases, the passing mark has been established as a final score of 70, although it is recognized that the passing mark differs for some courses.
- 5. P\* is defined as a grade that is unsatisfactory, but still within the passing range. In an alphabetical grading system (A, B, C, etc.), it

would be the equivalent of a C– or a D. P\* is a temporary grade that will be changed to either a Pass or a Fail by the course administration with the approval of the promotion committee at the final meeting of the academic year. The final decision is based on a number of factors, including discussions with course directors, performance in other courses, etc. The conversion of a P\* to a Pass may be contingent on the successful completion of required remediation (see point 8 below).

6. Grades of P\* awarded for marginal academic performance may be based on any of several criteria, including:

A. A final score that is near, but still above the failure mark. For example, if the passing score for a course is 70, a P\* would typically fall somewhere in the range of 70–75.

B. An extremely uneven performance in the course. For example, if a student receives an overall final score that is in the passing range, but fails a high proportion of the exams, or fails a particular aspect of the course such as conference groups, laboratory, etc.

C. Although an important goal of the curriculum is to integrate course material, it is recognized that different disciplines may be more easily recognized in some courses than in others. In classes in which the course administration feels that it is important for students to demonstrate adequate learning in individual disciplines, students may receive a P\* for failure to meet standards in one or more of these disciplines.

- 7. It is recognized that in extreme cases, students may be failed or awarded a P\* for issues related to professionalism that are independent of other aspects of academic performance.
- 8. If a student is performing in the failing or P\* range, or if there is a serious concern regarding the professional behavior of a student, it is the obligation of the course administration to make the individual aware of the issue and counsel them as appropriate.
- 9. At the discretion of the course administration, a student who is awarded a P\* may be required to undergo remediation in some or all aspects of the course. The request for remediation will be made by the course administration through the promotion committee, who will consider and act on the request at the final meeting of the academic year. The final decision of the promotion committee regarding remediation will be binding on both the student and the course administration.

# Tutoring Policies for Preclinical Courses in the School of Medicine

1. Formal tutoring is an important and limited service that is extended only to students who are experiencing academic difficulties. Difficulty in making the transition to medical school and adjusting to the increased academic workload and level of expectation varies for each individual. Many

resources are available to help students make this transition. Formal tutoring is made available to those students who need additional academic help during this time. As students progress through the preclinical years, they will experience professional growth, maturity, and increased confidence. Thus, it is anticipated that the need for tutoring services will diminish naturally with time.

- 2. The basis for the assignment of tutors needs to be transparent to all students in the class. Therefore, students must be apprised of the tutoring policies for a module on the first day that the module meets. Standards should be provided in writing, and it is preferable that module directors explain the pertinent points (especially situations in which a student will or will not be assigned a tutor) verbally as well.
- 3. An important goal of the faculty and administration is to encourage students to strive for excellence in all aspects of the curriculum. With this in mind, many excellent opportunities outside of the formal tutoring mechanism are made available to help students enhance their learning and performance. Students are encouraged (and if having serious difficulty, are expected) to participate in the following (and similar) activities:
  - a. available self-assessment modules
  - b. group study
- c. faculty-led sessions, such as "7 a.m. clubs," classroom or laboratory review sessions, and synthesis sessions.
- 4. Formal tutoring is available only for students who are having serious difficulty academically or who are deemed by the module director(s) and the first- and second-year student assistance directors (Drs. Pettepher and Norden, respectively) to be at risk for marginal or failing performance (ordinarily ~75 percent or less).
  - 5. Tutoring will be offered ordinarily under two circumstances:
- a. to students who are at risk for marginal or failing performance on exams as indicated by poor performance on quizzes, in small groups, in the lab, and/or through discussions with the module director(s), despite use of the resources noted in #3 above.
- b. to students who have performed at the P\* or failing level on an exam.
- 6. Decisions about tutor assignments will be made jointly by the module director(s) and the appropriate year director of the student assistance program. This will allow the appropriate matching of individual student needs with individual tutor strengths and assures that tutoring as a resource is being distributed equitably.
- 7. If a student has a failing or marginal performance in a module and wishes to obtain a tutor, he/she must follow the path indicated below:
- a. the student will set up a meeting to consult with the module director(s) (if they have not already been contacted)
- b. once the student's individual situation has been assessed by the module director(s) and the appropriate student assistance director, the appropriate level of tutoring support will be determined

- c. on assignment of a tutor, the student will contact the assigned individual to set up tutoring appointments.
- 8. Student performance and the need for a tutor will be assessed/reassessed following every major examination in the module. If a student is already receiving tutoring and the module director(s) believe(s) that the need still exists, the tutoring will continue. Depending upon the continued needs of the student as well as others requiring aid, the tutoring assignments may be changed or adjusted so the student may or may not maintain the same tutor.
- 9. Tutoring services are paid for through the dean's office. Students who receive tutoring will be responsible for signing a tutoring sheet that confirms that he/she worked with the assigned tutor for the time indicated by the tutor.
- 10. Tutoring sheets must be submitted by the tutor to the dean's office (Gwen Moore) for payment in a timely manner.
- 11. Paid tutoring through the dean's office is available only to students whose tutoring assignments have been made according to the path outlined in #7 above. Students who are performing adequately but wish to seek additional assistance (e.g., from an upper classman) for personal academic enhancement are responsible for arranging the services and for payment if necessary for any services rendered. The tutors utilized by the modules may or may not be available for this additional service.

Years Three and Four

Faculty and House Staff Assessments of Students. Faculty and house staff providing primary evaluations of students will not recommend letter grades. The evaluation provided by faculty and house staff will provide (1) assessments of the frequency with which each student demonstrates behavior in the various categories subject to evaluation, (2) narrative comments, and (3) an evaluation of suitability for appointment to residency on the service.

Determining Clerkship Grades. Students will receive a grade for each category of learning objectives and a final course grade. For the categories other than Values, discussed above, and for the final grade, each student will be graded Honors (H), High Pass (HP), Pass (P), Pass\* (P\*), or Fail (F).

# **Determining Grades for Categories:**

- An H grade will be given to students demonstrating superior achievement in a category.
- A HP grade will be given to students demonstrating better than average, but not superior achievement in a category.
- A P grade will be given to students demonstrating completely satisfactory performance in a category.
- A grade of P\* will be given to students whose achievement in a category is marginal.

 An F grade will be given for unsatisfactory achievement in a category. A student receiving an F in any category must receive an F for the clerkship.

# Determining Clerkship Grades:

- An H grade will be given to students for superior or outstanding achievement in all of the categories. Ordinarily, honors grades will be given to no more than 25% of a class.
- A HP grade will be given to students with superior achievement in several, but not all categories.
- A P grade will be given to students who demonstrate satisfactory achievement in all categories.
- A grade of P\* will be given to students whose performance is marginal because of important deficiencies in some aspects of course work. The P\* grade may be applicable for academic credit in an individual course only after approval by the student's Promotions Committee and endorsement by the Executive Faculty as reviewed in light of the student's complete record for the year. The Promotions Committee may require remedial work before such approval is recommended. Upon receiving such approval, the P\* grade will be recorded on the official transcript as a P. In the absence of such approval, the P\* grade will be recorded on the official transcript as an F.
- An F grade is given for unsatisfactory work resulting in failure. A student receiving an F in any individual category may receive an F for the clerkship. Similarly, a student with concerns in the area of Professional Values may receive an F grade based on the criteria defined above.

# Student Grievances Concerning Grades

Students should seek redress of a problem with a grade as soon as possible after receiving the grade and in no case later than six months after the event. Students with a problem should confer directly with the course director. Every effort should be made to resolve the problem fairly and promptly at this level.

If the student cannot resolve the problem through discussion with the course director, he or she should bring the problem, within two weeks of talking with the course director, to the attention of the associate dean for medical student affairs, who will seek to resolve the problem. If resolution is still not achieved, the associate dean will make a recommendation to the Dean, which will be accompanied by commentary on the recommendation by the relevant department chair. The Dean will make the final decision.

#### **Promotion**

Successful completion of the courses of the medical curriculum and scholastic standing are determined by the character of the student's daily work; the results of examinations, which may be written, oral, or practical; and observation of the student in action. The medical school curriculum builds progressively on the course work of each previous academic year. The courses of each subsequent year require increasing levels of coordination and integration of the material previously presented. Thorough knowledge and understanding of each subject and an appropriate level of skills are therefore required for satisfactory progress to be maintained in the medical curriculum.

Promotion committees of the faculty, in consultation with representatives of the departments responsible for instruction, are charged with making recommendations to the Dean, and the Executive Faculty regarding progress and promotions of students in each class. The Executive Faculty of the School of Medicine has final responsibility for the determination of medical student progress in the school. Decisions on the progress of students during the first two years are ordinarily made at the end of each academic year. In view of the integrated nature of the curriculum in the final two years, no specific decisions on promotion from the third to the fourth year are made. Decisions on the progress of students during these final two years, however, may be made at any time as academic performance may dictate. Ordinarily, decisions for graduation will be made shortly before Commencement in the final year.

The committees recommend for promotion those students who have demonstrated the knowledge, understanding, skills, and personal behavior consistent with faculty expectations at their particular stage of professional development. The school's academic program is predicated upon providing students an academic environment conducive to successful achievement. Occasionally, however, the outcome is unsuccessful.

If the academic performance of a student is deemed to be unsatisfactory, or if there is a serious concern regarding the professional behavior of a student, that individual may be dismissed from the School of Medicine or placed on probation. The promotions committee for each class is responsible for making recommendations to the Dean regarding student dismissal or probation. Ordinarily, these decisions are made at the final meeting of the academic year.

#### **Probation**

Probation serves three separate functions. First, it serves as official documentation that the student is deficient in areas related to academic performance and/or professionalism. Second, it provides the pathway that the student must follow in order to regain good standing in the School of Medicine. This may include remediation, maintaining appropriate performance standards, and/or adhering to professional expectations. Third, it

describes the consequences that will result if a student does not meet stated expectations during the period of probation. If a student is placed on probation, it is noted on his/her official School of Medicine transcript and included in the final Medical Student Performance Evaluation. Unless stated otherwise, the period of probation is one year. Promotions Committees will recommend removal of probationary status based on the student's satisfactory performance in succeeding units of study.

It is recognized that each student's situation represents an individual set of circumstances. Consequently, while the Promotions Committees will apply similar standards and principles throughout their deliberations, the decisions regarding dismissal or probation will be decided on a case-by-case basis. Some academic deficiencies will result in mandatory probation. In this regard, any student who receives a failing grade in a School of Medicine course or is requested to repeat all or part of an academic year will automatically be placed on probation.

Ordinarily, Promotions Committees will recommend dismissal of a student who receives a failing or marginal (P\*) grade in a School of Medicine course or displays a significant breech in professionalism while s/he is on probation. In this event, the decision regarding dismissal will be rendered as soon as possible once the student's Promotions Committee is made aware of the circumstances. Students who are facing dismissal from the School may be given the option of withdrawing.

# **Appeals**

A student may choose to appeal the dismissal recommendation of the Promotions Committee. He/she must submit a letter to the Dean who will appoint a sub-committee from the Executive Faculty to consider the case. If the sub-committee chooses to support the Promotions Committee recommendation and dismiss the student, the student will no longer have the opportunity to withdraw. If the dismissal is reversed, the student will be reinstated in the school with conditions set by the sub-committee. The decision of the sub-committee will be final.

# Grading and Promotions—Other Degrees

# Master of Science in Medical Physics Doctor of Medical Physics

Good academic standing is defined as both a semester and/or cumulative grade point average of 3.0 or higher.

#### Master of Public Health

With the exception of the master's research course, all courses will be graded with letter grades (A, B, C, F). The master's research course and

the elective courses are pass/fail and are not considered in calculation of GPA. Only courses with a grade of B or better will count toward the program requirements.

# **Master of Laboratory Investigation**

The grading system in the MLI program will follow the grading scale of the Graduate School, which includes the letter grades A, B, C, D, and F. A student will not be granted graduate credit for any course in which a grade of less than C is received. The letter I may be used at the discretion of the instructor in those cases in which the student is not able to complete work during the normal time allotted for the course. The notation W is entered onto the transcript when a student withdraws from a course. A grade point average of 3.0 is required for graduation.

# Master of Education of the Deaf Master of Science (Speech-Language Pathology) Doctor of Audiology

Degree candidates must pass all courses, with a 3.0 cumulative grade point average (A = 4 points, B = 3, C = 2, D = 1, F = 0). Exempted courses, incompletes, passes, and courses taken outside Vanderbilt University are not included in computations of grade point averages. Students may not enroll in courses for which they do not have the prerequisite courses.

# Master of Science in Clinical Investigation

Courses in the MCSI program are graded with the A, B, or C format. Only grades of B or better will count toward the program requirements. A grade of "Pass" is also acceptable.

#### Commencement

The university holds its annual Commencement ceremony following the spring semester. Degree candidates must have completed successfully all curriculum requirements and have passed all prescribed examinations by the published deadlines to be allowed to participate in the ceremony. In the same way when degree requirements have been completed, it is necessary for the degree to be conferred. A student completing degree requirements in the summer or fall semester will be invited to participate in Commencement the following May; however, the semester in which the degree was actually earned will be the one recorded on the diploma and the student's permanent record. Students unable to participate in the graduation ceremony will receive their diplomas by mail.

# Chairs, Professorships, and Lectureships

# **Endowed Chairs and Professorships**

Accenture Chair in the Vanderbilt Center for Better Health

Dorothy Beryl and Theodore R. Austin Chair in Pathology

Betty and Jack Bailey Professorship in Cardiology

Barry and Amy Baker Chair in Laryngeal, Head, and Neck Research

Allan D. Bass Chair in Pharmacology

Melinda Owen Bass Chair in Medicine

Bixler/Johnson/Mays Professor of Psychiatry

James G. Blakemore Research Chair in Psychiatry

James G. Blakemore Chair in Psychiatry

William L. Bray Chair in Urologic Surgery

Frances and John C. Burch Chair in Obstetrics and Gynecology

Lucius E. Burch Chair of Reproductive Physiology and Family Planning

Betty and Lonnie S. Burnett Chair in Obstetrics and Gynecology

Benjamin F. Byrd Jr. Chair in Oncology

Ann and Monroe Carell Jr. Family Chair in Pediatric Cardiology

Chancellor's Chair in Medicine

Chancellor's Professorship in Medicine

Amos Christie Chair in Global Health

Sam and Darthea Coleman Chair in Ophthalmology

Mark Collie Chair in Diabetes Research

Cornelius Abernathy Craig Chair

Craig-Weaver Chair in Pediatrics

Joe C. Davis Chair in Biomedical Science

Annette Schaffer Eskind Chair

John Clinton Foshee Distinguished Chair in Surgery

Gottlieb C. Friesinger II Chair in Cardiovascular Medicine

Thomas F. Frist Sr. Chair in Medicine

Ernest W. Goodpasture Chair in Experimental Pathology for Translational Research

Catalo

Mary Phillps Edwards Gray Chair in Stem Cell Biology and Tissue Regeneration

Catherine McLaughlin Hakim Chair in Medicine

George W. Hale Professorship of Ophthalmology

Paul V. Hamilton M.D. Chair in Geriatrics

Paul V. Hamilton M.D. and Virginia E. Howd Chair in Urologic Oncology

Elsa S. Hanigan Chair in Pulmonary Medicine

Joel G. Hardman Chair in Pharmacology

Ingram Chair in Surgical Sciences

Hortense B. Ingram Chair in the School of Medicine

Lisa M. Jacobson Chair in Cardiovascular Medicine

Rudy W. Jacobson Chair in Pulmonary Medicine

David T. Karzon Chair in Pediatrics

Krick-Brooks Chair in Nephrology

Lee E. Limbird Chair in Pharmacology

Guy M. Maness Chair in Otolaryngology

Dan May Chair in Medicine

Katrina Overall McDonald Chair in Pediatrics

McKesson Foundation Chair in Biomedical Informatics

William F. Meacham Chair in Neurological Surgery

Stanford Moore Chair in Biochemistry

Hugh J. Morgan Chair in Medicine

Harold L. Moses Chair in Cancer Research

Elizabeth and John Murray Chair in Medicine

John A. Oates Chair in Clinical Investigation

Carol and John S. Odess Chair in Facial Plastic and Reconstructive Surgery

James C. Overall Chair in Pediatrics

Ralph and Lulu Owen Chair in Medicine

Harry and Shelley Page Chair in Interventional Cardiology

Carol D. and Henry P. Pendergrass Chair in Radiology

Carolyn Perot Rathjen Chair in Pediatric Hematology and Oncology

Ann and Roscoe R. Robinson Chair in Nephrology

Ann and Roscoe R. Robinson Professorship of Clinical Research in Diabetes

Wilhelm Roentgen Professor of Radiology & Radiological Sciences

David E. Rogers Professorship in Medicine

Paul W. Sanger Chair for Experimental Surgery

John L. Sawyers Chair in Surgical Sciences

Kenneth Schermerhorn Chair in Orthopaedics

H. William Scott, Jr. Chair in Surgery

Addison B. Scoville, Jr. Chair in Medicine

Ruth King Scoville Chair of Medicine

John L. Shapiro Chair in Pathology

Mark C. Smith Chair in Otolaryngology/Head and Neck Surgery

Phyllis G. and William B. Snyder M.D. Chair in Ophthalmology and Visual Sciences

Ann Geddes Stahlman Chair in Medical Ethics

Edward Claiborne Stahlman Chair in Pediatric Physiology and Cell Metabolism

Gladys Parkinson Stahlman Chair in Cardiovascular Research

Gray E. B. Stahlman Chair in Neurosciences

Major E. B. Stahlman Chair in Infectious Diseases and Inflammation

Mary Geddes Stahlman Chair in Cancer Research

William Stokes Chair in Experimental Therapeutics

William S. Stoney Jr. Chair in Cardiac Surgery

Jacquelyn A. Turner and Dr. Dorothy J. Turner Chair in Diabetes Research

Jim Turner Chair in Alzheimer's Research

John B. Wallace Chair in Medicine

Mina Cobb Wallace Chair in Immunology

Natalie Overall Warren Chair in Biochemistry

William K. Warren Sr. Chair in Pediatric Gastroenterology

William C. Weaver III Chair in Neurology

Dorothy Overall Wells Chair in Pediatrics

Albert & Bernard Werthan Chair in Investigative Medicine

Lester and Sara Jane Williams Chair in Academic Surgery

Anne Potter Wilson Distinguished Chair in Colon Cancer

Elton Yates Chair in Autonomic Disorders

## Annually Funded Chairs and Professorships

Oswald T. Avery Distinguished Chair in Microbiology

F. Tremaine Billings Professorship in Medicine and Pharmacology

Harry Pearson Broquist Professorship in Biochemistry

C. Sidney Burwell Professorship in Medicine

Stanley Cohen Professorship in Biochemistry

John Coniglio Chair in Biochemistry

Rosalind E. Franklin Professorship in Genetics and Health Policy

James Tayloe Gwathmey Clinician Scientist Professorship

Ingram Cancer Research Professorships

Godfrey Hounsfield Chair in Radiology and Radiological Sciences

Grant W. Liddle Professorship in Medicine

Donald A. B. and Mary M. Lindberg University Professor of Biomedical Informatics

T. H. Morgan Professorship in Human Genetics

Elliott V. Newman Professorship in Medicine

John C. Parker Professor of Anesthesiology Research

T. Edwin Rogers Chair in Pharmacology

Joseph C. Ross Chair in Pharmacology

Ronald E. Santo Chair in Diabetes Research

Sarah H. Sell Chair in Pediatrics

Shedd Chair in Pediatric Infectious Diseases

Norman Ty Smith Chair in Patient Safety and Medical Simulation

Earl W. Sutherland Jr. Professorship in Pharmacology

Earl W. Sutherland Jr. Chair in Molecular Physiology & Biophysics

University Professor of Radiology and Radiological Sciences and Biomedical Engineering

Vanderbilt Dean's Chair

Vice Chancellor's Chair in Breast Cancer Research

Levi Watkins, Jr. Professorship for Diversity in Medical Education

Robert H. Williams Professorship in Medicine

John B. Youmans Professor of Medicine

## Committed Chairs

Ruth and R. Benton Adkins, Jr. Chair in Surgery

Ben J. Alper Chair in Rheumatology

Fred H. Bess Chair in Audiology

Robert and Rachelle Buchanan/A.H. And Lucile Lancaster Chair in Dermatology

Martha O. and Dixon N. Burns Chair in Medical Ethics

Gerald M. Fenichel Chair in Neurology

Edward and Nancy Fody Chair in Pathology

Dorothy and Laurence A. Grossman Chair in Cardiovascular Medicine

Donna S. Hall Chair in Breast Cancer

Patricia and Rodes Hart Chair in Urologic Surgery

George W. Holcomb Jr. M.D. Chair in Pediatric Surgery

Ingram Distinguished Chair in Pediatric Oncology

Ingram Professorship in Pediatric Oncology

Ann Light Chair in Pulmonary Medicine

John N. Lukens Jr. Chair in Pediatric Hematology-Oncology

Jack Martin M.D. Research Professorship in Psychopharmacology

Leo and Margaret Milne Record Chair in Surgery

Mildred Thornton Stahlman Chair in Perinatology

Margaret and John Warner Chair for Neurological Education

# Lectureships

THE JOHN Q. ADAMS LECTURESHIP IN OTOLARYNGOLOGY. Through the generosity of the Adams family this annual lecture furthers education in otolaryngology.

THE ALPHA OMEGA ALPHA LECTURE. The Alpha Omega Alpha Medical Honor Society each year invites a scientist of prominence to deliver a lecture before the students and faculty and members of the medical community. The first lecture was given during the school year 1926/27.

THE ALLAN D. BASS LECTURESHIP. This lectureship was established in 1976 in recognition of Dr. Bass's outstanding contributions to Vanderbilt University, the Nashville community, and the field of Pharmacology. He served as a professor and chairman of the Department of Pharmacology from 1953 to 1973, as associate dean for biomedical sciences from 1973 to 1975, and as acting dean of the School of Medicine from 1973 to 1974. The lectureship is made possible through the generosity of his associates and colleagues in the American Society of Pharmacology and Experimental Therapeutics; the FASEB; the AMA Council on Drugs; the Nashville Academy of Medicine; the present and former staff, students, and faculty members at Vanderbilt University; and the Department of Pharmacology. The first lecture was given in April 1977.

THE ROBERT N. BUCHANAN JR. VISITING PROFESSORSHIP IN DERMATOLOGY. The Department of Medicine established in 1980 a visiting professorship to honor Dr. R. N. Buchanan, Jr., professor emeritus and former chairman of the Division of Dermatology. Each year, a distinguished dermatologist is invited to come to Vanderbilt to deliver a series of formal lectures and participate in teaching conferences.

THE BARNEY BROOKS MEMORIAL LECTURESHIP IN SURGERY. In 1952, through the generosity of a Vanderbilt alumnus, an annual lectureship was established to honor the memory

of Dr. Barney Brooks, formerly professor of surgery and head of the department, and surgeon-in-chief of Vanderbilt University Hospital. As a fitting memorial to Dr. Brooks, these lectures have been given by physicians who have made distinguished contributions in clinical or investigative surgery.

THE GEORGE DANIEL BROOKS LECTURESHIP IN ONCOLOGY. Established and endowed in 1991 by Frances Brooks Corzine in honor of her father, G. Daniel Brooks, who died of cancer. The focus of the lectureship is oncology and rotates between clinical and basic cancer distinguished lecturers.

THE JOHN E. CHAPMAN LECTURESHIP IN THE ECOLOGY OF MEDICINE AND MEDICAL EDUCATION. Established by Richard E. Strain, M.D. '75, in memory of his father, Richard E. Strain, Sr., M.D. '35, and honoring Dr. John E. Chapman, former Dean of Vanderbilt University School of Medicine. The annual lecture will be devoted to subjects that address the changing role of medicine in our culture.

THE CULLY COBB LECTURESHIP IN NEUROLOGICAL SURGERY. This fund is used exclusively to cover expenses for speakers at the regular meetings of the Meacham Society. Dr. Meacham (M.D. '40) was chairman of the Department of Neurosurgery from 1954 to 1984. Dr. Cobb is a clinical professor of neurological surgery.

THE W. ANDREW DALE MEMORIAL LECTURESHIP. Established by the Dale family and friends, this first lecture in vascular surgery supports the advancement of vascular education, research, and patient care. The lecture reflects the depth of Dr. Dale's commitment to Vanderbilt Medical School and vascular surgery.

THE ROLLIN A. DANIEL JR. LECTURE IN THORACIC SURGERY. In 1977, the Department of Thoracic and Cardiac Surgery established the Rollin A. Daniel Jr. Lecture as a tribute to Dr. Daniel. Since Dr. Daniel's death, there has been generous support from Dr. Daniel's family and many former residents to this lectureship fund. Each year a distinguished thoracic surgeon is invited by the Department to visit Vanderbilt and deliver the annual lecture, usually in the fall.

DEAN'S LECTURE SERIES. The Dean's Lecture Series provides a forum for nationally recognized speakers to enrich the educational environment by providing insight into topics that are important to the science and art of medicine. Supported by the Dean's Office and facilitated by the students of VUSM, this series is intended to stimulate thought, curiosity, and enthusiasm about the challenges, controversies, and complexities of medicine and biomedical science.

DISCOVERY LECTURE SERIES. In 2006, the Medical Center launched its new Vanderbilt Discovery Lecture Series. Held twice each month, this series features the world's most eminent scientists, as well as Vanderbilt's own top researchers, who speak on the highest-impact research and policy issues in science and medicine today. The series kicked off in September with Sydney Brenner, Ph.D., who won the Nobel prize in Physiology or Medicine in 2002 for his discoveries in genetic regulation of organ development and programmed cell death. Lecture topics cover the spectrum of research areas, from pharmacology and cell and developmental biology to pediatrics and global health.

THE LEONARD W. EDWARDS MEMORIAL LECTURESHIP IN SURGERY. This annual lectureship was established in 1972 by the family and friends of Dr. Leonard Edwards, who was a professor of clinical surgery, in recognition of his more than fifty years of contributions to Vanderbilt and the Nashville community as a distinguished surgeon and teacher. The first lecture was given in 1972 by Dr. Lester Dragstedt.

THE PHILIP W. FELTS LECTURE SERIES IN THE HUMANITIES. This lecture series was established to honor Dr. Felts's dedication to medical students and his desire to help them develop as individuals as well as physicians. Funding in his memory comes primarily from former students and his own Vanderbilt classmates and friends as well as Vanderbilt faculty members. It allows medical students to invite a nationally recognized figure in the humanities to speak at the School of Medicine each year as part of the annual student-run humanities series. He was director of alumni affairs when he died in 1992.

THE ABRAHAM FLEXNER LECTURESHIP. In the fall of 1927, Mr. Bernard Flexner of New York City donated \$50,000 to Vanderbilt University to establish the Abraham Flexner Lectureship in the School of Medicine. This lectureship is awarded every two years to a scientist of outstanding attainments who shall spend as much as two months in residence in association with a department of the School of Medicine. The first series of lectures was given in the fall of 1928.

THE LEROY BRUNSON GEORGE JR. LECTURESHIP IN TRANSPLANTATION. This lecture was provided by his mother, in tribute to his brave spirit in facing unprecedented heart surgery in 1956, which resulted in his death.

THE ALVIN F. GOLDFARB LECTURESHIP IN REPRODUCTIVE ENDOCRINOLOGY. Established by the children of Dr. Goldfarb to honor their father, an alumnus of Vanderbilt University School of Medicine, this is the first named lectureship in the Center for Fertility and Reproductive Research. Serving as an important forum for continuing education, the lectureship enables the Vanderbilt medical community to learn from those at the cutting edge of research and practice in reproductive biology.

THE THOMAS P. GRAHAM, JR. LECTURE IN PEDIATRICS. The Department of Pediatrics and the Division of Pediatric Cardiology established this lecture to recognize Dr. Graham as a renowned clinician and teacher.

THE A. R. GLENN GREENE LECTURESHIP IN CARDIOVASCULAR MEDICINE. This fund was established in 2008 to pay tribute to Dr. R. Glenn Greene's career in medicine and his longstanding commitment to Vanderbilt's Division of Cardiovascular Medicine. The lecture-ship will support an annual speaker in cardiology, with a preference given to echo.

THE ERNEST W. GOODPASTURE LECTURE. In 1968 the Goodpasture Lecture was established by a friend of Vanderbilt University and of the Department of Pathology, Mrs. George M. Green, Jr. The lecture is to honor the memory of Dr. Ernest William Goodpasture, distinguished chairman of the Department of Pathology from 1925 until his retirement in 1955. Each year, a lecturer prominent for achievements in research or in medical education is selected. The first lecture was given in the fall of 1971.

THE J. LYNWOOD HERRINGTON LECTURESHIP IN GENERAL SURGERY. St. Thomas Hospital administers this fund for the exclusive use of surgical grand rounds, speakers, and lectures. It is in honor of Dr. Herrington, clinical professor of surgery, emeritus.

THE J. WILLIAM HILLMAN VISITING PROFESSORSHIP. This professorship was established in 1976 as a tribute to the late Dr. J. William Hillman, who served as professor and chairman of the Department of Orthopaedics. To commemorate Dr. Hillman's tireless dedication to the art of teaching, the department annually invites a prominent orthopaedist to spend three or four days in residence teaching the house staff through a series of walking rounds and informal talks, concluding with a day-long seminar on special topics in the field.

THE GEORGE W. HOLCOMB JR. LECTURESHIP IN PEDIATRIC SURGERY. This lectureship was established in 1990 in tribute to George Whitfield Holcomb, M.D., clinical professor of pediatric surgery, emeritus, for his many contributions as a pediatric surgeon and teacher from 1952 to 1989. The lectureship will keep pediatric surgeons at Vanderbilt abreast of new clinical procedures and research discoveries in the field of pediatrics by inviting guest lecturers from all over the country to give presentations.

THE MARC H. HOLLENDER LECTURESHIIP IN PSYCHIATRY. This fund is used by the Department of Psychiatry for an annual lecture honoring the memory of its former chairman, Dr. Marc H. Hollender.

THE BOEHRINGER INGELHEIM DISTINGUISHED LECTURESHIP IN BIOMEDICAL SCIENCES. This lectureship was established by the Boehringer Ingelheim Pharmaceutical Company in 1992 as an annual lecture. The lectureship was given in tribute to the strength of basic biomedical sciences at Vanderbilt University Medical Center. The focus of two lectures given by the distinguished lecturer is on a fundamental research area of broad and dramatic impact on the biomedical sciences.

THE VANDERBILT-INGRAM CANCER CENTER ORRIN INGRAM DISTINGUISHED LECTURE SERIES. Established in 2004. Each year, this program typically recruits four esteemed scientists to deliver lectures at Vanderbilt-Ingram Cancer Center. The series was designed to stimulate ideas, enhance communications and collaborations between Vanderbilt-Ingram members and their peers, and expose Vanderbilt-Ingram physicians and scientists to some of the most promising cancer research and programs taking place in the world today.

THE EVERETTE JAMES JR. LECTURESHIP IN RADIOLOGY AND RADIOLOGICAL SCIENCES. Established by friends and colleagues of Dr. James, former chairman of the Department of Radiology and Radiological Sciences, this lectureship brings internationally known experts in a variety of areas of diagnostic radiology to Vanderbilt annually.

THE CONRAD JULIAN MEMORIAL LECTURE. This lecture was instituted in 1980 in honor of Dr. Conrad G. Julian, the first director of gynecologic oncology at Vanderbilt University Hospital. The lecture is delivered each year on a subject related to gynecologic oncology and is given in conjunction with the annual Gynecologic Oncology Seminar.

THE PAULINE M. KING MEMORIAL LECTURESHIP. This lectureship was established in 1962 by Mr. Robert F. King of Klamath River, California, as a memorial to his wife. Each year, a distinguished thoracic or cardiovascular surgeon is invited to lecture by the Department of Surgery. The first Pauline M. King Memorial Lecture was given in the spring of 1963.

THE HOWARD S. KIRSHNER LECTURESHIP IN NEUROLOGY. This lectureship was established by Arlin Adams, Dr. Howard S. Kirshner's father-in-law, to honor Dr. Kirshner's 60th birthday and as a tribute to his long-standing career as a neurologist.

THE LEONARD J. KOENIG LECTURESHIP IN MEDICINE. This fund, established in 1977 and named for longtime Nashville pediatrician Dr. Leonard Koenig, is for lectures and seminars within the Department of Medicine.

THE M. GLENN KOENIG VISITING PROFESSORSHIP IN INFECTIOUS DISEASES. This visiting professorship was established in 1973 through the generosity of alumni, faculty, friends, and the family of the late Dr. M. Glenn Koenig who served as a professor of medicine and head of the Division of Infectious Diseases. In recognition of Dr. Koenig's unexcelled ability to teach at the bedside, the Department of Medicine invites physicians of unusual competence in the teaching of clinical infectious diseases to join the Division of Infectious Diseases for short periods to spend time on the wards and in discussions with students, house staff, fellows, and faculty. The first visiting professorship was held in 1973.

THE KROC FOUNDATION LECTURESHIP IN MOLECULAR PHYSIOLOGY AND BIO-PHYSICS. Established in 1986 by the Kroc Foundation in honor of Ray A. Kroc and Robert L. Kroc to support several visiting professors each year. These individuals present a state-of-the-art lecture on diabetes, insulin action, or a related endocrine topic and consult with faculty members and their groups.

THE ELIZABETH B. LAMB LECTURESHIP IN MICROBIAL PATHOGENESIS. Through the generosity of Elizabeth B. Lamb and family, income from the Lamb Center for Pediatric Infectious Diseases Research Endowment contributes to funding this annual lecture which brings an expert in the field to campus to expand professional education regarding infectious diseases research in children.

THE PAUL DUDLEY LAMSON MEMORIAL LECTURE. This lectureship was instituted in 1965 in memory of Dr. Lamson, professor of pharmacology and chairman of the department from 1925 until his retirement in 1952. A prominent scientist is brought to the campus biennially under the sponsorship of the alumni and staff of the Department of Pharmacology.

THE JOHN LEONARD LECTURESHIP IN MEDICINE. This fund was established by friends and colleagues of Dr. John Leonard to honor his more than twenty-five years of service as the Director of House Staff Education in the Department of Medicine.

THE FRANK H. AND MILBREY LUTON LECTURESHIP. Established in 1976 through the generosity of friends and former students, this lectureship honors Dr. Frank H. Luton, the first psychiatrist on the Vanderbilt faculty. Each year, a prominent lecturer in the field of psychiatry is selected.

THE MARTHA E. LYNCH LECTURESHIP. The Martha E. Lynch Lectureship is an annual series of lectures presented by the Vanderbilt Bill Wilkerson Center and is designed to provide continuing education to speech-language pathologists working in the public school system. The lectureship is named in honor of Martha E. Lynch, a speech-language pathologist who has devoted her thirty-year career to children with communication disabilities.

THE DAN MAY LECTURE. Made possible by a gift from the May family, this lecture series honors Mr. May, a Nashville business, educational, and civic leader who was a Vanderbilt graduate, long-time Board of Trust member, and friend of the University. The lecturer is a distinguished scholar of medicine or another discipline with expertise in cardiovascular disease, medical education, or humanistic aspects of medicine.

THE GLENN A. MILLIKAN MEMORIAL LECTURE. This lectureship was established in 1947 in memory of Dr. Millikan, professor of physiology, by members of the then second-year class. It has subsequently received support by means of a capital fund by Dr. Millikan's father and mother, Dr. Robert A. Millikan and Mrs. Gretna B. Millikan, and friends. Contributions have been made to the fund by members of the founding class and other students. The lectureship is maintained to provide a distinguished lecturer in physiology.

THE MEREDITH AND JOHN OATES LECTURESHIP. This lectureship was established in the John A. Oates Institute in Experimental Therapeutics within the Department of Medicine in 2006 through the generosity of a small group of friends and patients. This tribute honors Dr. Oates' leadership and Mrs. Oates' personal commitment to the pursuit of excellence at Vanderbilt by inviting outstanding speakers to Vanderbilt Medical Center to present scientific talks in areas related to Dr. Oates' prestigious research.

THE WILLIAM F. ORR LECTURESHIP. This annual lectureship was established in 1976 through the generosity of Hoffman-LaRoche, Inc., in honor of Dr. William F. Orr, first professor and chairman of the Department of Psychiatry, a position he held from 1947 to 1969. A psychiatrist of national prominence is invited each year to present the lecture and to participate in various teaching conferences in the Department of Psychiatry.

THE FRED D. OWNBY LECTURESHIP IN CARDIOLOGY. This lectureship was established in 1996 as a tribute to Dr. Fred D. Ownby's contributions to the field of cardiology, his passion for education, and his commitment to the people of Middle Tennessee. Presented annually by a visiting professor, researcher, or clinician of national renown, the lectures, seminars, and teaching rounds address the latest advances in research, technology, and treatment of cardiovascular illnesses.

THE JAMES M. PHYTHYON M.D. MEMORIAL LECTURESHIP IN PEDIATRIC ANESTHESI-OLOGY. The family of James Phythyon, M.D., in conjunction with the Department of Anesthesiology, honored Dr. Phythyon's years of service and commitment to the field of pediatric anesthesiology with this lasting gift intended for programmatic initiatives.

THE COBB PILCHER MEMORIAL LECTURE. In 1950, the Pi Chapter of the Phi Chi Medical Fraternity established the Cobb Pilcher Memorial Lecture to honor the memory of Dr. Pilcher, formerly associate professor of surgery, distinguished neurosurgeon, and a member of Phi Chi fraternity. Each year a lecturer of prominence is selected. The first lecture was given in 1950.

THE DAVID RABIN LECTURE IN ENDOCRINOLOGY. The Department of Medicine established in 1980 a visiting lectureship in recognition of the salient contributions of Dr. David Rabin to the world of endocrinology. Dr. Rabin was a professor of medicine and head of the Division of Endocrinology from 1975 until his death in 1984. This lectureship annually brings to Vanderbilt a world leader in the science of endocrinology and the application of that science to the solution of the problems of humankind.

THE SAMUEL S. RIVEN VISITING PROFESSORSHIP. This professorship was established in 1989 to honor Dr. Samuel Riven for more than fifty years of service to his patients and the Department of Medicine at Vanderbilt University. A physician of prominence is invited each year to present a lecture and to participate in various teaching conferences in the Department of Medicine.

THE ROSCOE R. ROBINSON M.D. LECTURESHIP. Dr. Robinson was an internationally recognized nephrologist and educator who, as the Vice Chancellor for Health Affairs, led VUMC through a period of tremendous growth and change during the 1980s and 1990s. The Robinson Lectureship was a gift from the School of Medicine faculty to celebrate the vice chancellor's years at Vanderbilt.

THE JOSEPH C. ROSS M.D. LECTURESHIP IN EMERGENCY MEDICINE. The Ross Lectureship is the first endowed lectureship in emergency medicine and was established by Dr. Ross, his family, and other supporters.

THE DOLORES SHOCKLEY LECTURESHIP AND AWARD IN PHARMACOLOGY. Dolores Shockley was the first African American woman to receive a Ph.D. from Purdue University, the first to receive a Ph.D. in pharmacology in the United States, and the first to chair a pharmacology department (Meharry Medical College). To recognize their remarkable colleague and her achievements, Lee and Tom Limbird endowed this lectureship and award in her honor. At the time of each biennial lectureship, recipients of the Dolores Shockley Award will be recognized for their contributions advancing diversity in biomedical research and training.

THE W. D. SALMON LECTURESHIP IN THE DIVISION OF GASTROENTEROLOGY. Honoring William D. Salmon, Jr. (M.D. '49 and professor of medicine, emeritus), this annual lecture series brings a visiting professor to campus to discuss topics in the field of gastroenterology.

THE HARRISON J. SHULL LECTURESHIP IN THE DIVISION OF GASTROENTEROLOGY. This lectureship honors the memory of the late Dr. Harrison J. "Hack" Shull, Sr. (M.D. '34), the first physician to specialize in gastroenterology in Middle Tennessee. He started Vanderbilt's Division of Gastroenterology in the 1950s.

THE NORMAN E. SHUMWAY JR. LECTURESHIP IN TRANSPLANTATION. This lectureship was established in 1991 to recognize the contributions and leadership of Dr. Shumway, a 1949 graduate of Vanderbilt University School of Medicine, in pioneering transplantation research, education, and patient care.

THE R. TURNER SIMPSON LECTURESHIP IN THE HISTORY OF MEDICINE. This lectureship was made possible by the generous contributions of John W. Simpson, M.D., Vanderbilt School of Medicine class of 1932, and his wife. The late Dr. Turner Simpson, brother of Dr. John W. Simpson, was also a Vanderbilt graduate. This lectureship will bring prominent figures in the field of medical history to Vanderbilt.

THE DRS. WILLIAM S. AND GRACE R. SNYDER LECTURESHIP IN OPHTHALMOLOGY. Established in 1983 by Phyllis and William B. Snyder, M.D. '57, the Snyder Lectureship honors Dr. Snyder's parents, both of whom practiced medicine in Kentucky. The lectureship is in the Department of Ophthalmology and Visual Sciences.

THE PAUL STERNBERG SR. LECTURESHIP. The Paul Sternberg Sr. Lectureship was established in 2004 by Dr. and Mrs. Paul Sternberg and family in memory of his father, an innovative and skilled ophthalmic surgeon.

THE EARL W. SUTHERLAND LECTURESHIP IN THE DEPARTMENT OF MOLECULAR PHYSIOLOGY AND BIOPHYSICS. In 1999, this lectureship was established to honor the memory of former Vanderbilt professor and Nobel Laureate Earl W. Sutherland.

THE PAUL TESCHAN LECTURESHIP IN THE DIVISION OF NEPHROLOGY AND HYPERTENSION. This lectureship was established in 1990 by colleagues of Dr. Teschan, professor of medicine, emeritus. Its purpose is to bring the world's outstanding leaders in nephrology to Vanderbilt to provide the Division of Nephrology with special occasions of stimulation and professional enrichment.

THE CHARLES J. THUSS SR., GERTRUDE NOBLE THUSS, CHARLES J. THUSS JR., AND CARTER THUSS LECTURESHIP IN PLASTIC AND RECONSTRUCTIVE SURGERY. This lectureship was established in 1977 by Dr. Charles J. Thuss, Jr., medical class of 1961, of San Antonio, Texas, in honor of his parents. The lectureship is funded in collaboration with the Department of Plastic Surgery for the purpose of bringing distinguished lecturers in the field of plastic and reconstructive surgery to the Vanderbilt campus.

THE "UNIT S" OTOLARYNGOLOGY LECTURESHIP. This lectureship was established in 1994 through the leadership and generosity of Dr. William G. Kennon, Jr., and other descendants of the Vanderbilt University School of Medicine team which served during World War I.

THE VANDERBILT UROLOGY SOCIETY VISITING PROFESSORSHIP AND RHAMY-SHELLEY LECTURE. This annual visiting professorship and lectureship was established in 1972 through the efforts of former residents in urology at Vanderbilt University Medical Center. An outstanding urologist, from either the United States or abroad, is invited to spend four or five days as a visiting professor in the Department of Urology, to join with former residents and other urologists in demonstrations of surgical technique and diagnostic acumen, as well as in a series of conferences and lectures. The activities conclude with a formal lecture which honors Dr. Robert K. Rhamy, who was chairman of the Department of Urology at Vanderbilt from 1964 to 1981, and Dr. Harry S. Shelley, former chief of the Division of Urology at Nashville Veterans Administration Hospital.

THE LEVI WATKINS JR. LECTURE ON DIVERSITY IN MEDICAL EDUCATION This lectureship is established to recognize Dr. Watkins, the first African American graduate of the Vanderbilt University School of Medicine in 1970. It is established to support efforts to increase diversity in medical and graduate education.

THE ALBERT WEINSTEIN LECTURESHIP IN DIABETES. This lectureship was established as a tribute to the late Dr. Albert Weinstein by his wife, Miriam, and family members. Dr. Weinstein was born in Middlesboro, Kentucky, in 1905 and received his A.B. degree from Vanderbilt University in 1926. Three years later, he graduated as Founder's Medalist from Vanderbilt University School of Medicine. Following his residency training at Johns Hopkins, he moved to Nashville to begin his medical practice in internal medicine at Vanderbilt, where he served as a clinical professor for more than three decades. Recognized for his remarkable insight into the treatment of his patients, he was also an avid reader and publisher, credited for more than forty scientific papers on a wide array of subjects, including diabetes, cardiology, and hypertension.

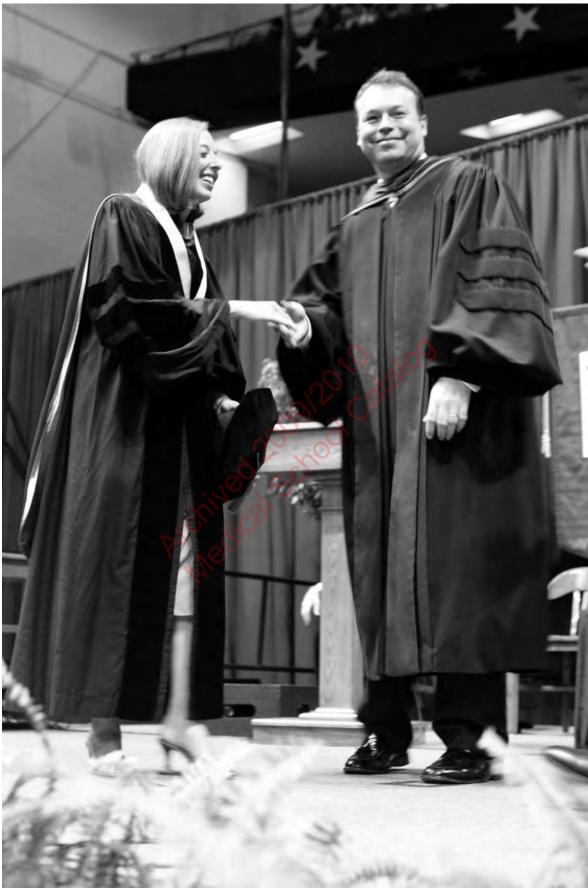
THE MARY JANE AND ALBERT WERTHAN VISITING LECTURESHIP IN DERMATOLOGY. This lectureship was established by the Werthans in 1997 in honor of Dr. Lloyd King, Chairman of the Division of Dermatology at Vanderbilt University Medical Center. The named lectureship will bring topflight physician-scientists to Vanderbilt annually to discuss advances in the diagnosis, treatment, and causes of skin lymphoma and other types of skin cancers.

THE JOHN D. WHALLEY LECTURESHIP. The John D. Whalley Child Language Lectureship is an annual lecture presented by the Vanderbilt Bill Wilkerson Center, featuring internationally recognized researchers in the area of child language disorders. The lectureship is a tribute to the late John Donelson Whalley, one of the influential forces behind the development of the Scottish Rite Masons Research Institute for Communication Disorders at the Bill Wilkerson Center.

THE GRANT WILKINSON LECTURESHIP IN CLINICAL PHARMACOLOGY. Friends and colleagues established this fund to pay tribute to the illustrious career of Dr. Wilkinson and to bring international leadership in clinical pharmacology to campus each year. This lecture-ship exposes both current and future students and faculty to the best of contemporary pharmacological science.

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# Honors and Awards



## Alpha Omega Alpha

A chapter of this medical honor society was established by charter in the School of Medicine in 1923. Not more than one-eighth of the students of the fourth-year class are eligible for membership, and only one-half of the number of eligible students may be elected to membership during the last half of their third year. The society has for its purpose the development of high standards of personal conduct and scholarship and the encouragement of medical research. Students are elected into membership on the basis of scholarship, character, and originality.

### Founder's Medal

The Founder's Medal, signifying first honors, was endowed by Commodore Cornelius Vanderbilt as one of his gifts to the University. This medal is awarded to the student in the graduating class of the School of Medicine who, in the judgment of the Executive Faculty, has achieved the strongest record in the several areas of personal, professional, and academic performance in meeting the requirements for the Doctor of Medicine degree during four years of study at Vanderbilt.

## Class Day Awards

THE SCHOOL OF MEDICINE AWARD OF DISTINCTION. This award is presented to students who have demonstrated outstanding leadership abilities in service to the School of Medicine.

DEAN'S AWARD. Presented to medical students distinguished by outstanding service to the School of Medicine and the community.

THE DEAN'S AWARD FOR RESEARCH. This award is presented to the graduating medical student who best exemplifies the attributes that lead to success in basic science or clinical research, namely creativity, dedication, productivity/multiple publications and careful diligence.

THE KAUFMAN PRIZE IN MEDICINE. This award honoring J. Kenneth Kaufman, M.D. '39, is presented to a graduating medical student who has demonstrated qualities of humaneness, dedication, and unselfish service in the study of medicine and will apply these qualities in medical practice.

THE GEOFFREY DAVID CHAZEN AWARD. This award for innovation in medical education was established to recognize a student, resident, fellow, or faculty member who has made special contributions to the educational programs of the Vanderbilt University School of Medicine through the development and implementation of effective innovation in educational approach.

JANET M. GLASGOW MEMORIAL ACHIEVEMENT CITATION. This citation is presented in recognition of the accomplishments of women medical students who graduate as honor graduates. It serves to reaffirm the American Medical Women's Association's commitment to encouraging their continuing achievement.

THE GEORGE AND BARBARA BURRUS MEDICAL MISSIONS AWARD. This award is presented to a student who has demonstrated exceptional interest and participation in providing medical care to the poor during medical school either locally or abroad.

THE LEONARD TOW HUMANISM IN MEDICINE AWARD. PRESENTED BY THE ARNOLD P. GOLD FOUNDATION. This award is given to a graduating student and a faculty member who demonstrate compassion and empathy in the delivery of health care, and who engender trust and confidence in both their patients and colleagues while adhering to professional ethical standards.

DAVID R. FREEDY MEMORIAL AWARD. This award is established to honor the memory of David Richard Freedy, a member of the Class of 1993. It is given to the student who has demonstrated leadership, courage and perseverance in the face of adversity.

AMOS CHRISTIE AWARD. This award recognizes the student in the graduating class who has demonstrated the outstanding qualities of scholarship and humanity embodied in the ideal pediatrician. The award is in memory of Dr. Amos Christie, who was Professor and Chairman of the Department of Pediatrics from 1943 to 1968.

JOHN G. CONIGLIO PRIZE IN BIOCHEMISTRY. This award presented to a medical student who has distinguished him/herself in Biochemistry. Both accomplishments in biomedical research and performance in Biochemistry courses are considered in evaluating candidates for this award. This award was established by friends of Professor Coniglio on the occasion of his retirement to honor his many contributions to medical education at Vanderbilt.

JOHN L. SHAPIRO AWARD FOR EXCELLENCE IN PATHOLOGY. This award, given upon action of the Department of Pathology, recognizes outstanding student performance in pathology. It is given annually or otherwise depending upon action by the department and honors the memory of Dr. John L. Shapiro, who was Professor and Chairman of the Department of Pathology from 1956 to 1971. Dr. Shapiro remained an active participant in a variety of university and community activities, until his death on July 15, 1983.

CANBY ROBINSON SOCIETY AWARD. With nominations generated from the fourth year class, this award is presented to a member of the graduating class who possesses those intangible qualities of common sense, knowledge, thoughtfulness, personal warmth, gentleness and confidence which combine to make the "Ideal Doctor"...the person fellow classmates would most like to have as their personal physician.

THE ALBERT WEINSTEIN PRIZE IN MEDICINE. The Weinstein Prize in Medicine is awarded to a student who has demonstrated high academic achievement, superior clinical competence, and the qualities of dedication and professionalism that characterize a good physician.

RUDOLPH KAMPMEIER PRIZE IN MEDICINE. The Kampmeier Award is presented by the Department of Medicine to the graduate who, in the judgment of the faculty, best combines high academic achievement with clinical excellence, original scholarship or research, and demonstrated potential for an academic career.

SURGICAL CLERKSHIP AWARD. This award is presented by the Section of Surgical Sciences to a student who has shown superior performance in the third-year surgical clerkship and who plans to enter graduate education in surgery.

THE H. WILLIAM SCOTT JR. PRIZE IN SURGERY. This award is presented to the graduating medical student who exemplifies the qualities of leadership, performance, and character reflecting the ideal surgeon.

HOSPITAL AWARD OF EXCELLENCE. This award recognizes the fourth year medical student by the chief residents of the services as having contributed most toward excellent patient care by demonstrating sensitivity, compassion, and concern in clinical responsibilities to patients of Vanderbilt Medical Center.

BEAUCHAMP SCHOLARSHIP. Endowed and awarded to the student showing the greatest progress in the field of psychiatry.

THE AWARD FOR EXCELLENCE IN INFECTIOUS DISEASES. This award is presented annually by the Divisions of Infectious Diseases in the Departments of Medicine and Pediatrics to the student who has demonstrated outstanding aptitude and performance in clinical and investigative efforts in Infectious Diseases or Microbiology.

THE ORTHOPAEDIC SURGERY CLERKSHIP AWARD. This award is presented by the Department of Orthopaedic Surgery to the student who has excelled in both the third and fourth year orthopaedic clerkships, and who has demonstrated outstanding potential in the field of orthopaedic surgery.

THE TOM NESBITT AWARD. This award is presented by the Nashville Academy of Medicine in recognition of the service and contribution of Tom Nesbitt, MD, as a member of the Academy and 133rd president of the American Medical Association. It also honors the quality of medical leadership in Nashville, as evidenced through the eight AMA presidents elected from the Nashville Academy of Medicine, the most of any county in the country. For achievement in educational, socio-economic, and legislative affairs, the Tom Nesbitt award is presented to the graduating medical student who has understanding and appreciation for such endeavors, and who demonstrates exemplary character and leadership.

LONNIE S. BURNETT AWARD IN OBSTETRICS AND GYNECOLOGY. This award is given to the student demonstrating superior performance and who exemplifies the qualities of dedication, leadership, compassion, and integrity in the field of Obstetrics and Gynecology.

PAULA C. HOOS AWARD. The Class of 2009 presents this award in recognition of teaching excellence in the anatomy laboratory and to express our sincere appreciation for the assistance of members of the graduating class.

ROENTGEN AWARD. This award is given to a graduating medical student who has made important contributions in one of the radiological sciences during four years of study. Named for Wilhelm Conrad Roentgen, a pioneer in diagnostic radiology, the award recognizes discoveries in either clinical or research areas.

THE HARRISON SHULL SR. GASTROENTEROLOGY AWARD. This award is to recognize a medical student who has demonstrated outstanding clinical performance during the student rotation in gastroenterology or hepatology.

J. DONALD M. GASS AWARD IN OPHTHALMOLOGY. This award is established in honor of Dr. J. Donald M. Gass, a graduate of Vanderbilt University School of Medicine, Class of 1957 and a renowned medical retina specialist. This award is given to a student who demonstrates excellence in ophthalmic education and research

EXCELLENCE IN EMERGENCY MEDICINE. This award for Excellence in Emergency Medicine is given on behalf of the Society for Academic Emergency Medicine. This award recognizes a medical student for outstanding clinical performance in the Emergency Department at Vanderbilt University Medical Center.

TENNESSEE ACADEMY OF FAMILY PHYSICIANS AWARD. This award is presented in recognition of dedication to the high ideals of Family Medicine.

OSCAR B. CROFFORD AWARD FOR DIABETES/ ENDOCRINE RESEARCH. This award is presented by the Division of Diabetes, Endocrinology, and Metabolism and the Vanderbilt Diabetes Center to the graduating medical student who has performed outstanding research in the area of diabetes and endocrinology. This award was established to honor Dr. Oscar B. Crofford for his contributions to the diabetes research at Vanderbilt and throughout the world.

JAY W. SANDERS HONORS IN AUDIOLOGY AWARD. Given by the faculty in the Department of Hearing and Speech Sciences for outstanding clinical and academic achievement in audiology.



# Financial Information

## Financial Information for Medical Students

UITION for the academic year 2009/2010 is \$39,400. The annual expense of a first-year student in the School of Medicine is estimated to be \$61,410.

Tuition and fees are set annually by the Board of Trust and are subject to review and change without further notice.

### 2009/2010

Application fee (to accompany secondary application)	\$ 50
Student activities and recreation fee (1st and 2nd years)	374
Student activities and recreation fee (3rd and 4th years)	439
Student health insurance	2,021
Professional liability insurance	410
Student long-term disability insurance	52
Student health service fee	65
Transcript fee (one time only)	30

## Payment of Tuition and Fees

All regularly enrolled medical students must pay the full tuition each year. There will be no exception to this requirement. Graduate students who enroll in courses in the medical curriculum for credit toward an academic degree and who later become candidates for the Doctor of Medicine degree may be required to pay the full tuition as indicated above. One half of tuition, fees, and other university charges are due and payable by 19 August. Second-semester tuition, fees, and other university charges are due and payable by 7 January. Additional information can be found at www.vanderbilt.edu/stuaccts.

### **Refund of Tuition**

Students who withdraw officially or who are dismissed from the university for any reason after the beginning of a term may be entitled to a partial refund in accordance with the schedule shown below. No refund will be made after the tenth week in any semester.

Withdrawal prior to the end of	Reduction
1st full week	100%
2nd full week	95%
3rd full week	85%
4th full week	80%
5th full week	75%
6th full week	65%
7th full week	60%
8th full week	55%
9th full week	50%
10th full week	40%

No refund after the 10th full week.

## Late Payment of Fees

Charges not paid by 19 August will be automatically deferred, and the student's account will be assessed a monthly late payment fee at the following rate: \$1.50 on each \$100 that remains unpaid after 19 August (\$5 minimum). An additional monthly late payment fee will be assessed unless payment is received in full on or before the end of each month, and late payment fees will continue for each month thereafter based on the outstanding balance unpaid as of the end of each month. All amounts deferred are due not later than 30 November for fall semester and 30 April for spring semester. Graduating students are not allowed to defer charges that are billed in advance for the final semester.

### **Financial Clearance**

Students may not be allowed to register for any semester if they have outstanding unpaid balances for any previous semester. No transcript, official or unofficial, will be issued for a student who has an outstanding balance until the account has been paid. Diplomas of graduating students may be withheld until all bills are paid.

International students must provide documentation of having funds sufficient to meet all tuition, mandatory fees, and living expenses for the anticipated period of enrollment before a visa will be issued. Information will be provided by the university Office of International Student and Scholar Services.

### **Books and Equipment**

Third- and fourth-year students are required to have a pager for an annual cost of approximately \$120.

All students must have clean white laboratory coats. In their second year, students must acquire hemocytometers and ophthalmoscopes. The average cost for these instruments is approximately \$400.

The average cost of books is approximately \$500 per year. The Medical Bookstore accepts cash or major credit cards.

First-year students will be required to have laptop computers for a onetime estimated cost of \$1,500.

### **Activities and Recreation Fees**

The required student activities and recreation fees entitle students to use the facilities of Sarratt Student Center and the Student Recreation Center. The fees also cover admission to certain social and cultural events and subscriptions to certain campus publications. Specific information on these fees is published annually in the *Student Handbook*. By payment of an additional fee, students and their spouses may use their identification cards for admission to athletic events.

## **Professional Liability Insurance**

Students will be automatically covered with professional liability insurance, required of all enrolled medical students, at the time of registration. The annual premium is payable in addition to tuition. Details of the policy are available at the university student insurance office, and students are encouraged to familiarize themselves with these details and with their responsibilities in this regard.

Students are covered whether they are at the Vanderbilt-affiliated hospitals (Vanderbilt University Medical Center, Nashville Veterans Administration Hospital, St. Thomas Hospital, or Baptist Hospital) or elsewhere as a "visiting student," providing that (1) the clerkship or other educational experience has prior approval from the School of Medicine as course work for credit, and (2) the activities within this experience are consonant with the student's level of training and experience and are performed under the supervision of appropriate faculty and/or staff.

### **Disability Insurance**

Students will be automatically covered with long-term disability insurance, required of all enrolled medical students, at the time of registration. The annual premium is payable in addition to tuition. Details of the policy will be provided to each student following registration.

#### Student Health Insurance

All degree-seeking students registered for 4 or more hours at Vanderbilt are required to have adequate hospitalization insurance coverage. The university offers a sickness and accident insurance plan that is designed to provide hospital, surgical, and major medical benefits. A brochure explaining the limits, exclusions, and benefits of insurance coverage is available at www.kosterweb.com. Additional information is also available at www.vanderbilt.edu/stuaccts/g\_health.html.

### Student Health Service Fee

The required student health service fee covers required immunizations and health screening tests.

## **Transcript Fee**

All new students entering Vanderbilt for the first time are charged a one-time transcript fee for official university transcripts.

## Merit/Non-Need-Based Scholarships

Every medical student will receive a minimum of \$2,000 in scholarship assistance, regardless of demonstrated need.

Each year, a number of merit scholarships are awarded to incoming students. The school is dedicated to creating a rich and excellent academic environment for each student. This environment is enhanced by the inclusion of students who are talented and represent a broad spectrum of society—social, economic, and cultural. Merit scholarships ordinarily continue through four years of study, as long as students maintain satisfactory academic performance. There is no application process for merit scholarships. Selected students will generally be notified by letter from the Dean.

THE THOMAS M. BLAKE SCHOLARSHIP. This endowed scholarship was established through a bequest provision by the late Thomas M. Blake, a 1944 graduate of the School of Medicine. The income is used to assist worthy students in the School of Medicine on the basis of merit. Partial-tuition scholarships are awarded periodically.

THE CANBY ROBINSON SCHOLARSHIPS. Canby Robinson Scholarships provide full tuition and, with satisfactory progress at Vanderbilt, continue for four years. The scholarships are awarded on the basis of demonstrated leadership and scholarship activities. Scholarship recipients are recommended by the Dean and the associate dean of admissions and chosen by a committee from the Canby Robinson Society. These scholarships were established in 1986 by the Canby Robinson Society.

THE JOHN E. CHAPMAN. M.D., ENDOWED SCHOLARSHIP FUND. This endowed fund was established in 2001 by friends, colleagues, and medical alumni to honor Dean Chapman, the seventh dean of the School of Medicine, upon his retirement after twenty-five years of service. Full- and partial-tuition scholarships are awarded on the basis of merit and need.

THE JOE C. DAVIS SCHOLARSHIP. The Davis Scholarship is given periodically to an incoming medical student who has demonstrated qualities of scholarship and leadership, as well as financial need. To be eligible, the candidate must come from a state specified as a Southeastern state east of the Mississippi. Full- and partial-tuition scholarships are awarded periodically for four years of medical study, contingent upon satisfactory performance.

THE DEAN'S SCHOLARSHIPS. Full- and partial-tuition scholarships are awarded annually for four years of study, contingent upon satisfactory academic performance. The Vanderbilt University School of Medicine is committed to diversity in its student body.

THE DORIS M. AND FRED W. LOVE SCHOLARSHIP. The Love Scholarship was established by Dr. Fred W. Love (M.D. 1945) and Mrs. Love. This tuition scholarship is given periodically and continues contingent upon satisfactory progress until the recipient graduates.

THE KONRAD LUX SCHOLARSHIP. This endowed scholarship was established by the will of Konrad Lux (M.D. 1925) to benefit students in the oral surgery program.

THE BESS AND TOWNSEND MCVEIGH SCHOLARSHIP FUND This endowed scholarship was established in memory of her parents by Grace McVeigh (B.A. 1925) to provide full and partial tuition scholarships for the benefit of needy and worthy students in the School of Medicine.

THE BARBARA D. MURNAN MEMORIAL SCHOLARSHIP. This endowed scholarship fund was established through a bequest provision by the late Barbara Murnan (B.A. 1934). The income provides merit-based awards to medical students. Partial-tuition scholarships are awarded periodically.

THE COLEMAN D. OLDHAM HONOR SCHOLARSHIP. This endowed scholarship was established through testamentary trust agreements by the late Coleman D. Oldham (B.A. 1924) and his sister Emma. Mr. Oldham lived in Richmond, Kentucky. The Oldhams stipulated that the scholarship be used to benefit worthy male students from Madison County, Kentucky, or if not available, worthy male students from Kentucky at large.

THE ELIZABETH CRAIG PROCTOR SCHOLARSHIP. This endowed scholarship was established through the generosity of Elizabeth Proctor and provides full tuition to a worthy medical student chosen by the Dean of the School of Medicine. The first Proctor Scholarship was awarded to a student from the incoming class of 2004.

# Financial Assistance

Education leading to the Doctor of Medicine degree requires a careful consideration of financial commitment by prospective students and their families. Financial planning is an important part of the student's preparation for medical school.

In addition to the merit scholarships just described, scholarships and loans are available through Vanderbilt, based on demonstrated financial need and continued satisfactory academic progress. Financial aid from school sources must be considered a supplement to governmental and other sources, rather than the primary source of funds necessary to attend medical school. Institutional financial aid is not adequate to meet students' demonstrated need, but approved educational expenses are met with funds from a combination of sources. Government funds that furnish significant loans to medical students are the Federal Subsidized and Unsubsidized Stafford Loan programs and the Federal Graduate PLUS loans. Private loans are also available to international students.

Additional information and applications for financial aid are online at <a href="https://medschool.vanderbilt.edu/financial-services/">https://medschool.vanderbilt.edu/financial-services/</a>. Applicants desiring more specific information about financial aid resources should contact the medical school Office of Student Financial Services.

The following are some of the Vanderbilt University School of Medicine institutional scholarships and loans available to assist students with demonstrated financial need.

### **Scholarships**

THE JAMES T. AND OLIVIA R. ALLEN SCHOLARSHIP FUND. Established in 1993 by Dr. and Mrs. James T. Allen (M.D. 1942) to provide scholarship assistance to needy and worthy students enrolled in the Vanderbilt University School of Medicine. Preference should be given to students who are members of the First Baptist Churches of Murfreesboro, Dickson, Waverly, Tennessee, in that order, but if no qualified students apply in any one year, that preference then be given to applicants who are Tennessee residents, and if no such qualified student applies in that year, give it to any qualified applicant.

THE ALPHA KAPPA KAPPA ALUMNI ASSOCIATION FUND. These funds are made available to students through contributions from alumni of the Alpha Kappa Kappa medical fraternity.

THE LUCILE R. ANDERSON SCHOLARSHIP FUND. This scholarship was established by Lucile R. Anderson (M.D. 1933).

THE SUE AND NELSON ANDREWS SCHOLARSHIP FUND. This endowed scholarship fund was established in 2001 through the generosity of Board of Trust member Nelson Andrews (B.A. 1950) and his wife, Sue Adams (B.A. 1951), to help deserving and needy students attend the School of Medicine.

THE BAKER-LEONARD SCHOLARSHIP. This scholarship was established by Quentin B. Leonard in memory of his grandparents, Bertha B. Baker and James S. Baker, his parents, Josephine F. Leonard and Sidney Leonard, and his uncle, Serring B. Baker.

THE EUGENE AND MARGE BESPALOW SCHOLARSHIP FUND. This endowed scholarship fund for deserving medical students was established by Dr. Bruce Dan (M.D. 1974) in honor of his grandparents.

THE DR. DANIEL B. BLAKEMORE SCHOLARSHIP FUND. This endowed scholarship was established by the will of Mrs. Nell J. Blakemore in memory of her husband for the benefit of worthy medical students who are in need of financial assistance.

THE BURRUS SCHOLARSHIP FUND. This endowed scholarship was established by members of the Burrus family to help meet the cost of tuition for medical students.

THE THOMAS CULLOM BUTLER AND PAULINE CAMPBELL BUTLER SCHOLARSHIP. This endowed scholarship was established by Thomas Cullom Butler (M.D. 1934) for worthy and needy medical students.

THE WILLIAM ROBERT CATE, M.D., SCHOLARSHIP. This endowed scholarship was established in 1996 by numerous donors to provide unrestricted scholarship support for the School of Medicine.

THE JOHN E. CHAPMAN, M.D., AND JUDY CHAPMAN SCHOLARSHIP. This endowed scholarship fund was established through a bequest provision by the late Grace McVeigh to honor

her friends Dean Chapman and his wife Judy for their many years of service at Vanderbilt University. The income is used to support needy and worthy students in the School of Medicine.

THE ALICE DREW CHENOWETH SCHOLARSHIP. This scholarship honors the career of Dr. Alice Drew Chenoweth (M.D. 1932), who had a distinguished career as a pediatrician in the area of public health.

THE CLASS OF 1943 MARCH AND DECEMBER SCHOLARSHIP FUNDS. These endowed scholarships were established by members of these medical school classes.

THE CLASS OF 1946 MEDICAL SCHOLARSHIP. This scholarship was established by members of this medical school class.

THE CLASS OF 1978 SCHOLARSHIP. This scholarship was established in 2007 to provide scholarship support to students enrolled in the School of Medicine.

THE CLASS OF 1964 MEDICAL SCHOLARSHIP FUND. This scholarship was established by members of this medical school class.

THE DR. ROBERT D. COLLINS SCHOLARSHIP FUND. This endowed scholarship was established by alumni in honor of Dr. Robert D. Collins (M.D. 1951) a distinguished and admired longtime professor of pathology.

THE COMMONWEALTH SCHOLARSHIP. This scholarship aid is made possible by the generosity of the Commonwealth Fund of New York City, a private foundation which has been supporting needy and deserving students in the School of Medicine for many years.

THE MARVIN B. AND MILDRED G. CORLETTE SCHOLARSHIP. This scholarship was established in December 2003. This endowment will support students in the Medical School.

THE LOUISE WILLIAMS COUCH SCHOLARSHIP. This endowed scholarship was established in 1998 in a letter from Dr. Orrie A. Couch requesting that a fund he established in 1962 at the George Peabody College for Teachers (now Peabody College at Vanderbilt) be transferred to the Medical School for the purpose of providing scholarship support for medical students.

THE DEBORAH AND C. A. CRAIG II MEDICAL SCHOLARSHIP FUND. This fund was established in 1992 by Mr. and Mrs. C. A. Craig II. It provides support to talented and deserving students engaged in the study of medicine. Preference is awarded to former Eagle Scouts.

THE JACK DAVIES SCHOLARSHIP FUND. This fund was endowed primarily through gifts from the Classes of 1981, 1982, 1983, 1984, and 1994 in honor of the distinguished and beloved long-time professor of anatomy. This fund is designed to provide medical student financial assistance.

THE J. T. AND MARY P. DAVIS SCHOLARSHIP FUND. This endowed scholarship was established by J. T. Davis (M.D. 1931).

THE HERBERT ESKIND MEMORIAL FUND. This scholarship honoring the memory of Mr. Herbert Eskind was established by members of his family.

THE ROBERT SADLER-WILLIAM EWERS SCHOLARSHIP FUND. This endowed scholar-ship was established in honor of Robert Sadler (M.D. 1947) and William Ewers (M.D. 1947).

THE J. F. FOX STUDENT SCHOLARSHIP IN MEDICINE. This fund was established in memory of Dr. J. F. Fox (M.D. 1898) and provides for annual assistance to students in the School of Medicine based on scholarship, promise, and financial need.

THE THOMAS F. FRIST, SR., M.D., SCHOLARSHIP. Established in 2006 by H. Lee Barfield (B.A. 1968, J.D. 1974) and Mary Frist Barfield (B.S. 1968) to honor her father and to provide financial assistance to medical students at the Vanderbilt University School of Medicine. Dr. Frist was a pioneer in the world of for-profit health care and founded Hospital Corporation of America in 1968.

THE D. G. GILL SCHOLARSHIP FUND. This fund was established in 1982 by the family of the late Dr. Daniel Gordon Gill. First preference goes to those students with financial need who have expressed an interest in the field of public health.

THE DRS. FRANK LUTON AND CLIFTON GREER SCHOLARSHIP FUND. This fund was founded in 1995 through a gift from the estate of Dr. Clifton Greer (M.D. 1951) in honor of the late Dr. Luton (M.D. 1927). It provides tuition support for medical students with demonstrated financial need, with preference given to those from the southeastern United States.

THE DR. HARRY GUFFEE SCHOLARSHIP FUND. This endowed scholarship was established in honor of Dr. Harry Guffee (M.D. 1939). Residents of Williamson County, Tennessee, are given first preference, and residents of the counties adjoining Williamson County are given second preference.

THE GLENN AND VIRGINIA HAMMONDS SCHOLARSHIP. This endowed scholarship was established by the late Dr. R. Glenn Hammonds (M.D. 1944). The income is used to provide financial assistance to worthy and needy medical students.

THE FRANK M. HANDLEY SCHOLARSHIP. This endowed scholarship was provided from the estate of Frank M. Handley (J.D. 1928).

EMILY AND H. CAMPBELL HAYNIE SCHOLARSHIP. In October 2001, the Emily and H. Campbell Haynie Scholarship was established in the Medical School endowment fund to benefit medical students.

THE JAMES HOLLORAN SCHOLARSHIP. This endowed scholarship was established by the class of 1980 in memory of their classmate, "Ed" Holloran.

THE HARRY R. JACOBSON, M.D., AND JAN JACOBSON SCHOLARSHIP. This endowed scholarship fund was created through a bequest by the late Grace McVeigh to honor Vice Chancellor Jacobson and his wife Jan for their service to Vanderbilt University. The income is used to provide support to needy and worthy students in the School of Medicine.

THE HOLLIS E. AND FRANCES SETTLE JOHNSON SCHOLARSHIP FUND. This endowed scholarship was established by Hollis E. Johnson (M.D. 1921).

THE ERNEST G. AND MIRIAM H. KELLY SCHOLARSHIP. This endowed scholarship was established through the trust of Dr. Ernest G. Kelly (B.A. 1922, M.D. 1926) to provide scholarship support within the School of Medicine.

THE IKE J. KUHN FUND. This scholarship fund is provided by a bequest from the will of Mr. Ike J. Kuhn and is awarded in the School of Medicine to a worthy man or woman born and raised in any of the states commonly known as the "southern states."

THE ANN R. LIGHT SCHOLARSHIP FUND. This endowed scholarship was established by Ann R. Light for needy medical students.

THE CHARLES T. LOWE SCHOLARSHIP. This endowed scholarship was established in 2002 through a bequest from Charles T. Lowe (B.A. 1932, M.D. 1936). This scholarship is restricted to residents of Dallas County, Arkansas, Wilson County, Tennessee, or surrounding counties.

THE THOMAS L. MADDIN, M.D., FUND. This fund is provided by a bequest from the will of Mrs. Sallie A. C. Watkins in memory of Dr. Thomas L. Maddin.

THE JACK MARTIN SCHOLARSHIP FUND. This endowed scholarship was established in honor of Jack Martin (M.D. 1953).

THE MARGARET LOONEY MCALLEN SCHOLARSHIP. Established in 2005 by C. Ashley McAllen (M.D. 1987) to provide scholarship support to deserving students enrolled in the Vanderbilt University School of Medicine based on financial need.

THE ROBERT L. AND BILLYE MCCRACKEN SCHOLARSHIP. This endowed scholarship fund was established through the generosity of the late Dr. and Mrs. Robert McCracken. Dr. McCracken (M.D. 1939) was a Nashville thoracic surgeon. The income is used to provide financial assistance to needy and worthy students enrolled in the School of Medicine.

THE PATRICIA AND EDWARD J. MCGAVOCK SCHOLARSHIP FUND. This endowed scholarship fund was established in 1998 through a bequest provision by the late Patricia McGavock of Old Hickory, Tennessee, to benefit students enrolled in the Vanderbilt University School of Medicine.

THE CHARLES AND EDITH MCGILL SCHOLARSHIP FUND. This endowed scholarship was established in 2000 through the proceeds of a life income trust set up by the late Charles M. McGill (M.D. 1935) and his wife, Edith, for the benefit of students enrolled in the Vanderbilt University School of Medicine.

THE BARTON MCSWAIN ENDOWED SCHOLARSHIP This endowed scholarship was established in 1994 with proceeds raised by the Vanderbilt School of Medicine Class of 1958 to honor the late Nashville pathologist H. Barton McSwain (B.A. 1927 M.D. 1930). The income is to be used to benefit students enrolled in the Vanderbilt University School of Medicine.

MEDICAL STUDENT SCHOLARSHIPS GIFT FUND. Funds are available to needy students through gifts donated by alumni and friends of Vanderbilt School of Medicine.

THE H. HOUSTON MERRITT SCHOLARSHIP. This endowed scholarship was established by H. Houston Merritt (M.D. 1922).

THE JAMES PRESTON MILLER TRUST. This trust, left by the will of James P. Miller in memory of his father, James Preston Miller, provides funds to assist in the medical education of deserving young men and women at Vanderbilt University. Residents of Overton County, Tennessee, are to be given first preference, and other residents of Tennessee are to be given second preference.

THE ANN MINOT ENDOWED SCHOLARSHIP. This endowed scholarship was established in 1994 to provide need-based scholarships to students in the School of Medicine.

THE C. LEON PARTAIN, M.D., AND JUDITH S. PARTAIN SCHOLARSHIP FUND. This endowed scholarship was established in 1998 through a bequest of the late Grace McVeigh (B.A. 1925) for the benefit of needy and worthy students at Vanderbilt University School of Medicine. The scholarship honors Dr. and Mrs. Partain for their service to Vanderbilt University Medical Center during Dr. Partain's tenure as chairman of the Department of Radiology and Radiological Sciences, 1992–2000.

THE WILLIAM B. PIDWELL, M.D., AND SUSAN A. PIDWELL SCHOLARSHIP. Established in 1999 to provide support to talented and deserving students with demonstrated financial need engaged in the study of medicine. Preference is given to those students majoring in family medicine.

THE WALLACE N. RASMUSSEN SCHOLARSHIP. Established in 2007 by Wallace N. Rasmussen to provide scholarship support to deserving students enrolled in the Vanderbilt University School of Medicine based in financial need.

THE THOMAS W. RHODES STUDENT SCHOLARSHIP FUND. Funds provided by the will of Georgine C. Rhodes were left to Vanderbilt University for the purpose of establishing a scholarship fund in the School of Medicine.

THE RILEY SCHOLARSHIP. This endowed scholarship was established by members of the Riley family: Harris D. Riley, Jr., M.D. (B.A. 1945 M.D. 1948); Frank Riley (B.A. 1949); Richard F. Riley, M.D. (B.A. 1946 M.D. 1948); and William G. Riley, M.D. (B.A. 1943 M.D. 1945).

THE CANBY ROBINSON SOCIETY STUDENT SCHOLARSHIP BENEFACTOR PROGRAM. Scholarships are made available to students from members who donate to this program.

THE ROSCOE R. ROBINSON, M.D., AND ANN ROBINSON SCHOLARSHIP FUND. This endowed scholarship was established in 1999 through a bequest by the late Grace McVeigh (B.A. 1925) for the benefit of needy and worthy students in the Vanderbilt University School of Medicine. The scholarship honors Dr. and Mrs. Robinson for their service to Vanderbilt Medical Center during Dr. Robinson's tenure as Vice Chancellor for Medical Affairs, 1981–1997.

THE DAVID E. AND BARBARA L. ROGERS ENDOWED SCHOLARSHIP. This endowed scholarship was established in 2003 by Barbara L. Rogers, the widow of Dr. David E. Rogers, to support students in the School of Medicine.

THE HELEN AND LOUIS ROSENFELD ENDOWED SCHOLARSHIP FUND. This endowed scholarship was established by Helen Rosenfeld, a Vanderbilt University alumna, and Louis Rosenfeld (M.D.1936).

THE GEORGE E. ROULHAC MEMORIAL SCHOLARSHIP FUND. This fund was established in 1994 through a gift from the estate of Dr. Roulhac (M.D. 1939). It provides tuition support for medical education.

THE WILLETT H. "BUDDY" RUSH SCHOLARSHIP. Established in memory of Dr. Rush (M.D. 1941), this scholarship honors the dedication he showed to the practice of medicine and the Frankfort, Kentucky, community. Awards are given in order of preference to students from Frankfort, Kentucky, the bluegrass region of Kentucky, and then the state of Kentucky.

THE RICHARD M. SCOTT FINANCIAL AID PROGRAM. This endowed scholarship was established by the medical class of 1988 to honor Richard M. Scott, director of financial aid for the School of Medicine from 1970 to 1987.

THE JOHN SECONDI SCHOLARSHIP FUND. This endowed scholarship was established in memory of Dr. John Secondi (M.D. 1970).

THE JOHN N. SHELL ENDOWMENT FUND. This scholarship fund is provided by a bequest from the will of John N. Shell.

THE LESLIE M. SMITH AND EVELYN C. SMITH SCHOLARSHIP ENDOWMENT FUND. This endowed scholarship fund was established in 1998 by Mrs. Evelyn Clark Smith, widow of Dr. Leslie McClure Smith (M.D. 1930), to be used to assist needy medical students. Preference is given to students from New Mexico and Kentucky.

THE FRANK C. AND CONNIE EWELL SPENCER MEDICAL SCHOLARSHIP FUND. This endowed scholarship fund was established in 1997 by Dr. Frank Cole Spencer (M.D. 1947) and his wife, Connie Ewell Spencer (B.A. 1946), to honor his medical class of 1947 on the

occasion of its 50th reunion. The scholarship is used to assist worthy students who would not otherwise be able to afford to attend the School of Medicine.

THE DOROTHEA AND JOSEPH G. SUTTON SCHOLARSHIP IN MEDICINE. This scholar-ship was established in 1995 through a gift from the estate of Dr. Sutton (M.D. 1922) for the benefit of students with financial need who are pursuing the study of medicine.

THE HARLAN HOWARD TAYLOR SURGICAL SCHOLARSHIP. This endowment scholarship fund was established through the proceeds of a life income trust set up by the late Dr. Harlan Howard Taylor to benefit medical students going into surgical fields.

THE VANDERBILT MEDICAL SCHOOL SCHOLARSHIP FUND. This endowed scholarship fund was established in August 2000. The income from this endowment is to be used to provide unrestricted scholarship support to students within the School of Medicine.

THE IRENE BEDFORD WATERS SCHOLARSHIP This scholarship was established by W. Bedford Waters (M.D. 1974) in honor of his mother, Irene. The scholarship benefits medical students who have demonstrated financial need, with first preference going to minority students.

THE CHARLES E. AND MILDRED WORK SCHOLARSHIP. This endowed scholarship was established through a bequest gift by the late Dr. Charles E. Work (M.D. 1935). The income is used to provide financial aid to needy and worthy medical students.

THE FRED C. WATSON MEMORIAL SCHOLARSHIP. This scholarship is made on the recommendation of the School of Medicine to students selected by a committee based in Lexington, Tennessee, to students who are graduates of Lexington High School and/or are residents of Henderson County.

THE JOE AND HOWARD WERTHAN FOUNDATION FUND. The funds made available by this foundation to Vanderbilt University are to be given to those students in the School of Medicine needing financial assistance.

THE DR. DAVID HITT WILLIAMS MEMORIAL SCHOLARSHIP FUND. This fund was established in 1998 through the bequest of Eugenia F. Williams in memory of her father, a successful financier, professor of obstetrics and gynecology, and medical practitioner in Knoxville, Tennessee. The income from the endowment is to be used to assist worthy and deserving students in the School of Medicine.

THE WILLS SCHOLARSHIP FUND. Established in 2003 by W. Ridley Wills (B.A. 1956) and Irene Jackson Wills through the Wills Foundation to provide assistance to worthy medical students based on financial need.

## Other Scholarships

Other scholarships are available outside of the need-based institutional financial aid program. They are as follows:

THE ELBYRNE GRADY GILL SUMMER RESEARCH SCHOLARSHIPS IN OPHTHALMOLOGY AND OTOLARYNGOLOGY. These scholarships provide support for medical student summer research in the areas of ophthalmology and otolaryngology.

THE MARY AND WILLIAM O. INMAN JR. SCHOLARSHIP FUND. This fund was established in 1985 by Miss Grace McVeigh (B.A. 1925) to benefit M.D./Ph.D. students.

MEADE HAVEN SCHOLARSHIPS IN BIOMEDICAL SCIENCES. Meade Haven scholarships in biomedical sciences have been endowed to provide support for medical students who have made a serious career commitment to obtain advanced experience and training in research in the biomedical sciences.

THE ANN MELLY SCHOLARSHIP IN ONCOLOGY. This scholarship is to provide medical students the opportunity to conduct research in the field of oncology. The scholarship recipients, to be known as Melly Scholars, would receive an integrative experience linking the basic sciences with their clinical outcomes. Such scholarships give in-depth exposure to research that addresses the cause and treatment of cancer. The scholarships have proven to be excellent experiences for medical students trying to determine whether to pursue a career in oncology and academic medicine. In the unlikely event that the field of oncology should be transformed or go out of existence, such as has happened with programs studying diseases like polio and tuberculosis, then in consultation with the donor and/or donor's children or grandchildren, another field of research would be chosen for the scholarship. This is to insure the continued recognition of Ann Melly's work in research and education.

THE HERBERT M. SHAYNE ENDOWMENT. Established in 2003 by the Shayne Foundation to provide tuition support to M.D./Ph.D. students during the M.D. portion of their training and includes a research laboratory stipend. The fund pays tribute to Herbert M. Shayne, a long-time supporter and board member of the Medical School.

THE VANDERBILT PRIZE IN BIOMEDICAL SCIENCES SCHOLARSHIP. The Vanderbilt Prize nurtures the career, research, and studies of a promising woman beginning her M.D./Ph.D. studies at Vanderbilt and includes a funded scholarship for the student winner.

THE THOMAS HUGGINS WINN SCHOLARSHIP. Established in 1988 through a bequest from Fanny Edith Winn to benefit M.D./Ph.D. students.

### **Revolving Loans**

THE AMA/ERF LOAN FUND. Funds are available to needy students through gifts donated by the American Medical Association Education and Research Foundation.

THE F. TREMAINE BILLINGS REVOLVING STUDENT LOAN FUND. Established by Elizabeth Langford and friends, this loan fund honors Dr. Billings and his many contributions as friend and internist. It is to be used for the education of worthy medical students.

THE BLOSSOM CASTER LOAN FUND. This fund was established by Milton P. Caster (M.D. 1949) in honor of his mother, Mrs. Blossom Caster.

THE O. D. CARLTON II LOAN FUND. This revolving loan fund was established by Hall Thompson in honor of O. D. Carlton II for needy third- and fourth-year medical students.

THE EDWARD F. COLE REVOLVING MEDICAL LOAN FUND. These funds are made available to students through contributions from Dr. Edward F. Cole, a Vanderbilt Medical alumnus.

THE FRANK M. DAVIS AND THEO DAVIS STUDENT LOAN FUND. This endowed loan was established by Frank M. Davis (M.D. 1934).

THE MAX EISENSTAT REVOLVING STUDENT LOAN FUND. This fund was established to honor the memory of Dr. Max Eisenstat.

THE TINSLEY HARRISON LOAN FUND. This fund was established to assist needy and worthy medical students by Dr. T. R. Deur, a Vanderbilt Medical School alumnus, in memory of Dr. Harrison, a former teacher and clinician at the school.

THE GALE F. JOHNSTON LOAN FUND. The funds donated by Gale F. Johnston are to be used as a revolving loan fund for students in the School of Medicine.

THE W. K. KELLOGG FOUNDATION LOAN FUND. This fund was established through donations from the W. K. Kellogg Foundation.

THE LAUDIE AND EDITH MCHENRY REVOLVING LOAN FUND. This fund was established with the proceeds from the trust of Dr. Laudie E. McHenry (M.D. 1953) for students enrolled in the School of Medicine.

THE VANDERBILT MEDICAL FACULTY LOAN FUND. This fund is made available by donations from members of the School of Medicine faculty to be used to defray the educational costs of disadvantaged students.

THE MEDICAL LOAN FUND OF LIFE AND CASUALTY INSURANCE COMPANY OF TENNESSEE. Through donations from the Life and Casualty Insurance Company of Tennessee, needy students are provided revolving student loans.

THE MEDICAL SCHOOL STUDENT AID LOAN FUND. This fund is made possible through contributions from alumni and friends.

THE J. C. PETERSON STUDENT LOAN FUND. This fund was established in memory of Dr. J. C. Peterson to provide loan monies for deserving medical students.

THE COLONEL GEORGE W. REYER MEMORIAL LOAN FUND. This fund was established by Colonel George W. Reyer (M.D. 1918).

THE LEO SCHWARTZ LOAN FUND. This loan fund was established through contributions from Dr. Leo Schwartz.

THE ROBERT E. SULLIVAN MEMORIAL LOAN FUND. Through the generosity of Robert E. Sullivan, a fund has been established to assist worthy and deserving medical students.

THE ROANE/ANDERSON COUNTY MEDICAL SOCIETY FUND. This revolving loan fund is given to a needy medical student, with preference given, when possible, to students from Roane, Anderson, and Morgan Counties of Tennessee.

THE THOMPSON STUDENT LOAN FUND. This fund is to be used as a revolving loan fund for students in the School of Medicine from Middle Tennessee.

THE VANDERBILT MEDICAL SCHOOL ALUMNI REVOLVING LOAN FUND. This fund was established through contributions from alumni.

## **Medical Scholars Program**

The Medical Scholars Program is sponsored by the school and offers interested students a one-year, in-depth, research experience in addition to the traditional four years of medical school. The goal of the Medical Scholars Program is to foster an interest in research among medical students that may eventually lead them to pursue careers in academic medicine. The research opportunities encompass all departments of the School of Medicine

and are aimed at giving medical students the opportunity to contribute to the process of discovery in either clinical or basic research laboratories.

All medical students at the Vanderbilt University School of Medicine, except those enrolled in the MSTP program, are eligible to apply to the program. Formal application to the Medical Scholars Program may be made in the spring of each year. The duration of the program is twelve consecutive months, beginning July 1. A stipend of \$27,000 is provided for each student. Criteria for selection include a student's interest in research and an appropriate research topic and mentor. More than 200 faculty members serve as potential advisers. The types of research available to students range from patient-oriented studies to epidemiological investigations to research at the molecular level. Interested students should contact Tina Hartert, M.D./M.P.H., director of the Medical Scholars Program.

# Financial Information for Medical Master's Degree and Other Doctoral Programs

Information for the 2009/2010 academic year is as follows.

# Doctor of Audiology and Master of Education of the Deaf and Master of Science (Speech-Language Pathology)

Tuition, 1st, 2nd, 3rd years	No.	\$29,190
Tuition, 4th year	60.	5,780

The total estimated cost of attendance for a first year student is \$52,880.

### Master of Science in Medical Physics

Tuition, 1st year	\$27,480
Tuition, 2nd year	18,320

The total estimated cost of attendance for a first year student is \$51,360.

## **Doctor of Medical Physics**

Tuition, 1st, 2nd years	\$28,620
Tuition, 3rd, 4th years	24.045

The total estimated cost of attendance for a first year student is \$51,900.

### Master of Public Health and Master of Science in Clinical Investigation

Tuition, 1st year	\$27,510
Tuition, 2nd year	13,760

The total estimated cost of attendance for a first year student is \$48,010.

## **Master of Laboratory Investigation**

Tuition (12 hours at \$1,145/hr.)

\$13,740

The total estimated cost of attendance for a first year student is \$33,490.

Tuition and fees are set annually by the Board of Trust and are subject to review and change without further notice.

### Other Fees

Student health insurance fee	\$2,021
Activities and recreation fee	374
Activities and recreation fee (summer)	68
Transcript fee (one time only	30

## **Payment of Tuition and Fees**

Fall semester tuition, fees, and other university charges are due and payable by 19 August. Spring semester tuition, fees, and other university charges are due and payable by 7 January. Summer charges are due and payable by 30 June.

Additional information can be found at www.vanderbilt.edu/stuaccts.

### **Refund of Tuition**

Students who withdraw officially or who are dismissed from the university for any reason after the beginning of a term may be entitled to a partial refund in accordance with the schedule shown below. No refund will be made after the tenth week in any semester.

Withdrawal prior to the end of	Reduction
1st full week	100%
2nd full week	95%
3rd full week	85%
4th full week	80%
5th full week	75%
6th full week	65%
7th full week	60%
8th full week	55%
9th full week	50%
10th full week	40%

No refund after the 10th full week.

## Late Payment of Fees

Charges not paid by 19 August will be automatically deferred, and the student's account will be assessed a monthly late payment fee at the following rate: \$1.50 on each \$100 that remains unpaid after 19 August (\$5 minimum). An additional monthly late payment fee will be assessed unless payment is received in full on or before the end of each month, and late payment fees will continue for each month thereafter based on the outstanding balance unpaid as of the end of each month. All amounts deferred are due not later than 30 November for fall semester and 30 April for spring semester. Graduating students are not allowed to defer charges that are billed in advance for the final semester.

### **Financial Clearance**

Students may not be allowed to register for any semester if they have outstanding unpaid balances for any previous semester. No transcript, official or unofficial, will be issued for a student who has an outstanding balance until the account has been paid. Diplomas of graduating students may be withheld until all bills are paid.

International students must provide documentation of having funds sufficient to meet all tuition, mandatory fees, and living expenses for the anticipated period of enrollment before a visa will be issued. Information will be provided by the university Office of International Student and Scholar Services.

### **Financial Assistance**

Approved educational expenses are met with funds from a combination of sources. Government loans that furnish significant loans to students are the Federal Subsidized and Unsubsidized Stafford Loan programs and Federal Graduate PLUS loans. Private loans are also available to international students. Additional information and applications for financial aid are online at <a href="https://www.mc.vanderbilt.edu/medschool/finaid">www.mc.vanderbilt.edu/medschool/finaid</a>. Applicants desiring more specific information about financial aid resources should contact the Medical School Office of Student Financial Services.

# Research in Medical Sciences

## **Endowed Research Funds**

THE RACHEL CARPENTER MEMORIAL FUND. This fund was established in 1933 by a gift from Mrs. Mary Boyd Carpenter of Nashville. The income derived from the fund is to be used for education in the field of tuberculosis.

THE BROWNLEE O. CURREY MEMORIAL FUND FOR RESEARCH IN HEMATOLOGY. This is a memorial fund created by the friends of Brownlee O. Currey. The income is being used for the support of research in the field of hematology.

THE JACK FIES MEMORIAL FUND. The income from a gift to Vanderbilt by Mrs. Hazel H. Hirsch as a memorial to her son, Jack Fies, is to be used to support research in the field of neurosurgery. It is hoped that subsequent donations will be made by those who may be interested in creating a larger fund for this phase of research.

THE JOHN B. HOWE FUNDS FOR RESEARCH. In January 1946, the members of the family of the late John B. Howe established two funds in the university to be known as the John B. Howe Fund for Research in Neurosurgery and the John B. Howe Fund for Research in Medicine. The expenditures from the funds for neurosurgery and medicine are administered through the Department of Surgery and the Department of Medicine.

THE BEQUEST OF AILEEN M. LANGE FOR MEDICAL RESEARCH. To be used for medical research in preventing and curing ailments of human beings.

THE ANNIE MARY LYLE MEMORIAL FUND FOR MEDICAL RESEARCH. This gift is to be used for basic or applied research in medical science, particularly cardiovascular research or another area of need.

THE NEUROLOGY RESEARCH FUND. Funds to be used for research efforts in the field of neurology.

THE MINNIE J. ORR FUND FOR RESEARCH IN POLIOMYELITIS OR HEART DISEASE.

THE MARTHA WASHINGTON STRAUS-HARRY H. STRAUS FOUNDATION, INC. The foundation provides support for research in the Department of Medicine in the field of cardiovascular diseases.

THE LESLIE WARNER MEMORIAL FUND FOR THE STUDY AND TREATMENT OF CANCER. This fund was established in 1932 in the memory of Leslie Warner of Nashville, Tennessee. Half of the founding grant was contributed by the nieces and nephews of Mrs. Leslie Warner.

## Multi-Investigator Research Centers and Programs

### Vanderbilt AIDS Center

The Vanderbilt AIDS Center supports all HIV-related research and helps coordinate HIV care and provider education. Several multi-investigator NIH grants support the full spectrum of HIV research, from clinical trials to basic virology and immunology. The Vanderbilt Meharry Center for AIDS Research (CFAR) grant is a key component. The Vanderbilt Meharry CFAR was established in 2003 to strengthen HIV/AIDS research across both Vanderbilt and Meharry campuses, as well as the Comprehensive Care Center. It is one of 20 CFARs at academic medical centers across the United States that are competitively funded by the NIH. CFAR aims to synergistically enhance HIV/AIDS research by providing expertise, resources, and services that foster interdisciplinary collaboration, especially on translational research. The Vanderbilt Meharry CFAR focuses on research into disparities in the HIV epidemic, and collaborates closely with the Vanderbilt Institute for Global Health.

## **Center for Child Development**

See page 438.

## Center for Biomedical Ethics and Society

The mission of the Center for Biomedical Ethics and Society is to provide leadership in education, research, and clinical service at VUMC concerning the ethical, legal, and social dimensions of medicine, healthcare, and health policy. The Center is committed to multi-disciplinary exploration of the individual and social values, cultural dynamics, and legal and professional standards that characterize and influence clinical practice and biomedical research. The Center aims to be a catalyst for collaboration in teaching, research, and practice at Vanderbilt and to contribute to scholarship and policy making from the local to the international level.

### Free-Electron Laser Center

The Vanderbilt University Free-Electron Laser (FEL) Center is a multidisciplinary research program dedicated to exploring medical applications of high-power, tunable radiation available from unique accelerator-based light sources—the Mark III FEL and our novel monochromatic X-ray system. These light sources provide unique opportunities for novel biomedical uses, and increased understanding of the basic physical interactions between light and matter, and are complemented by a wide array of state-of-the-art imaging and spectroscopic systems. The center involves research groups from the School of Medicine, the School of Engineering, and the College of Arts and Science, but the heart of our program lies in the development of clinical treatment protocols. Our approach is an "atoms to humans" model in which the underlying science is explored in support of the clinical results. Often, insights into the clinical procedures come from basic physical studies of laser/materials interactions. Still, the focus on eventual clinical treatments is never lost, and the involvement of physicists, chemists, biologists, and engineers is in the service of medicine. To facilitate the widespread use of the new clinical applications, we will use our understanding of the underlying mechanisms and our technological infrastructure to develop dedicated, stand-alone laser systems for use in the military and civilian communities. Our efforts towards the development of new table-top laser sources that are dedicated to performing specific surgical applications will allow the surgical protocols developed with the FEL to be transferred to a large number of hospitals and other clinical settings. We have also developed several interactive programs around campus. In collaboration with the Vanderbilt Institute of Chemical Biology, we are investigating specific optical molecular probes that can be used for in vivo molecular imaging to guide the therapeutic applications. In collaboration with the Center for Structural Biology, we are investigating the use of the monochromatic X-ray system for "synchrotron quality" X-ray crystallography experiments here at Vanderbilt.

### Center for Human Genetics Research

The Vanderbilt Center for Human Genetics Research (CHGR) was initiated in July, 1997, to bring a focus to human genetic research at Vanderbilt, to foster the expansion of this research, and to help develop appropriate training activities for a growing number of students interested in human genetics. The central theme of the CHGR is the understanding of how genes influence complex traits; traits that are influenced by the intricate interplay of multiple genes and environmental factors. This encompasses research at the molecular, clinical, and population levels performed by faculty in multiple departments and schools.

# Center for Lung Research Division of Allergy, Pulmonary, and Critical Care Medicine

This center stimulates and facilitates lung research and training throughout the institution. Center investigators represent nine departments and are engaged in a wide range of basic and clinical research. These investigators work both individually and in collaboration with many other faculty members. The center serves to identify important research opportunities, to assist investigators in identifying collaborators within and outside the institution, and to facilitate the research process by providing physical facilities, financial support, and administrative and scientific expertise. The center maintains close relationships with the departments of

medicine, cell biology, pediatrics, pathology, biomedical engineering, pharmacology, and molecular physiology and biophysics, as well as with other departments in the schools of medicine and engineering.

## **Center for Matrix Biology**

The mission of this center is to foster cohesive interactions among Vanderbilt University scientists who work, directly or indirectly, on extra cellular matrix biology in order to facilitate collaborations, promote excellence in matrix research and acquire funding support.

### Center for Molecular Neuroscience

The Center for Molecular Neuroscience supports research and training of neuroscientists who utilize sophisticated genetic, cell biologic, biochemical and biophysical techniques to understand fundamental aspects of development, signaling and disease in the brain. Major research foci of faculty are in neuronal development and differentiation, control of membrane excitability, mechanisms of synaptic plasticity, elucidation and analysis of drug actions in the brain, and altered gene/protein function in mental illness. Faculty of the CMN utilize state-of-the art molecular and transgenic techniques to understand how key genes control brain development and function and to develop new animal models for syndromes such as ADHD, Parkinson's disease, and Alzheimer's disease.

## Center for Molecular Toxicology

The Center for Molecular Toxicology is a National Institute of Environmental Health Science-funded research center. The Center's overall research goals are to understand phenomena of toxicological interest in chemical terms, answer questions related to toxicity at the biochemical level, and apply such chemical and biochemical knowledge to problems involving human health.

### Center for Space Physiology and Medicine

To demonstrate its commitment to research in the physiological challenges of manned space flight, Vanderbilt University Medical Center established the Center for Space Physiology and Medicine in 1989. Under the direction of David Robertson, M.D., Professor of Medicine, Pharmacology, and Neurology, and F. Andrew Gaffney, M.D., Professor of Medicine, the Center's mission is to direct and coordinate the medical center's space-related research. The collaborating members of the medical faculty are internationally recognized authorities in many areas relevant to manned space flight. The center also has close ties to scientists within NASA centers and to Russian investigators in the Institute for Biomedical Problems and the Russian Cardiological Research Center in Moscow.

### **Center for Structural Biology**

The transinstitutional Center for Structural Biology, founded in 2000, is a new transinstitutional research and training unit that focuses on the integrated application of structural methods for solving fundamental problems in medicine and biology. The Center also provides education and training in all areas of structural biology to all interested researchers on campus. Faculty, drawn from eight departments in the College of Arts & Science and the School of Medicine utilize NMR, EPR and fluorescence spectroscopes, X-ray crystallography, cryo-electron microscopy and computational techniques to understand a range of critical events such as signal transduction, viral infection, the replication of genes in healthy cells, and the malfunction of the repair of damaged genes in cancer.

# Clinical Nutrition Research Unit Division of Cardiovascular Medicine

The Clinical Nutrition Research Unit (CNRU) is funded by the NIDDK to promote nutrition research and education at Vanderbilt. Nutrition research is carried out by faculty members in most academic departments and extends from basic laboratory research to clinical and applied research. A particular mission of the CNRU is to encourage translation of basic research to patient care. To this end the CNRU encourages information exchange and collaboration. It supports research cores that bring nutrition investigators together to discuss their work. It supports a seminar series to bring in outside nutrition scientists to speak to the Vanderbilt nutrition community.

### **Diabetes Research and Training Center**

The Diabetes Research and Training Center (DRTC) at Vanderbilt is one of a network of centers established by the National Institute of Diabetes, Digestive and Kidney Diseases (NIDDK) to conduct research and training in diabetes mellitus and related endocrine and metabolic disorders. The DRTC is a multidisciplinary program with 95 participating faculty members distributed among fourteen departments in two schools and three colleges of the university. The Biomedical Research Component consists of a research base of 65 investigators in the areas of in vivo metabolism, signal transduction, etiology and complications, gene regulation, beta cell function, demonstration and education.

# Digestive Disease Research Center Division of Gastroenterology

The Digestive Disease Research Center (DDRC) is a multidisciplinary center at Vanderbilt University Medical Center developed to serve a number of purposes. The center promotes digestive diseases-related research

in an integrative, collaborative and multidisciplinary manner. In addition to enhancing the basic research capabilities of established DDRC investigators, the center attracts investigators not involved in digestive diseases-related research to pursue these lines of investigation, in order to develop and implement programs for training and establishment of young investigators in digestive diseases-related research and facilitate the transfer of basic research findings to the clinical area.

### **Frist Nursing Informatics Center**

The Frist Nursing Informatics Center is housed on the second floor of Frist Hall. Faculty, staff and student support is provided for various informatics applications, including handheld devices, clinical log software, use of Blackboard (Web-based course template system), survey design, and other knowledge building tools. In addition, a computer lab environment supports online learning activities with additional lab machines available for online testing.

### **Clinical Research Center**

See Vanderbilt Institute for Clinical and Translational Research (VICTR) on page 151 below.

### George M. O'Brien Renal Center

The objective of the Renal Center is to contribute to the understanding of pathogenic mechanisms leading to progressive nephron destruction in the kidney. Investigators from the departments of medicine, pediatrics, surgery, cell biology, pharmacology, and pathology bring a multidisciplinary approach to bear on specific mechanisms leading to glomerular and tubular dysfunction and progressive glomerular destruction. Center funding is derived primarily from the National Institutes of Health grant entitled "Biology of Progressive Nephron Destruction."

### **Informatics Center**

The Informatics Center at Vanderbilt functions as a highly effective system of people, processes and technology working at all levels of the medical center to improve health care using information technology and communication to change the face of health care to provide the best care, education, and research possible.

### Institute for Experimental Therapeutics

The Institute for Experimental Therapeutics builds on Vanderbilt's internationally recognized strengths in human pharmacology. The major missions of the Institute are to investigate mechanisms underlying variability in drug actions in humans, and to translate those results into more effective use of available drugs and the development of improved drug therapies.

### Institute for Global Health

The Institute for Global Health fosters interdisciplinary research, teaching, and service activities linked to health and/or development in resource-limited settings of the developing world. The Institute helps strengthen and sustain the interests and activities of the Vanderbilt community by:

- Facilitation of international contacts for program development and training
  - Advocacy for better equity in global health investments
  - Assistance in securing resources for international activities
- Standardization and facilitation of overseas administrative approaches
- Improved communication through grand rounds, seminars, and discussion forums
- Active partnerships with institutions in the U.S. and abroad that share the Institute's goals and wish to partner with Vanderbilt faculty, staff, and students.

By facilitating the involvement, development, and growth of collaborations aimed at addressing problems in resource-limited settings, the Institute expects Vanderbilt itself to be enriched in its diversity and sensitivity to the global challenges in health and development. By serving as a facilitating body for expanding the activities of individual scientists and departments across the Vanderbilt campus, the Institute expects to aid multidisciplinary research efforts in diseases of poverty, tropical climes, and health disparities.

### Elizabeth B. Lamb Center for Pediatric Research

The Elizabeth B. Lamb Center is dedicated to research in infectious diseases of children. The center is an interdisciplinary research unit combining interests in infectious diseases, immunology, microbiology, and pathology. It is located within the Division of Pediatric Infectious Diseases. The primary mission of the Lamb Center is to foster basic biomedical research with the goal of developing new approaches for the prevention and treatment of childhood infectious diseases.

### Institute for Medicine and Public Health

The mission of the Institute for Medicine and Public Health is to improve personal and public health through discovery, training, and service programs designed to protect against threats to health, promote healthier living, improve quality of health services, and prepare leaders to advance health and health care. Its goal is to improve the quality, safety, equity, and efficiency of public and personal health services, with the ultimate goal to improve the health of all citizens.

### **Mass Spectrometry Research Center**

The five areas that compose the Mass Spectrometry Research Center Research and Development, MS Core Service, Proteomics, Serum and Biofluids Core, and Bioinformatics provide the local research community with world-class instrumentation and collaborative support of cuttingedge research in the medical and bioscience fields. The Research & Development Laboratory is focused on the development of new mass spectrometry and data analysis techniques that can be applied to problems of medical significance. The Mass Spectrometry Service Laboratory is an advanced shared instrument facility. The MS Core Service provides cost effective, state-of-the-art instrumentation to students, fellows and faculty for identification and structural analysis of biological molecules and for qualitative and quantitative assays of drugs and metabolites in physiologic fluids. The Proteomics Lab provides assistance with or participation in proteomic studies. The Tissue and Biofluids Core Laboratory direct proteome profiling and protein imaging of intact tissues by MALDI-MS. The Core also provides proteome profiling of serum, plasma, and other biofluids by MALDI-MS and analysis of biofluid proteome fractions by "shotgun" LC-MS-MS methods. The newly established Bioinformatics Group develops new algorithms, software, and database tools for analysis of mass spectrometry data for proteomics and other applications within the MSRC. This group interacts with faculty in the Developments of Biomedical Informatics and Biostatistics, bringing together new analytical technologies with computational and statistical approaches to large complex datasets in biomedical research.

### Skin Diseases Research Center

The Skin Diseases Research Core Center at Vanderbilt University is an NIH/NIAMS-funded center with the mission of promoting skin-related research among both basic and clinical investigators. Organized within the Dermatology Division, this center involves investigators and core laboratories from multiple other areas. This center supports core laboratories in phenotype analysis, morphology and molecular genetics. Pilot and feasibility projects are awarded for investigators new to skin-related research or for novel studies by established cutaneous researchers. Inquiries may be directed to the SDRCC.

### Vanderbilt Addiction Research Center

The Vanderbilt Addiction Center provides the academic focus within Vanderbilt University for research, education, and clinical care activities related to the pathogenesis, prevention, and treatment of alcohol and other drug abuse and dependence. VAC represents an interdepartmental network of investigators and clinicians from the Schools of Medicine, Nursing, and Engineering, the College of Arts and Science, and Peabody College. Investigators and clinicians work individually and in collaboration with other faculty members. VAC identifies important research opportunities, assists investigators in identifying collaborators within and outside Vanderbilt, and facilitates research by providing a forum for interdisciplinary discussions among clinical and basic scientists.

# Vanderbilt Bill Wilkerson Center for Otolaryngology and Communication Sciences

The Vanderbilt Bill Wilkerson Center for Otolaryngology and Communication Sciences was created in 1997 to fill a need for ear, nose, and throat doctors and hearing and speech therapists to work side by side for the benefit of their patients with communication and otolaryngological diseases and disorders. The center is composed of the Vanderbilt Department of Hearing and Speech Sciences (formerly the Bill Wilkerson Center) and the Vanderbilt Department of Otolaryngology. The Center offers diagnosis and treatment for a wide range of conditions that affect hearing, speech, language and voice production, as well as more than twenty research laboratories addressing basic and applied issues in Otolaryngology and Hearing and Speech Sciences.

### The Vanderbilt Brain Institute

The Vanderbilt Brain Institute unites campus-wide neuroscience to facilitate interdisciplinary research, training and public outreach. The VBI's mission is to:

- be a communication center for transinstitutional neuroscience
- advance neuroscience educational initiatives
- spearhead fund-raising in interdisciplinary research and training
- coordinate public relations and community outreach programs

### **Vanderbilt Center for Bone Biology**

The Vanderbilt Center for Bone Biology was created to investigate diseases of bone and mineral metabolism, which are now widely recognized as major public health problems. Although the last 15 years have seen an upsurge of interest in these diseases, this is not yet reflected by major changes in the way these diseases are treated or our understanding of what

causes them. Technologic improvements in investigating mechanisms involved in normal bone remodeling, together with the widespread use of genetic mouse models to identify molecules responsible for common bone diseases, may now make it possible to unravel the pathophysiology of some of these common bone diseases, and to develop new diagnostic tools and treatments that could change the quality of life for many patients. The new Vanderbilt Center for Bone Biology is in the process of assembling a cadre of well-trained investigators to address these issues, with an initial primary focus on osteoporosis, and cancers such as breast cancer, prostate cancer, and myeloma, which frequently affect the skeleton, and pharmacologic enhancement of fracture repair.

### Vanderbilt Center for Evidence-Based Medicine

The mission of the VCEBM is to promote understanding and adoption of evidence-based medicine. In Vanderbilt University Medical Center, VCEBM is responsible for coordinating journal clubs and clinical department efforts to adhere to evidence-based practice. In the School of Medicine, it is responsible for classroom instruction and case study assisting students in the development of evidence-based practice core competence. It is also a research center funded through grants from public and private organizations. Recent investigations include the impact of pay for performance programs in increased adherence to evidence-based practices by hospitals and a national study of consumer understanding of evidence-based medicine. Finally, VCEBM conducts workshops for hospitals and medical leaders on optimal ways to achieve clinical transformation through evidence-based practices.

### Vanderbilt Center for Stem Cell Biology

The mission of the Vanderbilt Center for Stem Cell Biology is to perform basic research necessary to learn how to produce new cell-based treatments from embryonic stem cells. To do this, it is necessary to first learn more about the biology of stem cells and how to direct their differentiation towards specific fates. The Vanderbilt Center for Stem Cell Biology is home for the Coordinating Center for the Beta Cell Biology Consortium. A major goal of this consortium of scientists is to learn how to make pancreatic beta cells from embryonic stem cells. If achieved, this would provide a new cell-based therapy for the treatment of diabetes.

### Vanderbilt Diabetes Center

The Vanderbilt Diabetes Center provides a comprehensive approach to diabetes. Programs dealing with education and training of students and fellows provide the next generation of care givers and scholars. Other programs support the diabetes-related research of more than eighty VUMC

faculty members. Several sophisticated core resources are of particular importance in this regard. Finally, the VDC through the recently established Vanderbilt-Eskind Diabetes Clinic provides comprehensive clinical care, including addressing complications of the disease, for diabetics of all ages.

### Vanderbilt-Ingram Cancer Center

The Vanderbilt-Ingram Cancer Center is Tennessee's only Comprehensive Cancer Center designated by the National Cancer Institute and one of only 39 nationwide. This designation, the highest ranking awarded cancer centers by the world's foremost authority on cancer, recognizes research excellence in cancer causes, development, treatment and prevention, as well as a demonstrated commitment to community education and outreach. In addition to providing the most sophisticated cancer care available and more than 150 of the most promising therapies still under investigation, Vanderbilt-Ingram Cancer Center offers the region's only Family Cancer Risk Service, its first comprehensive Breast Diagnostic Center, its most complete Pain and Symptom Management Program and its only Cancer Information Program staffed by a master's trained oncology nurse and linked to the National Cancer Institute. Vanderbilt-Ingram Cancer Center offers its clinical trials in home towns throughout Tennessee, Kentucky, Alabama, and Georgia through its Affiliate Network of more than a dozen hospitals.

### Vanderbilt Institute of Chemical Biology

The Vanderbilt Institute of Chemical Biology (VICB) is a transinstitutional initiative between the College of Arts and Science and the School of Medicine. The mission of the VICB is to promote research and education in the application of chemistry to important biological problems. Strong basic science programs and outstanding research and clinical centers exist at Vanderbilt that focus on understanding the molecular basis of disease. As these molecular studies increase our understanding, application of the tools of chemistry (e.g., synthesis, analysis, structure-activity) can be used to design and develop new agents to detect, treat, and prevent disease. The VICB operates core facilities in high throughput screening, chemical synthesis, antibody generation, and bioanalytical nuclear magnetic resonance to support these activities, and sponsors major research programs in drug discovery and proteomics.

### Vanderbilt Institute for Clinical and Translational Research (VICTR)

The Vanderbilt Institute for Clinical and Translational Research (VICTR) is Vanderbilt's virtual home for clinical and translational research. Supported by the Vanderbilt Office of Research and the NIH-sponsored Clinical and Translational Science Award (CTSA), the mission of the institute is to transform the way ideas and research discoveries make their way from origin to patient care.

This is accomplished through collaboration with a wide variety of research partners; by training, nurturing, and rewarding participating researchers; by funding research; by developing new and innovative ways to involve the community in research; by developing new informatics and biostatistical systems; and by making available the latest technologies and sound research results affecting patient care.

VICTR supports many program initiatives including the following:

- VICTR Clinical Research Center (CRC) supports clinical research by providing a controlled environment including inpatient and outpatient adult and pediatric space, laboratories, equipment, supplies, and nursing care. The CRC also serves as a resource for teaching and a site for research in the methodology of patient care systems and apprenticeship for young clinical investigators.
- VICTR Pilot Funding Program. VICTR and CTSA funds provide support and resources for the generation of pilot and preliminary data. Resources are available following a quick review and approval process, including, but not limited to, core laboratory services, biostatistical/ethical consultations, informatics support, expert studios, clinical lab services/supplies, in- and outpatient facilities, and nursing care. VICTR resources can supplement funding obtained from other sources. (Federal agencies do not fund inpatient beds or nursing support.
- VICTR Voucher Program provides financial support in the form of "micro-grants" (less than or equal to \$2,000) to enable preliminary work and generation of pilot data on clinical translational research projects. Applicants must describe how the research program has the potential to move from patient observations and laboratory discoveries to the bedside (and ultimately to clinical practice). The submission process is minimal, and requests are typically reviewed within two business days.
- VICTR Clinical and Translational Research Studios. Structured, dynamic sessions bring together relevant research experts in a particular methodology to focus on a specific stage of research. These one-and-a-half-hour sessions are intended to enhance research quality, improve funding success, foster advances in clinical practice and improvements in patient health, increase publications, and generate new hypotheses. A studio consists of two to six experiences faculty selected to participate in a guidance session based on specific areas of research and needs identified by the investigator. Studio types include research hypothesis generation, design, implementation, analysis and interpretation, translation, and manuscript.
- VICTR StarBRITE Portal is an interactive Web-based system that provides researchers and study personnel at Vanderbilt and Meharry with links to resources, experts, regulatory support, templates for research preparation and study conduct, database development software, educational requirements and opportunities, institutional applications, and research approval process support.

### Vanderbilt Institute for Integrative Genomics

The Vanderbilt Institute for Integrative Genomics is a transinstitutional initiative to foster use of genomic approaches for understanding the biology of disease. Genomics is the term applied to a broad array of scientific paradigms aimed at determining how the genome of an organism defines its physiological and pathological conditions. The goal of this institute is to harness the full power of genomics by integrating this emerging field with more traditional as well as other new scientific disciplines. The institute strives to bring the science of studying genomes into phase with existing experimental paradigms in developmental biology, vascular biology, cancer biology, genetics, cardiovascular medicine, neuroscience and other fields. This initiative is designed to capitalize on institutional strengths in four specific areas: functional genomics/model organism disease models, cancer genetics, epigenetics/chromatin biology, and computational genetics. Integrative Genomics interfaces strongly with the Zebrafish Initiative funded by the Academic Venture Capital Fund, as well as other existing programs. Goals include strategic faculty recruitment, a seminar series highlighting innovative approaches to obtaining or using genomic information, and support of strategic core facilities to enable cutting-edge research.

### Vanderbilt Kennedy Center for Research on Human Development

The mission of the Vanderbilt Kennedy Center for Research on Human Development is to improve the quality of life of persons with disorders of thinking, learning, perception, communication, mood and emotion caused by disruption of typical development. It is dedicated to improving the lives of children and adults with disabilities by embracing core values that include the pursuit of scientific knowledge with creativity and purpose; the dissemination of information to scientists, practitioners, families, and community leaders; the facilitation of discovery by Kennedy Center scientists; and the translation of knowledge into practice. The Center is one of fourteen nationally designated National Institutes of Health research center on mental retardation and other development disabilities supported in part by the National Institute of Child Health and Human Development. In 2005, it was designated a University Center for Excellence on Developmental Disabilities Education, Research and Service by the federal Administration on Developmental Disabilities. The Center is an interdisciplinary research, training, diagnosis, and treatment institute, embracing faculty and resources available through Vanderbilt University Medical Center, the College of Arts and Science, and Peabody College. The Center brings together scientists and practitioners in behavior, education, genetics, and neuroscience to work together in unique ways to solve the mysteries of development and learning.

### Vanderbilt University Institute of Imaging Science

The Vanderbilt University Institute of Imaging Science is a university-wide interdisciplinary initiative that brings together scientists whose interests span the spectrum of imaging research – from the underlying physics of imaging techniques to the application of imaging tools to address problems such as understanding brain function. The new Institute has a core program of research related to developing new imaging technology based on advances in physics, engineering, and computer science. The Institute promotes applied research in collaboration with biomedical scientists and physicians who have interesting questions that imaging can address. In addition to high-field MRI and MR spectroscopy in human subjects, the Institute offers state-of-the-art options for small animal imaging.

### Women's Reproductive Health Research Center

The Women's Reproductive Health Research Center at Vanderbilt was established in 1999 with principal funding from the National Institute of Child Health and Human Development as part of the Specialized Cooperative Centers Program on Reproduction Research. This center's program was established to promote clinically focused research programs at institutions that possess research strength in both basic science and clinical medicine. At Vanderbilt, the center has developed a program that is broadly focused on the promotion of reproductive health by increasing understanding of normal reproductive biology as well as the dysfunction associated with diseases such as abnormalities of pregnancy, dysfunctional uterine bleeding, endometriosis and cancer. In addition to support from the National Institutes of Health, the center receives substantial support from the Endometriosis Association for an international research and training program in endometriosis research. This training program supports collaborations among basic and clinical scientists within the multidisciplinary research environment at Vanderbilt with a focus on the care of women with endometriosis and associated diseases. The over-arching goal of the center is to move scientific discoveries of reproductive disease from bench to bedside to improve the health care of women.

# Courses of Study



These listings give faculty and course offerings of the various departments and programs offering instruction within the School of Medicine. The names and ranks of faculty members engaged in instruction are shown with these department and program listings.

The School of Medicine offers the following degree programs: Doctor of Medicine, Doctor of Audiology, Doctor of Medical Physics, Master of Education of the Deaf, Master of Science (Speech-Language Pathology), Master of Medical Physics, Master of Science in Clinical Investigation, Master of Science in Laboratory Investigation, and Master of Public Health. Courses in the School of Medicine are offered in both semester and yearlong formats. Courses leading to the M.D. degree do not carry credit hours; other programs use the traditional credit hour designation.

The university reserves the right to change the arrangement or content of courses, to change texts and other materials used, or to cancel any course on the basis of insufficient enrollment or for any other reason.

### MEDICINE COURSES

Anesthesiology

Biochemistry

Biomedical Informatics

Cancer Biology

Cell and Developmental Biology

**Emergency Medicine** 

Interdisciplinary/Primary Care/Family

Medicine

Medical Education and Administration

Medicine

Microbiology and Immunology

Molecular Physiology and Biophysics

Neurology

Obstetrics and Gynecology

Ophthalmology

Orthopaedic Surgery and Rehabilitation

Otolaryngology

Pathology

Pediatric Medicine

Pharmacology

Preventive Medicine

Psychiatry

Radiation Oncology

Radiology

General Surgery

Surgical Specialties

CLINICAL INVESTIGATION COURSES

HEARING AND SPEECH SCIENCES
COURSES

Audiology

Education of the Deaf

Speech-Language Pathology

LABORATORY INVESTIGATION COURSES

MEDICAL PHYSICS COURSES

Diagnostic Radiology

Therapeutic Radiology/Radiation Oncology

PUBLIC HEALTH COURSES

# Anesthesiology

CHAIR Michael S. Higgins

PROFESSORS EMERITI M. Lawrence Berman, John J. Franks, Joanne Lovell Linn
PROFESSORS John T. Algren, Jeffrey R. Balser, James Michael Berry, Eric Delpire, Jayant K.
Deshpande, John Watson Downing, William R. Furman, Michael S. Higgins, Addison K.
May, C. Lee Parmley, Bernhard Riedel, John H. Selby, Bradley E. Smith, Kevin Strange,
John Leeman Tarpley, Ann Walia, Matthew Bret Weinger

ADJUNCT PROFESSORS Jayakumar R. Kambam, Michael Lange Nahrwold ASSOCIATE PROFESSORS Frederick E. Barr, Jill K. Boyle, E. Jane Brock, Step

ASSOCIATE PROFESSORS Frederick E. Barr, Jill K. Boyle, E. Jane Brock, Stephen P. Bruehl, Susan A. Calderwood, Ok Yung Chung, Kevin B. Churchwell, Sukdeb Datta, Suanne M. Daves, Robert J. Deegan, Brian S. Donahue, Letitia Jane Easdown, Zena Leah Harris, Stephen R. Hays, Elizabeth Heitman, Shannon L. Hersey, C. Scott Hoffman, Kenneth J. Holroyd, Julie Kay Hudson, Steve A. Hyman, Benjamin W. Johnson, Jr., Ira S. Landsman, Thomas C. Lewis, Randall J. Malchow, Letha Mathews, Mark W. Newton, Ramachander K. Pai, Pratik Parag Pandharipande, Ray Paschall, Jr., Neal R. Patel, Stewart Neal Perlman, Marsha J. Peterson, Michael G. Richardson, Nahel N. Saied, Clark A. Scovel, Ramprasad Sripada, Paul J. St. Jacques, Mary B. Taylor, Antermarie Thompson, Liza M. Weavind

ADJUNCT ASSOCIATE PROFESSOR David Dwight Alfery

ASSISTANT PROFESSORS Hemant S. Agarwal, Saeedah Asaf, Nathan Edward Ashby, Arna Banerjee, John Allan Barwise, Tyler W. Berutti, Julian S. Bick, Frederic T. Billings IV, James L. Blair, Eswara C. V. Botta, Clifford Bowens, Jr., William B. Byrd, Christopher L. Canlas, Meera Chandrashekar, Kevin P. M. Currie, Jason T. Daume, Olga Dayts, Jerod Scott Denton, Katherine Dobie, Susan S. Eagle, Jean-Terese Fischer, Geoffrey M. Fleming, Marek Grzeszczak, Rajnish Kumar Gupta, John David Hall, Holly Richter Hardin, Stephen T. Harvey, Douglas Landon Hester, Alexander K. Hughes, Tracy P. Jackson, Adrian A. Jarquin-Valdivia, Paulette M. Johnson, Jill Erin Kilkelly, Shannon Robert Kilkelly, Christopher M. Lemelle, Stuart McGrane, Sheila Patricia McMorrow, Andrew C. Miller, Anne M. Miller, Vikram Patel, Jason Edward Pope, Mias Pretorius, James A. Ramsey, Vidya Rao, Amy C. Robertson, Daniel Roke, Brian S. Rothman, Matthew Paul Rupert, Steven W. Samoya, Kevin J. Saunders, Jonathan Scott Schildcrout, Thomas F. Shultz, Rigoberto L. Sierra-Anderson, Silvio Sitarich, Heidi A. Beverley Smith, Martha Jane Smith, Kenneth G. Smithson, Carl William Stanberry, Sarah Starr, Bradly Strohler, Chad E. Wagner, Amr Ahmed Waly, Scott Christopher Watkins, Donna C. Whitney, Betty Worri, Yordanos Yohannes, Laura Nicole Zeigler

RESEARCH ASSISTANT PROFESSORS Daniel J. France, Kenneth B. E. Gagnon, Franck Potet, Jason M. Slagle

ADJUNCT ASSISTANT PROFESSORS Barry W. Brasfield, Scott R. Levin, Vijay Rani Makrandi, Ashok Saha, Sadiq Sohani, Michael J. Stabile, Geeta P. Wasudev, Madhu S. Yelameli SENIOR ASSOCIATE Stephen T. Blanks

ASSOCIATES Raymond F. Johnson, Nimesh Patel

INSTRUCTORS Tekuila Carter, Sarah Fandre, Amy Larsen Lynch, Jason B. Olinger, Stephanie Rasmussen, Stephen Ormond Slattery, Sally A. Watson, Robert A. Wells

CLINICAL INSTRUCTORS Thomas G. Adkins, Mark Dentz, Ned Robert Jacobson, Jeffrey W. Kehler, William Charles Lamb, David Winek, H. Kendle Yates

ASSISTANTS Robert Williams Atwood, Justin Calabrace, Lindsay Gebhart, Amanda Hill, Leland J. Lancaster, Jr., Neal W. Sanders, John Shields, Fred Ryan Truesdale, Joshua L. Yarbrough

**5700. Basic Anesthesiology.** This pre-clinical elective course is for students at the completion of their first-year course work. It involves spending 2-3 hours per day between 0630-0830 hours. Students will rotate in the OR, ICU, acute pain service, OB Anesthesia, and PEDS Anesthesia. Students will experience all facets of anesthesiology. Summer following first year. Robertson, Pai.

**5611. Clerkship in Anesthesiology.** This course is a four-week elective providing a multidisciplinary experience in Anesthesiology so that all students will rotate through the following venues: Adult anesthesia at VUH and/or VA; Cardiothoracic anesthesia; Pediatric anesthesia; OB Anesthesia; Neuro ICU/SICU/BICU; Acute pain service. In addition to participating in departmental lectures for residents, Grand Rounds, and M&M, students will be provided with a textbook, Basics of Anesthesia, 5th edition, and The Difficult Airway course manual for use during the elective. Students will keep the SEA curriculum cards and a departmental manual that are given at the beginning of the course. Student specific lectures will also be given during the course. Each student will take one evening call and one weekend day call to provide exposure to anesthesia for trauma and emergency surgery. Prior experience in anesthesia is not required. Fourth year. Boyle.

6100. Special Clinical Study-Vanderbilt.

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

7100. Special Clinical Study-Non-VU.

7150. Special Research Study-Non-VU.

# Biochemistry

CHAIR Michael R. Waterman

PROFESSORS EMERITI Harry P. Broquist, Frank Chytil, Stanley Cohen, Leon W. Cunningham, Benjamin J. Danzo, Willard R. Faulkner, Carl G. Hellerqvist, Robert A. Neal, David E. Ong, Oscar Touster

PROFESSORS Richard N. Armstrong, Richard M. Breyer, H. Alex Brown, Jorge H. Capdevila, Richard M. Caprioli, Graham F. Carpenter, Bruce D. Carter, Walter J. Chazin, David Cortez, Martin Egli, Stephen W. Fesik, F. Peter Guengerich, David L. Hachey, Scott W. Hiebert, Billy Gerald Hudson, Tadashi Inagami, Daniel Christopher Liebler, Lawrence J. Marnett, Neil Osheroff, Jennifer A. Pietenpol, Ned Allen Porter, Carmelo Joseph Rizzo, Charles R. Sanders II, Samuel Andrew Santoro, Kevin L. Schey, Michael P. Stone, Gary Allen Sulikowski, Conrad Wagner, Michael R. Waterman

RESEARCH PROFESSORS Essam E. Enan, Edward Thaddeus Olejniczak, Carol A. Rouzer ADJUNCT PROFESSORS Rodney Kiplin Guy, Rafael Radi

ASSOCIATE PROFESSORS Thomas N. Oeltmann, James G. Patton, Virginia L. Shepherd RESEARCH ASSOCIATE PROFESSORS Pierre Chaurand, David B. Friedman, Amy-Joan Lorna Ham, Galina I. Lepesheva, Zigmund Luka, Raymond L. Mernaugh, Jarrod A. Smith, Paul A. Voziyan

ADJUNCT ASSOCIATE PROFESSOR Brenda A. Schulman

ASSISTANT PROFESSORS Brian O. Bachmann, Brandt F. Eichman, Tina M. Iverson, D. Borden Lacy, Andrew J. Link, Zu-Wen Sun, David L. Tabb

VISITING ASSISTANT PROFESSOR Jeong-Yun Choi

RESEARCH ASSISTANT PROFESSORS Eric S. Dawson, Gerald D. Frank, Joel M. Harp, Hong-Jun Liao, W. Hayes McDonald, Laura Sera Mizoue, Rekha R. Pattanayek, Jason Phan, Michelle L. Reyzer, Oleg Yu Tikhomirov, Md. Jashim Uddin, Bin Zhao, Lisa J. Zimmerman

ADJUNCT ASSISTANT PROFESSOR Joseph Edward Deweese

RESEARCH INSTRUCTORS Anna L. Blobaum, M. Wade Calcutt, Goutam Chowdhury, Simona G. Codreanu, Robert L. Eoff, Rajappa Kenchappa, Qasim A. Khan, Joey C. Latham, Jeremy S. Myers, Pradeep S. Pallan, Erin H. Seeley, Jonathan Sheehan, Zhen Wang

ADJUNCT INSTRUCTOR Jeremy Lynn Norris ASSISTANTS Philip John Kingsley, Li Lei

**5100. Vanderbilt Student Volunteers for Science.** Medical students choosing the Vanderbilt Student Volunteers for Science (VSVS) elective will be placed in teams of three or four and go to middle school classrooms ten times during the semester to teach science lessons. Lesson manuals and kits are provided. The coordinator of VSVS will arrange times for the class visits based on VSVS team and teacher schedules. Total time commitment for the semester is 15 hours. This includes a practice session, ten one-hour classes for science lessons, and estimated travel time to and from a middle school. First and second year, Shepherd.

**5330. Molecular Aspects of Cancer Research.** The course will consist of a focused series of seminars and discussions to explore the molecular basis of cancer. Seminars will rely heavily on extramural speakers who have recognized expertise in selected research areas. Students meet with each speaker for one hour immediately after each seminar. This provides an opportunity for students to meet internationally recognized scientists from a variety of academic and research institutions. Discussion sections will be led by a faculty member after each series of three to four seminars. This course may be taken for graduate credit by MSTP (M.D./Ph.D.) students by registering through the Graduate School for Biochemistry 337. Prerequisite: Biochemistry or faculty permission. Heibert.

6150. Special Research Study - Vanderbilt.

6200. Special Study - Pre-Clinical.

# Biomedical Informatics

CHAIR Daniel R. Masys

PROFESSORS Mark E. Frisse, Nunzia B. Giuse, Douglas P. Hardin, Kevin B. Johnson, Daniel Christopher Liebler, Nancy M. Lorenzi, Daniel R. Masys, Randolph A. Miller, John A. Morris, Jr., Joe B. Putnam, Jr., William W. Stead, Elizabeth E. Weiner, Matthew Bret Weinger

ADJUNCT PROFESSOR Jonathan B. Perlin

ASSOCIATE PROFESSORS Dominik Aronsky, Steven Holloway Brown, Kevin B. Churchwell, Cynthia S. Gadd, Michael S. Higgins, Neal R. Patel, Marylyn DeRiggi Ritchie, Edward K. Shultz, W. Anderson Spickard III, Paul J. St. Jacques

RESEARCH ASSOCIATE PROFESSOR Paul A. Harris

ADJUNCT ASSOCIATE PROFESSORS Constantin Aliferis, Ahmed Fadiel, Shawn E. Levy ASSISTANT PROFESSORS Rashid M. Ahmad, Erik M. Boczko, Joshua C. Denny, John Doulis, Jeffry S. Gordon, William M. Gregg, Gretchen Purcell Jackson, Rebecca N.

Jerome, Jim N. Jirjis, Ian D. Jones, Mia A. Levy, Bradley A. Malin, Subramani Mani, Michael E. Matheny, Jens Meiler, Asli Ozdas, Josh Favrot Peterson, Samuel Trent Rosenbloom, John Malotte Starmer, David L. Tabb, Patricia A. Trangenstein, Lemuel Russell Waitman, Stuart Tobe Weinberg, Hua Xu, Bing Zhang, Zhongming Zhao RESEARCH ASSISTANT PROFESSORS Heather L. Andrews, Fern FitzHenry ADJUNCT ASSISTANT PROFESSOR Ioannis Tsamardinos RESEARCH INSTRUCTOR Lorenzo J. Vega-Montoto ADJUNCT INSTRUCTOR Nila A. Sathe

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

# Cancer Biology

CHAIR Lynn M. Matrisian

PROFESSORS Carlos L. Arteaga, R. Daniel Beauchamp, Timothy S. Blackwell, David P. Carbone, Raymond N. DuBois, Jr., Wa'el El-Rifai, Michael L. Freeman, Lynn M. Matrisian, Robert J. Matusik, Gregory R. Mundy, Josiah Ochieng, Richard M. Peek, Jr., Cathleen C. Pettepher, Jennifer A. Pietenpol, Joe B. Putnam, Jr., Vito Quaranta, J. Ann Richmond, Keith T. Wilson, Wei Zheng, Mary M. Zutter

VISITING PROFESSOR Alexander R. A. Anderson

RESEARCH PROFESSORS James Oliver McIntyre, Robert H. Whitehead

ADJUNCT PROFESSOR Vincent L. Giranda

ASSOCIATE PROFESSORS Sarki A. Abdulkadir, Ravi S. Chari, James E. Crowe, Jr., Pran Krishna Datta, Christine Marie Eischen, David Lee Gorden, Volker H. Haase, Simon William Hayward, Walter Gray Jerome III, P. Charles Lin, Bo Lu, Pierre Pascal Massion, William Pao, Ambra Pozzi, Linda Sealy, Jeffrey Roser Smith, Alissa M. Weaver, Elizabeth Yang, Wendell Gray Yarbrough, Roy Zent

RESEARCH ASSOCIATE PROFESSOR Robbert Jacobus C. Slebos

ADJUNCT ASSOCIATE PROFESSOR Gianluigi Giannelli

ASSISTANT PROFESSORS Donald J. Alcendor, Claudia D. Andl, Neil Adri Bhowmick, Christine Hwayong Chung, Dai H. Chung, Thao P. Dang, Utpal P. Dave, Mark P. de Caestecker, Punita Dhawan, Josiane Edward Eid, Barbara Mary Fingleton, Zhaozhong Han, Jason R. Jessen, Dineo Khabele, Conor L. Lynch, Christopher Chad Quarles, Takamune Takahashi, J. Michael Thomson, Donna Jane Webb, Christopher S. Williams, Fen Xia, Baogang Jonathan Xu, Thomas E. Yankeelov, Fiona Elizabeth Yull, Alexander Zaika, Ming-Zhi Zhang, Zhongming Zhao, Andries Zijlstra

RESEARCH ASSISTANT PROFESSORS Joseph M. Amann, Swati Biswas, Robert H. Carnahan, Rebecca S. Cook, Mikhail M. Dikov, Michael R. Dohn, Claire Shipman Edwards, Lourdes Estrada, Lisa J. McCawley, Todd W. Miller, Jiqing Sai, Yingjun Su, Darren R. Tyson

ADJUNCT ASSISTANT PROFESSORS Donald J. Alcendor, Naohiko Koshikawa RESEARCH INSTRUCTORS Katayoun I. Amiri, R. Rao Arasada, Michelle Dawn Martin, Dayanidhi Raman, Julie Sterling

Web site: http://www.mc.vanderbilt.edu/histology

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

# Cell and Developmental Biology

CHAIR Susan Rae Wente

PROFESSORS EMERITI Alvin M. Burt III, James A. McKanna, Marie-Claire Orgebin-Crist PROFESSORS David M. Bader, H. Scott Baldwin, R. Daniel Beauchamp, Timothy S. Blackwell, Kendal Scot Broadie, David P. Carbone, Vivien A. Casagrande, Chin Chiang,

Blackwell, Kendal Scot Broadie, David P. Carbone, Vivien A. Casagrande, Chin Chiang Robert J. Coffey, Jr., Arthur Frederick Dalley II, Raymond N. DuBois, Jr., Ford F. Ebner, Jonathan D. Gitlin, James Richard Goldenring, Kathleen L. Gould, Todd R. Graham, Steven K. Hanks, Stephen R. Hann, Mark A. Magnuson, Robert J. Matusik, David M. Miller III, Harold L. Moses, Lillian B. Nanney, Eric G. Neilson, Jeanette J. Norden, Gary E. Olson, John S. Penn, Cathleen C. Pettepher, David Brent Polk, J. Ann Richmond, William Evans Russell, Lillianna Solnica-Krezel, Roland W. Stein, William P. Tansey, Susan Rae Wente, Christopher V. E. Wright

RESEARCH PROFESSORS Vivian Siegel, Robert H. Whitehead

ADJUNCT PROFESSOR John Steven Halle

ASSOCIATE PROFESSORS Jin Chen, Mark P. de Caestecker, Maureen Anne Gannon, Antonis K. Hatzopoulos, Ela W. Knapik, Patricia A. Labosky, P. Charles Lin, John Jeffrey Reese, Linda Sealy, E. Michelle Southard-Smith, Guanqing Wu, Elizabeth Yang, Roy Zent

ASSISTANT PROFESSORS Kevin C. Ess, Joshua T. Gamse, Guoqiang Gu, Raul J. Guzman, Stacey S. Huppert, Christopher J. Janetopoulos, Irina N. Kaverina, Anne K. Kenworthy, Ethan Lee, Laura Anne Lee, Anna L. Means, Melanie D. Ohi, Ryoma Ohi, Lawrence S. Prince, Matthew John Tyska, Tao Peter Zhong, Sandra S. Zinkel

RESEARCH ASSISTANT PROFESSOR Jeffrey L. Franklin RESEARCH INSTRUCTORS Fugiang Geng, Zhaoliang Li

**5680. Regional Review of Gross Anatomy.** This course is designed to provide students with an opportunity for in-depth exposure to selected anatomic regions that may be relevant for their chosen specialties. Each student is expected to demonstrate his or her in-depth increase in knowledge through completion of a mutually agreed upon topic/project/scholarly contribution. Students are expected to expand their anatomic understanding through individual efforts and by serving/teaching during the first year gross anatomy instructional sessions. This elective is especially recommended for students interested in all surgical specialties, emergency medicine, family medicine, internal medicine, neurology, pathology, pediatrics, or radiology. Students have the opportunity to perform prosections with the goal of expanding their knowledge base beyond the VMS I level. Attendance at relevant lectures, participation in the laboratory exercises, extensive teaching/mentoring interactions with VMS I is expected. Each student must meet with the course director to design an individualized program of study. Offered November, December, January and February. Fourth year. Nanney.

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

# Emergency Medicine

CHAIR Corey M. Slovis PROFESSORS Thomas James Abramo, Jeremy J. Kaye, Corey M. Slovis, Keith Wrenn VISITING PROFESSOR Ron M. Walls ASSOCIATE PROFESSORS Donald Hayes Arnold, Dominik Aronsky, Andrea C. Bracikowski, David J. Maron, E. Paul Nance, Jr., Donna L. Seger, Lawrence B. Stack, Alan B. Storrow, Saralyn R. Williams, Seth W. Wright

ASSISTANT PROFESSORS Anna Marie Allen, Tyler W. Barrett, Richard S. Belcher, James F. Bihun, John J. Block, Jeremy Brywczynski, Stephen John Cico, Cristina Maria Estrada, James F. Fiechtl, Robert Warne Fitch, Jin Ho Han, Benjamin S. Heavrin, Joan Collier Henning, Daniel P. Himes, Michael N. Johnston, Ian D. Jones, Martin I. Jordanov, Laurie M. Lawrence, William E. Lummus, Nicole S. McCoin, Jared John McKinney, Jeffry P. McKinzie, Sheila Patricia McMorrow, Christy A. Meade, Mark L. Meredith, Marc Mickiewicz, Andrew Charles Neck, Kenneth Hugo Palm, Kendra Papson Parekh, Donna J. Perlin, Camiron Pfennig, Dorris Elise Powell-Tyson, Steven T. Riley, John Paul Rohde, Stephan Edward Russ, Gary R. Schwartz, Charles M. Seamens, Wesley H. Self, Malee V. Shah, Clay B. Smith, Kurt A. Smith, Shannon B. Snyder, David S. Taber, R. Jason Thurman, Valerie N. Whatley, Steven John White, Amanda Grace Wilson

RESEARCH ASSISTANT PROFESSOR Daniel J. France

ASSISTANT CLINICAL PROFESSORS Gregory H. Jacobson, David W. Lawhorn, Geoffrey D. Lifferth, Steven R. Meador, Wayne E. Moore, J. Raymond Pinkston SENIOR ASSOCIATES Judy Jean Chapman, Karen F. Miller

ASSOCIATE R. Kevin High

INSTRUCTORS Kristen Dettorre, Kristin Joy Ehst, Natasha B. Halasa, Mary Suzanne Hampson, Robert L. Hooker, James E. Keffer, Jill Cole Obremskey, Karen S. Rogers, Jason L. Shipman, Travis L. Stork

CLINICAL INSTRUCTORS Kimberly Arnold Currier, Aubrey M. Delk, Geoffrey E. Hayden, David L. Lanier, Jill E. Lawton, Michelle Schierling

**5100. EMS I: Introduction to Prehospital Care and Emergency Medicine.** This course familiarizes students with aspects of a metropolitan emergency medical system, both in the field and in the emergency department. Students will attend lectures, practice sessions, at least two four-hour rides with Metro Nashville Emergency Medical Services ambulances responding to 911 calls throughout the city and a ride with the District Chief, and spend one or two evenings in the Adult Emergency Department at Vanderbilt. After completing this course, students will be able to approach common emergency situations including, trauma, chest pain, shortness of breath, seizures, alcohol- and drug-related emergencies, drowning, and common pediatric emergencies. Finally, students will receive training in various basic skills (obtaining vital signs, c-spine immobilization, basic bandaging, wound care/suturing, ortho injuries/splinting, and airways management/intubation). Prerequisite: Second-year medical student status. Slovis.

**5200. EMS I: Introduction to Prehospital Care and Emergency Medicine.** This course is offered to medical student teaching assistants only. Slovis.

**5950. Emergency Medicine.** This required four-week clerkship introduces the senior medical student to the specialty of emergency medicine and reviews principles of emergency care that will benefit a graduate entering any specialty. Eleven clinical shifts spread across three different Emergency Departments during the month will offer students an opportunity to care for adult and pediatric patients with a variety of complaints. They will work closely with faculty and senior residents to formulate treatment plans and participate in procedures and other therapeutic interventions. Optional experiences with ground EMS, Lifeflight, and Emergency Ultrasound are also available. This clinical clerkship also has a significant didactic component, and students will usually attend 3-5 daily interactive lectures per day on weekdays. Afternoon lab sessions will allow practice of airway skills, splinting, and emergency procedures. Students will receive both BLS and ACLS training during the rotation. While this required clerkship is time intensive, and the required elements fill the scheduled four weeks, the course director will work with students to the extent possible to manage the scheduling challenges that

may be encountered during residency interview season. Prerequisite: Completion of all thirdyear core clerkships. Fourth year. Rohde.

6100. Special Clinical Study-Vanderbilt.

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

7100. Special Clinical Study-Non-VU.

7150. Special Research Study-Non-VU.

# Interdisciplinary/Primary Care/ Family Medicine

DIRECTOR Roger J. Zoorob PROFESSOR Roger J. Zoorob

ADJUNCT PROFESSOR Maciej S. Buchowski

ASSOCIATE PROFESSORS Marino A. Bruce, Karin E. Coetzee-Moolman, Tony L. Ross, Thomas C. Whitfield, Jr.

ASSOCIATE CLINICAL PROFESSORS Allen Scott Craig, Timothy F. Jones, Vincent Morelli ASSISTANT PROFESSORS Muktar Hassan Aliyu, Gene Alan Hannah, Ilene N. Moore, Claude E. Shackelford, Alex James Slandzicki

INSTRUCTORS Karli Alderson, John M. Boone, Jr., Elizabeth B. Burgos, James E. Dunlap, Philip R. Harrelson, Keren Holmes, Camellia R. Koleyni, James R. MacDonald, Scott R. Parker, Martha Ellen Shepherd, Ruth Carr Stewart, William P. Titus III, Jonna H. Whitman, Arthur E. Williams

CLINICAL INSTRUCTORS Gregg P. Allen, Charles A. Ball, James Norris Johnson, Charles T. Marable, Wendy Wiser

**5025. Molecular Foundations of Medicine.** Molecular Foundations of Medicine is designed to familiarize students with the cellular structures, biomolecules, and processes that constitute life, human health, and disease at the molecular level. Material will provide a mechanistic foundation for the medical curriculum and equip students to adapt and practice medicine in the future. The course will employ an integrated approach to teach underlying principles of biochemistry, cell biology, and genetics with an emphasis on human systems and medical conditions. The inclusion of clinical correlation sessions, small groups, and laboratory sessions will further integrate and broaden course material and relate molecular processes to the study of human disease. First year. Osheroff, George, Pettepher.

**5035. Structure, Function, and Development.** The objective of this course is to provide students with the means to develop an effective understanding of the normal micro- and macroscopic structure, function, and development of the human body that will enable them to distinguish and begin to understand the impact of malformation, trauma, disease, degeneration, and dysfunction, and to envision the goal of therapeutic intervention and restoration. In the short term, it aims to prepare medical students for subsequent courses (Disease, Diagnosis, and Therapeutics) and clinical rotations through the development of an appropriate vocabulary, a knowledge base of essential information, and an awareness of

the means to gain further information when required. In the long term, it aims to prepare physicians to appreciate the importance of an understanding of structure, function, and development as it is applied in clinical practice and to have a knowledge base appropriate for a medical physician, allowing them to communicate/interact meaningfully with those in other health specialties and participate in continuing medical education and life-long learning. The course will employ a coordinated, integrated approach to the presentation and learning of the disciplines of human gross anatomy, cell and tissue biology (histology), human development (embryology), and physiology in a context of clinical application. First year. Dalley, Strom, Pettepher.

**5045.** Patient, Profession, and Society I. The course provides didactic and experiential learning in the essential social, ethical, economic and legal aspects of patient care and health policy, and in the psychological dimensions of illness and doctor-patient relationships. The second half of the course also emphasizes fundamental communication skills and provides training in patient interviewing. The experiential aspects of the course include a Clinical Preceptorship with a practitioner in an area of the student's choosing, rotation through a variety of Chronic Care Clinics, and the beginning of a Patient Partnership that will continue throughout the four years of medical school, including in Year One visits to the patient's home. First year. Churchill, Powers.

**5055. Foundations of the Profession.** The goal of this course is to provide students with an understanding of the historical and social context of the practice of medicine. Through assigned readings, lectures, small group discussions and simulations, students will gain an appreciation for the core values and ethical principles that guide the profession's relationship with society and the physician's relationships with patients. They will also explore some of the contemporary challenges facing physicians today, including the need to improve health care disparities, quality, and safety. First year. Miller.

**5065. Preclinical Intersessions.** Each week will focus on a chronic illness or topic chosen because it illustrates basic science principles covered in prior blocks. Through large group discussion, case presentations, review of readings, and small groups, the course will provide comprehensive integration of basic science, clinical medicine, and the social, cultural and economic aspects of medicine, First year. Rodgers.

**5070.** Disease, Diagnosis, and Therapeutics. The objectives of this course are to teach the pathogenesis and manifestations of disease and to introduce the fundamentals of diagnosis and pharmacologic as well as nonpharmacologic therapy. Diseases, their recognition, and treatment will be presented in a systems-based format using an interdisciplinary approach to allow integration of pathobiology, clinical diagnosis, and therapy in a comprehensive manner. Principles of pharmacologic therapy will be presented in the context of relevant pathophysiology and how humans react to drug therapies. The course will utilize a variety of teaching modalities that include lectures, laboratory sessions focused on the gross and microscopic pathology of disease, and technology-based modalities that include computer-based lessons, as well as formats that will promote critical thinking (small group sessions, case-based learning that utilizes patients, and problem-based cases that will be taught by both faculty and students). Laboratory and imaging diagnosis will be presented in the context of the diseases to which these foundations are applied in order to prepare students for the next phase of their education in the clinical setting. Basic principles of radiologic imaging will be supplemented by correlation with manifestations and diagnosis of disease. Emphasis will be placed on the use of laboratory data in solving clinical problems. The role of nutrition in disease prevention and management will also be emphasized. The impact of disease and its treatment on public health and society as well as strategies for prevention will be explored. Second year. Atkinson, Murray, Awad.

- **5075. Patient, Profession, and Society II.** The second year of Patient, Profession, and Society is a continuation of the first-year course designed to provide formal and experiential learning around critical social, cultural, and interpersonal issues associated with the practice of medicine. There are four primary segments of the course: Preventive Medicine and Community Health, Patient and Family Impact of Neurologic and Psychiatric Disease, Physician-patient Communication Skills, and Chronic Illness Experience continued from the first year. Second year. Smalley, Webb.
- **5080.** The Brain and Behavior. The Brain and Behavior module is directed towards helping students acquire a solid understanding of the human central nervous system and human behavior. The format of the module will include lectures, lab exercises, small group discussions, and patient and case presentations. In conjunction with Physical Diagnosis, the skills training includes psychiatric interviewing, fundus exam, and neurological exam. The Brain and Behavior module will integrate three areas of medical science: (1) neuroanatomy, physiology, and biochemistry; (2) psychopathology and systems neuroscience; and (3) pathology, pharmacology, and radiology. Together, the course will provide the foundation necessary for an understanding of the clinical fields of Neurology and Psychiatry. Second year. Norden, Heckers.
- **5085. Emphasis Program.** The Emphasis Program is designed to provide students with the opportunity to pursue research and scholarly activities during the first two years of medical school, and thereby to prepare them to fill roles as leaders and scholars. In the fall semester, students will be introduced to nine possible areas of study. In consultation with course faculty each student will then identify a project and a mentor in one of the nine areas. The second semester will be devoted to developing the research plan for the project. For eight weeks during the summer between first and second year, students will carry out their research. In the fall semester of the second year, research will be completed and the process of writing up the project will begin. During the spring semester of the second year, students will present the results of their research and prepare their reports in publishable form. First and second year. O'Day.
- **5090. Capstone.** The goal of this required four-week course for fourth-year students is to "spiral back" to basic sciences. Students will gain insights into how advances in basic sciences have impacted clinical practice. Eight diseases or cases will be covered (two per week), each led by an expert in the fields. Possible topics covered will include obesity, vision loss, post-traumatic stress disorder, rheumatoid arthritis, trauma, colon cancer, miscarriage, and staphylococcal infections. There will be a few hours of lectures and small group discussions with ample time provided for student-directed learning and discovery. Fourth year. Allos.
- **5100. Primary Care Medicine, VUH.** All fourth-year students will have a required four-week unit in an ambulatory primary care setting. Students will choose an experience in outpatient internal medicine, family medicine, or pediatrics. Practice sites include ambulatory medicine or pediatric clinics in the community. The clinic experience is supplemented by various conferences and a home health or hospice visit. In addition, all students will complete the core didactic lecture series that includes exercises in problem-based learning, role-plays to foster interview skills, and a program in risk management. Prerequisite: Medicine 5020, Pediatrics 5020, Surgery 5020. Fourth year. Spickard, Gigante.
- **5150. Primary Care Medicine, Non-VU.** Students may also arrange a primary care experience outside of Nashville, subject to the approval of the course directors. Fourth year. Spickard, Gigante.
- **5230.** Beginner Spanish for the Medical Professional. Beginner Spanish for the Medical Professional includes a comprehensive grammar and vocabulary review, emphasizing communication between the health care provider and the Latino patient. The course underscores current essential cultural, demographic, and public policy issues affecting health care delivery

to the Latino population in the United States. Class is conducted entirely in Spanish, however no previous knowledge of the language is required. First and second year. Catanzaro.

**5235. Intermediate Spanish for the Medical Professional.** Intermediate Spanish for the Medical Professional emphasizes spoken Spanish in the context of the health care provider and the Latino patient, including a comprehensive grammar review and offering extensive vocabulary related to the clinical setting. Cultural issues related to health care and the Latino patient are emphasized. Prerequisite: IDIS 5230 or faculty permission. Catanzaro.

**5236.** Let Your Life Speak: Authentic Decision Making for Your Medical School Career. This is a course designed to give students in their first or second year of medical school a unique opportunity to address issues of personal identity and self-care. This course will provide a forum for learning and dialoguing with other students about real-life issues that impact your personal development as a medical professional, with specific emphasis on some of the unique issues that face women in medicine. Questions such as "How will I choose a specialty?", "How will I integrate family with career?", and "How will I maintain my passion for medicine?" will be addressed as we consider the anatomy of the decision-making process. Class will be guided group discussion format with various female physician guest speakers and each student will also receive a one-hour personal coaching session with the instructor during the semester. First and second year. Smith.

**5238.** Wellness. This course will allow students to dedicate structured time to the pursuit of a wellness activity that has meaning for them and will serve to inform their practice of lifelong wellness. Requirements: (1) Proposal and Timeline—include prose describing why this project is important to you and what you want to get out of your personal project; (2) Monthly check-ins with elective instructor; (3) Submit and discuss a piece of prose describing what you learned from your experience and how this experience will inform your practice of lifelong wellness. Students will submit a proposal using the Wellness elective form to the Office of Student Records. The proposal should include a description of the project and an estimated timeline. Approval of the advisory college director is required. First and second year. Rodgers.

**5239. Contemplative Mind in Medicine.** This course will provide a forum for learning effective stress reduction skills, a supportive and safe environment where medical students have an opportunity to discuss their experiences of the early years of medical education, and a personal experience for the foundation of a behavioral and preventive perspective in their future practice of medicine. First and second year. Peerman.

**5240.** Health Care Economics and Medical Practice Management. This course is designed to familiarize students with current mechanisms of health care reimbursement for hospitals, physicians, and other components of the health care delivery system. Important U.S. health policies that affect the financing of health care will be explored, as well as the debate for and against the establishment of universal health coverage in the United States. Students will also become familiar with the array of practice options open to physicians for their professional practice and how these practice settings align with the physician's personal and professional goals. First and second year. Webb.

**5242.** Backstage Pass to the Wards. This course will allow students the opportunity to complete a series of six to eight rotations throughout a variety of specialties and subspecialties at Vanderbilt University Hospital. It is expected that students will "shadow" and accompany the attending or resident physicians in their daily activities and participate in procedures/patient care at the discretion of their mentors. Opportunity for personal reflection and recording of insight into the various specialities will be possible via online forum and/or personal journal entries. Students are encouraged to ask relevant questions of their physicians and will be asked to reflect upon their experiences at the concession of all rotations. First and second year. Rodgers.

**5320. Core Clerkships: Intersession.** The intersessions are intended to address important clinical skills that apply to all medical domains. This is a pass/fail course. Third year. Lomis.

# Medical Education and Administration

INTERIM CHAIR Jeffrey R. Balser

PROFESSORS Donald W. Brady, G. Roger Chalkley, Gerald S. Gotterer, Gerald B. Hickson, George C. Hill, Donald E. Moore, Jr., Lillian B. Nanney, John S. Penn, Emil R. Petrusa, James W. Pichert, David S. Raiford

RESEARCH PROFESSOR Scott B. Boyd

ASSOCIATE PROFESSORS Charlene M. Dewey, Julie Kay Hudson, Frederick K. Kirchner, Jr., Diana Marver, Scott M. Rodgers, John H. Shatzer, Jr., Norman B. Urmy

ASSISTANT PROFESSORS Warren Ernest Beck, James L. Bills, Craig R. Carmichel, Peter J. Giammalvo, Michelle Savidge Grundy, John F. Manning, Jr., Martha K. Miers, Ilene N. Moore, Stephen B. Moore, David S. Noel, David Osborn, Bret L. Perisho, Kimberly A. Petrie, Allison Pingree, Ann H. Price, Jill M. Pulley, Joan A. Randall, Mary E. Rawn, Frank J. Rosato, Lynn E. Webb

ADJUNCT ASSISTANT PROFESSORS Mary Bufwack, Barbara Clinton

ASSOCIATE William R. Rochford

ASSISTANT G. Wayne Wood

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

## Medicine

CHAIR Eric G. Neilson

PROFESSORS EMERITI Fred Allison, Jr., Thomas G. Burish, Oscar B. Crofford, Jr., Roger M. Des Prez, John M. Flexner, Gottlieb C. Friesinger II, Fred Goldner, Jr., David W. Gregory, H. Keith Johnson, Sanford B. Krantz, Samuel R. Marney, Jr., Alexander C. McLeod, David N. Orth, Lloyd H. Ramsey, Joseph C. Ross, William D. Salmon, Jr., Raphael F. Smith, James D. Snell, Jr., Paul E. Teschan, Alexander S. Townes, Alastair J. J. Wood, Richard M. Zaner

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Thomas A. Golper, John P. Greer, Marie R. Griffin, Kenneth R. Hande, Raymond C. Harris, Jr., Thomas R. Harris, J. Harold Helderman, Billy Gerald Hudson, lekuni Ichikawa, Tadashi Inagami, David H. Johnson, Allen B. Kaiser, Herman J. Kaplan, Mark J. Koury, Marvin W. Kronenberg, Daniel J. Lenihan, John M. Leonard, Julia G. Lewis, Richard W. Light, Christopher D. Lind, MacRae F. Linton, James E. Loyd, Mark A. Magnuson, Daniel R. Masys, James M. May, Joseph K. McLaughlin, Clifton Kirkpatrick Meador, Barbara O. Meyrick, Geraldine G. Miller, Randolph A. Miller, Harold L. Moses, Gregory R. Mundy, John H. J. Nadeau, Eric G. Neilson, John H. Newman, John A. Oates, Neil Osheroff, Harry Lee Page, Jr., Richard M. Peek, Jr., Robert N. Piana, Alvin C. Powers, David S. Raiford, J. Ann Richmond, Wayne Joseph Riley, L. Jackson Roberts II, David Robertson, Rose M. Robertson, Dan M. Roden, Bruce J. Roth, Jeffrey N. Rottman, Donald H. Rubin, Martin P. Sandler, William Schaffner, John F. Schnelle, Friedrich G. Schuening, Gerald Schulman, John S. Sergent, James R. Sheller, Virginia L. Shepherd, Xiao Ou Shu, Ghodrat A. Siami, Corey M. Slovis, Jeffrey A. Sosman, Theodore Speroff, W. Anderson Spickard, Jr., Thomas Stasko, William W. Stead, C. Michael Stein, Richard S. Stein, Timothy R. Sterling, William J. Stone, George P. Stricklin, Robert E. Tarone, James Ward Thomas II, Michael Vaezi, Douglas E. Vaughan, Keith T. Wilson, Lawrence K. Wolfe, Wei Zheng

RESEARCH PROFESSORS Maciej S. Buchowski, Kristina E. Hill, Barbara Schneider, Vivian Siegel, Robert H. Whitehead

ADJUNCT PROFESSORS Paolo Boffetta, Matthew D. Breyer, John W. Christman, Carlo La Vecchia, John J. Murray, Olof Nyren, Jorgen Helge Olsen, Leslie L. Robison, James R. Snapper, Henrik Toft Sorensen, John P. Sundberg

ADJUNCT RESEARCH PROFESSOR Manuel S. Valenzuela

CLINICAL PROFESSORS Robert Seth Cooper, Ernest William Ewers, Daniel M. Green, Raymond M. Hakim, Philip Earl Johnston, Jonathan B. Perlin, Mace L. Rothenberg CATHERINE MCLAUGHLIN HAKIM ASSOCIATE PROFESSORS Volker H. Haase, Talat Alp Ikizler, Douglas B. Sawyer, David Xiao-Ming Zhao

ASSOCIATE PROFESSORS George R. Avant, Joseph Albert Awad, John G. Benitez, Jordan D. Berlin, Jeffrey Bishop, Mark J. Bliton, Qiuyin Cai, Jin Chen, André Lemont Churchwell, Keith B. Churchwell, Dawood Darbar, Mark P. de Caestecker, Charlene M. Dewey, Thomas G. Di Salvo, Jose J. Diaz, Jr., John H. Dixon, Jr., G. Dewey Dunn, Roy O. Elam III, Tom A. Elasy, Darrel L. Ellis, Igor Alexandrovich Feoktistov, Frank A. Fish, James T. Forbes, Howard A. Fuchs, Lawrence S. Gaines, Maureen Anne Gannon, Stacey Ann Goodman, David William Haas, Steven K. Hanks, David E. Hansen, Tina V. Hartert, Antonis K. Hatzopoulos, Scott W. Hiebert, Kenneth J. Holroyd, Nuhad M. Ismail, Madan Jagasia, Spyros A. Kalams, Douglas S. Kernodle, Ela W. Knapik, Sunil Kripalani, John T. Lee, David J. Maron, William H. Martin, Pierre Pascal Massion, Lisa A. Mendes, Robert F. Miller, Torin Monahan, Paul L. Moots, Barbara A. Murphy, Katherine T. Murray, Allen J. Naftilan, Thomas N. Oeltmann, William Pao, R. Stokes Peebles, Michael Karl Porayko, James S. Powers, Ambra Pozzi, Stephen Paul Raffanti, Ivan M. Robbins, Deborah W. Robin, David Allen Schwartz, Donna L. Seger, Douglas L. Seidner, Sandra F. Simmons, Bonnie S. Slovis, Walter E. Smalley, Jr., Jeffrey Roser Smith, Michael Lee Smith, E. Michelle Southard-Smith, W. Anderson Spickard III, Charles W. Stratton, Craig R. Sussman, Yi-Wei Tang, Annemarie Thompson, Flora A. M. Ukoli, Lorraine B. Ware, Mark Stephen Wathen, Arthur P. Wheeler, Saralyn R. Williams, Robert J. Workman, Keith Wrenn, Guanqing Wu, Mary I. Yarbrough, Roy Zent, John A. Zic

RESEARCH ASSOCIATE PROFESSORS Hui-Fang Cheng, Andre Michael Diedrich, Daniel J. France, Stanley B. Higgins, Mohammed Sika, Paul A. Voziyan, Wanqing Wen, Tao Yang

VISITING RESEARCH ASSOCIATE PROFESSOR Gloria E. Gutierrez ADJUNCT ASSOCIATE PROFESSORS Bettina M. Beech, Paul C. McNabb II, Lou Reinisch ADJUNCT RESEARCH ASSOCIATE PROFESSOR Scott Matthew Williams ASSOCIATE CLINICAL PROFESSORS Wendell Scott Akers, Phillip D. Bertram, Stanley J. Bodner, Alfred S. Callahan, James R. Cato, Alan G. Cohen, James P. Fields, Richard W. Garman, Jr., Francis W. Gluck, Jr., Jacques Heibig, Marcus C. Houston, Robert H. Latham, Aaron P. Milstone, Judson E. Rogers, Marvin J. Rosenblum, Dan S. Sanders III, Richard P. Schneider, Harrison J. Shull, Jr., James N. Sullivan, Michael D. Zanolli ASSISTANT PROFESSORS Robert L. Abraham, Ahmad Abu-Halimah, Ban Mishu Allos, Thomas Andl, Navaid Asad, Dana Backlund, Jayant Bagai, Michael T. Baker, Shichun Bao, Julie A. Bastarache, Dawn Beaulieu, Daniel A. Birchmore, Karen C. Bloch, Chad S. Boomershine, Jeffrey B. Boord, Dorin Bogdan Borza, Megan G. Bowles, Travis Carl Bowles, James P. Bracikowski, Patrick E. Burnett, Brenda J. Butka, Jeffrey David Byers, Kerri L. Cavanaugh, Emily Chan, Geoffrey Chidsey, Sallaya Chinratanalab, Wichai Chinratanalab, Neesha Naik Choma, Christine Hwayong Chung, Stephen John Cico, Walter K. Clair, Anna S. Clayton, John H. Cleator, Bryan Richard Collier, Lala A. Cornelius, David Robertson Coxe, Marshall H. Crenshaw, Sarah Peters Cribbs, Yong Cui, Kelly E. Cunningham, Kathryn McCrystal Dahir, Qi Dai, Julie B. Damp, Thao P. Dang, Titus Luther Daniels, Utpal P. Dave, Jan Stallings DeLozier, Sandra L. Deming, Jeffrey M. Dendy, Nanette Eldridge Dendy, Joshua C. Denny, Wonder Puryear Drake, Warren Reid Dunn, Ryszard Dworski, Jamie P. Dwyer, Florent Elefteriou, Christopher R. Ellis, Jeannine Z. P. Engel, Brian George Engelhardt, John M. Fahrenholz, Mary Kathleen Figaro, William H. Fiske, Pete P. Fong, Jay H. Fowke, Michael J. Fowler, Haydar Adib Frangoul, Rand T. Frederiksen, Joseph L. Fredi, Gottlieb Christian Friesinger III, James V. Gainer III, G. Waldon Garriss III, Jill Gilbert, Timothy D. Girard, Mark Dennis Glazer, William M. Gregg, Youfei Guan, Ralf C. Habermann, David D. Hagaman, Maureen Kay Hahn, Katherine Louise Hanson, Chuan-Ming (Jimmy) Hao, Norman Chandler Hardman, Jr., Anna R. Hemnes, Paula C. Herrmann, Timothy John Hinton, Richard L. Hock, Charles C. Hong, Rob Reid Hood, Leora Horn, Todd M. Hulgan, Adriana M. Hung, Joseph W. Huston III, Aldo A. Ilarde, Waleed N. Irani, James C. Jackson, Mark W. Jacokes, Shubhada Jagasia, Henry S. Jennings III, Jason R. Jessen, Jim N. Jirjis, J. Thomas John, Jr., Jill L. Jones, Asha R. Kallianpur, J. Jonas Kalnas, Hillary R. Kaplan, Mohana Karlekar, Bernice Karnett, Adetola Kassim, Jennifer A. Kearney, Vicki L. Keedy, Peggy L. Kendall, Lloyd G. King, Murali Krishna Kolli, Sapna P. Kripalani, Susan Faye Kroop, Emily Graham Kurtz, Joshua LaBrin, Vipul T. Lakhani, Lisa Hood Lancaster, Anthony James Langone, Robin Elizabeth Lapre, Mark A. Lawson, William Edward Lawson, Carla Tucker Lee, Mia A. Levy, Chee C. Lim, Elizabeth Lindsey, Catherine R. Linn, Jirong Long, James Matthew Luther, Amy S. Major, Ravinder R. Manda, Larry W. Markham, Michael E. Matheny, Michael E. May, Ingrid Mayer, William H. Maynard, Stephanie A. McAbee, Michel Alice McDonald, Morgan Fitz McDonald, Catherine C. McGowan, Melissa McPheeters, John A. McPherson, Julie A. Means-Powell, Alison N. Miller, Jami L. Miller, Matthew S. Miller, Sumathi K. Misra, Ken Monahan, David Scott Morgan, Sandra A. Moutsios, James A. S. Muldowney III, Harvey Johnson Murff, Suzanne Shelton Murff, Kevin J. Myers, Anne Taggart Neff, Reid M. Ness, Kevin Dean Niswender, Henry Hean Lee Ooi, Chandra Y. Osborn, Kevin T. Palka, Don J. Park, Leon L. Parks III, John P. Peach, Jason Kyle Pereira, Roman E. Perri, Josh Favrot Peterson, Neeraja B. Peterson, Amy Elizabeth Potter, Mias Pretorius, Ann H. Price, Jan Ellen Price, Adam James Prudoff, Igor Puzanov, David Bruce P'Pool, Jr., Han Zhu Qian, Satish R. Raj, Debra S. Rankin, Nishitha M. Reddy, Elizabeth Ann Rice, Todd W. Rice, Thomas Ramsey Richardson, Otis Rickman, Mark A. Robbins, Samuel Trent Rosenbloom, Russell Lawrence Rothman, Christianne L. Roumie, Ben Hardin Rowan III, Pablo J. Saavedra, Joseph George Salloum, Uchechukwu K. A. Sampson, Elizabeth Ann Sastre, Bipin N. Savani, Andrew E. Scanga, Heidi Maree Schaefer, David G. Schlundt, William E. Serafin, Shannon E. Serie,

Martha Jane Shrubsole, Dexter W. Shurney, Lisa Beth Signorello, David Alan Slosky,

Clay B. Smith, Stephen J. Smith, Terrence A. Smith, Barbara M. Snook, Laurence M. Solberg, Kelly L. Sopko, John Michael Stafford, Catherine V. Stober, Stephen A. Strickland, Sebastian Sune Strom, Eric L. Sumner, Melanie Swift, Takamune Takahashi, Thomas R. Talbot III, Helen Keipp Talbot, Simpson Bobo Tanner IV, Gregg T. Tarquinio, Lora D. Thomas, James J. Tolle, Andrea L. Utz, Eduard E. Vasilevskis, Raquel Villegas, Paula L. Watson, James D. West, Jule J. West, C. William Wester, S. Patrick Whalen, Ursula P. Whalen, Mark A. Wigger, Elisabeth Donlevy Willers, Christopher S. Williams, Susan Wodicka, Benjamin D. Womack, Patty Walchak Wright, Kenneth W. Wyman, Patrick S. Yachimski, Xiangli Yang, Pampee Paul Young, Ruth T. Young, Ming-Zhi Zhang, Xianglan Zhang, Tao Peter Zhong, Sandra S. Zinkel

VISITING ASSISTANT PROFESSOR David M. Hiestand

RESEARCH ASSISTANT PROFESSORS Rasul Abdolrasulnia, Vladimir R. Babaev, Dana M. Brantley-Sieders, Vanessa J. Briscoe, Nada M. Bulus, Hui Cai, Zheng Cao, Jian-Chun Chen, Jian-Kang Chen, Xiwu Chen, Chun-Hua Dai, Maria Pia G. DePasquale, John P. Donahue, Andrew Carl Ertl, Alfredo Gamboa, Emily M. Garland, Alain P. Gobert, Fiona E. Harrison, Michael F. Hill, Sabine S. Huke, Dawn A. Israel, Jeong Suk Kang, Hanako Kobayashi, Kirk B. Lane, Emma K. Larkin, Cunxi Li, Frances E. Likis, Qingdu Liu, John T. Loh, Mark S. McClain, Ginger L. Milne, Chandramohan Natarajan, Vadim K. Pedchenko, Xuyang Peng, Vasiliy V. Polosukhin, Shimian Qu, Reena Rao, Shirley Brody Russell, Sergey V. Ryzhov, Hideto Sano, Ayumi Kamina Shintani, Liviu Sicinschi, Heidi J. Silver, Joseph F. Solus, George Stathopoulos, Renee A. Stiles, Yan Ru Su, Harikrishna Tanjore, Elena E. Tchekneva, Carlos G. Vanoye, Christo Dimitro Venkov, Michael W. Vollman, Dao Wu Wang, Xiaochuan Carol Xu, Patricia Gale Yancey, Gong Yang, Bing Yao, Yajun Yi, Huiyong Yin, Michail Zaboikin, Fenghua Zeng, Yahua Zhang, Weisong Zhou ADJUNCT ASSISTANT PROFESSORS Sylvie A. Akohoue, Kong Y. Chen, Xinhong Dong, Marvin Feuerberg, Mary Kathleen Figaro, Diane S. Keeney, Lucia M. Tanassi ADJUNCT RESEARCH ASSISTANT PROFESSOR Myungsoo Joo

ASSISTANT CLINICAL PROFESSORS Joseph Akamah, Yasmine Subhi Ali, Newton Perkins Allen, Jr., David W. Allen, J. David Amlicke, Vinita Anand, John E. Anderson, Muhammad Asad, Jordan Ross Asher, Kenneth S. Babe, Jr., Robert J. Berkompas, Brian Stuart Biesman, Michael D. Callaway, Thomas H. Callaway, Karen V. Cassidy, David E. Chambers, Renee L. Cohen, Marvin Harris Cohn, Bryce W. Dixon, Tracey E. Doering, David L. Edwards, Steven A. Embry, Jeffrey B. Eskind, Cheryl Ann Fassler, Marquetta L. Faulkner, James A. Gaume, Michael H. Gold, Mark S. Goldfarb, Robert P. Graham, Jr., Antonio M. Granda, Elie Hage-Korban, Connie Allen Haley, Mary Alice Harbison, Charles E. Hart, William B. Harwell, Jr., Benjamin B. Hayes, J. Brevard Haynes, Jr., A. Clyde Heflin, Jr., Robert D. Hoover, Jr., David H. Horowitz, Mark Randall Kaplan, Kathleen R. Kearney, Ruth E. Lamar, James A. Lancaster, Dana L. Latour, Stanley M. Lee, Thomas J. Lewis, Jr., Francisco J. Mayorquin, Robert Wallace McClure, John R. McRae, Marvin Porter Meadors III, Howard R. Mertz, Alvin H. Meyer, Jr., Gary L. Mueller, Ronald Andrew Nelson, Henry E. Okafor, Bjarki J. Olafsson, Kandarp Patel, Barbara R. Paul, Ronald E. Pruitt, Lara Carpigiani Bezas Pupim, Lisa E. Radix, Bruce Earle Richards, Christopher W. Robb, Jason B. Robbins, Vito K. Rocco, Gregory P. Rowbatham, Csaba Rusznak, Sean P. Ryan, Mohanakrishna Sathyamoorthy, Rishi K. Saxena, Michael Kevin Smith, Suzanne R. Snyder, Peter J. Swarr, Thomas A. Tesauro, John G. Thompson, Jr., F. Karl VanDevender, Paul W. Wheeler, Craig Wierum, W. Carter Williams, Jr., Brian D. Williamson, Morgan Jackson Wills, Bruce L. Wolf, Christina Ynares

SENIOR ASSOCIATES Daniel W. Byrne, Lynda Denton Lane, Royanne A. Moore, G. Kyle Rybczyk

ASSOCIATE Victoria L. Harris

INSTRUCTORS Matthew J. Abbate, Vivak Bhatt, Kelly A. Birdwell, Michael E. Bowen, Kristina M. Buchholz, Philip J. Ciampa, Warren Clayton, Jr., Irina A. Didier, Glenn C.

- Douglas, Julia Dunn, Shelley E. Ellis, Joseph B. Fanning, Christina Taulien Fiske, Leslie Wyttenbach Goebel, James E. Gore, Jennifer Kiser Green, Erik Nels Hansen, Jacob Walter Hathaway, Joseph A. Henske, Gwendolyn A. Howard, Carey Kang-lun Hwang, Jeanette Sison Ilarde, Richard G. Lane, Benjamin Martel, Debra J. McCroskey, Vlada V. Melekhin, John Michael Norvell, James E. Powell, Brent N. Rexer, Amy E. Schindler, John Douglas Scott, Salyka Sengsayadeth, Edward D. Siew, Manakan Betsy Srichai, Eli Steigelfest, Bobby J. White
- RESEARCH INSTRUCTORS Holly M. Algood, Rupesh Chaturvedi, Sergiy Chetyrkin, James Robin Edwards, James N. Higginbotham, Aaron Marshall Kipp, Jordanka Kourteva, Wentian Luo, Tetyana V. Pedchenko, Maria Blanca Piazuelo, Nataliya Pidkovka, S. M. Jamshedur Rahman, Shanmuga Lakshmi Sadagopal, Wanda L. M. Snead, Chisu Song, Dina Myers Stroud, Yinghao Su, Megha H. Talati, Chuanzhong Ye
- ADJUNCT INSTRUCTORS John Q. Binhlam, Anna K. Hopla, Francesca Tentori, Vianney Epino Villaruz
- CLINICAL INSTRUCTORS Bradley N. Bullock, William D. Edmondson, Melinda Shaw Henderson, Jeffrey L. Hymes, Jason B. Martin, Christopher C. McClure, William H. Pettus, Robert S. Quinn, Lucien C. Simpson
- ASSISTANTS Rupa Meena Agrawal, Jennifer C. Baker, Layla M. Cochran, Kimberly Arnold Currier, Debbie J. Drake-Davis, Caroline V. Duley, Mary F. Edwards, Mary A. Grove, Deborah Haggard, Donnalita Harmon, Robin Hensley, Jason Robert Jean, Sharon B. Johnson, Connie Lewis, Deborah Baker Martin, Margaret A. Morrison, Jill R. Nelson, Deborah M. Payne, Holly R. Pierce, Whitney L. Reynolds, Carol R. Scott, Jamie Bradford Spicer, William H. Swiggart, Julianne Haines Wagnon, Douglas Casey West
- **5012. Physical Diagnosis.** The introduction to clinical medicine course for second year students. Emphasizes interviewing skills, acquiring a medical database, and performing a comprehensive physical examination. Utilizes a mentor system with groups of four students assigned to two faculty tutors who will guide them through history taking, patient examinations, and writeups. Includes lectures, practical sessions, and patient encounters. Second year. Leonard.

Web site: http://medicine.mc.vanderbilt.edu/q4\_studtrainprog\_pdc.cfm.

- **5015.** Introduction to Clinical Problem Solving The course emphasizes the role of history, physical findings, laboratory studies, radiologic studies, and other modalities in solving clinical problems. The course covers a variety of problems that the students will face throughout their careers, including, but not limited to anemia, renal failure, gastrointestinal bleeding, jaundice, chest pain, dyspnea, thyroid nodules, vaginal bleeding, and dementia. The focus throughout the course is defining the problem, determining the diagnostic possibilities, developing a diagnostic strategy, including knowing how to interpret the relevant tests in order to establish a diagnosis. The lectures are taught by the medical specialists who routinely deal with the problem under discussion and who can discuss in depth the relevant clinical issues. The lectures are supplemented by a series of clinical problem sets. The course will also consider the value and limits of testing in general and consider in depth the issues of test sensitivity, specificity, and predictive value. Second year. Stein.
- **5020. Medicine Core Clerkship.** Third-year medical students participate in an eleven-week, inpatient clinical clerkship under the aegis of the Department of Medicine, utilizing the clinical services of the Vanderbilt and VA hospitals. It is believed that learning is most vivid through direct experience with patients, obtaining histories, and doing physicals and laboratory studies, and that it is amplified by reading and intensive contact with members of the teaching staff and house staff. Students are given considerable responsibility under close supervision by the teaching staff. The clerkship is divided into three rotations of which two are general medicine and one subspecialty medicine. Each student is assigned to a faculty/resident team and

functions as an apprentice physician with graded responsibility for the evaluation and management of patients admitted to the medicine service. Students participate in all clinical and teaching activities of the service, including daily attending rounds, morning report, noon conferences, Grand Rounds, and the Thursday morning lecture series. In addition, students meet weekly in small groups with an assigned faculty member who conducts preceptor rounds for the entire eleven weeks. Third year. Spickard and Staff.

- **5100. Clinical Preceptorship Elective.** The objective of this experience is to expose first-and second-year medical students to clinicians early in their educational training and to give the students the opportunity to obtain exposure to clinician role models, so that the idealistic and altruistic attitudes which brought them to medicine may be sustained during the pre-clinical phase of their education. We also hope to provide an experience in which medicine is practiced: specifically, the common sense and practical considerations which influence approaches taken, outcomes achieved, and continuity provided in the health care system. Students are also encouraged to work with preceptors representing specialty careers of interest to the students. First and second year. Powers.
- **5130.** Subspecialty Clinics in Medicine. The Department of Medicine offers a four-week unit for senior medical students to work in subspecialty clinics in the department. Students work one-on-one with faculty members or fellows in at least nine (9) clinic meetings per week. Students may choose from a variety of clinics including allergy/pulmonary, bone marrow transplant, cardiology, endocrinology, gastroenterology, hematology/oncology, infectious disease, nephrology, pharmacology, and rheumatology. Students may spend all of their time on one or two clinics or elect to work in a variety of clinics. Students arrange their schedules with attendings in various clinics, then obtain a signature for the course from Dr. Anderson Spickard III using an add card at least one month prior to the beginning of the chosen unit. Fourth year. Prerequisite: Medicine 5020. Spickard.
- **5210.** Clinical Pathophysiology and Pharmacology: Rounds on the CRC. The course consists of the in-depth discussion each week of the illness of one patient emphasizing the pathophysiology of the disease process and important issues in clinical diagnosis. Enrollment is limited so that the traditional question and answer interaction between physicians and students during rounds can be maintained. Patients will normally be selected from among those admitted to the Clinical Research Center and will, insofar as possible, reflect conceptually important or commonly encountered diseases and differential diagnostic problems. First and second year. Robertson.
- **5240. Ethics, Law, and Medicine.** This course explores a variety of topics and problems at the intersection of ethical, legal, and medical concerns in the modern world of health care, including (to name a few) end of life decision making, reproductive technologies and abortion, genetic screening, and organ transplantation. Case-based and discussion oriented, the course has a secondary aim—to engage with others from different disciplinary backgrounds and training in order to foster greater appreciation for the multiplicity of perspectives associated with these (and similar) topics. Accordingly, the course is designed for, and available for enrollment to, students in the Schools of Divinity, Law, and Medicine. First and second year. Clayton.
- **5350. History of Medicine.** This course covers medical history from the Ancient Near East to the present. The course directors give the first few lectures for background; subsequent class meetings consist of guest lectures and reports by the students. Each student writes a paper or book review on a chosen aspect of medical history. The students who complete this course will be on their way to becoming humanistic physicians who understand where their profession has been and where it may be going. First and second year. Freemon.

**5425.** The Healer's Art. This course will create an interactive space to work on the art of medicine, including those aspects of helping and healing that students bring with them to medical school. It is based on a course developed by Rachel Remen, M.D., and now offered in more than fifty medical schools in the U.S. The format uses small groups and a well-tested "discovery" model drawn from humanistic and cognitive psychology. Following a discovery model means that students work in groups of five, with a faculty preceptor, to create a trusting community of inquiry where fundamental human experiences in medicine can be explored. The focus of the learning will be on (1) recognizing meaning, awe, and mystery in medicine and (2) understanding the relationship between healing patients and wholeness in one's own life. Students can expect to learn tools to enhance their interaction with patients, as well as their capacity for self-awareness and stress reduction. First and second year. Elam.

**5430.** Rheumatology Clinical Outcomes Research. The research will focus on analysis of patients seen at Vanderbilt with a particular rheumatic disease (e.g., ankylosing spondylitis, polymyalgia rheumatica), chosen with the student, to recognize variables which predict good or poor outcomes in specific patients. The research program will involve extensive review of patient records and entry of data into the Vanderbilt Rheumatology data base. Student participation in data analysis is encouraged. Fall 2008 elective areas include clinical research in rheumatic disease (Dr. Boomershine) and genetics of autoimmune diseases (Dr. Aune). Contact the faculty directly for more information. First and second year. Thomas.

**5555. Geriatric Medicine.** The intent of this course is to provide students with an advanced educational experience in geriatric medicine. Students will gain familiarity with multiple geriatric syndromes: polypharmacy, gait instability, dementia, fragility, pain management, pressure sores, incontinence, osteoporosis; appreciation for continuity of care across different levels of care; and the ability to differentiate between normal aging and disease processes. Students' knowledge of ethical issues will also be enhanced including patient autonomy, driving, and elder abuse. Students will also be able to identify and use community resources effectively, assess and treat multiple geriatric syndromes, organize management of multiple acute and chronic diseases simultaneously, and communicate sensitively and effectively with older persons and caregivers. Prerequisite: Medicine 5020. Powers.

**5610.** Clerkship in Clinical Nephrology. Students will participate in daily rounds with the nephrology attending, the nephrology fellow, and the medical resident assigned to the Vanderbilt Hospital nephrology service. Patients with various clinical disorders including fluid and electrolyte abnormalities, acid-base disturbances, glomerular diseases, and disturbances of renal function, including acute and chronic renal failure, will be seen and discussed. Students will have the opportunity to perform renal consults and present patients to the rest of the rounding team. Frequently, the nephrology service is requested to perform emergency consultation which requires acute hemodialysis or acute plasmapheresis. Students may participate in these acute consultations and develop an understanding of renal emergencies. This elective is designed to give the fourth-year student significant experience in practical clinical nephrology and prepare him or her for future house staff training. Prerequisite: Medicine 5020. Fourth year. Lewis.

**5611. Subinternship in Medicine, VU.** A student may serve as a clerk on the Vanderbilt medical service otherwise staffed by attending physicians, one assistant resident, and one regular intern. Approximately three to four selected new patients per week will be assigned for initial evaluation and continuing care. The format provides an excellent opportunity to work closely with members of the clinical faculty in caring for patients with interesting diagnostic and management problems. The patients assigned will be selected for their teaching value, and the student will function as the sub-intern under the direct supervision of the assistant resident and attending physician. Rotations on in-patient cardiovascular, medical subspecialties, and general medicine are available. Prerequisite: Medicine 5020. Fourth year. Leonard.

- **5613. Subinternship in Critical Care Medicine, VU.** This course is a four-week subinternship in multidisciplinary critical care medicine from the perspective of internal medicine. The student will be expected to fulfill much of the role of a junior level house officer, but will be closely supervised by interns, residents, and a senior critical care fellow, as well as a critical care attending. The unit is a very active critical care facility that manages a wide variety of medical emergencies using extensive monitoring and support equipment. The emphasis is on pulmonary disease, infection, and renal dysfunction, but covers all aspects of critical illness, including endocrinology, nutritional support, cost containment, and ethical issues. Teaching rounds are given daily, and these are supplemented with didactic lecture-discussions several days each week. Prerequisite: Medicine 5020. Fourth year. Wheeler.
- **5616. Subinternship in Medicine, VAH.** The form of this clerkship is a substitute internship on the Veterans Administration Hospital medical wards, working in concert with the house staff team (assistant resident, intern, and one or two third-year medical students). The substitute intern will be assigned one or, rarely, two new patients each admitting day and will be responsible for their care under the direction of the assistant resident. The substitute intern's patients will not be worked up by the regular intern. The student will be expected to attend all of the functions and keep the same hours as the house staff. This should provide an intensive experience in ward medicine. Prerequisite: Medicine 5020. Fourth year. Christman.
- **5619.** Subinternship in Critical Care Medicine, VAH. This subinternship at the Veterans Administration Hospital is intended to expose medical students to a variety of important management issues in critical care medicine. The student should have prior general ward experience in medicine and surgery. The student will function in the combined ICU/CCU as a sub-intern under the supervision of a medical resident, a pulmonary/cardiology fellow, and both an intensive care unit and a cardiology attending. The student will actively participate in both general medical intensive care and cardiac intensive care rounds. The student will have an every-third-night in-house call schedule and will work directly with two residents and interns. During the rotation, the student will learn how to evaluate complex critically ill patients and formulate diagnostic and therapeutic plans. The student will become familiar with the principles and techniques of invasive and non-invasive monitoring. Major areas which are stressed include ICU and CCU pharmacology, airway management and mechanical ventilation, fluid/electrolytes management, nutritional intervention, and ICU ethics. Prerequisite: Medicine 5020, Surgery 5020. Fourth year. Massion.
- **5620.** Clerkship in Gastroenterology, VU. This clerkship offers a broad experience in all clinical phases of gastroenterology including diseases of the hepatobiliary system and pancreas. Seminars, rounds, and evaluation of current literature are regularly scheduled. Students will be actively involved in in-patient consultation and out-patient clinics. Exposure to gastrointestinal endoscopic techniques will be available. Prerequisite: Medicine 5020. Fourth year. Ness.
- **5621. Clerkship in Gastroenterology, VAH**. This clerkship at the Veterans Administration Hospital offers a broad experience in all clinical phases of gastroenterology including diseases of the hepatobiliary system and pancreas. Seminars, rounds, and evaluation of current literature are regularly scheduled. Individual instruction in sigmoidoscopy as well as exposure to other more specialized gastrointestinal techniques are available. Prerequisite: Medicine 5020. Fourth year. Smalley.
- **5622.** Clerkship in Hepatology. This clerkship offers a broad experience in diagnosis and management of patients with liver disease. Students participate actively in liver service activities and attend all didactic teaching sessions within the Division of Gastroenterology. Exposure to outpatient consultative and continuing care is emphasized. In addition, students will make hospital rounds daily with the attending hepatologist. Prerequisite: Medicine 5020. Fourth year. Perri.

- **5630.** Cardiovascular Diagnostics. Students will be exposed to current technologies involved in the diagnosis of cardiovascular disease. Each student will spend one week in each of four different modalities: echocardiography, nuclear cardiology and stress testing, cardiac catheterization, and cardiac MRI and CT. Didactic lectures will be given at the beginning of each week to prepare the students for the experience. Fourth year. Dendy, Damp.
- **5635. Clerkship in Bone Marrow Transplant.** For one month the student will participate in the activities of the bone marrow transplant service, including Tuesday and Thursday clinics, Monday teaching conferences, daily morning work/teaching rounds with the medical house staff, and other teaching conferences with the house staff. This elective is designed to provide in-depth experience with respect to the selection of patients for transplant procedures as well as with the management of transplant problems. Prerequisite: Medicine 5020. Fourth year. Goodman.
- **5645.** Clinical Nutrition and Metabolic Support. The Adult Nutrition Support Team, housed in the Vanderbilt Center for Human Nutrition, serves as a consultation service for patients who require parental and enteral nutrition at VUMC. Initial comprehensive consultation and follow-up care provide guidance in appropriate patient selection, determination of nutrient requirements and type of nutrition support, and ongoing clinical management to prevent complications and achieve nutritional goals. Typical patients include those who are critically ill with major abdominal surgery or trauma and those with serious underlying gastrointestinal disease. It is not unusual to see patients with life-threatening malnutrition. Students who choose this elective will participate as active members of the multidisciplinary consult team. The student will learn nutrition assessment methods and the skills to translate assessment findings into appropriate nutrition support interventions. Exposure will include intravenous and tube feeding interventions. Skills for typical prescription and monitoring of the nutrition support patient will be taught including macronutrient, fluid, electrolyte, acidbase, and glucose management. The student will have the opportunity to follow individual patients from initial consultation to daily follow-up care. There will be an opportunity to participate in the home malnutrition clinic as well. Fourth year. Seidner.
- **5650.** Clerkship in Patient-Oriented Research. The Clinical Research Center is a combined inpatient/outpatient facility drawing patients from all divisions of Vanderbilt Hospital. Many of the most important discoveries pertaining to patient care are made in such a setting. Most of the patients have complicated disease presentations. Students have the opportunity to experience both basic and translational research in a clinical setting. Regular attending rounds will be made with the house staff and investigators, and there will be an opportunity for the student to participate in the evaluation of patients and conduct patient-oriented research. Prerequisite: Medicine 5020, Surgery 5020, Pediatrics 5020. Fourth year. Robertson.
- **5660. Clerkship in Pulmonary Diseases, VAH.** Students participate in an active inpatient pulmonary consult service (8-12 consults per week, 4-8 bronchoscopies per week) where they evaluate and present patients and review chest x-rays, chest CT scans, and pulmonary function tests on a daily basis. Clerks acquire skills in the work-up and management of common pulmonary problems including hypoxemia, pulmonary emboli, acid-base disturbances, CXR abnormalities, obstructive and restrictive lung diseases, infection, and neoplasm. Students also have the opportunity to be involved with outpatient evaluation and work-up of lung masses and participate in a weekly interdepartmental chest cancer conference. Other activities include weekly pulmonary clinic at the VA, weekly physiology/pathophysiology lectures, and weekly clinical case conference. Prerequisite: Medicine 5020. Fourth year. Massion.
- **5670.** Clerkship in Renal Pathophysiology, VAH. This clerkship offers active participation in the evaluation of patients with kidney disease and fluid-electrolyte imbalance, in acid-base disorders, and in renal-electrolyte rounds, as well as experience in the hemodialysis program

for acute and chronic renal failure. Plasmapheresis patients will also be seen as a part of the rotation. Students will see consults and also manage nephrology inpatients. Prerequisite: Medicine 5020. Fourth year. Stone.

**5680. Clerkship in Infectious Diseases.** During the clerkship, the students will evaluate patients with infections as part of the infectious diseases consult service at VU Hospital. They should gain competence in diagnostic skills and in the management of infected patients, including choice and use of antibiotics. Special emphasis will be placed on understanding the epidemiology, pathophysiology, and natural history of infectious diseases. Students will be active participants in the management and follow-up of patients and will attend regularly scheduled rounds, conferences, and seminars of the Infectious Diseases Division. Prerequisite: Medicine 5020. Fourth year. Wright.

**5691. Subinternship in Cardiovascular Critical Care, VU.** The student will actively participate in the management of critically ill cardiology patients hospitalized in the Cardiac Care Unit. Duties will include the management of patients with (1) cardiogenic shock, (2) complicated myocardial infarction, (3) complex coronary stenting, (4) Swan-Ganz catheters and continuous hemodynamic monitoring, (5) intra-aortic balloon pumps, (6) mechanical circulatory assist devices, (7) mechanical ventilation, and (8) vasoactive medications. The student will work closely with an assigned medical resident and be expected to write an admission history and physical examination and daily progress notes and present patients followed on daily work rounds to the entire team. The course will require three overnight calls with the assigned resident. The rotation will provide a significant "hands-on opportunity" for medical students to participate in the management of critically ill patients. The paired resident/single medical student model will provide a great deal of time for interactive teaching and learning. Note: Because of the intense nature of this clerkship, students will not be excused for intern interviews or other personal matters during this rotation. Prerequisite: Third year core clerkships. Fourth year. DiSalvo.

**5710.** Clerkship in Rheumatology Center. This is an outpatient service rotation designed to immerse the student extern in the evaluation and care of patients with a wide variety of rheumatic diseases. Special emphasis is placed on the patients with rheumatoid arthritis and lupus; however, all of the inflammatory and degenerative connective tissue disorders will be seen and reviewed. There is daily contact with several rheumatologists as well as the entire staff of the Arthritis Center at Vanderbilt Hospital (physical therapy, occupational therapy, patient educator, etc.) The student will observe patient evaluations and treatment methods and will be expected to perform some new patient assessments. Emphasis is placed on learning the most practical and cost effective means of efficiently planning evaluations and treatments. This rotation is especially valuable to students considering primary care and orthopaedics. Fourth year. Huston.

**5730. Clerkship in Clinical Cardiology.** This consultative cardiology experience was restructured in 2005 to offer new learning opportunities for medical students wishing to refine their skills in cardiovascular diagnosis. It provides both inpatient encounters and personalized instruction in physical diagnosis and EKG reading. The student will see new patients in consultation with cardiology faculty at Vanderbilt and at the VA Hospital. A highlight of the experience is a private weekly patient presentation to—and examination of the patient with—a senior cardiac physician at Vanderbilt. The student will be instructed in the use of a heart sound simulator which has been demonstrated to improve physical diagnosis skills. Eight didactic sessions on EKG interpretation are provided during the four-week rotation. Finally, weekly conferences to attend include: Clinical Cardiology (2), Echocardiography, Nuclear Medicine, and Cardiology Grand Rounds. Prerequisite: Medicine 5020. Fourth year. Campbell.

**5735. Palliative Care.** Students will rotate through VUMC, the VA Hospital, and Alive Hospice under the supervision of palliative care specialists. Students will follow their own patients and

work with an interdisciplinary team (IDT). This opportunity will allow students to learn and apply the fundamentals in pain and symptom management, how to communicate at the end of life, care of the dying patient, and hospice. Students will spend roughly two weeks at VUMC and the remainder of time equally at the VA Hospital and Alive Hospice. At VUMC and the VA Hospital, students will work with the inpatient consultative team and see patients throughout the hospital from all disciplines of medicine assisting in symptom management, advanced care planning, and hospice. At Alive Hospice, they will accompany members of the IDT on home visits and learn more about their various roles in end of life care. In addition, students will spend time on the inpatient hospice units. The medical director for palliative care at Vanderbilt University will supervise and evaluate the students on the basis of the six clinical core competencies as delineated by the ACGME. Creative structuring will allow students to make modifications to the rotation to meet individual needs. Fourth year. Karlekar.

**5737. Palliative Care: Hospice.** This semester-long elective for first- and second-year students provides the opportunity to spend time at Alive Hospice, under the direction of the medical director, rounding in their inpatient hospice residence (a free standing, independent, thirty-bed hospice facility). Students will be exposed to a variety of patients (age, cancer and non-cancer diagnoses, AIDS, differing symptom management challenges, etc.), and will have the opportunity to interact with patients, families, and interdisciplinary staff. It is intended to expose the student to this specific paradigm of care at the end of life, enhancing awareness of the reality of the dying process, the importance of hospice philosophy, and the integration of an interdisciplinary team concept, and to provide a "take home" symptom management protocol. Students will develop a deeper skill in communication and benefit from the continuity of understanding end of life issues and symptom management. First and second year. Henderson.

**5740.** Clerkship in Pulmonary Consultation. This course consists of seeing all pulmonary consultations at VU Hospital, presenting the cases to conferences and rounds, participating in pulmonary laboratory testing, fiberoptic bronchoscopy, and pleural biopsy procedures, and attending joint pulmonary conferences. Prerequisite: Medicine 5020. Fourth year. Wheeler.

**5760. Clerkship in Rheumatology.** Time will be spent primarily in the VUH and VA outpatient clinics, but also will include consultation on patients with rheumatologic problems. Patient evaluations will emphasize pathophysiology and management decisions. A weekly rheumatology conference discusses related topics. Fourth year. Thomas.

**5770.** Clerkship in Clinical Endocrinology. This elective is designed to afford students an intensive experience with both inpatients and ambulatory patients. The student will be a member of the inpatient endocrine consultation team, which consists of an endocrinology staff physician, a fellow, and residents. Students will work up assigned patients, discuss them with other members of the team, and follow them throughout hospitalization. The focus will be on diagnostic and therapeutic decision making for hospitalized patients. In addition, the student will attend a variety of endocrine and diabetes clinics, including clinics with special emphasis on pituitary disorders, thyroid-parathyroid disease, and ambulatory diabetes management. Prerequisite: Medicine 5020. Fourth year. Jagasia.

**5780. Subinternship in Medical Oncology.** This subinternship will provide the student with a broad overview of clinical oncology. Inpatient exposure will be centered at Vanderbilt Hospital, where the student will assist the oncology fellow in the evaluation of new oncology service admissions and new consultations. The student will make morning rounds and present new cases to the oncology attending. In addition to inpatient exposure, the student will attend two to three outpatient clinics per week and see patients with the oncology attendings. During the rotation, the student will also attend the Division of Oncology conferences at Vanderbilt. Prerequisite: Medicine 5020. Fourth year. Johnson.

- **5790.** Clerkship in Clinical Dermatology. This elective will be centered on teaching in the outpatient setting with direct faculty interaction. The primary location of clinic assignments will be in Dermatology Clinic at Vanderbilt 100 Oaks. Selected clinics will occur at the VA Hospital. There will be participation in weekly conferences specifically for the rotators on the clerkship. The didactic lectures during the month will focus on the identification, treatment and management of common dermatologic diseases. The clinical experience will reinforce the lectures plus give insight into the role of the dermatologist as a consultant for less common and difficult to treat conditions. Rotations in July require special permission. Fourth year. Zic.
- **5820. Spirituality in Medicine.** Weekly one-hour meetings with journal club format. Articles will represent diverse faiths and points of view. Goals will be to develop broad-based, universal definition of spirituality and to explore the impact of spirituality in health, disease, and treatment. Also will discuss death, dying, and diversity issues. First and second year. Tarpley.
- **5828. Clinical Ethics Consultation.** Ethics consultation has been utilized for a number of years in the U.S., but not without difficulties and controversies. Students will participate in ethics consultation and also explore the different models of ethics consultation and their strengths and weaknesses. They will also have the opportunity to examine the different theoretical frameworks that undergird these different models with an eye toward their practical implementation. In addition to participation in ethics consultations, students will also prepare a short presentation to be made to the members of the Center for Biomedical Ethics and Society and will write an essay of between 3,000 and 5,000 words exploring an ethical question in clinical medicine. Fourth year. Bishop.
- **5910. Preceptorship at Siloam Family Health Center.** The objective of this elective is to expose second-year medical students to clinical health care at a community clinic. Students will visit the Siloam Family Health Center once a week during its hours of operation (Monday, 6:00-8:00 p.m., Thursday, 6:00-8:00 p.m., or Saturday, 10:00 a.m.-noon). During their visits, students will shadow a physician. They may also have the opportunity to help in history taking and physical diagnosis. Second year. Prerequisite: Completion of first-year curriculum. Gregory.
- 5930. Clerkship in Health Promotion. Monthly elective for one student interested in health education and health promotion in clinical and outpatient programs. The student will observe and participate in the Cardiac and Pulmonary Rehabilitation Programs at the Dayani Center. Additionally, the student may elect to spend a portion of this elective in the areas of smoking cessation, behavioral health, nutrition, exercise science, or corporate health. An overview of each area not chosen will be provided. Students are expected to spend approximately half of their time in research related to the measurement of clinical outcome inpatients within the rehabilitation program. The format of the clerkship will include lectures, case discussions, readings, and direct patient contact. A mentor, through a multidisciplinary approach, will guide the student to health promotion. To personalize the experience, students will receive their own fitness assessments, nutritional counseling, stress assessments, and free use of the Dayani Center facilities during the clerkship month. Students will be involved in a one-day a week clinic at Page-Campbell under the direction of physician. In addition, students will be trained weekly in EKG interpretation by co-supervising 12-lead exercise tests with Dayani staff. It is advised that students contact the course instructor prior to clerkship. Fourth year. Not offered January, February, or March. Klint.
- **5940.** Rheumatology Clinical Research. Students will be given a topic within a long-term data base of patients with rheumatic disease for intensive investigation during a one-month period. The student will be expected to acquire skills in outcome research. The possibility of participating in this elective for two months may be considered. Requires a Special Study Research Petition. Fourth year. Thomas.

5960. Clerkship in Clinical Hematology. For one month, the student will participate in the daily clinics of the hematology service. Additionally there is an opportunity to attend the rounds of the malignant hematology service and/or the benign hematology service at Vanderbilt University Hospital. The student will be able to attend clinical conferences. This clinical elective is designed to provide a broad in-depth exposure to both benign and malignant hematology under the direct supervision of the hematology faculty. Prerequisite: Medicine 5020. Fourth year. Stein.

5980. Clerkship in Clinical Ethics: Research in Medical Humanities or Clinical Ethics. Each proposed research project must be submitted in writing to the course director for review and approval; the description of the proposed research must include goals, hypotheses, rationale, method, and bibliography. The research project must be able to be completed within the period of the rotation (four weeks), or within a reasonable time during the fourth year. The research project may be a continuation of an earlier ethics research proiect or a new one. Bliton.

6100. Special Clinical Study-Vanderbilt.

6150. Special Research Study - Vanderbilt.

6200. Special Study-Pre-Clinical.

7100. Special Clinical Study-Non-VU.

7150. Special Research Study-Non-VU.

# ecial Clinical Study-Non-VU. ecial Research Study-Non-VU. Microbiology and Immunology

CHAIR Jacek Hawiger PROFESSOR EMERITUS John H. Hash

PROFESSORS Christopher R. Aiken, Dean Williams Ballard, Mark R. Boothby, James E. Crowe, Jr., Mark R. Denison, Terence S. Dermody, Richard T. D'Aquila, Jacek Hawiger, J. Harold Helderman, George C. Hill, Sebastian Joyce, Donald H. Rubin, Henry Earl Ruley, Subramaniam Sriram, James Ward Thomas II, Luc Van Kaer

ASSOCIATE PROFESSORS Thomas M. Aune, Timothy L. Cover, David William Haas, Spyros A. Kalams, Douglas S. Kernodle, Andrew J. Link, Geraldine G. Miller, Louise A. Rollins-Smith, Eric Patrick Skaar

ASSISTANT PROFESSORS Wonder Puryear Drake, D. Borden Lacy, Eric Sebzda, Ben Spiller, John Vance Williams

RESEARCH ASSISTANT PROFESSORS Maria Pia G. DePasquale, Qing Lin, Yan X. Liu, Danyvid Olivares-Villagomez, Lan Wu

RESEARCH INSTRUCTORS Oleg A. Osipovich, Ruth Ann Veach, Jing Zhou, Jozef Zienkiewicz

5020. Microbiology and Immunology. This provides a comprehensive course of microbiology and immunology encompassing the molecular cell biology of microbial agents and the immune system, review of pathogenic bacteria, viruses, fungi, protozoa, and parasites. The course consists of lectures, conferences, and laboratory sessions and problem-based small group discussions focused on different pathogen-host relationships. SPRING. Van Kaer.

Web site: http://bret.mc.vanderbilt.edu/microbiology

6150. Special Research Study-Vanderbilt.

6200. Special Study—Pre-Clinical.

# Molecular Physiology and Biophysics

CHAIR Roger D. Cone

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PROFESSORS Albert H. Beth, G. Roger Chalkley, Alan D. Cherrington, Roger J. Colbran,

Roger D. Cone, Jackie D. Corbin, Stephen Neil Davis, Eric Delpire, Emmanuele DiBenedetto, Ronald B. Emeson, John H. Exton, John C. Gore, Daryl K. Granner,

Jonathan Lee Haines, Raymond C. Harris, Jr., Carl H. Johnson, Robert L. Macdonald,

Mark A. Magnuson, James M. May, Owen Patrick McGuinness, Hassane S.

Mchaourab, Louis Joseph Muglia, Richard M. O'Brien, Jane H. Park, David W. Piston,

Alvin C. Powers, Roland W. Stein, Kevin Strange, Marshall Lynn Summar, David H.

Wasserman, P. Anthony Weil, John P. Wikswo, Jr., Scott Matthew Williams

RESEARCH PROFESSORS Sharron H. Francis, K. Sam Wells

ADJOINT PROFESSOR Giorgio Sirugo

ASSOCIATE PROFESSORS Aurelio Galli, Maureen Anne Gannon, Volker H. Haase, Alyssa H. Hasty, David Charles Samuels, Linda Sealy, Phoebe L. Stewart, James S. Sutcliffe, Jeanne M. Wallace, Danny G. Winder

RESEARCH ASSOCIATE PROFESSORS Charles E. Cobb, Eric J. Hustedt, Robert T. Matthews, Mary E. Courtney Moore, Jacques Pantel

ASSISTANT PROFESSORS Jeffrey A. Canter, Wenbiao Chen, Dana C. Crawford, Bruce M. Damon, Niels de Jonge, Kate L. J. Ellacott, Anne K. Kenworthy, Shawn E. Levy, Douglas Paul Mortlock, Kevin Dean Niswender, Masakazu Shiota, John Michael Stafford

RESEARCH ASSISTANT PROFESSORS Holli H. Dilks, Dale Scott Edgerton, Subhadra C. Gunawardana, Hanane A. Koteiche, Michael J. McCaughey, Deborah G. Murdock, Richard Lee Printz, Richard R. Whitesell

ADJUNCT ASSISTANT PROFESSOR Habibeh Khoshbouei

ASSOCIATE Kelly Ann Taylor

RESEARCH INSTRUCTORS Richard K. P. Benninger, Sheng-Song Chen, Kevin Erreger, Heinrich J. G. Matthies, Christopher Mark Olsen, Nathalie C. Schnetz-Boutard, Kylee L. Spencer, Susanne A. M. Thomson, Saraswathi Viswanathan

ASSISTANTS Genea S. Crockett, Benita Lynch, David P. Sexton

**5300. Medical Scientist Training Program: Seminar.** This course is specifically designed for students enrolled in the joint M.D./Ph.D. program. It consists of coordinated presentations by M.S.T.P. students on a range of scientific discoveries and issues of broad relevance to biomedical research. Enrollment is limited to M.S.T.P. students for whom the course is required. For M.S.T.P. students only. First and second year. Dermody.

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

# Neurology

CHAIR Robert L. Macdonald

PROFESSORS EMERITI Frank R. Freemon, John Sloan Warner

PROFESSORS Bassel W. Abou-Khalil, Malcolm John Avison, John J. Connors, Peter D.

Donofrio, Gary W. Duncan, Gerald M. Fenichel, Howard S. Kirshner, Patrick Lavin,

Robert L. Macdonald, Beth Ann Malow, David Robertson, Subramaniam Sriram, Arthur S. Walters, Ronald G. Wiley

RESEARCH PROFESSOR Scott B. Boyd

CLINICAL PROFESSOR Karl Edward Misulis

ASSOCIATE PROFESSORS Philip David Charles, Thomas L. Davis, Sean P. Donahue, Anthony W. Kilroy, Michael J. McLean, Paul L. Moots, Juliann Paolicchi, J. Eric Pina-Garza, Michael G. Tramontana

ASSOCIATE CLINICAL PROFESSOR Constance J. Johnson

ASSISTANT PROFESSORS Amir M. Arain, Nabil J. Azar, Kanika Bagai, Gregory Neal Barnes, Aaron B. Bowman, W. Bryan Burnette, Michael Kane Cooper, Ramon Fontanilla Cuevas, Kevin C. Ess, John Y. Fang, Bradley S. Folley, Martin J. Gallagher, Rishi Gupta, Kevin F. Haas, Peter Hedera, Jane Ellen Howard, Kimberly Nixon Hutchison, Adrian A. Jarquin-Valdivia, Andre Lagrange, BethAnn McLaughlin, John K. Mori, Harold Moses, Jr., Anne Elizabeth O'Duffy, Siddharama Pawate, Amanda C. Peltier, Fenna T. Phibbs, Tyler Reimschisel, Sandra L. Schneider, Pradumna Pratap Singh, Brian M. Thompson, David R. Uskavitch, Kohilavani Velayudam, James S. Walker

RESEARCH ASSISTANT PROFESSORS Hua-Jin Feng, Jingqiong Kang, M. Diana Neely, Song-Yi Yao

ADJUNCT ASSISTANT PROFESSORS Kreig D. Roof, Nandakumar B. Vittal ASSISTANT CLINICAL PROFESSORS Jan Lewis Brandes, Mary Ellen Clinton, Noel P. Lim, Barbara J. Olson, Erin Phillips, Subir Prasad, Deron V. Sharpe, Teresa Zyglewaska INSTRUCTORS Rachel Dolhun, Roberta M. Leu ASSISTANT Susan E. Beaird

- **5020. Neurology Core Clerkship.** The rotating students of the third-year class are alternately assigned to two 2-week (total=4 weeks) rotating blocks of clinical neurology inpatient and outpatient experience. Students are given direct responsibility for the evaluation and care of patients under the supervision of house staff and faculty. This exposure is intended to provide the students with an approach to patients with diseases of the central, peripheral, and autonomic nervous systems and skeletal muscles. On the first day of the rotation, the orientation meeting is in 317 MCS at 8:00 a.m. At the end of the rotation, students will have to take the NBME exam. Departmental recognition is given to the highest NBME score. Exposures to other areas of neurology can be arranged; talk to the clerkship director. Third year. Jarquin-Valdivia.
- **5130. Neurology Clinic Subspecialty Survey.** This course represents a collection of nine half-day clinics per week with the goal of exposing the interested student to the broad array of contemporary clinical neurology specialties. Fourth year. Charles.
- **5611. Neurology Consultation Service, VAH.** Students are assigned to the consultation service where they are responsible for working up and following patients under the supervision of the Veterans Administration Hospital chief neurology resident and faculty. This rotation provides the student with opportunities to evaluate patients with neurologic complications of medical, surgical, and psychiatric disease. Prerequisite: Neurology 5020. Fourth year. Wiley.

- **5612.** Clerkship in Neurology. Senior students will evaluate neurological consultations at VU Hospital and The Vanderbilt Clinic under the supervision of residents and faculty. Opportunities to participate in EEG, EMG, ultrasound, sleep studies, botox injections, and others are available upon request. Prerequisite: Neurology 5020. Fourth year. Jarquin-Valdivia.
- **5613. Clerkship in Pediatric Neurology.** Senior students will evaluate neurological consultations at VU Hospital and participate in pediatric neurology outpatient clinics at Vanderbilt Children's Hospital. Prerequisite: Pediatrics 5020, Neurology 5020. Fourth year. Paolicchi.
- **5614.** Clinical Neuro-oncology. Students will see consults and admissions to VUH and VAMC with cancer of the nervous system and neurological complications of cancer. They will also attend pediatric neuro-oncology clinic one morning per week and will have the opportunity to follow neurosurgical neuro-oncology patients before, during, and after surgery. Prerequisite: Neurology 5020. Fourth year. Moots.
- **5615. Subinternship in Neurorehabilitation.** This is a four-week rotation in which the student will take supervised primary care of 10-15 patients on the neurorehabilitation service. In addition to participating in the care of patients and presenting patients on attending rounds, the student participates in team meetings where the rehabilitation program for each patient is planned with physical, occupational, and speech therapists, social workers, etc. The student also participates in family meetings with patients, families, and therapists. The student writes admission orders and notes, and progress notes, and follows the clinical course of patients carefully during the entire rotation. The student is expected to go to the Stroke Clinic (TVC3) one day per week. In the final week of the rotation, the student is expected to present a 45-minute discussion on a relevant rehabilitation topic of the student's choice in a meeting with both attendings, the stroke resident, students, and fellow. This course satisfies the subinternship requirement. Prerequisite: Neurology 5020, Medicine 5020. Fourth year. Kirshner.
- **5617. Stroke Management.** The student will gain first-hand experience with the management of stroke. The course includes rounds on the new stroke service at Vanderbilt with Dr. Kirshner and colleagues, and participation in clinical stroke protocols and in stroke diagnostic procedures such as carotid ultrasound. Stroke rehabilitation, which is the subject of a separate elective, could also be observed during this elective. Prerequisite: Medicine 5020. Fourth year. Kirshner.
- 5655. Subinternship in Neurocritical Care. The comprehensive and collaborative care of a wide range of critically ill patients that have primarily life- or organ-threatening diseases or injuries to the brain, spinal cord, peripheral nerves, or muscles. There will be exposure to a wide range of medical and surgical clinical problems such as hypertension, vascular disease, respiratory dysfunction, fluids and electrolytes, acid-base, COPD, diabetes mellitus and insipidus, myocardial dysfunction, cardiac dysrhythmias, pancreatitis, end-of-life care, infectious issues, airway management, ICU pharmacology, etc. There will be exposure to the standard, pertinent, and evidence-based issues relevant to intensive care management. These may include mechanical ventilation, vascular cannulations, point-of-care ultrasonography, resuscitation, neuroprotection, nutritional issues, etc. The opportunity to go to the OR with the assigned patients, for their neurosurgery and/or anesthesiology is available and encouraged. The students will have all associated clinical responsibilities and will participate in all the usual house-staff (interns, residents, and fellows) activities, including procedures, lectures (including the monthly ethics rounds), patient care, diagnosis, and management. Students are expected to attend the Fundamentals of Critical Care Support course (FCCS) lectures and take the exam for FCCS certification at the end of the rotation. 100 percent commitment is required. No overnight call, but may need to stay late. One day off per week. Satisfies the surgical subinternship requirement. Prerequisite: Third year core clerkships. Fourth year. Jarquin-Valdivia.

- 6100. Special Clinical Study-Vanderbilt.
- 6150. Special Research Study-Vanderbilt.
- 6200. Special Study-Pre-Clinical.
- 7100. Special Clinical Study-Non-VU.
- 7150. Special Research Study-Non-VU.

## Obstetrics and Gynecology

INTERIM CHAIR Howard W. Jones III

PROFESSORS EMERITI Benjamin J. Danzo, Stephen S. Entman, Marie-Claire Orgebin-Crist PROFESSORS Frank H. Boehm, Lonnie S. Burnett, John Watson Downing, Esther Eisenberg, Arthur C. Fleischer, John W. Greene, Howard W. Jones III, Kevin G. Osteen, Rose M. Robertson, Daulat Ram P. Tulsiani, Sten H. Vermund, Carl W. Zimmerman

ADJUNCT PROFESSORS Gloria Richard-Davis, Janice E. Whitty

CLINICAL PROFESSORS Michael A. Belfort, James F. Daniell, Jr., Henry W. Foster, Joel T. Hargrove, Frank Wen-Yung Ling, Valerie Montgomery Rice, Thomas Gregory Stovall, Robert Layman Summitt, Jr.

ASSOCIATE PROFESSORS Ted L. Anderson, Rochelle Filker Andreotti, Edson James Andrews, Jr., Jeffrey C. Andrews, Mark J. Bliton, Michael Alan Gold, Katherine E. Hartmann, Lynn M. Matrisian, Glynis A. Sacks-Sandler

ASSOCIATE CLINICAL PROFESSORS Robert H. Ball, Jill F. Chambers, Harold Breckinridge Collins II, Angus M. G. Crook, James H. Growdon, Jr., Barry Kent Jarnagin, Audrey H. Kang, Val Yvette Vogt

ASSISTANT PROFESSORS Kelly A. Bennett, Bruce Robert Beyer, Daniel H. Biller, Kaylon L. Bruner-Tran, Tamara L. Callahan, Lavenia B. Carpenter, Mary Anne Carroll, Marta Ann Crispens, Etoi A. Garrison, Elizabeth Colvin Huff, Dineo Khabele, Susan M. Lewis, Richard R. Lotshaw, John A. Lucas, Melissa McPheeters, Melinda S. New, Andy M. Norman, Charles B. Rush, Stacey A. Scheib, Leilani M. Smieja, Bennett M. Spetalnick, Laurie Arnold Tompkins, Deborah J. Wage, Renee M. Ward, Amy Gregory Weeks, Angela Wilson-Liverman

ADJUNCT ASSISTANT PROFESSOR Tultul Nayyar

ASSISTANT CLINICAL PROFESSORS George B. Crafton, B. Stephens Dudley, George Alan Hill, Bryan Richard Kurtz, Nancy B. Lipsitz, Elizabeth L. Oldfield, Roy W. Parker, Gautam G. Rao, Glenn A. Weitzman, Laura L. Williams

ASSOCIATES Martha Shaw Dudek, Julie S. Kaalberg

INSTRUCTORS Alison B. Barlow, Allyson Boudreaux, Suzanne T. Csorna, Lisa Goehring, Karen Pearce Gold, Tamara S. Keown, Lucy Koroma, William Fitzhugh Lee, Trenia Lyn Webb

RESEARCH INSTRUCTOR Andrew James Wilson

CLINICAL INSTRUCTORS R. Terry Adkins, Darrington Phillips Altenbern, Anne F. Anderson, Jeffrey Van Anderson, Donald R. Barnett, Lewis J. Bellardo, Mary Anne Blake, Phillip L. Bressman, Douglas H. Brown, Roy P. Burch, Jr., Christina Cain-Swope, J. Calvin Channell, Katherine L. Clarke-Haney, Jackson Daniel Cothren, Donna J. Crowe, Melanie A. Dunn, Joy Louise Duong, Abby C. Eblen, Joe Michael Edwards, Frederick L. Finke, Larry D. Gurley, Sara Habibian, Michael D. Hawkins, M. Bruce Hirsch, Annette E. A. Kyzer, Tiffanee A. Lenzi, John W. Macey, Jr., Roseann Maikis, Tiffanie Tate Moore,

S. Houston Moran, Merri B. Morris, H. Clay Newsome III, Sharon A. Norman, Thomas Michael Numnum, Naomi Sudeen Paschall, Sharon Marie Piper, Melissa G. Reynolds, Ron N. Rice, Sherrie A. Richards, Jacqueline Lee Rodier, Anne Tomlinson Rossell, Robin Elizabeth Sandidge, Nicole L. Schlechter, Shali Ricker Scott, Geoffrey H. Smallwood, Stephen M. Staggs, Jill Steier, Kristina Lynn Storck, S. Allison Cox Strnad, Michael Charles Swan, Catherine M. Thornburg, Christine M. Whitworth, Carl E. Wingo, Anne Courter Wise, Grayson Noel Woods

ASSISTANT Susan B. Drummond

5020. Obstetrics-Gynecology Core Clerkship. Each member of the third-year class is assigned to the obstetrics and gynecology service for five-and-one-half weeks. Vanderbilt University Hospital. Each student will spend two-and-one-half weeks on the obstetrical rotation. While on the maternal-fetal service this will include daily attending rounds and involvement with the maternal-transport service. Students will also be assigned to the perinatal group practice service. In addition to being involved on labor and delivery, students will help manage obstetric patients who are followed in the Vanderbilt Clinic. Each student will spend twoand-one-half weeks on gynecology. Each student will spend one-half day per week in continuity clinic, one-half day in colposcopy clinic, and one-half day in clinical transaction project. Daily teaching rounds are conducted by the GYN oncologists. The general gynecology service provides exposure to the medical and surgical management of patients seen at the Gynecology Clinic. The two-week rotation at Baptist Hospital provides excellent exposure to operative gynecology and to gynecology in the private practice setting. In addition, students are encouraged to observe surgical cases performed by the reproductive endocrinology service. The five-and-one-half weeks rotation provides a broad based introduction to the discipline of obstetrics and gynecology. Included in the rotation is a lecture series given by the faculty covering general obstetrics, high-risk obstetrics, gynecologic oncology, reproductive endocrinology, and general gynecology. Third year. Rush and Staff.

**5425.** Reproductive Health and Sexuality. This course is intended to give students a broad overview of reproductive health issues. Topics will include sexual function and dysfunction, contraception, infertility, STDs, sexual differentiation, ethics, and medico-legal issues. Classes will generally consist of interactive lectures and case discussions. First and second year. Eisenberg.

**5620.** Clerkship in Maternal/Fetal Medicine. During this rotation, the student receives advanced training in high-risk obstetrics at the student level. Students help to direct both the antepartum and postpartum care of several complications of pregnancy, including preterm labor, PPROM, and pregnancy-induced hypertension. By the end of the rotation, the student should be familiar with the main complications of pregnancies, be confident in delivering directed and concise patient assessments and treatment plans, and have mastered the mechanisms of normal labor and delivery. Specific learning activities include daily morning obstetrical teaching rounds; attendance in obstetrical clinic, with additional time spent in diabetic clinic, obstetrical ultrasound clinic, and the clinics of several MFM attendings; weekly fetal monitor conference; bimonthly obstetrical ultrasound conference; and overnight call on labor and delivery suite. Learning resources include one-on-one interactions with the obstetrical house staff and attendings, access to current obstetrical texts and journals, and teaching conferences. Prerequisite: OBGN 5020. Fourth year. Carpenter.

**5640. Clerkship in Reproductive Endocrinology and Infertility.** During this rotation, the student receives training in the management of gynecologic endocrine and infertility patients. The student participates in the evaluation and management of women with gynecologic endocrinology problems and the infertile couple, including hysterosalpingography and sonohysterography, and assists in their operative care, which includes experience in advanced

laparoscopic techniques. By the end of the rotation, the student should be familiar with the diagnosis, evaluation, and treatment of the common causes of infertility, and the evaluation of other gynecologic endocrine disorders. Specific learning activities include attendance in the REI Clinic and patient management discussion; assistance with the operative cases of the service, with attention paid to the preoperative evaluation, as well as the postoperative management; observation of vaginal ultrasound, including follicular monitoring associated with ovarian stimulation; and attendance at the weekly reproductive endocrinology and infertility seminar. Prerequisite: OBGN 5020. Fourth year. Eisenberg.

**5645. Subinternship in Benign Gynecology.** During the rotation, the student will receive both didactic and clinical training, as well as practical experience in the diagnosis and management of a breadth of ambulatory and surgical gynecologic problems. The student will participate in office and preoperative evaluation, in addition to ambulatory and surgical management of patients. The student will be expected to attend didactic lectures and seminars of the OB-GYN department and prepare a presentation on a topic of interest to be determined in consultation with one of the attending faculty. Prerequisite: OBGN 5020. Fourth year. Anderson.

**5650.** Subinternship in Gynecologic Oncology. During this rotation, the student receives training in the management of gynecologic oncology patients. The student participates in the evaluation and treatment of patients, gaining experience in surgery, colposcopy, pathology, chemotherapy, and radiation techniques. By the end of the rotation, the student should be familiar with the staging of different gynecologic malignancies, common treatment modalities, and important prognostic factors affecting survival. In addition, the student will be exposed to the immediate postoperative care of the acutely ill patient. Specific learning activities include pre- and postoperative care of the oncology surgical patient; assistance in the operative cases on the service; and attendance in the private clinics of the oncology attending. Prerequisite: OBGN 5020. Fourth year. Gold.

**5660. Urogynecology: Female Pelvic Medicine and Surgery.** During this rotation, the student receives training and practical experience in the diagnosis and management of pelvic floor defects and dysfunctions. The student will participate in preoperative evaluation, surgery, and postoperative follow-up of operative cases. In addition, there will be exposure to conservation treatment including pelvic floor rehabilitation and insertion/management of pessaries. History and physician exam of pelvic floor defects are also emphasized. Prerequisite: OBGN 5020, Medicine 5020, Surgery 5020. Fourth year. Zimmerman.

6100. Special Clinical Study - Vanderbilt.

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

7100. Special Clinical Study-Non-VU.

7150. Special Research Study-Non-VU.

## Ophthalmology and Visual Sciences

CHAIR Paul Sternberg, Jr. PROFESSOR EMERITUS James H. Elliott

PROFESSORS Randolph Blake, Vivien A. Casagrande, Sean P. Donahue, Heidi Elizabeth Hamm, Frederick R. Haselton, Patrick Lavin, Timothy P. McNamara, Denis M. O'Day, John S. Penn, Kevin L. Schey, Paul Sternberg, Jr.

CLINICAL PROFESSORS John B. Bond, John E. Downing, Ralph E. Wesley

ASSOCIATE PROFESSORS Anita Agarwal, David J. Calkins, Edward F. Cherney, Amy S.

Chomsky, Robert L. Estes, James W. Felch, Karen Margaret Joos, Louise Ann Mawn, Franco Maria Recchia, Uyen L. Tran

ASSOCIATE CLINICAL PROFESSOR Karla J. Johns

ASSISTANT PROFESSORS Nancy Mayer Benegas, John B. Bond III, Jiyang Cai, Min Shen Chang, Jeffrey A. Kammer, K. Bradley Kehler, Lori Ann F. Kehler, Stephen Jae Kim, Mark A. Kroll, Rachel Wang Kuchtey, Janice C. Law, Jennifer L. Lindsey, Mark Rodney Melson, Lawrence M. Merin, David G. Morrison, Martin I. Perlmutter, Rebecca M. Sappington, Robbin B. Sinatra, Chasidy Dionne Singleton, Jeffrey Sonsino, Laura L. Wayman, Daniel S. Weikert

RESEARCH ASSISTANT PROFESSOR Jin-Hui Shen

ASSISTANT CLINICAL PROFESSORS Brian Stuart Biesman, Abraham Pacha Cheij, Meredith A. Ezell, Walter W. Frey, William G. Gates, Azizur Rahman, Deborah S. Ruark, Deborah D. Sherman, Ira A. Shivitz, Peter L. Sonkin

ASSOCIATE Ronald J. Biernacki

INSTRUCTORS Sachin Mehta, Rahul Reddy

RESEARCH INSTRUCTORS John Kuchtey, Jin-Long Yang

CLINICAL INSTRUCTORS George N. Cheij, Maria Garber, Ralph F. Hamilton, Henry B. Kistler, Jr., Kimberly A. Klippenstein, Craig F. McCabe, Carrie L. Morris, Yeshawant B. Paranjape, E. Glenn Sanford

**5260.** The Eye as a Sentinel of Systemic Disease. Virtually every systemic disorder can result in ocular manifestations. Regardless of area of specialization, physicians will encounter patients with eye complaints. Distinguishing between benign conditions and those eye signs which herald serious systemic disease can be critical. This elective will be structured as a problem-based approach in which students participate in the differential diagnosis. The course will also familiarize the student with the distinguishing features of many eye disorders. Following the course, students will be able to recognize common ophthalmic conditions and understand the significance of many visual symptoms and eye findings. First and second year. Sternberg.

**5610.** Clerkship in Ophthalmology. An intensive clinical experience in ophthalmology which includes inpatient, outpatient, and operating room assignments. There is one-to-one supervision by the resident staff and Ophthalmology Department staff. At the completion of this clerkship, the student should have mastered all basic ophthalmologic exam techniques including visual acuity, external exam, slit lamp examination, ophthalmoscopy, and visual fields. Students must receive pre-approval from the Department of Ophthalmology for this clerkship in July, August, and September. Prerequisite: Surgery 5020. Fourth year. Morrison.

**5620.** Clerkship in Ophthalmic Plastic and Orbital Surgery. Clinical experience in oculoplastic and orbital surgery which includes the diagnosis and treatment of orbital tumors, inflammations, Graves orbitopathy, lacrimal disorders, ptosis, eyelid reconstruction, eyelid malposition, and orbital fractures. It will include involvement at Vanderbilt University Hospital, U.S. Veterans' Administration Medical Center, Centennial Medical Center, Baptist Hospital, and St. Thomas Hospital. Students will be involved in clinical evaluation and follow-up, as well as operating room assignment. Experience will emphasize the management of patients with mid-facial disorders relative to the ocular complications and implications. Emphasizes team approach with other specialties such as oral and maxillofacial surgery, otolaryngology, plastic surgery, neurosurgery, and dermatology in management of mid facial and orbital diseases. Approval by Dr. Wesley is required in advance. Requires ADVANCE credentialing at Baptist Hospital and Centennial Medical Center. Prerequisite: Surgery 5020. Fourth year. Wesley.

## Orthopaedics and Rehabilitation

CHAIR Herbert S. Schwartz

PROFESSORS Arthur Frederick Dalley II, Michael Craig Ferrell, Neil Edward Green, Heidi Elizabeth Hamm, Donald Han Lee, Gregory A. Mencio, Gregory R. Mundy, Herbert S. Schwartz, Dan M. Spengler, Kurt P. Spindler

VISITING PROFESSORS John O. Edmunds, Jr., Dinesh Rajaram Kale

ADJUNCT PROFESSOR Thomas J. Limbird

ASSOCIATE PROFESSORS Antoinne C. Able, Philip James Kregor, John E. Kuhn, Michael J. McNamara, William Todd Obremskey, Paul A. Thomas, Douglas R. Weikert ASSOCIATE CLINICAL PROFESSOR Michael J. Christie

ASSISTANT PROFESSORS Kristin R. Archer, Scott T. Arthur, Robert Baum, John J. Block, Andrea C. Bracikowski, David M. Bratton, Robert Caldwell, Cory L. Calendine, James L. Carey, Charles L. Cox III, Sarah Peters Cribbs, Richard A. Davis, Ronald G. Derr, Clint J. Devin, Alex B. Diamond, Richard P. Driessnack, Warren Reid Dunn, Robert Warne Fitch, Ann Marie Flores, Andrew K. Gregory, Thomas E. Groomes, Linda R. Halperin, Jennifer L. Halpern, Gene Alan Hannah, Ginger E. Holt, Amir Alex Jahangir, John W. Klekamp, Colin G. Looney, Steven A. Lovejoy, Conor L. Lynch, Jeffrey E. Martus, Michael J. McHugh, Erika J. Mitchell, E. Paul Nance, Jr., D. Elizabeth Orsburn, Paul D. Parsons, Paul J. Rummo, Jonathan G. Schoenecker, Andrew Alan Shinar, Narendra K. Singh, Christopher T. Stark, Andrew Brian Thomson, Marc Allen Tressler, Horace E. Watson, Jeffry T. Watson, Todd R. Wurth

RESEARCH ASSISTANT PROFESSORS Jeffry S. Nyman, Toshitaka Yoshii

ADJUNCT ASSISTANT PROFESSOR Jane M. Siegel

ASSISTANT CLINICAL PROFESSORS Mark R. Christofersen, Philip Gerlach Coogan, David K. DeBoer

SENIOR ASSOCIATE David B. Trenner

ASSOCIATES Anabel Robertson Atkinson, Carolyn Sue Aubrey, Tisha Barzyk, Amy E. Cassidy, K. Hudson Deeter, Michael F. Eagle, Laura J. Huston, Elizabeth Potts, Connie Vineyard

INSTRUCTORS Warren E. Gardner, Aaron Matthew Perdue, John Burton Pope, Matthew R. Price, Kristina Wilson

RESEARCH INSTRUCTORS Jiro Ichikawa, Daniel S. Perrien

- **5130.** Subspecialty Clinics in Orthopaedic Surgery. This course offers the student an opportunity to rotate through the various orthopaedic clinics. Eight to nine clinic meetings per week are required. Prerequisite: Surgery 5020. Fourth year. Spengler.
- **5611.** Subinternship in Foot and Ankle Orthopaedic Surgery. The student will be asked to evaluate patients with foot and ankle disorders in both inpatient and outpatient settings. The student will be expected to participate in preoperative and postoperative patient evaluation and management, as well as surgical management. At the conclusion of the rotation, the student should have an in-depth understanding of arthritis, foot and ankle fractures, sports medicine of the foot and ankle, and common deformities. Orthotic and pedorthic management will also be taught. Prerequisite: Surgery 5020. Fourth year. Thomson.
- **5612. Subinternship in Adult Hand Orthopaedic Surgery.** The course provides hands-on exposure to adult hand surgery. The student will be able to integrate medical and surgical knowledge in the care of patients with congenital hand deformities and musculoskeletal hand injuries in both inpatient and outpatient settings. Emphasis will be placed on initial evaluation, preoperative and postoperative management. Prerequisite: Surgery 5020. Fourth year. Weikert.

- **5613. Subinternship in Orthopaedic Oncology.** The course provides hands-on exposure to musculoskeletal oncology and adult orthopaedics. The student will be able to integrate medical and surgical knowledge in the care of orthopaedic patients, in both inpatient and outpatient settings. Prerequisite: Surgery 5020. Fourth year. Schwartz, Holt.
- **5614.** Subinternship in Pediatric Orthopaedic Surgery. This course will provide the student with experience assessing and managing pediatric orthopaedic surgical patients. Emphasis will be placed on pertinent history taking, evaluation of the child, and decision making and treatment in both inpatient and outpatient settings. Prerequisite: Surgery 5020. Fourth year. Mencio.
- **5615.** Subinternship in Reconstructive Orthopaedic Surgery. The course provides hands-on exposure to adult reconstructive surgery. The student will be able to integrate surgical knowledge in the care of orthopaedic patients in both the inpatient and outpatient settings. Prerequisite: Surgery 5020. Fourth year. Shinar.
- **5616. Subinternship in Orthopaedic Rehabilitation.** This course is designed to provide hands-on exposure to orthopaedic and neurological rehabilitation. Many of these patients have had surgical procedures, and the student will have an opportunity to follow the patients post-acutely. The student will be asked to integrate medical and surgical knowledge in the care of rehabilitation in the hospital and outpatient clinic. The attending physician on the rehabilitation service will define participation in patient care. The student will be expected to participate in the treatment of individuals with significant orthopaedic and neurological impairment who require long-term hospitalization to achieve maximal independence. The primary responsibility is the care of those patients with spinal cord injury, amputations, multiple trauma traumatic brain injury, and general debilitation. Outpatient clinics are available to expose students to the long-term problems which these patients encounter. Prerequisite: Surgery 5020. Fourth year. Groomes.
- **5617. Subinternship in Adult Spine Orthopaedic Surgery.** The student will be asked to integrate medical and surgical knowledge in the care of patients with spine-related deformities and injuries in the hospital and outpatient clinics. Students will receive an introduction to outpatient assessment and inpatient management of individuals with a wide variety of spinal disorders. The course is designed to provide a proper assessment of patients with neck and low back pain, as well as spinal injuries with neurological involvement. The student will be expected to participate actively in the emergent, preoperative, surgical, postoperative hospital, and outpatient diagnostic and therapeutic care of orthopaedic patients. Prerequisite: Medicine 5020, Surgery 5020. Fourth year. Spengler.
- **5618. Subinternship in Sports Medicine.** The course is designed to provide hands on exposure to orthopaedic sports medicine. The student will be asked to integrate medical and surgical knowledge in the care of patients with sports-related injuries in the hospital and outpatient clinics. Participation in patient care will be defined by the chief resident. The student will be expected to participate aggressively in the emergent, preoperative, surgical, postoperative hospital, and outpatient diagnostic and therapeutic care of sports medicine patients, athletic injuries, and all injuries of the knee and shoulder. Prerequisite: Surgery 5020. Fourth year. Spindler.
- **5619.** Subinternship in Adult Orthopaedic Trauma. The course is designed to provide hands-on exposure to orthopaedic traumatology. The student will be asked to integrate medical and surgical knowledge in the care of trauma victims and musculoskeletal injuries in the hospital and outpatient clinics. Participation in patient care will be defined by the chief resident. The student will be expected to participate aggressively in the emergent, preoperative, surgical, postoperative hospital, and outpatient diagnostic and therapeutic care of orthopaedic patients. Prerequisite: Medicine 5020, Surgery 5020. Fourth year. Obremskey.

**5620. Primary Care Orthopaedics.** This course is designed to provide students interested in primary care or non-surgical specialties with an in-depth experience in adult musculoskeletal disease. Focusing primarily on the examination and evaluation of patients with musculoskeletal problems, the student will rotate through general and specialty orthopaedic clinics and participate in the evaluation and treatment of acute orthopaedic trauma in the emergency room. Participation in daily orthopaedic conferences and teaching rounds will broaden the scope of the student's exposure to orthopaedic surgery. The presentation of a case-focused conference at the conclusion of the rotation will be expected of each student. This course is not recommended for those intending to pursue a career in orthopaedic surgery. Prerequisite: Surgery 5020. Fourth year. Holt.

**5630.** Adult Orthopaedic Surgery. The course provides a wide exposure to inpatient and outpatient orthopaedic surgery ranging from trauma and sports medicine to reconstruction. The student is expected to integrate book knowledge with patient care. A tremendous hands-on experience is available to a host of musculoskeletal pathology. Prerequisite: Surgery 5020. Fourth year. Schwartz.

6100. Special Clinical Study—Vanderbilt.

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

7100. Special Clinical Study-Non-VU.

7150. Special Research Study-Non-VU.

## Otolaryngology

CHAIR Roland D. Eavey

PROFESSOR EMERITUS R. Edward Stone, Jr.

PROFESSORS Fred H. Bess, Thomas F. Cleveland, James A. Duncavage, Roland D. Eavey, C. Gaelyn Garrett, James L. Netterville, Robert H. Ossoff, Jennifer A. Pietenpol, William Russell Ries, Anne Marie Tharpe, David L. Zealear

ADJUNCT PROFESSORS Brian Bernard Burkey, Michael E. Glasscock III

ASSOCIATE PROFESSORS David S. Haynes, Robert J. Sinard, Jay A. Werkhaven, Wendell Gray Yarbrough

ADJUNCT ASSOCIATE PROFESSOR Lou Reinisch

ASSISTANT PROFESSORS Marc L. Bennett, Cheryl Lee Rainey Billante, Steven L. Goudy, Barbara Jacobson, Kyle Mannion, William Michael Mullins, Bernard Rousseau, Paul T. Russell III, John W. Seibert, Dale A. Tylor, Kimberly N. Vinson, Christopher T. Wootten RESEARCH ASSISTANT PROFESSORS Ramya Balachandran, Robbert Jacobus C. Slebos ADJUNCT RESEARCH ASSISTANT PROFESSOR Omid Majdani

ASSISTANT CLINICAL PROFESSORS Brian Stuart Biesman, Mark A. Clymer, William L. Downey, Daniel R. Hightower, Thomas W. Holzen, Warren R. Patterson, John David Rosdeutscher

INSTRUCTORS Edwin Boyette Emerson, Kenneth C. Fletcher, Todd C. Huber, Esther Kim, Maria Kirzhner, Sarah L. Rohde

RESEARCH INSTRUCTORS Hanbing An, Shan Huang

CLINICAL INSTRUCTORS Samuel S. Becker, William G. Davis, William Thomas Moore, Robert C. Owen

CLINICAL ASSOCIATE Mitchell K. Schwaber

**5950. Voice Center Laryngology.** This course is an elective in otolaryngology focusing on problems with the voice, airway, and swallowing. It is based out of the Vanderbilt Voice Center, and students will participate in the clinical and surgical management of patients with disorders affecting the larynx and the upper aerodigestive tract. Participants will spend time in the voice center clinics with a staff laryngologist, learning the specialized evaluation of the voice and swallowing patient. This will include hands-on experience with laryngeal videostroboscopy. Students will also learn the specifics of the standard otolaryngology head and neck examination. Other members of the elective faculty will include voice scientists and speechlanguage pathologists who regularly perform voice evaluations and therapy for our patients. Significant time will also be spent in the operating room learning endoscopic management of laryngeal pathology and airway disorders, as well as the surgical management of vocal fold paralysis. Prerequisite: Medicine 5020, Surgery 5020. Fourth year. Garrett.

**5970.** Subinternship in Otolaryngology. Students will work with the otolaryngology staff and residents on the otolaryngology service at Vanderbilt University Hospital participating in the diagnosis and treatment of patients with otolaryngologic and head and neck diseases. Attendance at the weekly otolaryngology grand rounds is mandatory. Prerequisite: Surgery 5020. Fourth year. Sinard.

6100. Special Clinical Study-Vanderbilt.

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

7100. Special Clinical Study-Non-VU.

7150. Special Research Study-Non-VU.

## Pathology

CHAIR Samuel Andrew Santoro

PROFESSORS EMERITI Anh H. Dao, Susan A. Halter, Martin G. Netsky, John Brown Thomison, William O. Whetsell, Jr., Stephen C. Woodward

PROFESSORS James B. Atkinson III, Billy R. Ballard, Paul E. Bock, Alan Stuart Boyd, Raymond F. Burk, Cheryl M. Coffin, Robert D. Collins, Pelayo Correa, Jeffrey Mark Davidson, Sergio Fazio, Agnes B. Fogo, David Gailani, David R. Head, Richard L. Hoover, Billy Gerald Hudson, Joyce E. Johnson, Michael Laposata, Barbara O. Meyrick, William M. Mitchell, Harold L. Moses, Kevin G. Osteen, David L. Page, Fritz F. Parl, Samuel Andrew Santoro, Herbert S. Schwartz, Virginia L. Shepherd, Jean F. Simpson, Mildred T. Stahlman, Larry L. Swift, Cindy L. Vnencak-Jones, Mary Kay Washington, Mary M. Zutter

ADJUNCT PROFESSORS Roy A. Jensen, Martin Charles Mihm, Jr.

CLINICAL PROFESSORS Robert G. Horn, Renu Virmani

ASSOCIATE PROFESSORS Sarki A. Abdulkadir, Mark W. Becher, Alice C. Coogan, Hernan Correa, Sheila Patricia Dawling, Christine Marie Eischen, James T. Forbes, Robert D. Hoffman, Walter Gray Jerome III, Thomas L. McCurley III, William Pao, Stephen J. Schultenover, Gregory C. Sephel, Edward K. Shultz, Charles W. Stratton, Yi-Wei Tang, William M. Valentine, Jeanne M. Wallace

RESEARCH ASSOCIATE PROFESSORS Venkataraman Amarnath, Ling Geng, Maria Gabriella Giro, Lijun Ma

ADJUNCT ASSOCIATE PROFESSOR Awadh A. Binhazim

ASSOCIATE CLINICAL PROFESSORS David L. Black, Richard D. Buchanan, Paul B. Googe, Edward C. McDonald, Richard Oldham, Ronald W. Oxenhandler, David Alan Schwartz, Ana K. Stankovic

ASSISTANT PROFESSORS Ty William Abel, Mary Ann Thompson Arildsen, Jennifer Black, Dorin Bogdan Borza, Kelli Lynn Boyd, Debra L. Callahan, Justin Merrill Marke Cates, James David Chappell, Rosana Eisenberg, Kim Adams Ely, Oluwole Fadare, Sylvia L. Gografe, Adriana L. Gonzalez, Annette S. Kim, Yasin Kokoye, Amy S. Major, Claudio A. Mosse, Anne Taggart Neff, Kenneth J. Salleng, Melinda E. Sanders, Adam Seegmiller, Alissa M. Weaver, Marcia L. Wills, Alison L. Woodworth, Ashwini K. Yenamandra, Pampee Paul Young, Andries Zijlstra

RESEARCH ASSISTANT PROFESSORS Kalyani Amarnath, S. Kent Dickeson, Susan Renee Opalenik, Ingrid M. A. Verhamme, Zhonghua Zhang

ADJUNCT ASSISTANT PROFESSOR Ronald Bruce Wilson

ASSISTANT CLINICAL PROFESSORS Maurice M. Acree, Jr., Harry G. Browne, Daniel D. Canale, Jr., Deborah O. Crowe, Thomas A. Deering, Samuel Houston DeMent, Vaithilingam G. Dev, James Patrick Elrod, Rufus Jack Freeman, Katherine Stokes Hamilton, Thomas E. Hanes, Jerry K. Humphreys, Peter F. Jelsma, Roy King, Bruce P. Levy, Adele Maurer Lewis, Feng Li, Amy Ralston McMaster, Robert Norman Page, Dan Arie Pankowsky, Julie M. Pena, Philip G. Pollock, David J. Switter, Robert W. Wahl

ASSOCIATES Maralie Gaffron Exton, Bruce W. Greig

INSTRUCTORS Samir Lutf Aleryani, Troy M. Apple, William Chopp, Erin N. Z. Yu RESEARCH INSTRUCTORS Jayasri DasGupta, Sandra J. Olson, Meejeon Roh, Susan E. Samaras

CLINICAL INSTRUCTORS Carla M. Davis, Larry M. Lewis

- **5610.** Clerkship in Autopsy Pathology. The student will assist in post-mortem examination with the full-time staff and will correlate the clinical and pathological features in an attempt to understand the pathogenesis of the fatal disease processes. Recommended for students considering residencies in pathology. Fourth year. Wills.
- **5620. Surgical Pathology.** The student will work with the surgical pathology faculty, fellows, and residents in evaluating gross and microscopic material from current cases. Emphasis will be placed on introducing the student to the relationship that surgical pathologists maintain with clinical colleagues in caring for patients. In this elective, there will be opportunity to see medical biopsies and obstetrical and gynecologic material, as well as specimens from most surgical specialties. Appropriate short research projects will be available for the interested student. Fourth year. Johnson.
- **5630. Clinical Pathology.** Clinical pathology is composed of multiple diverse laboratory services that provide diagnostic testing for all areas of medical practice: blood bank, clinical chemistry, special chemistry (including toxicology), hematology and urinalysis, special hematology (bone marrow and lymph nodes analysis), hemostasis, microbiology and virology, molecular infectious disease, molecular genetics, and immunopathology (including flow cytometry). The student may rotate in one or multiple labs. Training is individualized based on the interests and future plans of the student. Training consists of a mixture of observation and both didactic and case-based learning. At the end of the rotation, the student will have an understanding of efficient use and interpretation of the tests in the areas of the lab through which the student has rotated for diagnosis and monitoring of diseases. Fourth year. Laposata.
- **5650. Clinical Microbiology.** The basic goal of this one month rotation is to gain an appreciation of clinical microbiology, including basic bacteriology, mycology, and mycobacteriology. The preceptor method will be used in doing bench work under supervision followed by independent bench work. Self-education through reading the text, *Koneman: Basic Microbiology*,

will be required. Unusual and interesting cultures can be pursued by review of patient charts or examination of the patient, if appropriate. The clinical aspects are coordinated through the infectious disease service and include participation in their rounds. Stratton.

**5680. Clerkship in Forensic Pathology.** Join the Nashville Medical Examiner's Office for a month-long elective in one of the most fascinating areas of medicine, forensic pathology. Observe and participate in death-scene investigations, autopsies, and courtroom testimony. Learn about the important function a medical examiner's office plays in the protection of the public health of our community. This elective is not just for those who are interested in pathology, but also for all medical students who want to see how disease and trauma affect the human body. Prerequisite: Third year core clerkships. Fourth year. Deering.

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

7150. Special Research Study-Non-VU.

## Pediatric Medicine

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**5020. Pediatrics Core Clerkship.** Each member of the third-year class is assigned to Pediatrics for five and one-half weeks. Three and one-half weeks are spent on the Vanderbilt University Children's Hospital inpatient pediatric wards. Students participate in all phases of diagnosis and treatment of a wide variety of illnesses of children and infants. Two and one-half weeks of the clerkship includes work in pediatric clinics or Meharry Hospital or community sites. Besides teaching rounds on the wards and nursery, student lectures are held three times a week. Grand rounds are held weekly and chief resident rounds are held each Thursday. Third year. Fleming and Chief Residents and Staff, Children's Hospital.

**5220. Practicing Pediatrics with Families.** This elective course provides information about the issues and challenges facing families of children with chronic illnesses and developmental disabilities through providing discussions with members of the Families as Classroom Teachers (FACT) Program. Classroom discussions will be supplemented with nearby site visits and interactions with child specialists. Objectives include developing sensitivities to the needs of children with chronic conditions and their families, becoming familiar with a variety of chronic illnesses and developmental disabilities through hearing the families' personal stories, learning to work collaboratively with families, and acquiring advocacy skills to assist children and their families in accessing educational, therapeutic, and community resources. First and second year. Lee.

**5240. Foundations of Global Health.** This course introduces students to the multi-dimensional field of global health. It is intended to provide students with a foundation in global

health so that they may critically analyze and assess relevant issues related to the field. The course will examine determinants of global health and identify interventions used to ameliorate health, particularly in low-resource settings. Additionally, research and evaluation methodologies commonly used in the field will be represented. At the end of this course, students should be able to identify a key global health question and design a suitable research project which addresses that question. First and second year. Vermund.

- **5242.** Studies in Global Health: Informatics. Health care professionals often lack knowledge about the utilities and limitations of systematically processed data and how those data impact key decisions in clinical and public health practice. In collaboration with the Vanderbilt University Department of Biomedical Informatics, this short course will address the broad issue mentioned above and all of its sub-components. Offered in a workshop format, the course will offer hands-on data management and analysis practica. Manders.
- **5244. Studies in Global Health: Ethics.** In collaboration with the Vanderbilt University Center for Biomedical Ethics and Society, this short course addresses the most pressing ethical controversies that transcend national borders. Students will be challenged to think critically about the most prominent socio-ethical issues that complicate global public health practice and research. Heitman.
- **5246. Studies in Global Health: Leadership.** This short course introduces students to key concepts in management and leadership that are essential to successful navigation of global health projects and programs. Issues of resource constraints, decision analysis modeling, cost-effectiveness assessments, and logistics in health care delivery, training, and research will be presented through case studies. Reside.
- **5248.** Studies in Global Health: Medical Anthropology. This course provides a framework for medical students to investigate and learn about the study of pain, illness, suffering, and healing in cultures around the world. This course is designed to introduce students to a broad range of medical anthropology topics, theoretical approaches, and research techniques by examining case studies on chronic illness, sorcery and traditional healing, and modern pandemics, as well as treatment and illness expectations. Within these discussions, the focus will be comparative, investigating illness, misfortune, and healing in a number of societies in Mozambique, Uganda, South Africa, France, the United States, and Japan. Students will develop an appreciation for the culturally specific nature of illness, allowing them to better understand and treat patients from diverse cultural backgrounds. Audet.
- **5249.** Studies in Global Health: Tropical Medicine Case Studies. This course will introduce students to tropical diseases and parasitology in a clinical case study format with student group leadership that is facilitated by faculty with tropical medicine training and experience. Written case protocols will be presented by faculty and infectious disease fellows/internal medicine residents who will lead an interactive discussion involving pathophysiology, clinical presentation, differential diagnosis, diagnosis, and treatment. Case studies to be presented will include tropical diseases such as cysticerocosis, tuberculosis, "severe HIV," leprosy, diphtheria and mumps, arenavirus, chikungunya, Lassa fever, dengue, schistosomiasis, leishmaniasis, Chagas disease, SARS, onchocerciasis, liver flukes, plasmodium falciparum malaria, filariasis, echinococcus, and endemic fungi. The course is designed for clinicians who wish to refine their diagnostic and therapeutic skills in dealing with diseases not seen often in the U.S., but prevalent in tropical environs. Students will be required to read case studies and background articles. First and second year. Wester.
- **5400.** Pediatric Clinical Rounds. The pediatric chief residents will lead a small group of students in examination of pediatric patients at the Vanderbilt Children's Hospital. Our goal is to provide an enjoyable and provocative opportunity to supplement the Physical Diagnosis course with hands-on pediatric experience. The course is offered in March and April. Second year. Varies.

**5611.** Subinternship in Pediatric Medicine. Students will serve as externs on the wards of VU Hospital. They will serve on a team and assume intern responsibilities with supervision and countersignature of orders/notes by second- and third-year residents. Patient assignments will usually be limited to five admissions per call night. Externs may pick up patients on non-call days depending on their census. Call is every fourth night. Clerks may also visit offices of private pediatricians and have the option to see return clinic visits of patients they discharged. This rotation fulfills the subinternship requirement in the fourth year. In order to ensure the strong clinical experience that characterizes this elective, each clinical clerkship is built into the house staff rotational schedule. Therefore, the pediatric service relies heavily on each student who is accepted into the program. We ask that the student consider his/her acceptance as a strong commitment to serve. Students may be excused from ward duties for no more than three days for interviews or other absences, unless special permission is obtained from the course director and associate dean for medical student affairs. Prerequisite: Pediatrics 5020. Fourth year. Fleming.

**5635.** Subinternship in Pediatric Hematology/Oncology. Upon completion of this course, students will have a better understanding of the pathology, treatment, and survival of common childhood cancers. They will also gain experience in working up and treating anemias and bleeding disorders. These objectives are accomplished through a combination of inpatient time and outpatient time. Half of the course will be on the inpatient service where students will be expected to follow their own patients, present on rounds, write daily progress notes, and prepare a short 10-15 minute discussion of a patient of interest. Students will also participate in walk rounds with the fellow and faculty for more informal discussion. The other half of the course will be in the outpatient clinic. While there, students will see both new patients and patients returning for therapy. Students will take a history from the family, perform a physical exam, interpret lab tests, present these patients to the faculty, and write notes. Students will also have the opportunity to attend "specialty" clinics to see a group of patients with a focused set of problems (for example, sickle cell clinic). Prerequisite: Third year core clerkships. Fourth year. Whitlock.

**5650. Clerkship in Pediatric Developmental Medicine.** Students will learn about a variety of developmental disabilities in infants, children, and adolescents, including developmental delays, cognitive/intellectual disability. Down syndrome, learning disabilities, attention deficit hyperactivity disorder, behavior disorders, autism spectrum disorders, motor disorders, and speech-language disorders. They will observe in-depth evaluations by developmental pediatricians and psychologists at the Center for Child Development. They will also participate in several didactic learning sessions. In addition, students will visit community agencies serving children with special needs and their families. This rotation provides minimal opportunity for direct patient care experience, but instead offers several venues for learning about developmental and behavioral disorders. Prerequisite: Pediatrics 5020. Fourth year. Reimschisel.

**5680.** Clerkship in Pediatric Cardiology. This course is a clinical clerkship in pediatric cardiology. The purpose of the course is to provide the student with expertise in clinical evaluation of cardiovascular disease in infants, children, and adolescents. It will be particularly useful for students planning a career in pediatrics or cardiology. The student is a full-time, active participant in the pediatric cardiology clinical service team. The clerkship includes exposure to EKG interpretation, echocardiography, and cardiac catheterization, with a particular focus on physical examination skills. Prerequisite: Pediatrics 5020, Medicine 5020. Fourth year. Johns.

**5690. Clerkship in Pediatric Endocrinology.** Students who participate in this clerkship will be able to identify the common endocrine problems of childhood, propose appropriate diagnostic studies, and formulate long-term management plans. Growth disorders, diabetes, thyroid disease, and adrenal disease will be the most common conditions encountered, including abundant referrals for new-patient evaluations. The clerkship combines patient

contact in the hospital and ambulatory setting with ample time for case discussions with faculty. Prerequisite: Pediatrics 5020. Fourth year. Mathew.

- **5700.** Clerkship in Pediatric Hematology-Oncology. Once students have finished this elective, they will have a better understanding of the pathology, treatment, and survival of common childhood cancers. They will also gain experience in working up and treating anemias and bleeding disorders. These objectives are accomplished through a combination of inpatient time and outpatient time. Half of the elective will be on the inpatient service where the students will be expected to follow their own patients, present on rounds, write daily progress notes, and prepare a short 10-15 minute discussion of a patient of interest. The student should also participate in walk rounds with the fellow and faculty for more informal discussion. The other half of the elective will be in the outpatient clinic. While there, the student will see both new patients and patients returning for therapy. The student will take a history from the family, perform a physical exam, interpret lab tests, present these patients to the faculty, and write notes. The student will also have the opportunity to attend "specialty" clinics to see a group of patients with a focused set of problems (for example sickle cell clinic). Prerequisite: Pediatrics 5020. Fourth year. Domm.
- **5710.** Clerkship in Pediatric Gastroenterology, Hepatology, and Nutrition. Students actively participate in the care of pediatric gastroenterology out-patients and in-patients at Vanderbilt Children's Hospital. The rotation provides a broad experience in the evaluation and management of common as well as unusual gastroenterological, hepatic, and nutritional diseases of childhood. Attendance in the endoscopy laboratory permits familiarity with esophagogastroduodenoscopy, colonoscopy, polypectomy, and percutaneous liver biopsy. Rounds include daily review of histopathology specimens and radiographic studies. Custom-designed rotations emphasizing nutritional support or outpatient experience can be arranged. Prerequisite: Pediatrics 5020. Fourth year. Acra.
- **5715. Clerkship in Pediatric Nephrology Research.** Students will participate in ongoing clinical and basic laboratory research protocols relating to nephrology. Introduction to scientific methodology and appropriate experimental methods will be emphasized. By analyzing the glomerular and tubular functions, biosynthetic ability, and histochemistry at the single nephron level in animals with a variety of conditions, the underlying mechanisms for renal diseases will be investigated. Participation in clinical research projects relating to specific disease entities will allow for the incorporation of basic laboratory findings into a thorough understanding of human renal pathophysiology. Prerequisite: Pediatrics 5020. Fourth year. Kon.
- **5800. Genetic Clerkship.** Students participate in evaluating, diagnosing, and counseling patients and families seen in the genetics, genetics outreach and prenatal clinics as well as ward consults. Students will gain experience with a variety of single gene disorders, malformation syndromes, and chromosomal abnormalities and will participate in weekly research and clinical conferences. Selected research projects in clinical genetics, cytogenetics, dysmorphology, molecular genetics, or neurogenetics are also available. Prerequisite: faculty approval. Fourth year. Phillips.
- **5815.** Subinternship in Neonatology. Students will serve as clerks on the newborn special care service of VU Hospital. They will have all associated clinical responsibilities and will participate in all the usual house staff activities. This elective requires a 100 percent commitment of the student's time. The student will participate in in-house night call. Prerequisite: faculty approval. Fourth year. Walsh.
- **5910.** Clerkship in Pediatric Infectious Disease. The central objective of the elective clerkship in pediatric infectious diseases is to learn to evaluate children with infectious diseases. Core reading on the pathophysiology of infectious disease will be encouraged. Students will actively participate in ambulatory and hospital care of children with infectious diseases. Prerequisite: Pediatrics 5020. Fourth year. Halasa.

**5990. Subinternship in Pediatric Critical Care.** The elective will be geared towards fourth-year medical students interested in pursuing pediatric residency. The objectives will be (1) understanding of the complex pathophysiology of critically ill children, (2) learning the basic principles of multidisciplinary management of critically ill children, and (3) detailed review of a few common diseases seen in a multidisciplinary pediatric critical care unit. The student will be expected to participate in all the teaching conferences of the division. Additionally, the student will be expected to stay overnight at least four times during the four weeks' rotation, and will be expected to review topics present in a formal setting. Prerequisite: Pediatrics 5020. Fourth year. Fleming.

6100. Special Clinical Study-Vanderbilt.

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

7100. Special Clinical Study-Non-VU.

7150. Special Research Study-Non-VU.

## Pharmacology

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RESEARCH INSTRUCTORS Michael Bubser, Liping Du, Kristopher Michael Kahlig, Alicia Ruggiero, Sergey Aleksandrovi Vishnivetskiy

ADJUNCT INSTRUCTOR Dawn S. Matthies

**5220.** Cardiovascular Pharmacology. The goal of this course is to provide the student with a state-of-the-art knowledge of cardiovascular physiology and pharmacology from the molecular to the organismal level. Classic experimental studies, molecular studies, and clinical observations will be presented to demonstrate the power of interdisciplinary approaches in answering complex questions in biology. Students will have the opportunity to identify specific areas of pathophysiologic states for emphasis. Topics covered: development of the cardiovascular system, regulation of cardiac contractility and electrophysiology, blood pressure regulation, coagulation, and select cardiovascular pathophysiologies. Course Offered every alternate odd-numbered year. First and second year. Barnett.

6100. Special Clinical Study-Vanderbilt.

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

7100. Special Clinical Study—Non-VU.

7150. Special Research Study - Non-VU.

### Preventive Medicine

Web site: http://www.mc.vanderbilt.edu/prevmed/course/requiredcourse.htm

**5410. Health Services in the Community.** There are introductory sessions on the organization of health services, and orientations to Vanderbilt University Medical Center and Nashville. There will be assignments to community-based services, including visits to patients with a nurse in the Vanderbilt Home Nursing Program. Other community sites include primary care centers and special programs, including Alive Hospice, a service center for homeless persons, and a clinic serving primarily immigrants and refugees. First and second year. Lefkowitz, Heitman.

**5720.** Clerkship in Epidemiology at the CDC. At the Centers for Disease Control (CDC) in Atlanta, students will be introduced to the principles and practices of epidemiology through participation in the day-to-day operation of a national disease surveillance system, and by actively assisting in epidemiological investigations. Students often have an opportunity to participate in

a field investigation. Insofar as possible, students will be allowed to choose the program area to which they wish to be assigned. Under the general supervision of a senior staff member, the student, in addition to assisting in epidemic investigations, will work in all phases of program activities. The program areas include communicable diseases (salmonella, shigella, tetanus, hospital-acquired infections, hepatitis, neurotropic viruses, etc.), vaccine utilization (measles, rubella, polio, etc.), family planning evaluation, leukemia surveillance, etc. Travel and living expenses while in Atlanta, and basic transportation costs between home (Medical School) and Atlanta must be borne by students. Combinations of vacation time and elective time may be arranged. NB: Students must submit an application to the CDC. The CDC deadline for applications is March 30 of the third year of medical school for elective periods during Sept-Dec of the student's fourth year; it is May 30 for electives starting after January of the fourth year. Occasionally later applications will be considered, but the general rule is the earlier the application, the more likely your acceptance into the program. Application can be obtained from CDC by visiting the Web site: www.cdc.gov/eis/applyeis/elective.htm. Dr. Schaffner is closely associated with the CDC activities and can describe them in detail and facilitate your application. Prerequisite: Enrollment requires faculty approval. Fourth year. Schaffner.

# Psychiatry

CHAIR Stephan H. W. Heckers

PROFESSORS EMERITI Virginia D. Abernethy, Thomas A. Ban, George C. Bolian, Peter T. Loosen, James L. Nash, Fridolin Sulser, Warren W. Webb

PROFESSORS William Bernet, Leonard Bickman, Randy D. Blakely, Ariel Y. Deutch, Ronald B. Emeson, Judy Garber, Volney P. Gay, Stephan H. W. Heckers, Gerald B. Hickson, Steven D. Hollon, Howard S. Kirshner, Christine L. Konradi, Elizabeth Lunbeck, Peter R. Martin, Herbert Y. Meltzer, Karoly Mirnics, Sohee Park, Howard B. Roback, Elaine Sanders-Bush, Richard C. Shelton, Christopher Slobogin, Mark Thomas Wallace

ADJUNCT PROFESSORS George W. Arana, Steven S. Sharfstein

CLINICAL PROFESSORS David Barton, Robert O. Begtrup, Samuel O. Okpaku, William M. Petrie, Rudra Prakash, S. Steve Snow

ASSOCIATE PROFESSORS Thomas F. Catron, D. Catherine Fuchs, Lawrence S. Gaines, Harry E. Gwirtsman, William A. Hewlett, Robert M. Kessler, Joseph D. LaBarbera, Myung A. Lee, Paul W. Ragan, Scott M. Rodgers, Ronald M. Salomon, Jeffrey G. Stovall, James S. Sutcliffe, Michael G. Tramontana, David H. Zald

RESEARCH ASSOCIATE PROFESSOR Mary S. Dietrich

ADJUNCT ASSOCIATE PROFESSOR Rahn Kennedy Bailey

ASSOCIATE CLINICAL PROFESSORS Frederick T. Horton, Jr., Kent Kyger, J. Kirby Pate, Judith J. Regan, William M. Regan, Nicholas Sieveking, C. Richard Treadway, Zia U. Wahid ASSISTANT PROFESSORS Anne P. Bartek, Margaret McCullough Benningfield, Jennifer Urbano Blackford, William V. Bobo, Michelle E. Brooks, Kimberly P. Brown, Courtney P. Burnette, Carissa J. Cascio, Michael F. Caucci, Nathaniel Kim Clark, Ronald L. Cowan, Jon S. Ebert, Richard A. Epstein, Elliot M. Fielstein, Alistair James Reid Finlayson, P. Toby Fishel, Jeri Eileen Fitzpatrick, Bradley S. Folley, Erin Paige Fowler, Bradley W. Freeman, Deborah Faye Gatlin-Raulston, Merida M. Grant, Paul James Gresch, James C. Jackson, Monica L. Jacobs, Juan Jaramillo, Tarah M. Kuhn, Thomas J. Lavie, Linda G. Manning, Andrew Alan Michel, Stephen Anthony Montgomery, Michael J. Murphy, Mitchell H. Parks, Jo Cara Pendergrass, Susanna Quasem, Kevin Sanders, Jennifer A. Scroggie, Sandra S. Seidel, Samuel Riley Sells III, Michael Henry Sherman, Karen L. Starr, David F. Street, Patti

Parkison Van Eys, Jeremy M. Veenstra-VanderWeele, Michael W. Vollman, James S. Walker, Zachary E. Warren, David D. Weinstein, Amanda Grace Wilson, Zhongming Zhao RESEARCH ASSISTANT PROFESSORS Evonne J. Charboneau, Kirsten L. Haman, Mei Huang, Zeljka M. Korade, Zhu Li

ASSISTANT CLINICAL PROFESSORS Judith B. Akin, Tammy Suggs Alberico, Philip Bradley Anderson, Colin Armstrong, Casey C. Arney, David W. Ayer, Sarah B. Aylor, Michael J. Baron, Ralph I. Barr, Lynn P. Barton, Elizabeth A. Baxter, Laurel Leslie Brown, Reena M. Camoens, Thomas W. Campbell, Keith A. Caruso, Gerald D. Case, Alexander J. Chalko III, David K. Chang, Nilufer E. Yalman Chanin, Philip Chanin, Yuejin Chen, Craig A. Clark, Jerry P. Co, Michelle Macht Cochran, Carlton Cornett, Jill DeBona, Thomas W. Doub, Jon W. Draud, Franklin J. Drummond, Christopher J. Dull, Sharone Elizabeth Franco, Daniel L. Friedman, Sharon M. Gordon, John J. Griffin, Heather Harris, Vicki S. Harris, James R. Hart, Brian D. Haworth, Carol B. Hersh, Michael D. Hill, Howard Rhea Holly, Roy E. Hutton, Raju V. Indukuri, M. Shahidul Islam, John A. Jackson, Robert C. Jamieson, Daniel S. Javier, Sonya Nicole Jones, Harold W. Jordan, William D. Kenner, Jack L. Koch, Jr., Alexandre Koumtchev, Carmel Colgrove Lakhani, Linda S. Lundin, Alan J. Lynch, Nasreen Mallik, George M. Mathews, James R. McFerrin, Michael H. McGhee, Carol Proops Milam, Robert E. Murray, J. Richard Navarre, Paula S. Nunn, Dorothy M. Owens, Samuel J. L. Pieper, Jr., Rodney A. Poling, Michael W. Propper, Gilbert W. Raulston, Karen H. Rhea, Clifford F. Roberson, Richard E. Rochester, Hal C. Schofield, Gary S. Solomon, Jackie L. Stankiewicz, Phyleen Stewart-Ramage, Brian R. Swenson, Tianlai Tang, Dorothy Durham Tucker, Rhonda R. Venable, Jane R. Weinberg, W. Scott West, Brad V. Williams, Nat T. Winston, Linda Wirth

SENIOR ASSOCIATE Elise David McMillan

ASSOCIATES Michael John Cull, Helen E. Hatfield, Mary Virginia Manley, Lynne L. McFarland, Michelle Foote Pearce, Timothy Stambaugh

INSTRUCTORS Virginia S. Gardner, Vidya Raj

RESEARCH INSTRUCTOR Hui-Dong Wang

CLINICAL INSTRUCTORS Donna Marie Barrett, Kevin B. Collen, Paul Morris, Earl Q. Parrott ASSISTANTS Molly Butler, Amy Nicholson

**PSY 5020. Psychiatry Core Clerkship.** Psychiatry clinical rotation. Basic goals of this clerkship are to learn the fundamental techniques of psychiatric assessment, differential diagnosis, and treatment intervention. Activities include direct patient care and clinical rounds in the company of assigned faculty, The four-week placements include: Vanderbilt University Hospital, VA Hospital, the Psychiatric Hospital at Vanderbilt (Adult/Adolescent/Child) and Middle Tennessee Mental Health Institute. Third year. Salomon.

**5255. Clerkship in Public Psychiatry.** Students will serve as externs on an acute care ward at Middle Tennessee Mental Health Institute. They will serve as integral members of the treating team by assuming intern responsibilities with supervision and countersignature of orders/notes by the chief resident. Direct patient care will include evaluating, diagnosing, and treating a wide variety of acutely ill psychiatric patients. Students will gain experience managing an acute psychiatric service and gain exposure to the practice of psychiatry in the state mental health system. Prerequisite: Psychiatry 5020; Medicine 5020. Fourth year. Salomon.

**5470.** Empathy and the Physician-Patient Relationship. This course addresses the critical issue of communicating with patients. The course builds on students' altruism and desire to care for patients and to establish a good physician-patient relationship. Emphasis is on the student's professional identity and interaction with patients. The course focuses on skills of interpersonal communication with a primary emphasis on developing understanding and skills of empathy. Practical approaches to listening to and talking with patients are practiced in a small group discussion/seminar format. Students also gain an understanding of patients as persons

who are integrated biologically, psychologically, spiritually, and socially. The meaning of suffering and illness are examined to explore the multiple facets of illness experience. Some class discussion incorporates assigned readings of brief excerpts from selected articles and books written by patients and physicians. Some classes involve interviews with patients as well as practicing physicians. The objective of this course is to enhance students' feelings of satisfaction, confidence, and competence with patient encounters. First and second year. Owens.

5617. Clerkship in Alcohol and Drug Dependence. This elective will consist of care of patients undergoing alcohol and drug dependence rehabilitation in the Vanderbilt Addiction Center (VAC) [formerly VITA] unit under the leadership of members of the Division of Addiction Medicine. Students will have responsibility for the psychiatric care of patients in regular work and teaching rounds, reviewing rehabilitation plans for the patients and participating in group therapy discussions, attending staff conferences, and developing a comprehensive knowledge of the detoxification and rehabilitation of persons with substance use disorders and their medical and psychiatric complications. They will learn the team concept of care through a multidisciplinary approach employing medical and psychiatric nursing care, social services, group therapy, nutritional assessment, occupational and vocational rehabilitation, and exercise. Emphasis will be on family dynamics, demonstrating the dysfunctional family relationships that occur in chemically dependent patients. The special programs of Alcoholics Anonymous, Al-Anon, and Narcotics Anon groups will be available both on the unit and in the community. The after-care of patients will be demonstrated. The student will have the opportunity to take clinical responsibility for the care of these often-complex patients under the direct supervision of the attending. Prerequisite: Psychiatry 5020. Fourth year. Martin.

**5620. Subinternship in Neuropsychiatry.** This subinternship is an introduction to clinical practice and research at the interface of psychiatry and neurology. Under supervision, the student will examine patients with psychiatric and neurologic diseases affecting emotions, such as temporolimbic epilepsy, frontal lobe lesions, strokes in the non-dominant hemisphere, or degenerative conditions such as Alzheimer's Disease, Parkinson's Disease, vascular dementia, and Huntington's Disease. Readings will focus on the neurology of emotion, including functional neuroanatomy, experimental neuropsychology, and electrophysiology. The student may participate in research protocols involving quantitative behavioral assessment, autonomic measures, and structural and metabolic imaging of the brain. Prerequisite: Psychiatry 5020, Neurology 5020. Requires faculty approval. Fourth year—January through April. Gwirtsman.

**5625. Subinternship in Child Psychiatry Consultation–Liaison.** This subinternship is an introduction to clinical practice as a consultation-liaison psychiatrist working with children and adolescents. Under supervision, the student will examine patients with psychiatric diseases complicating pediatric management including delirium, catatonia, anxiety and mood disorders both complicating pediatric illness and mimicking pediatric illnesses (somatoform disorders), management of chronic pain in collaboration with the pediatric pain team, acute stress and post traumatic stress disorder on the trauma service and in the intensive care unit, and psychiatric consultation regarding eating disorders. Readings will focus on the neurobiology of trauma and the neurobiology of the interface between emotions and physical disorders. The student may participate in the study of delirium and PTSD in the pediatric ICU. Prerequisite: Psychiatry 5020, Neurology 5020, Pediatrics 5020. Fourth year. Sanders.

**5638.** Adult Outpatient Psychiatry. Students will have the opportunity to be involved in adult outpatient psychiatry under the direct supervision of Dr. Thomas LaVie. They will learn the basics of a psychiatric evaluation, psycho-pharmacology, and psychotherapy (particularly psycho-dynamic formulation and the principles of insight-oriented therapy and CBT). This will also include didactic teaching, case presentations, treatment planning, chart review, and group supervision. Prerequisite: Psychiatry 5020. Fourth year. LaVie, Salomon.

**5639.** Clerkship in Child and Adolescent Psychiatry. Students will have the opportunity to shadow child psychiatrists in outpatient, inpatient, and school-based consultation settings. Assigned readings supplement patient care experiences. Students are occasionally expected to follow patients with attending/resident supervision. Special projects are optional for students and may include research and writing activities. Prerequisite: Medicine 5020; Surgery 5020; Psychiatry 5020. Fourth year. Fuchs.

**5640. Clinical Evaluation and Treatment of Psychosis.** Psychosis (i.e., impaired reality testing) is a cardinal feature of several psychiatric disorders. Differentiation of psychotic disorders from other mental illnesses (e.g., delirium or intoxication) is often quite complex. This elective emphasizes a clinical appreciation of psychosis and training in the use of diagnostic instruments for clarification of psychotic symptoms in several settings. The elective can be tailored to the interests of the student by dividing time among inpatient treatment units, community clinics, and routine outpatient offices, for both adolescents and adults, and in both clinical and research environments. Activities under the purview of the faculty include participation in assessments and treatment planning for adolescents and adults, neuroimaging and medication trial research in adults, and consultation-liaison assessments in children, adolescents, and adults. It is recommended that students choose three of these settings for in-depth exposures to this work. The student will be expected to prepare and lead a journal club meeting or case conference relevant to one of these settings for an audience of attendings and peers. Prerequisite: Psychiatry 5020, Neurology 5020, and prior planning of activities with Dr. Heckers or his designee. Fourth year. Heckers.

6100. Special Clinical Study-Vanderbilt.

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

7100. Special Clinical Study-Non-VU.

7150. Special Research Study - Non-VU

## Radiation Oncology

INTERIM CHAIR Arnold William Malcolm PROFESSORS Charles William Coffey II, Michael L. Freeman RESEARCH PROFESSOR Sekhar R. Konjeti

ASSOCIATE PROFESSORS Anuradha Bapsi Chakravarthy, Anthony J. Cmelak, P. Charles Lin. Bo Lu. Arnold William Malcolm

ADJUNCT ASSOCIATE PROFESSOR David R. Gius

ASSISTANT PROFESSORS George X. Ding, Steven R. Goertz, Zhaozhong Han, Corbin Johnson, Todd Tenenholz, Fen Xia

RESEARCH ASSISTANT PROFESSORS Kenneth B. E. Gagnon, Heping Yan, Eugenia M. Yazlovitskaya

ADJUNCT ASSISTANT PROFESSOR Paul Allen Rosenblatt INSTRUCTORS Matthew A. Deeley, Manuel A. Morales RESEARCH INSTRUCTOR Kwang Woon Kim

**5620. Clerkship in Therapeutic Radiology.** Students participate in initial evaluation of patients, formulation of treatment, supervision of treatment, and follow-up evaluations. Basic oncology principles to be emphasized. Student will learn indications and techniques for stereotactic, HDR, LDR and IMRT radiotherapy. Prerequisite: Fourth-year status. Chakravarthy.

6100. Special Clinical Study-Vanderbilt.

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

7100. Special Clinical Study-Non-VU.

7150. Special Research Study-Non-VU.

## Radiology and Radiological Sciences

CHAIR Jeremy J. Kaye

PROFESSORS EMERITI Joseph H. Allen, Jr., John H. Beveridge, S. Julian Gibbs, Sandra G. Kirchner, W. Faxon Payne

PROFESSORS Rochelle Filker Andreotti, Malcolm John Avison, Frank E. Carroll, Jr., John J. Connors, Benoit M. Dawant, Dominique Delbeke, Arthur C. Fleischer, Michael L. Freeman, Stephan H. W. Heckers, Richard M. Heller, Jr., Marta Hernanz-Schulman, Jeremy J. Kaye, Robert M. Kessler, Marvin W. Kronenberg, Steven G. Meranze, C. Leon Partain, James A. Patton, Ronald R. Price, Valerie Montgomery Rice, Martin P. Sandler, Harold D. Thompson, Norman H. Tolk, John A. Worrell

RESEARCH PROFESSOR A. Bertrand Brill

ADJUNCT PROFESSORS Ayman Al-Hendy, Arnold Burger, A. Everette James, Jr. ASSOCIATE PROFESSORS Edson James Andrews, Jr., Ronald Curtis Arildsen, André Lemont Churchwell, Keith B. Churchwell, Jeffrey L. Creasy, Thomas S. Dina, Mark D. Does, Edwin F. Donnelly, Daniel T. Fowler, Isabel Gauthier, M. Reza Habibian, John G. Huff, Stacy Stansell Klein, René Marois, William H. Martin, Murray J. Mazer, Robert Alan Mericle, Michael I. Miga, E. Paul Nance, Jr., Cynthia B. Paschal, David R. Pickens III, Thomas A. Powers, Anna Wang Roe, Glynis A. Sacks-Sandler, Max Israel Shaff, Stephanie E. Spottswood, Michael G. Stabin, Sharon M. Stein, Ronald C. Walker, George Young

RESEARCH ASSOCIATE PROFESSORS Ronald M. Baldwin, Natasha Grant Deane ADJUNCT ASSOCIATE PROFESSOR Jeffrey A. Landman

ASSISTANT PROFESSORS John W. Allred III, Joseph M. Aulino, Michael Joseph Ayad, Emma M. Bisson, John J. Block, Peter R. Bream, Jr., Kimberly Collis Brennan, Andrew M. Brittan, Cari L. Buckingham, Li Min Chen, Ronald L. Cowan, Bruce M. Damon, Charles V. DePriest, Joseph Diggs, Zhaohua Ding, Christine K. Dove, Ricardo B. Fonseca, James Christopher Gatenby, Daniel Frank Gochberg, James D. Green, Ewa F. Grzeszczak, Rishi Gupta, Melissa A. Hilmes, Alice A. Hinton, Nancy Wingfield Darden Holland, Ralph Duane Holland, Tamarya L. Hoyt, Frederick M. Isaacson, James M. Joers, Laurie B. Jones-Jackson, Martin I. Jordanov, J. Herman Kan, Minh N. Kenney, Peter M. Lams, Mark A. Lawson, Henry Charles Manning, Jackiel R. Mayo, James H. McElmurray, Kevin T. McManus, Victoria L. Morgan, Todd E. Peterson, Wellington Pham, Christopher

Chad Quarles, John Danforth Ross, Robert J. Singer, Sudha P. Singh, Seth A. Smith, LeAnn Simmons Stokes, Megan K. Strother, David S. Taber, Geoffrey E. Wile, Jennifer R. Williams, Curtis A. Wushensky, Thomas E. Yankeelov

VISITING ASSISTANT PROFESSOR Edward Brian Welch

RESEARCH ASSISTANT PROFESSORS Ning Guo, William R. Riddle, Baxter P. Rogers, Kevin W. Waddell

ADJUNCT ASSISTANT PROFESSORS Reuven Brenner, Jaydip Datta

ADJOINT ASSISTANT PROFESSOR Bennett A. Landman

ASSISTANT CLINICAL PROFESSORS Jung Ja Hong, Philip McGuire, Andrew J. Padgug ASSOCIATES Mohammad Sib Ansari, Jeffrey A. Clanton

INSTRUCTORS Christopher C. Bathurst, G. Nicole Davis, Annie M. Heemskerk, Geoffrey W. Horn, Cheryl A. Hubbard, John-Michael N. Khalil, Otto A. Sanchez, Jayne M. Seekins, Dennis A. Velez, Feng Wang, Huairen Zeng

ASSISTANT Sarah M. Baggette

- **5610. Clerkship in Diagnostic Radiology.** The student participates in a variety of learning experiences in diagnostic radiology. These include reading materials designed for medical students, a didactic lecture series by the radiology staff, round table discussions of appropriate radiographic evaluation of patients, rotations through the various subspecialty divisions of radiology, and various film reading sessions. The purpose of this course is to provide the fourth-year medical student with the fundamentals of diagnostic imaging and an understanding of optimal imaging pathways for various clinical conditions. Attendance and participation are required. This course is not well-suited for the student who needs excessive time off away from the rotation. Prerequisite: Medicine 5020, Surgery 5020, Pediatrics 5020, and Obstetrics/Gynecology 5020. Fourth year. Offered August, September, October, November, February, and April. Donnelly, Jordanov.
- **5630. Pediatric Radiology.** This program will introduce the fourth-year medical student to the principles of diagnostic imaging in pediatric radiology. The medical student will function primarily as an observer during the interpretation of radiographs and the performance of procedures. He or she will be expected to correlate clinical presentation of the patient with the radiologic imaging studies in order to develop a mature appreciation of the role of pediatric imaging and the practice of clinical pediatrics. Prerequisite: Fourth-year status. This course is offered from September through June only, not in July and August. Heller.
- **5640. Clerkship in Neuroradiology.** Students will cover both adult and pediatric neuroimaging during their rotation. The month will allow a broad exposure to the field of neuroradiology. Students will primarily cover readouts with Dr. Megan Strother (adult neuroradiology) and Dr. Curt Wushensky (pediatric neuroradiology). Working with the radiology residents, students will review cases prior to readouts, correlating clinical histories with radiographic findings. Students will be responsible for weekly case presentations during the neuroradiology case conferences. Reading assignments will focus on the basics of CT and MR imaging. Prerequisite: Fourth-year status. Strother.
- 6100. Special Clinical Study-Vanderbilt.
- 6150. Special Research Study-Vanderbilt.
- 6200. Special Study-Pre-Clinical.
- 7100. Special Clinical Study-Non-VU.
- 7150. Special Research Study-Non-VU.

## Section of Surgical Sciences

#### CHAIR OF THE SECTION R. Daniel Beauchamp

#### **Surgical Division Required Courses**

**5020.** Surgery Core Clerkship. Clinical rotation. For ten weeks each student in the third-year class is assigned to the surgical divisions of Vanderbilt University Hospital or Nashville Veterans Administration Medical Center. Under the direction and supervision of the staff, the student takes histories, does physical examinations and assists the staff in the diagnostic evaluation and clinical management of assigned patients. Half of each student's period of clinical work is in general surgery. The other five weeks of the clinical assignment provide two (2) rotations to the specialty services in Anesthesiology (VAH), Cardiothoracic (VUH,VAH), Neurosurgery (VUH), Ophthalmology(VUH), Orthopaedic Surgery(VUH), Otolaryngology (VUH), Pediatric Surgery (VUH), Plastic Surgery (VUH), Renal Transplant (VUH), Urology (VUH), Vascular Surgery (VUH), Trauma (VUH). These rotations provide exposure to a variety of patients with problems in general surgery and in the specialty fields of surgery. Members of the staff hold teaching sessions daily. Students go with their patients to the operating rooms where they are observers and assistants. An integral part of this clerkship is the core lecture series in surgery. Students will be assigned faculty preceptors for small group discussions. Third year. Beauchamp, Lomis, and Staff.

#### **General Surgery**

General Surgery, Vanderbilt General Surgery, VA

#### Subspecialties

Anesthesiology, VAH Cardiothoracic, VUH

Cardiothoracic, VAH
Neurosurgery, VUH
Ophthalmology, VUH
Orthopaedic Surgery, VUH
Otolaryngology, VUH
Pediatric Surgery, VUH
Plastic Surgery, VUH

Renal Transplant, VUH Trauma, VUH Urology, VUH Vascular Surgery, VUH

## General Surgery

CHAIR Naji N. Abumrad

PROFESSORS EMERITI William H. Edwards, Sr., Walter G. Gobbel, Jr., H. Keith Johnson, James A. O'Neill, Jr., Robert E. Richie, Douglas H. Riddell, John L. Sawyers

PROFESSORS Naji N. Abumrad, Derrick J. Beech, Colleen M. Brophy, John G. Byrne, J. Stephen Dummer, Wa'el El-Rifai, William R. Furman, Robert L. Galloway, Jr., James Richard Goldenring, J. Kenneth Jacobs, Addison K. May, Richard S. Miller, John A. Morris, Jr., Thomas C. Naslund, C. Wright Pinson, John H. Selby, David Shaffer, Kenneth W. Sharp, John Leeman Tarpley, John Kelly Wright, Jr.

VISITING PROFESSOR Neville Grant

RESEARCH PROFESSOR Irene Feurer

ADJUNCT PROFESSORS William O. Richards, William L. Russell

CLINICAL PROFESSORS Ravi S. Chari, Joseph L. Mulherin, Jr.

ASSOCIATE PROFESSORS Antoinne C. Able, Bettina M. Beech, Pran Krishna Datta, Mark

P. de Caestecker, Jose J. Diaz, Jr., David Lee Gorden, Ana M. Grau, Jeffrey S. Guy, Raul J. Guzman, Alan Joseph Herline, Michael S. Higgins, Michael D. Holzman, Mark C. Kelley, Steven G. Meranze, Nipun B. Merchant, Bonnie M. Miller, Alphonse T. Pasipanodya, A. Scott Pearson, Walter E. Smalley, Jr., Flora A. M. Ukoli, Liza M. Weavind

RESEARCH ASSOCIATE PROFESSORS Natasha Grant Deane, Rafe M. Donahue, Kareem A. Jabbour, Padmini Komalavilas, Phillip E. Williams

ADJUNCT ASSOCIATE PROFESSORS Robert C. Bone, Andrew John Pullan

ASSOCIATE CLINICAL PROFESSORS Carlton Z. Adams, Jr., Roger A. Bonau, Reginald W. Coopwood, William H. Edwards, Jr., Steven J. Eskind, Raymond S. Martin III, William A. Nylander, Jr., Douglas O. Olsen, Stanley O. Snyder, Jr., Pat Winston Whitworth, Jr.

ASSISTANT PROFESSORS Claudia D. Andl, Arna Banerjee, James T. Broome, Ysela Maria Carrillo, Kong Y. Chen, Bryan Richard Collier, Jeffery B. Dattilo, Punita Dhawan, Charles Robert Flynn, M. Dorothy Fogerty, Sunil K. Geevarghese, Oscar D. Guillamondegui, Douglas A. Hale, Burnett S. Kelly, Jr., Ralph J. LaNeve, Eric H. Liu, Kimberly D. Lomis, Murray J. Mazer, Willie V. Melvin III, Ingrid M. Meszoely, Derek E. Moore, Roberta Lee Muldoon, Patrick R. Norris, Alexander A. Parikh, Alphonse T. Pasipanodya, Benjamin Kuttikatt Poulose, William P. Riordan, Jr., Henry P. Russell, Amar B. Singh, Kenneth G. Smithson, Marinos C. Soteriou, David Brandon Williams, Paul E. Wise, Dengping Yin, Alexander Zaika

VISITING ASSISTANT PROFESSOR Lisa Strommer

RESEARCH ASSISTANT PROFESSORS Abbes Belkhiri, Leonard Alan Bradshaw, Joyce Cheung-Flynn, Tahar Hajri, Lynne A. Lapierre, Amosy E. M'Koma, Yukiko Ueda, Edward Y. Zavala

ASSISTANT CLINICAL PROFESSORS Carlton Z. Adams, Jr., Terry R. Allen, Suhail H. Allos, Jeanne F. Ballinger, Eugene Prichard Chambers, Jr., Jonathan A. Cohen, Maria E. Frexes-Steed, Richard J. Geer, Robert W. Ikard, Sabi S. D. Kumar, Timothy J. Ranval, Richard B. Terry

SENIOR ASSOCIATES Margaret Tarpley, Carolyn S. Watts

INSTRUCTORS Chadi T. Abouassaly, Raeanna C. Adams, Christopher Carr, William D. Dutton, Jennifer E. Foster, Kirby R. Gross, Mickey M. Ott

RESEARCH INSTRUCTORS Yong-Jig Cho, Elena A. Kolobova, Pamela A. Marks, Nagaraj S. Nagathihalli, Ki Taek Nam, Joseph T. E. Roland, Robyn A. Tamboli

CLINICAL INSTRUCTORS Laura L. Dunbar, Ray Hargreaves, Laura Louise Lawson, Martina I. Okwueze

ASSISTANTS Mary Fran Hazinski, Leanna Robbins Miller

**5500. Subinternship in Vascular Surgery.** This course will expose the student to the physical assessment of the vascular patient with correlation of diagnostic testing. Treatment options will be discussed and vascular surgical techniques emphasized. Operation experience as well as conferences, rounds, and clinic participation is expected. Prerequisite: Surgery 5020. Fourth year. Naslund.

**5600. Transplantation Elective.** The goal of this course is to introduce second-year students to the biological, clinical, and social aspects of transplantation. The course will meet for thirteen or fourteen one-and-one-half hour sessions during the fall semester. The weekly format will be discussion of clinical issues in transplant recipients. The preceptors will vary from week to week. The format may also vary depending on the wishes of the preceptors. Slides or other didactic material may be included, but the basic structure will be a seminar with questions to be answered and group discussion. A few faculty may bring transplant patients to the sessions to answer questions and interact with students. For students interested in watching transplant operations, there will be a sign-up sheet posted at the beginning of the course, and

it is anticipated that a few students will have this opportunity. After the course is completed, it is anticipated that the students will have a broad understanding of the vocabulary and concepts involved in organ transplantation. They will have a grasp of the basic biological and clinical issues of transplantation and be familiar with the most important social and ethical problems in the discipline. The students should also be aware of the major complications of transplantation. An attempt will be made to include in discussion areas of current investigation in transplantation biology. Prerequisite: First-year curriculum. Second year. Geevarghese.

**5612. Subinternship in Surgery, VAH.** Students rotating at the Veterans Administration Hospital can elect to spend time on general surgery, vascular surgery, or cardiothoracic surgery. They will be exposed to the full range of clinical activities of each of these services, and they will also have the opportunity to participate in preoperative evaluation, intraoperative management, and postoperative care. There will also be a weekly clinic which the student will be expected to attend. Each service has a full complement of conference activities which the students will be expected to attend. There will be close observation of the student's activities by the house staff and by the attending staff, as well. If students are interested, ample opportunity will be provided to do a brief report for possible publication. Prerequisite: Surgery 5020. Fourth year. Guillamondegui.

5614. Subinternship in Surgical Critical Care Medicine, VU. The Surgical Critical Care clerkship provides students with a multidisciplinary approach to care of the critically ill surgical patient. Students will function in a supervised environment and be expected to fulfill the role of a surgical intern. The units are very active critical care facilities with state-of-the-art monitoring and support technology. The course content emphasizes a physiologic approach to the care of critically ill general, vascular, transplant, geriatric, oncology, and emergency surgical patients. Students will gain experience with invasive hemodynamic monitoring, mechanical ventilation, enteral/parenteral nutrition, surgical infectious disease, and management of vasoactive medications. Topics such as cost containment, resource utilization, and medical ethics are an integral part of daily intensive care management. The patient care service consists of a surgical or anesthesia attending physician, a surgical critical care fellow, two mid-level surgical/anesthesia residents, and three surgical interns. Other staff available in the units include clinical pharmacists, respiratory therapists, and advance practice nurses. Teaching rounds are made each morning with didactic lecture and case-discussions Monday-Thursday. Friday morning attendance of surgical grand rounds and resident teaching conference is mandatory. A course syllabus containing management protocols and educational objectives is provided to all registrants. Evaluation of the student's performance is based on clinical knowledge, basic science application, integration into the team, and an essay examination given at the end of the rotation. Mid-rotation and final evaluations of each student will be conducted by the critical care fellow assigned to the unit, as well as the course director. Call expectations are one night each week and two weekend nights (total of six night-call shifts) during the rotation. Prerequisite: Surgery 5020. Fourth year. May.

**5616.** Subinternship in Emergency General Surgery. The EGS service is the primary general surgery service at Vanderbilt University Hospital which handles all emergent and urgent non-trauma surgical emergencies. The service responds to all consults in the Emergency Department, in-patient, and transfers from the surrounding 85,000 square miles. The common disease processes range from "bread and butter" general surgery (appendicitis and cholecystitis) to the abdominal catastrophe. Operative cases are done in the OR with open and laparoscopic techniques. Bedside surgery for critically ill patients is a common occurrence. The EGS service performs most of the ICU PEGs and perc tracheotomies for the adult ICUs. The medical student extern experience on the EGS service is a concentrated experience on a busy general surgical service. The student will be an integral part of the team. Students will get to see initial surgical consultation, follow patients during their hospital stay, and participate during any

operative intervention. The medical student extern is expected to take a minimum of 1:4 on call with the EGS consult resident. This allows the medical student an opportunity to experience what a surgical residency is like. Evaluation will be based on feedback from faculty and the chief resident with whom you have worked. Prerequisite: Surgery 5020, Third-year core clerkships. Fourth year. Diaz.

- **5617. Subinternship in Colon and Rectal Surgery.** The colon and rectal surgery service at VUMC offers the opportunity for fourth year medical students to serve as subinterns. This affords the students the opportunity to take an active role in patient care while assuming some of the intern responsibilities when appropriate as well as being involved in the operating room. Operative cases range from open and minimally invasive/ laparoscopic colon and rectal procedures for inflammatory bowel disease, diverticular and other benign diseases, and neoplasia to procedures for benign anorectal conditions. Students will work very closely with the three colon and rectal surgery faculty in clinic and in the operating rooms which allows for personal attention and feedback. Requires approval through the Registrar's Office. Prerequisite: Surgery 5020. Fourth year. Muldoon.
- **5618.** Subinternship in Hepatobiliary Surgery and Liver Transplant. This rotation provides a general exposure to the fundamentals of hepatobiliary surgery and liver transplantation. The student will be expected to see patients and be a part of their care preoperatively, intraoperatively, and postoperatively in the transplant clinics, in the OR, and on ward rounds. The student will participate in transplant operations at VUMC and organ procurements, which may be performed outside of VUMC. Finally, the student will attend all transplant conferences that are held during his or her rotation. Prerequisite: Surgery 5020. Fourth year. Geevarghese.
- **5619.** Subinternship in Gastrointestinal/Laparoscopic Surgery. The senior rotation of the GI/Lap service will expose the student to a broad variety of general surgical and advanced laparoscopic procedures. The student will be integrated into the four resident teams and will be expected to fully participate in activities—patient rounds, duties in the operating room, and all educational conferences. If desired, the student can choose to focus their clinic or OR time on a subset of the practice such as bariatric surgery, laparoscopic foregut surgery, or advanced endoscopic procedures and the faculty who perform them. Prerequisite: Surgery 5020. Fourth year. Poulose.
- **5621. Subinternship in Surgical Critical Care, VAH.** This general surgery clerkship at the Veterans Administration Hospital provides students with a multidisciplinary approach to care of the critically ill surgical patient. Students will function in a supervised environment and be expected to fulfill the role of an intern. The course content emphasizes a physiologic approach to the care of critically ill general, cardiovascular, vascular, orthopaedic, urology, ENT, and neurosurgical patients. Students will gain experience with invasive hemodynamic monitoring, mechanical ventilation, enteral / parenteral nutrition, surgical infectious disease, and management of vasoactive medications. The patient care service consists of a surgical or anesthesia attending physician, a critical care fellow, and a surgical or anesthesia intern. Teaching rounds are made each morning Monday–Friday. The student will be expected to attend the didactic lecture series at 11:00 a.m., along with the other interns and medical students rotating through Vanderbilt SICU and Neuro-ICU. A course syllabus containing educational objectives is provided to all registrants. Evaluation of the student's performance is based on clinical knowledge, basic science application, and integration into the team. There are no call expectations for this rotation. Prerequisite: Surgery 5020. Fourth year. Banerjee.
- **5670.** Subinternship in Surgical Oncology. This general surgery course offers inpatient and outpatient clinical experience in treatment of patients with primary as well as recurrent or inoperable malignant tumors at Vanderbilt University Hospital. Emphasis is on principles

of comprehensive management of patients with malignant disease. The student will gain experience in the multimodality treatment approach to cancer. Prerequisite: Surgery 5020. Fourth year. Parikh.

**5690.** Subinternship in Kidney/Pancreas Transplantation. This course is offered by the Department of General Surgery. Students will work with the resident and full-time staff on the transplantation service. Experience will be provided in pre-operative, operative, and post-operative management of patients who have had a kidney and/or pancreas allograft. The student will have an opportunity to study methods of tissue typing, organ preservation, and immunosuppression. Ward rounds daily. Prerequisite: Surgery 5020. Fourth year. Shaffer.

**5850.** Subinternship in Trauma. The Vanderbilt University Trauma Center provides an integrated approach to the multiply injured patient. The student will be introduced to the three basic components of trauma care: pre-hospital care, hospital care, and rehabilitation. The pre-hospital care component includes exposure to the Life Flight program, the Metro Ambulance Service, and the initial resuscitation and assessment in the Emergency Room. The hospital care component of the elective allows active participation on the inpatient trauma service, including the assessment of difficult problems in intensive care medicine and rehabilitation. Students are expected to become proficient in a wide variety of bedside procedures in a supervised setting. An essay examination is given at the end of the rotation. Prerequisite: Surgery 5020. Faculty approval required. Fourth year. Miller.

# Cardiac Surgery

CHAIR John G. Byrne

PROFESSORS EMERITI William C. Alford, Jr., Harvey W. Bender, Jr., William S. Stoney, Jr. PROFESSORS David P. Bichell, John G. Byrne, Ricardo Luis Levin, Michael R. Petracek

CLINICAL PROFESSOR Davis C. Drinkwater, Jr.

ASSOCIATE PROFESSOR Karla G. Christian

ASSOCIATE CLINICAL PROFESSOR J. Scott Rankin

ASSISTANT PROFESSORS Tarek S. Absi, Rashid M. Ahmad, Jorge M. Balaguer, Stephen K. Ball, James P. Greelish, Steven J. Hoff, Betty Kim

**5630. Subinternship in Cardiac Surgery.** This course consists of an intensive four-week exposure to the patient care activities of the cardiac surgical service. Faculty will consist of members of the Department of Cardiac Surgery. Students will have the opportunity for extensive exposure to patients with a wide variety of clinical problems in acquired/congenital cardiac disease including coronary atherosclerosis and its intraoperative (coronary bypass) and percutaneous (coronary stent placement) management in the "hybrid OR," repair of cardiac valve disease using the standard and minimally invasive approaches, management of cardiac failure including ventricular assist devices, and cardiac transplantation. By special arrangement, students may rotate on pediatric cardiac surgery for their four-week rotation. The educational environment will be the outpatient clinic, operating room, ICU, and general care wards. Formal teaching conferences and didactic lectures will be provided weekly. Prerequisite: Surgery 5020. Fourth year. Byrne.

## Neurological Surgery

CHAIR George S. Allen

PROFESSORS George S. Allen, John J. Connors, J. Michael Fitzpatrick, Robert L. Galloway, Jr., E. Duco Jansen, Anita Mahadevan-Jansen, Reid Carleton Thompson, Noel B. Tulipan ADJUNCT PROFESSOR Stephen Oppenheimer

CLINICAL PROFESSOR Alan H. Fruin

ASSOCIATE PROFESSORS Mark W. Becher, Joseph S. Cheng, Peter E. Konrad, Louise Ann Mawn, Robert Alan Mericle, Michael I. Miga, Allen K. Sills

RESEARCH ASSOCIATE PROFESSOR Changging C. Kao

ASSISTANT PROFESSORS Oran S. Aaronson, Michael Joseph Ayad, John Allan Barwise, Henry Charles Manning, Joseph S. Neimat, Matthew Marshall Pearson, Paul T. Russell III, Robert J. Singer, Kenneth G. Smithson, Andrea L. Utz, Kyle Derek Weaver, Baogang Jonathan Xu

RESEARCH ASSISTANT PROFESSOR Michael S. Remple INSTRUCTORS Todd S. Shanks, Dennis A. Velez RESEARCH INSTRUCTOR Adrija Sharma ADJUNCT INSTRUCTOR Laura Diedrich

**5620.** Subinternship in Neurological Surgery. The student works with the resident staff and attending staff on the neurosurgical service at Vanderbilt University participating in the diagnosis and management of patients with neurosurgical problems. Prerequisite: Surgery 5020. Requires faculty pre-approval. Fourth year. Allen.

## Oral and Maxillofacial Surgery

CHAIR Samuel Jay McKenna PROFESSOR EMERITUS Elmore Hill PROFESSORS Harry Lewis Legan, Samuel Jay McKenna CLINICAL PROFESSOR Bruce S. Haskell ASSOCIATE PROFESSOR Marion L. Messersmith ASSOCIATE CLINICAL PROFESSORS James D. Allen, John R. Werther ASSISTANT PROFESSORS Joseph G. Abood, James L. Cannon, Jack C. Fisher, Donald I. George, Jr., A. Joel Gluck, Steven G. Press, Julie Wang Rezk, James N. Thacker ASSISTANT CLINICAL PROFESSORS George A. Adams, Jr., George A. Adams, Sr., Michael L. Bobo, Nathan A. Burns, Bryan Byrnside, Mirna A. Caldwell, Robert Caldwell, Jeffrey B. Carter, Myoungsoo Choi, George H. Clayton, Lindsey W. Cooper, Sr., Nina Foley, Chad E. Fowler, Richard H. Gentzler III, Matthias J. Gorham, Jr., Cynthia A. Green, Spencer A. Haley, Alexandra Warren Hendricks, Jody Jones, John T. King, William Layman, George S. Lee, Charles Michael Locke, Jonathan D. Lucas, Bruce C. McLeod, Edward C. Perdue, John Philipose, Terryl A. Propper, Gregory P. Richardson, Stanley C. Roddy, Jr., John K. Shea, Ellen G. Shemancik, Henry Clifton Simmons III, David J. Snodgrass, Julie Ann Staggers, John Carlos Stritikus, Rhonda Switzer, Donna C. Walls, Kevin D. West, Ryan B. Wiesemann, John E. Yezerski CLINICAL INSTRUCTOR Franklin William Taylor

5700. Clerkship in Oral Surgery. Senior medical students will work with the residents and staff in the diagnosis and management of oral surgical problems. There will be participation in the management of a wide range of surgical problems, including temporomandibular joint disease, facial trauma, growth abnormalities, and benign lesions. There will also be experience in minor surgical procedures of the mouth, for example, extraction of teeth. Prerequisite: Surgery 5020. Fourth year. McKenna.

## Pediatric Surgery

CHAIR Wallace W. Neblett III PROFESSOR EMERITUS George W. Holcomb. Jr. PROFESSOR Wallace W. Neblett III ASSOCIATE PROFESSOR John B. Pietsch. ASSISTANT PROFESSORS Dai H. Chung, Gretchen Purcell Jackson, Eric R. Jensen, Harold Newton Lovvorn III, Walter M. Morgan III, Stephen Eric Morrow RESEARCH ASSISTANT PROFESSOR Jingbo Qiao

5660. Subinternship in Pediatric Surgery. This course provides an opportunity for students to work on the wards and in the outpatient department caring for children in pre-operative, operative, and post-operative periods and attending both pediatric and surgical conferences. Daily rounds are held. Prerequisite: Surgery 5020, Pediatrics 5020. Fourth year. Neblett.

# Plastic Surgery

CHAIR R. Bruce Shack PROFESSOR EMERITUS John B. Lynch PROFESSORS Lillian B. Nanney, William Russell Ries, R. Bruce Shack

ASSOCIATE PROFESSORS Kevin F. Hagan, Kevin J. Kelly

ASSOCIATE CLINICAL PROFESSORS Jack Fisher, Thomas W. Orcutt

ASSISTANT PROFESSORS Stephane Alain Braun, James J. Madden, Jr., John Blair Summitt, Wesley P. Thayer, Douglas R. Weikert, J. Jason Wendel

ASSISTANT CLINICAL PROFESSORS Caroline H. Chester, Stephen M. Davis, Joseph B. DeLozier III, Philip E. Fleming, Mary Katherine Gingrass, Melinda J. Haws, G. Patrick Maxwell, John David Rosdeutscher

ASSISTANT Marcia E. Spear

5460. Plastic Surgery Elective. Are you interested in learning more about a surgical specialty that is so broad-based as to include all age ranges from pediatrics through geriatrics and virtually the entire body from head to foot? Are you interested in meeting with full-time faculty who are recognized nationally for their contributions to the specialty of plastic surgery? Are you interested in seeing patients and examining patients who have a broad variety of clinical problems? Are you interested in interacting with the faculty in a small group to discuss these problems in detail on a weekly basis? If so, I would encourage you to consider the plastic surgery elective as a part of your educational opportunities. Second year. Shack.

**5680. Subinternship in Plastic Surgery.** The student works with the plastic surgery faculty and residents on the plastic surgery service at Vanderbilt University Hospital, participating in the diagnosis and management of patients, with a wide variety of reconstructive and aesthetic problems. This includes surgery of the hand, the breast and trunk, the head and neck, and the lower extremity. Patients range from pediatric to geriatric age groups and problems vary from congenital to acquired including deformity from neoplasm, burns, and trauma. Prerequisite: Surgery 5020. Fourth year. Shack.

## Thoracic Surgery

CHAIR Joe B. Putnam, Jr.
PROFESSOR Joe B. Putnam, Jr.
ASSOCIATE PROFESSOR Jonathan C. Nesbitt
ASSISTANT PROFESSORS Eric L. Grogan, Betty Kim, Eric Shawn K. Lambright, Otis Rickman

**5632.** Subinternship in Thoracic Surgery. This course consists of an intensive four-week exposure to the patient care activities of the thoracic surgical service. Faculty will consist of members of the Department of Thoracic Surgery. Students will have the opportunity for extensive exposure to patients with a wide variety of clinical problems including staging and treatment of lung cancer, esophageal cancer, management of advanced thoracic neoplasms including pulmonary metastases and malignant pleural effusion, reoperative thoracic surgery, and management of end-stage lung disease with lung volume reduction surgery and lung transplantation Specific attention to multidisciplinary care in thoracic surgery, clinical trials, and health care outcomes will be provided. The educational environment will be the outpatient clinics, operating room, ICU, and general care wards. Formal teaching conferences and didactic lectures will be provided weekly. Prerequisite: Surgery 5020. Fourth year. Putnam.

**5633.** Independent Study in Thoracic Surgery. This course will be a four week rotation prearranged with faculty within the Department of Thoracic Surgery. An independent clinical or laboratory project will be created or designed in collaboration with a faculty member prior to the rotation. The rotation will be a concentrated investigation process leading to a scholarly product. The student will be encouraged to submit this product or report for peer-reviewed publication. Prerequisite: Surgery 5632. Fourth year. Putnam.

**5634.** Subinternship in Cardiothoracic Surgery, VAH. The Veterans Administration Hospital fourth-year mission is to provide students with the opportunity to experience a broad spectrum of cardiothoracic patient interactions from the clinic to the OR to the bedside and beyond. Building upon the third year of medical education, the fourth-year student will be incorporated into the surgical team as a subintern and function at the level of an intern. The student will be expected to identify, discuss, and outline therapeutic options for common surgical pathologies from the simple to the complex. The student will attend the thoracic OR on Mondays and clinic on Fridays. Tuesdays, Wednesdays, and Thursdays will be spent covering the cardiac surgery service. The focus will be technical in nature and the student should arrive with basic suturing and knot typing expertise. Over the course of four weeks, the goal will be to inspire a quest for surgical knowledge and technique that will be the impetus for a surgical career. The student will develop an understanding of the processes at work in defining thoracic pathology and the operative techniques employed to surgically correct or remove it. Requires approval through the Registrar's Office. Prerequisite: Surgery 5020. Fourth year. Grogan.

## Urologic Surgery

CHAIR Joseph A. Smith, Jr.

PROFESSORS Mark C. Adams, John W. Brock III, Michael S. Cookson, Rodney Davis, Roger R. Dmochowski, Robert J. Matusik, Bruce J. Roth, Joseph A. Smith, Jr.

ASSOCIATE PROFESSORS Sam S. Chang, Peter E. Clark, Simon William Hayward, S. Duke Herrell III, Steven G. Meranze, Douglas Franklin Milam, John C. Pope IV, Harriette Miles Scarpero, William J. Stone

ASSOCIATE CLINICAL PROFESSORS H. Victor Braren, Charles W. Eckstein, Robert H. Edwards, Keith W. Hagan, Phillip P. Porch, Jr., Robert A. Sewell

ASSISTANT PROFESSORS Melissa R. Kaufman, Nicole L. Miller, David F. Penson, Stacy T. Tanaka, John C. Thomas

RESEARCH ASSISTANT PROFESSORS Govindaraj Anumanthan, Ming Jiang, Ren Jie Jin, Xiuping Yu

ASSISTANT CLINICAL PROFESSORS Robert B. Barnett, Raoul S. Concepcion, Mark D. Flora, Jenny Jo Franke, Whitson Lowe, Thomas E. Nesbitt

ASSOCIATES Karen Michelle Ardisson, Todd J. Doran

INSTRUCTORS Hernan O. Altamar, Daniel A. Barocas, Alison M. Lake, Todd M. Morgan, Priya Padmanabhan, William S. Reynolds, Davis P. Viprakasit

CLINICAL INSTRUCTORS Robert B. Faber, John J. Warner ASSISTANTS Lisa L. Lachenmyer, Rochell Lee Sasse

**5640.** Subinternship in Urology. The student will work with the full-time faculty and the urology resident staff in the day-to-day care of patients on the urology service. This clerkship will provide an in-depth experience in the care and treatment of a patient population that is commonly seen at a tertiary care hospital. Operative experience will be quite extensive. Participation on this clerkship also involves attendance at the various department-wide conferences held from time to time during the week. This is an intensive and comprehensive clerkship for those considering urological residency or other postgraduate surgical training, or for those seeking an overview of urologic surgery position. Prerequisite: Surgery 5020. Smith.

**5980. Subinternship in Pediatric Urology.** The student will work with full-time faculty and the urology resident staff in the day-to-day care of patients on the pediatric urology service. This clerkship will provide an in-depth experience in the care and treatment of both in-hospital and outpatient urological problems. Participation in the clerkship will also involve attendance at the various department-wide conferences held during the week. This clerkship is intended for those considering a urological residency or considering a residency in pediatrics. Prerequisite: Surgery 5020. Fourth year. Brock.

6100. Special Clinical Study-Vanderbilt.

6150. Special Research Study-Vanderbilt.

6200. Special Study-Pre-Clinical.

7100. Special Clinical Study—Non-VU.

7150. Special Research Study—Non-VU.

## Clinical Investigation

Courses leading to the Master of Science in Clinical Investigation degree

**5000. Drug and Device Development.** This seminar-style course is designed to provide an overview of the drug and device development process. We will cover issues of drug discovery, pre-clinical drug development, Phase I through Phase IV human testing, device development, and the role of the FDA in regulatory affairs. First year. SUMMER. [3] Raj.

**5001. Grant Writing I.** Principles of scientific written and oral communication, with a focus on grant writing will be discussed. The principles of scientific grant writing will include how to write the background and significance, previous work, and methods sections. Students will review grants submitted to public health service study sections, participate in a mock study section, and prepare a sample grant application. Enrollment is limited. First year. SUMMER. [1] Brown, Ray.

**5002. Medical Writing for Clinical Investigators.** This course is designed to teach clinical investigators medical writing skills required to publish scientific articles in peer-reviewed medical journals. Since candidates in the M.S.C.I. program are expected to complete their master's theses based on their research projects in the spring of year two, this course is scheduled prior to this deadline to assist students in writing their theses. Teaching will consist of demonstrations and discussions of how to improve the writing quality using each student's thesis-in-progress as an example. Each student will be expected to write and revise his or her master's thesis as course work. No additional written assignments will be required. Second year. SPRING. [2] Byrne.

**5003. Molecular Medicine.** The Molecular Medicine course will provide an overview of basic cellular and molecular processes to acquaint physicians who have been engaged in clinical training with recent advances in these areas. Each module of the course will consist of didactic lectures addressing a fundamental process followed by clinical illustrations to demonstrate the relevance of molecular biology to clinical medicine and investigation. In general, the fundamental didactic lectures will be delivered by basic science faculty and the clinical illustrations will be presented in a case-oriented fashion by a member of the Department of Medicine or other clinical department. First year. SPRING. [4] Sawyer.

**5004. Human Genetics.** This course prepares students to (1) describe the structure and function of genes and chromosomes, the distribution of genetic variants in populations, and the role of genetic variants in human disease; (2) describe the implementation of methods for ascertaining clinical datasets for clinical genetic research studies; (3) understand molecular genetic methods for genotyping and variation and mutation detection in the conduct of clinical genetic research studies; (4) identify genetic epidemiological methods for identifying genetic variants associated with complex disease risk; (5) describe thresholds for significance in studies of the genetics of complex disease and potential confounders of results of studies of complex disease genetics; (6) describe use of online databases in clinical genetic research; (7) describe the ethical issues associated with clinical genetic research and address ethical concerns in the design and conduct of clinical genetic research studies; and (8) describe the challenges in translating clinical genetic research into clinical practice. Second year. FALL. [2] Taylor.

**5005.** Case Studies in Clinical Investigation I. First year M.S.C.I. students will present their project plans for class discussions. The format will be in a studio design. Students will be presenting their MSCI projects in the presence of three to four experts selected from VU

faculty. It is anticipated that the studio will take place prior to submission of the project for IRB or CTSA application (if applicable). The students are expected to initiate the studio process as soon as they are accepted in the program. First year. FALL. [1] Ikizler, Barr.

- **5009. Biostatistics I.** This course will teach modern biostatistical skills. Students will use statistical software to learn data analysis methods using actual clinical research data sets. Students will also learn about statistical power and sample size calculations using the software nQuery Advisor. An emphasis will be placed on performing statistical analyses and interpreting output. Commonly used statistical methods will be explained as well as the techniques that experienced biostatisticians use to analyze data. All students will be encouraged to bring a data film from their MSCI project to class to stress hands-on learning with clinical research data. First year. FALL. [4] Byrne.
- **5015. Biostatistics.** The objectives of this course include fundamental biostatistical concepts related to multivariable analyses in existence of confounding and effect modification. Topics include Student's t-test, one-way ANOVA, linear, binary logistic, proportional odds logistic, and Cox proportional-hazard regressions with emphasis in checking model assumptions. Basic concepts on repeated measures analysis including a mixed-effect and GEE regression models. Proper strategies for developing reliable multivariable models. Proper strategies for developing reliable multivariable models in prognostic-diagnostic research, randomized controlled trial, and observational study for causation. Prerequisite: MSCI 5009 and MSCI 5030. First year. SPRING. [4] Shintani.
- **5016. Research Skills.** This course offers basic instruction and practical advice on a variety of issues and skills related to the conduct of clinical research, often with computer demonstrations. First or second year. FALL, SPRING. [1] Orozco.
- **5017. Clinical Career Seminars.** Topics of discussion will include academic "rules of the road," time management, promotion/tenure issues, grants management, and overall program evaluation. Candidates will hone their scientific communication skills through an annual presentation at this forum. **FALL**, SPRING. [1] Brown.
- **5018. Cancer Biology.** This module introduces several major areas of cancer biology and is intended as an overview. Topics range from the molecular biology of cancer (e.g., oncogenes, tumor suppressors) to issues of drug design and clinical trials. Second year. [2] Reynolds.
- **5019. Cellular Microbiology of the Pathogen-Host Interaction.** An interdisciplinary course designed to train students at the interface of molecular microbiology and cell biology. Model organisms or their products will be analyzed in the context of molecular cell biology. Students will be challenged to utilize new information from microbial genome sequencing to understand host cell subcellular compartments and signaling pathways. Prerequisite: A solid background at the graduate or undergraduate level in natural science curriculum, for example molecular cell biology, microbiology, and immunology. First year. [3] Green.
- **5021. Molecular and Cellular Immunology.** The cellular and molecular foundations of the immune response system and the humoral and cellular reactions that result from immunologic interactions. Two lectures per week and seminars presented by students. Second year. FALL. [3] Joyce.
- **5022. Cancer Biology.** A multidisciplinary course designed to expose students to all areas of basic and applied cancer research. Emphasizes the molecular mechanisms underlying carcinogenesis and tumor progression and their relationship to clinical aspects of the disease. FALL. [4] Yull.
- **5024.** Case Studies in Clinical Investigation II. This course is designed to simulate a thesis defense. Overall, second-year MSCI students are expected to give a presentation to the

class on the progress of their selected MSCI project or their project completed during the program. The extent of the presentation will depend on the accomplishments made. If requested, a studio format can be utilized. Second year. SPRING. [1] Ikizler, Barr.

5026. Proteomics. This lecture-style course may include the following sample subjects:

- Introduction to clinical proteomics—rationale, description of prior studies and future needs
- Selection of candidate biomarkers—application of MALDI Mass Spec to biological samples
- Selection of candidate biomarkers—other approaches
- Assay development—multiplex assays, high throughput micro assays, industry collaboration
- Sample datasets—how clinical proteomics can be incorporated into past and future clinical trial datasets and IRB issues
- Biostatistical analytical approaches for proteomics
- Novel bioinformatic approaches to proteomic data analysis
- Clinical proteomics in action—application of the process to clinical acute lung injury.

First or second year. [1] Ware.

**5027. Functional Genomics and Proteomics.** An interdisciplinary course designed to train predoctoral students and postdoctoral fellows in biological applications of functional genomics and proteomics in immunobiology. The topics include (1) proteomic analysis of blood cells, vascular endothelial cells, and smooth muscle cells involved in immunity and inflammation, (2) functional genomics of immunobiology using genome-wide mutagenesis, (3) gene expression profiling of immune/inflammatory responses based on DNA microarray technology, (4) peptide/protein transduction and its applications to cell-based proteomics and intracellular protein therapy, (5) proteomic analysis of MHC antigens, (6) genomics and proteomic analysis of host-pathogen interactions, (7) genomic and proteomic analysis of inflammatory and immune diseases and (8) development and application of new genomic and proteomic strategies in immunobiology. SPRING. [2] Hawiger.

**5028. Data Management.** The objective of this course is to teach students the fundamentals of research data planning, collection, storage, dissemination, and manipulation. Several software tools will be employed, but primary ideas should transcend individual applications (especially versions) and ultimately serve students by providing tools for use in data management for clinical investigation. SPRING. [2] Harris.

**5029.** Research Ethics and Scientific Integrity. This course is a systematic examination of the ethical concepts and standards of biomedical science and research integrity. Its aim is to provide graduate and postgraduate trainees in the biomedical sciences and clinical research a framework in which to recognize, examine, resolve, and prevent ethical conflicts in their professional work. First year. [1] Heitman.

**5030. Epidemiology I.** This course will provide an introduction to the principles of the design of evidence-based clinical studies. The course will cover concept of causation, epidemiological research design, measures of disease frequency and association, detection of confounders and interaction, and issues pertaining to the validity and applicability of research in medicine. The course will also provide introduction to the design and analysis of clinical research in diagnostic, prognostic, therapeutic, and etiologic (side effects) studies. First year. FALL. [4] Shintani.

**5032.** Critical Issues in Cancer Research. This seminar/tutorial will examine primary research papers to develop critical thinking skills on current topics in cancer research, including cell growth control, signal transduction, regulation of gene expression, and programmed cell death. The discussions will focus on discredited and controversial areas as well as cuttingedge studies. Students can write a paper for additional credit. Prerequisite: course director approval. SUMMER. [3] Ruley.

**5044. Clinical Trials.** Design and data analysis for clinical trials in biomedical research. Primary topics include specification of study objectives, design options, ethical guidelines, randomization, blinding, sample-size determination and power analysis, interim monitoring and data analysis appropriate for parallel, crossover, nested, factorial, and group allocation designs. Other topics include the role of the FDA in the drug approval process, meta-analysis, adaptive trial designs, non-inferiority trials, bio-equivalence trials, biomarker trials, and high-dimensional endpoint trials. Emphasis is on practical use of methods rather than formal statistical theory. (Cross-listed with PUBH 5504.) First year. FALL. [4] Shyr.

**5048. Epidemiology II.** The design of observational studies, including factors that are important in design selection. The design of cohort studies, including rationale for use of the cohort study, prospective and retrospective cohort studies, assembly and follow-up of the cohort, exposure measurement, outcome ascertainment, confounders, effect modification, calculation of measures of occurrence and effect, and summary of multivariate statistical analyses for cohort studies. The case-control study, including rationale for use, conditions necessary for validity of the case-control study, selection of controls, sources of bias in case-control studies, and multivariate analysis. The ecological study, including when to use and when to avoid. Designs to usually avoid: cross-sectional, case-series, and exposed-subject designs. The course includes didactic lectures and critical reading of important epidemiologic studies from the current medical literature. The latter encompasses discussion of the articles in small groups and structured presentation to the class. The course also includes a project, which is the development and presentation of a study design protocol to the class. This protocol is for the project that will serve as the student's master's thesis. (Cross-listed with PUBH 5508). Prerequisite: Epidemiology 1, Biostatistics 2, Clinical Trials, or approval of instructor. SPRING. [4] Ray.

# Hearing and Speech Sciences

Courses leading to the degrees of Doctor of Audiology, Master of Education of the Deaf, and Master of Science in Speech-Language Pathology

CHAIR Anne Marie Tharpe

PROFESSORS EMERITI Judith Rassi, R. Edward Stone, Jr., Robert T. Wertz PROFESSORS Daniel H. Ashmead, Fred H. Bess, Stephen M. Camarata, Edward Gage

Conture, Roland D. Eavey, Lee Ann C. Golper, D. Wesley Grantham, Linda Jean Hood, Gary P. Jacobson, Howard S. Kirshner, H. Gustav Mueller, Ralph N. Ohde, Robert H.

Ossoff, Anne Marie Tharpe, Mark Thomas Wallace

RESEARCH PROFESSOR Teris K. Schery

ADJUNCT PROFESSORS Charles E. Edmiston, Jr., Michael E. Glasscock III, Judith S. Gravel, Lewis M. Nashner, Eugene C. Nelson

CLINICAL PROFESSOR Gary W. Duncan

ASSOCIATE PROFESSORS Gene W. Bratt, Troy Alan Hackett, P. Lynn Hayes, David S. Haynes, Gerald B. Hickson, Ellen M. Kelly, Todd A. Ricketts, Sandra L. Schneider

ADJUNCT ASSOCIATE PROFESSORS Faith Wurm Akin, Micah M. Murray

ASSISTANT PROFESSORS Rima Abou-Khalil, Tamala Selke Bradham, Mary N. Camarata, Michael de Riesthal, William W. Dickinson, Lea Helen Evans, Mary Sue Fino-Szumski, Michelle Lyn Gutmann, Sue T. Hale, Charles Howard Hausman, Melissa Henry, Benjamin W. Y. Hornsby, Monica L. Jacobs, Barbara Jacobson, Devin Lochlan McCaslin, Daniel

B. Polley, Bernard Rousseau, C. Melanie Schuele, Marcy Ann Sipes, Deborah Tyson, Wanda G. Webb

RESEARCH ASSISTANT PROFESSOR Alexandra Fonaryova Key

ADJUNCT ASSISTANT PROFESSORS Patricia Flynn Allen, John R. Ashford, Linda L. Auther, Robert Lewis Baldwin, G. Pamela Burch-Sims, Bertha Smith Clark, Andrew Dittberner, Rebecca M. Fischer, Barbara F. Peek, Amy McConkey Robbins, Mia Alexandra Lee Rosenfeld, Scott Wright

#### **Audiology**

- **5121. General Anatomy.** Introduction to the structure and function of the human organism. Integrates the gross anatomical structure of the human body and its organ systems with microscopic structure, physiological function, and homeostatic mechanisms. Emphasis also on the clinical relevance of selected topics. FALL. [3] TBA.
- **5217. Hearing Disorders and Assessment.** An introduction to the major pathologies of the peripheral and central auditory system as well as the medical/surgical treatment of those pathologies, followed by an introduction to the equipment and procedures used to assess auditory function in patients of all ages. SPRING. [3] Hornsby.
- **5227. Anatomy and Physiology of Hearing Mechanisms.** A comprehensive description of the anatomy and physiology of the peripheral and central auditory systems in normal and impaired populations. Includes a clinically oriented review of neuroanatomy focused on the major sensory and motor pathways. FALL. [3] Hackett.
- **5233. Neuroscience.** A comprehensive introduction to the field of neuroscience from important molecules to cell function, neural systems, and cognition. Topics include the physiology of nerve cells, the sensory systems of vision, audition and touch, the motor system, sleep, consciousness, speech, and sexual behavior. Coverage of clinical topics includes the chemical basis of the psychoses, diseases of the brain, and repair mechanisms after brain injury. SPRING. [3] Smith.
- **5302. Hearing Science.** A discussion of basic acoustics as it applies to hearing science. Anatomy and physiology of the peripheral and central hearing mechanism and vestibular system. FALL. [3] Hackett.
- **5303.** Hereditary Hearing Loss. Hereditary aspects of hearing loss in infants, children, and adults. Genetic bases of hearing loss, modes of inheritance, characteristics of syndromic and non-syndromic hearing losses. Collaboration with geneticists and genetic counselors. Recent developments and issues in evaluating and managing patients with genetic hearing loss. FALL. [3] Hood.
- **5310. Measurement of Hearing.** The theory and practice of hearing measurement, with emphasis on routine clinical and screening audiometric techniques, testing environment, audiometric standards and calibration, applied impedance measurements, and interpretation of audiometric tests. FALL. [3] Dickinson.
- **5318. Educational Audiology and Aural Habilitation for Children.** A survey of approaches to aural rehabilitation for children. Specific focus will be on intervention for children with hearing loss in educational and other habilitative settings. SPRING. [3] Tharpe.
- **5325. Pediatric Audiology.** A survey of methods and procedures used in the evaluation of the auditory function and management of neonates, infants, and young children. Includes identification and intervention procedures. There will be review of special populations of children with hearing loss. FALL. [3] Tharpe.

- **5327.** Hearing Loss and Speech Understanding. This course examines various factors that may affect the speech understanding of persons with hearing loss. The contribution to the unaided and aided speech understanding of persons with hearing loss of (1) subject factors, such as degree of hearing loss, and deficits in frequency and temporal resolution, and (2) environmental factors, such as the level and type of background noise, reverberation, and talker characteristics, will be examined. Methods for predicting speech understanding will also be discussed. SPRING. [3] Hornsby.
- **5328. Psychoacoustics.** Psychoacoustic theory and methods. Auditory perception in normal hearing and hearing impaired subjects. SPRING. [3] Hornsby.
- **5330.** Advanced Audiologic Evaluation I. Diagnostic audiometry principles and procedures, including acoustic reflex measures, speech audiometry, auditory brainstem response (ABR), and electrocochleography (ECochG). Also, newborn auditory screening with ABR. Practicum required. SPRING. [3] Jacobson.
- **5332.** Pathology of the Auditory System. A study of pathologies involving the peripheral auditory system arising from genetic factors, disease, and trauma, with emphasis applied to presenting signs/symptoms, and medical/audiological management. FALL. [3] Hood.
- **5333.** Microbiology and Pharmacology for Audiology. An examination of the microbial etiology and pathogenesis of acute otitis media and those microbial/host/environmental risk factors associated with infection, the primary mechanisms of antimicrobial resistance commonly encountered in middle ear infections, and how this process impacts upon the therapeutic selection of an antimicrobial agent. The course will identify the potential role of biofilm formation in the middle ear as a potent virulence factor for recurrent disease. SPRING. [3] Edmiston.
- **5337. Auditory Clinical Electrophysiology.** This course will cover basic concepts in electrophysiological and electromagnetic recordings (e.g., electrode types/uses, far and near field recordings, volume conduction, dipole sources). Recording of both near and far-field electrical responses emitted by peripheral and central nervous system will be studied. Recording techniques and interpretation of conventional clinical evoked potentials (e.g., electrocochleography, auditory brainstem response, sonomotor responses, electroneurography) will be covered. Special topics will include: audiometric applications of these evoked potentials (e.g., for infant hearing screening and special needs populations, and intraoperative neurophysiological monitoring). There will be extensive laboratory practica conducted within and outside the classroom. SPRING. [3] Jacobson/McCaslin.
- **5340. Amplification I.** Background and development of the design of hearing aids, ear mold acoustics, electroacoustic, characteristics, performance standards and measurement techniques, clinical selection, and evaluation procedures. FALL [1], SPRING [2]. Dickinson.
- **5343. Hearing Conservation.** A discussion of noise levels, OSHA guidelines, noise-induced hearing loss, and hearing protection in work and leisure activities. Industrial audiology including testing, training, and intervention protocols. SUMMER. [2] Dundas.
- **5345. Amplification II.** Advanced topics in amplification including advanced probe microphone techniques, single and multi-channel compression systems, analog and digital signal processing, and current and emerging prescriptive and fitting verification methods. FALL. [3] Ricketts.
- **5346.** Assessment of Vestibular Disorders. This course offers an in-depth approach to the assessment of the dizzy patient. Subject matter will include anatomy and physiology of the peripheral and central vestibular, ocular motor, and postural control systems; introduction to both electrical and video techniques for recording the vestibulocular reflex; case history

- and bedside assessment of the dizzy patient, technique and interpretation of electronys-tagmography, rotational testing, computerized dynamic posturography and sonomotor responses; assessment of self-report dizziness handicap. Students will be expected to conduct practica outside the classroom. SUMMER. [3] Jacobson, McCaslin.
- **5347. Management of Vestibular Disorders.** This course will focus on interpretation and analysis of balance laboratory results in dizzy patients as well as treatment and therapy provided by other professionals. Subject matter will include advanced concepts in central vestibular system physiology, peripheral and central disorders of the vestibular system and their clinical findings, introduction to imaging dizzy patients, disequilibrium of aging and risk of falls assessment, drug treatment of vertigo, surgical treatment of vertigo, and vestibular rehabilitation. FALL. [3] Jacobson, McCaslin.
- **5348.** Audiology in Education. Current issues and trends concerning the role of the audiologist in the public school setting. Emphasis on early identification and intervention, inservice education, amplification, and the roles of federal, state, and local agencies in providing services to the hearing-impaired school-age population. SPRING. [3] Fino-Szumski.
- **5349.** Laboratory: Audiology in Education. Demonstration and hands-on experience with personal and classroom amplification systems. Operation and troubleshooting of amplification systems commonly used in a classroom setting; specifically, hearing aids, FM systems, assistive listening devices, vibrotactile devices, and cochlear implants will be demonstrated. Co- or prerequisite: SPED 2600 or HRSP 2600. SPRING. [1] Sladen.
- **5352.** Special Problems in Audiology. Areas and problems not included in other courses in audiology, chosen to fit the students' interests and the needs of their programs. May be repeated to a total of 12 hours. FALL, SPRING, SUMMER. [1–4] Staff.
- **5353. Amplification III.** Design and evaluation of auditory prostheses for listeners with hearing loss. Theoretical and clinical considerations of cochlear and auditory brainstem implants as well as hearing aids from a prostheses perspective. SPRING. [3] Ricketts.
- **5354.** Cochlear Implants for Infants and Children. Current issues in the medical, audiological, speech/language, and educational management of children with cochlear implants. Emphasis on multidisciplinary team function. Prerequisite: AUD 5318. SPRING. [2-3] Tharpe.
- 5355. Clinical Externship. FALL, SPRING, SUMMER. [0-3] Hale.
- **5359.** Audiometric Instrumentation and Calibration. An introduction to fundamental concepts in electronics and computer science and to instrumentation used in the hearing clinic or research laboratory for producing, measuring, and analyzing audio signals. Standards and procedures for calibration measurements, with practical hands-on experience. FALL. [3] Grantham, Ricketts.
- **5363. Hearing and Aging.** A survey of major concepts in gerontology, including demographics, psychosocial aspects of aging, biology of aging, and clinical conditions of the older adult. Physiological changes within the aging auditory system, and clinical issues in audiological assessment and intervention with older hearing-impaired patients. SPRING, SUMMER. [3] Rosenfeld.
- **5365. Business and Financial Management.** An overview of accounting practices, marketing, and operations management as they relate to management of an audiology practice. Topics discussed include financial reporting, budgeting, pricing, billing and coding, regulatory issues, and human resource management. Students are required to design an audiology practice and develop a business plan as part of this course. SPRING. [3] Fino-Szumski.

- **5367. Professional Issues and Ethics for Audiologists.** Examines professional issues in audiology including malpractice, quality improvement, marketing, credentialing, diversity, and legislation. Emphasis will be given to issues of ethics and clinical integrity in the practice of the profession of audiology. FALL. [2] Bess.
- **5368. Clinical Research Design and Statistical Analysis.** Covers reliability, internal and external validity of group study designs, single subject designs, basic descriptive and inferential statistics, core measures in epidemiology, and conventions for reporting statistics. FALL. [3] Ashmead.
- **5371.** Research Design and Statistics. Covers topics in research design and statistics for students preparing for research careers in hearing science, speech science, and communication disorders. Reviews mathematical bases for probability theory and statistical inference. Covers fundamental parametric and nonparametric statistical tests, with extensive discussion of research design in the context of analysis of variance. Presents statistical properties of psychophysical methods and signal detection theory. FALL, SPRING. [3] Ashmead.
- **5385. Instrumentation for Hearing and Speech Sciences: Stimulus Generation, Measurement, and Calibration.** A hands-on introduction to the principles and techniques of setting up equipment for hearing and speech perception experiments. Students are exposed to analog generators (noise generators, function generators, oscillators, computer-controlled digital-to-analog converters), processing devices (attenuators, filters, mixers, amplifiers), terminating devices (earphones, loudspeakers, analog-to-digital converters), and measurement devices (oscilloscope, voltmeter, spectrum analyzer). Students will learn to design and implement circuits involving these various devices, and to measure and calibrate various kinds of acoustic stimuli. Fall of odd-numbered years. [3] Grantham.
- **5386.** Instrumentation for Hearing and Speech Sciences: MATLAB Programming with Real-Time Applications. An introduction to the standard MATLAB computing language in a Windows environment. Basic programming concepts including data types and storage, data input and output, conditional execution, iterative programming, and the use of functions. The goal is for the student to become sufficiently comfortable with MATLAB (and with the concept of programming languages in general) to develop programs to solve specific computational problems too tedious to solve by calculator. The last third of the course will be devoted to the application of MATLAB programming to real-time laboratory problems. Spring of even-numbered years. [3] Grantham.
- **5387. Spatial Hearing.** An advanced treatment of the perception by humans of auditory objects in space, including laboratory demonstrations. Topics include (1) binaural processing (lateralization, binaural detection); (2) localization and spatial resolution in the free-field; (3) auditory distance perception; (4) the precedence effect: localization in reverberant spaces; and (5) the central auditory nervous system: binaural pathways. Fall of even-numbered years. [3]. Grantham.
- 5580. Introduction to Clinical Case Conference. FALL. [1] Mueller.
- **5581.** Capstone I. Capstone projects may take several forms including research-based investigations, evidence-based position papers, business plans, critical literature reviews with applications to clinical problem solving, grant proposals, development of clinical protocols based on published research findings, etc. In Capstone I, students will identify an appropriate capstone committee and define their capstone projects and submit and defend a capstone proposal. FALL, SPRING, SUMMER. [3] Staff.

- **5582. Capstone II.** In Capstone II, students will complete their capstone project. The capstone project culminates in an oral defense of a formal manuscript which has been submitted to the student's capstone committee. FALL, SPRING. [3] Staff.
- **5583. Clinical Case Conference/Grand Rounds.** This course includes attendance at weekly case conferences where clinical case studies will be presented. The grade for this class will include clinical performance and attendance. FALL, SPRING, SUMMER. [1] Hale
- **5584. Capstone Research.** SPRING. [0] Conture.

#### **Education of the Deaf**

- **5308.** Language and Literacy in Children with Hearing Loss. This course presents an overview of normal language acquisition and the challenges imposed by a hearing loss. A variety of methods and materials to develop oral and written language and reading will be included. Practical methods of assessment, supportive strategy development, and curricular adaptations for children with hearing loss will be explored. SUMMER. [3] Hayes.
- **5312.** Psychology and Culture of the Deaf. Presentation and discussion of significant historical and current issues relating to the deaf population. Primary focus will be on psychological development, educational/methodological models, and deaf culture. Although the principal focus is on the psycho/social and cognitive/intellectual development of deaf individuals through the lifespan, a general survey of other areas of exceptionality is made with emphasis on the implications for the deaf child with additional disabilities and/or special needs. SUMMER. [2] Hayes.
- **5320.** Introduction to Amplification for Infants and Children. Designed for deaf education and speech-language pathology students. Current issues and trends in conventional amplification for infants and children. Selection, fitting, verification, and validation of traditional amplification options will be addressed including directional vs. omnidirectional microphones, analogue vs. digital instruments, monaural vs. bilateral fittings, and real-ear measures vs. functional aided gain. Hearing aid retention, maintenance, and troubleshooting techniques are addressed. FALL. [2] Ryan.
- **5322.** Children with Hearing Loss and Additional Disabilities. A survey of methods, procedures, and observational techniques used in the identification and evaluation of children with physical, cognitive, and/or emotional disabilities. An interdisciplinary perspective informs the course with particular attention to identifying characteristics of special populations that are atypical of children with hearing loss. SUMMER. [2-3] Hayes.
- **5356.** Internship/Externship: Maymester. A three-week, intensive, full-time clinical or classroom placement during the month of May in an auditory-oral environment designed specifically to meet the student's individual interests and needs. SUMMER. [2] Kan.
- **5358. Student Teaching and Field Experience in Deaf Education.** Students will develop appropriate skills for providing services to children with hearing loss in group settings; will collaborate with professionals in audiology and speech/language pathology; will plan sessions for family-centered intervention emphasizing communication development or plan lessons; will prepare or review individual family service plans (IFSPs) or individual education plans (IEPs); will assess speech, language, listening, cognitive, motor, and social development of children; and will evaluate effectiveness of services. FALL, SPRING, SUMMER. [1] Kan.

- **5370.** Special Problems in Deaf Education. Areas and problems not included in other courses in deaf education, chosen to fit the students' interests and the needs of their programs. May be repeated to a total of 12 hours. FALL, SPRING, SUMMER. [1-4] Staff.
- **5372. Seminar in Deaf Education.** Supports student development of organizational skills that will facilitate the completion of requirements for the master's degree in education of the deaf and the transition from graduate school to a profession in deaf education. Emphasis is placed on the development of a professional portfolio, a review of certification requirements, and skill development in job searching including resume writing and interviewing skills. FALL, SPRING, SUMMER. [1] Staff.
- **5390. Curriculum and Methods for Deaf Children.** Presentation and discussion of current issues, methods, and materials involved in providing successful educational programming for children with hearing loss both in special programs and in inclusionary settings. This includes the adaptation of regular curriculum and instructional procedures for students with hearing impairments. Focus is on assessment of academic skills and individualizing instruction. Students gain practical experience in planning, carrying out, and evaluating lessons and are exposed to a variety of educational materials and methods. SPRING. [3] Kan.
- **5391. Practicum: Curriculum and Methods for Deaf Children.** This practicum provides opportunities for graduate students to incorporate information acquired from MDE 5390 into daily practice to acquire teaching skills and techniques upon which effective learning depends. Corequisite: MDE 5390. FALL. [1] Kan.
- **5392. Teaching Children with Hearing Loss to Listen and Speak**. Theories of and methods for developing auditory perception and spoken language skills in deaf and hard-of-hearing children. The purpose of this course is to increase students' skills in assessing and developing speech, auditory functioning, and phonologic awareness in deaf and hard-of-hearing children. FALL, SPRING, SUMMER. [1-2] Fischer or Hayes.
- **5393.** Practicum: Teaching Children with Hearing Loss to Listen and Speak. This practicum provides opportunities for graduate students to incorporate information acquired from MDE 5392 into daily practice to acquire teaching skills and techniques upon which effective learning depends. Corequisite: MDE 5392. SPRING. [1] Staff.

#### Speech-Language Pathology

- **5206. Anatomy and Physiology of Speech and Hearing Mechanisms.** The basic processes of speech production, acoustics, and perception. Neuroanatomy, anatomy, physiology, acoustics, and acoustic correlates of sound features. Intended for undergraduates and graduate students outside the Department of Hearing and Speech Sciences. SPRING. [3] Ohde.
- **5300. Neurology of Speech and Language.** The structure and function of the nervous system, with emphasis on the neural mechanisms of speech and language. Neurologic conditions producing speech and language disorders are surveyed. FALL. [3] Webb.
- **5301.** Acoustics and Perception of Speech and Speech Disorders. An examination of the processes of speech production, acoustics, and perception. Emphasis on relevant literature and research techniques in speech science. FALL. [3] Ohde.
- **5304. Child Language Acquisition.** The components and processes of normal language development. Relation to social and cognitive aspects of child development. Survey of developmental psycholinguistic research. FALL. [2] Schuele.

- **5305. Clinical Principles and Procedures.** Presentation and demonstration of clinical principles and procedures applicable in communication sciences and disorders. FALL. [2] Golper.
- **5306. Child Language Disorders.** The language development of children of variant populations. Focus on description of populations, assessment techniques, and intervention strategies. Clinical applications of research in normal language acquisition. FALL. [3] Schuele.
- **5307. Seminar: Topics in Childhood Language Disorders.** Current issues in normal language acquisition and clinical applications to variant populations. Content of seminar rotated. FALL. [2] Staff.
- **5311. Stuttering.** Significant research in the field of stuttering, with emphasis on etiology and therapy. The management of fluency disturbances. SPRING. [3] Conture.
- **5313. Management of Communication Disorders in the Schools.** This course provides an overview of management principles and practices for children with communication disorders during the school-age years. Curriculum-based communication assessment and methodologies for implementation of communication programs in school settings will be addressed. SPRING. [3] Hausman.
- **5314.** Articulation Disorders and Clinical Phonetics. The etiology, evaluation, and management of articulatory defects in children and adults. Prerequisite: consent of instructor. FALL. [3] Ohde.
- **5316. Motor Speech Disorders.** A study of the nature and treatment of the adult and child-hood dysarthrias and dyspraxias of speech. Management of infants and young children at neurological risk for developing motor speech disability. Rights of the severely communicatively disabled. Prerequisite: 300 or consent of instructor. SPRING. [2] Schneider.
- **5317. Traumatic Brain Injury.** Pathophysiology of traumatic brain injury in children and adults; unique and common sequelae, the evaluation and treatment of cognitive/communicative deficits, and special problems of the population. Prerequisite 5300 or 5331 or consent of instructor. SUMMER. [3] De Riesthal.
- **5319. Dysphagia.** The study of the normal and disordered swallow in pediatric and adult populations. Anatomy and physiology, videofluoroscopic and other assessment procedures, as well as various treatment alternatives and techniques are included. FALL. [3] Ashford.
- **5321. Seminar: Intervention for Pediatric Acquired Brain Injury.** Assessment and intervention techniques for cognitive/communicative and behavioral deficits associated with pediatric acquired brain injuries. Emphasis on effects on normal development, educational curricula modifications and teacher/family training. Prerequisite: permission of instructor. SUMMER. [2] Allen.
- **5323.** Communication in Autism Spectrum Disorders. The course addresses basic theories and principles associated with communication assessment of and intervention for children with Autism Spectrum Disorders. Auditory characteristics, causative factors, classroom structure, behavior management, communication strategies, social and peer interaction, and family-focused practices are also reviewed. This class also will provide an overview of typical social, play, and linguistic development compared to the features and behavioral characteristics of autism spectrum disorders (ASD). FALL. [2-3] Wallace.
- **5324. Feeding and Swallowing Disorders in Children.** This course focuses on the assessment, diagnosis, and management of dysphagia in children including the role of the speech-language pathologist and multidisciplinary and family-centered, family-supported management. Prerequisite SLP 5319. SPRING. [2] Ashford, Golper.

- **5326. Speech Disorders in Craniofacial Anomalies.** The etiology, diagnosis, and management of speech defects associated with craniofacial anomalies, with major emphasis on cleft palate. SUMMER. [1] Henry, Muckala.
- **5331. Aphasia.** The study of aphasia in adults, including the neuronanatomical basis, etiologies, symptomatology, assessment, differential diagnosis, and treatment. SPRING. [3] De Riesthal.
- **5335. Seminar in Augmentative Communication.** The application of augmentative communication devices to patients with physical and/or cognitive disabilities. The various types of devices available, the techniques for selecting and applying these systems to individual patients, and specific information on how to achieve effective conversational use of such systems. FALL. [2] Webb.
- **5336. Voicing Disorders.** Theories of voice production, with emphasis upon underlying mechanisms that cause vocal defects. Procedures for group and individual management. SUMMER. [3] Jacobson.
- **5338. Research Methods in Communicative Disorders.** Research techniques and procedures. Analysis of research examples from the literature. Study of design of experiment, data collection, statistical analysis, and presentation of research findings. FALL. [1] Camarata.
- **5351. Special Problems in Speech Pathology.** Areas and problems not included in other courses in speech pathology, chosen to fit the students' interests and the needs of their programs. May be repeated to a total of 12 hours. FALL, SPRING, SUMMER. [Variable credit: 1–6] Staff.
- **5355. Clinical Internship/Externship.** Sequence of clinical practicum placements over five semesters for speech-language pathology majors in clinical track. Designed to meet supervised practicum requirements for eventual certification by American Speech-Language-Hearing Association. Sequence of initial part-time internship placements in campus and other local facilities, followed by a full-time externship placement at one of many selected sites throughout the country or abroad. SPRING, SUMMER. [1-7] Hale.
- **5357. Professional Issues in Communication Disorders.** Examines various professional issues within the fields of speech-language pathology and audiology. For example, ethics, malpractice, quality improvement, marketing, reimbursement, multicultural sensitivity, and federal legislation. SPRING, [1] Hale.
- **5361. Family-Centered Counseling and Interviewing.** Examines the helping relationship in the clinical process, counseling theory relative to audiology and speech-language pathology practices, and principles and methods of effective clinical interviewing and counseling. SPRING, SUMMER. [2] Hale
- 5369. Master's Thesis Research. FALL, SPRING, SUMMER. [0] Staff.
- **5377. Seminar in Speech Perception.** The study of the processes and models underlying the perception of speech features. Relevant acoustic correlates for speech perception will be evaluated, and these properties will be emphasized through the generation of synthetic speech. The course will cover the contributions of speech perception research to our understanding of speech development, and language and hearing disorders. SPRING. [3] Ohde.
- **5583. Clinical Case Conference/Grand Rounds.** This course includes attendance at weekly case conferences where clinical case studies will be presented. The grade for this class will include clinical performance and attendance. FALL, SPRING, SUMMER. [1] Hale.

**5588.** Independent Study/Readings in Speech Pathology. FALL, SPRING, SUMMER. [1-3] Staff.

5584. Independent Practicum. FALL, SPRING, SUMMER. [0] Conture.

# Laboratory Investigation

Courses leading to the Master of Laboratory Investigation degree

- **1010. Lab Theory I.** This is a lecture and hands-on course designed for MLI students and covers methods for the production, detection, molecular biological and immunological characterization, purification, and conjugation (e.g., to beads, biotin, dyes, enzymes, etc.) of recombinant proteins and antibodies for research use. FALL, SPRING, SUMMER. [4] Mernaugh.
- **1011. Lab Theory II.** This is a lecture and hands on course designed for M.L.I. students and covers methods for the production, detection, immunological characterization, purification, conjugation (e.g., to beads, biotin, dyes, enzymes, etc.), and assay development of hybridoma monoclonal antibodies for research use. FALL, SPRING, SUMMER. [4] Mernaugh.
- **1021. Bioregulation I: Cell Biology.** Fundamental aspects of the utilization of genetic material from DNA to RNA to protein. FALL. [2] Chalkley.
- **1022. Bioregulation I: Genetics and Development.** Fundamental aspects of the utilization of genetic material from DNA to RNA to protein. FALL. [2] Chalkley.
- **1023. Bioregulation I: Gene Expression.** Fundamental aspects of the utilization of genetic material from DNA to RNA to protein. FALL. [3] Chalkley.
- **1024. Bioregulation I: Proteins.** Fundamental aspects of the utilization of genetic material from DNA to RNA to protein. FALL. [2] Chalkley.
- **1030. Methods of Research Techniques.** This course is designed for MLI students. FALL. [1] Chalkley.
- **1040.** Responsible Conduct in Research. Formal lectures and small group discussion on a range of issues encountered in research activities. Included are responsibilities of the investigator and the university to the federal government; scientific misconduct; ethical use of animals in research; ethics of publication, lab management, and grant writing. SUMMER. [1] Chalkley.
- **1050. Bioregulation II: Neuroscience.** Fundamental aspects of cell-cell communication and information flow through multicellular organs and the overall regulation of these processes. SPRING. [1] Chalkley.
- **1051. Bioregulation II: Cell Division.** Fundamental aspects of cell-cell communication and information flow through multicellular organs and the overall regulation of these processes. SPRING. [2] Chalkley.
- **1052. Bioregulation II: Cell Signaling.** Fundamental aspects of cell-cell communication and information flow through multicellular organs and the overall regulation of these processes. SPRING. [2] Chalkley.

- **1053. Bioregulation II: Defense Mechanisms.** Fundamental aspects of cell-cell communication and information flow through multicellular organs and the overall regulation of these processes. SPRING. [1] Chalkley.
- **1054. Bioregulation II: Microbial Pathology.** Fundamental aspects of cell-cell communication and information flow through multicellular organs and the overall regulation of these processes. SPRING. [1] Chalkley.
- **1055. Bioregulation II: Endocrinology.** Fundamental aspects of cell-cell communication and information flow through multicellular organs and the overall regulation of these processes. SPRING. [1] Chalkley.
- **2000. Fundamentals of Biomedical Research.** (Also listed as Biological Sciences 299) Overview of basic principles of biomedical research. Course will cover the fundamentals of biochemistry, cell biology, and genetics, the three main components of the fall semester Bioregulation course. SUMMER. [3-6] Chalkley.
- **2010. Lab Management.** This course is designed for MLI students and covers university, departmental, and laboratory organization, team building, budget management, problem resolution, record keeping, notebook and electronic data base management, IACUC and IRB protocol writing, etc. SPRING. [1-4] Richmond.
- **2200. Biochemistry I.** (Also listed as Biological Sciences 220) Structure and mechanism of action of biological molecules, proteins, nucleic acids, lipids, polysaccharides. Enzymology. Carbohydrate metabolism. Prerequisite: Biological Sciences 110a–110b and Chemistry 220a–220b. FALL. [3]. Krezel.
- 2325. Histology with Lab. (Also listed as Cell and Developmental Biology 325) This course focuses on the organization of cells to form tissues and organs in terms of both structure and function. Our studies begin with a discussion of the basic tissue types that form all multicellular organisms. Lecture and microscopic laboratory formats will introduce students to epithelia, connective tissue, muscle, nerve, and lymphoid tissues. Students will examine histological preparations microscopically in laboratory during this phase of the course. Next, a discussion of the organization of tissues into functioning organs will be pursued. Here, we will focus on basic concepts in organ arrangement rather than memorizing various structures. Students will have significant input on which adult or developing organs are used as models of organ structure and function. Learning laboratory methods in the analysis of tissues and organs will run concurrently with didactic instruction. Students will be asked to choose specific tissues/organs (often directly related to their thesis work) that they will prepare for morphological analysis. Specifically, students will learn methods in fixation, processing, sectioning, and microscopic analysis including morphometrics, immunofluorescence, histochemistry, and electron microscopy. Offered every other year. FALL. [3] Bader.
- **2380. Computational Structural Biochemistry.** (Also listed as Chemistry 238) Theoretical and practical aspects of modeling protein structure and interactions computationally. Sequence-sequence alignments, secondary structure prediction, fold recognition, de novo structure prediction. Protein design, protein-protein docking, protein-ligand docking. Prerequisite: Chemistry 231. FALL. [4] Meiler.
- **2700. Statistical Methods for Biomedical Research.** (Also listed as Biological Sciences 270) An introduction to statistical methods used in the analysis of biological experiments, including the application of computer software packages. Emphasis on testing of hypotheses and experimental design. Topics include descriptive statistics, analysis of variance, regression, correlation, contingency analysis, and the testing of methods for sampling natural populations. Prerequisite: Biological Sciences 110a–110b. FALL. [3] McCauley.

- **2740. Proteins.** (Also listed as Biological Sciences 274) Molecular structures and biological functions of proteins. Underlying chemical and physical properties. Structural motifs and topology; folding and dynamics; enzyme atalysis; protein-DNA interactions. Structure-based drug design; protein symmetry; supramolecular protein machines. Chemical and spectroscopic methods to probe protein structure and behavior in solution. Prerequisite: Biological Sciences 220. FALL. [3] Eichman.
- 3010. Thesis Research and Defense. FALL, SPRING, SUMMER. [1-6].
- 3020. Research Project. FALL, SPRING, SUMMER. [1-6].
- **3031. Training and Technique Modules: Microscopy.** Eight-week modules conducting laboratory research on a project designed by a faculty preceptor. Includes technical instruction, critical data analysis, experimental design, and literature review. SUMMER. [3] Wells.
- **3032. Training and Technique Modules: RT-PCR.** Eight-week modules conducting laboratory research on a project designed by a faculty preceptor. Includes technical instruction, critical data analysis, experimental design, and literature review. SPRING. [1-3] Opalenik.
- **3033. Training and Technique Modules: Microarray.** Eight-week modules conducting laboratory research on a project designed by a faculty preceptor. Includes technical instruction, critical data analysis, experimental design, and literature review. SPRING, SUMMER. [3] Levy.
- **3034. Training and Technique Modules: Electron Microscopy.** Eight-week modules conducting laboratory research on a project designed by a faculty preceptor. Includes technical instruction, critical data analysis, experimental design, and literature review. SPRING. [2] Jerome.
- **3035. Training and Technique Modules: Animal Surgery.** Eight-week modules conducting laboratory research on a project designed by a faculty preceptor. Includes technical instruction, critical data analysis, experimental design, and literature review. FALL, SPRING, SUMMER. [1-3] Wasserman.
- **3036. Training and Technique Modules: Mass Spectroscopy.** Eight-week modules conducting laboratory research on a project designed by a faculty preceptor. Includes technical instruction, critical data analysis, experimental design, and literature review relevant to the use of mass spectrometry for the characterization of proteins, lipids, small molecules, etc. FALL, SPRING, SUMMER. [1-3] Reyzer.
- **3037. Training and Technique Modules: Transgenic Mice.** Eight-week modules conducting laboratory research on a project designed by a faculty preceptor. Includes technical instruction, critical data analysis, experimental design, and literature review relevant to the production of transgenic mice. FALL, SPRING, SUMMER. [3] Emeson.
- **3038. Training and Technique Modules: Sequenom.** Eight-week modules conducting laboratory research on a project designed by a faculty preceptor. Includes technical instruction, critical data analysis, experimental design, and literature review. FALL, SPRING, SUMMER. [2] Schnetz-Boutand.
- **3039. Training and Technique Modules: Animal Anesthesiology.** Eight-week modules conducting laboratory research on a project designed by a faculty preceptor. Includes technical instruction, critical data analysis, experimental design, and literature review. FALL, SPRING, SUMMER. [2] Williams.
- **3100.** Cell Biology. (Also listed as Cell and Developmental Biology 310) This is a graduate-level course with three major goals pivotal for success as a graduate student: (1) to provide solid foundational knowledge of cell biology, (2) to learn to think critically about experimental design and interpretation, and (3) to learn to communicate effectively, both orally and in

writing. The class features faculty from the Department of Cell and Developmental Biology and emphasizes fundamental cell processes such as migration, mitosis, proliferation, and death. Critical signaling pathways are reviewed in relation to cell biological processes essential for developmental biology. Weekly student presentations help develop oral communication skills and weekly writing assignments hone writing skills, helping students learn classical and cutting-edge techniques while improving their ability to read and synthesize the literature. Final paper assignment is designed to help students learn to develop and design feasible experiments to test a strong hypothesis. Prerequisite: IGP curriculum, the entire Bioregulation class. FALL. [4] Labosky.

- **3105.** Advanced General Psychology. (Also listed as Psychology 301a) Physiological psychology, perception and sensation, learning, complex processes, developmental, personality, social psychology, and psychopathology. Participation in various sections determined by each student's background and career interests. [3] Staff.
- **3107.** Introduction to Structural Biology. (Also listed as Biochemistry 300) Introduction to methods to determine the three-dimensional structures of biological macromolecules and macromolecular complexes at or near atomic resolution. Techniques covered include X-ray crystallography, NMR, EPR and fluorescence spectroscopies, cryo-electron microscopy, and computational modeling. Emphasis is placed on practical aspects of each technique and the range of applications for which each technique is applicable. The course is given during the first third of the semester, just preceding Biochemistry 303, SPRING. [1] Chazin and Staff.
- **3110. Foundations of Biomedical Informatics.** (Also listed as Biomedical Informatics 300) This introductory course examines the unique characteristics of clinical and life science data and the methods for representation and transformation of health data, information, and knowledge to improve health care. Principles of information security and confidentiality are taught, along with functional components of information systems in clinical settings and the use of databases for outcome management. Through skill modules and weekly programming exercises, the course provides an introduction to methods underlying many biomedical informatics applications, including information retrieval, medical decision making, evaluation of evidence, and knowledge representation. The historical evaluation of the field of biomedical informatics is taught concurrently, using examples of landmark systems developed by pioneers in the field. FALL. [3] Johnson, Weinberg.
- **3115. Foundations of Bioinformatics.** (Also listed as Biomedical Informatics 310) This survey course introduces students to the experimental context and implementation of key algorithms in bioinformatics. The class begins with a review of basic biochemistry and molecular biology. The group will then focus on algorithms for matching and aligning biological sequences, given the context of molecular evolution. The emphasis will move from comparing sequences to the systems developed to enable high throughput DNA sequencing, genome assembly, and gene annotation. Gene products will be the next focus as students consider the algorithms supporting proteomic mass spectrometry and protein structure inference and prediction. The informatics associated with transcriptional microarrays for genome-wide association studies will follow. Finally, the class will examine biological networks, including genetic regulatory networks, gene ontologies, and data integration. Formal training in software development is helpful but not required. Students will write and present individual projects. FALL. [3] Tabb.
- **3200.** Biological Sciences Graduate Seminar. (Also listed as Biological Sciences 320) May be taken for credit more than once. FALL, SPRING. [1] Staff.
- **3201.** Introduction to Cell Biology. (Also listed as Biological Sciences 201) Structure and function of cells, subcellular organelles, and macromolecules. Fundamentals of organelle function, membrane transport, energy production and utilization, cell motility, cell division,

- intracellular transport, and mechanisms of signal transduction. Prerequisite: Biological Sciences 110a–110b. SPRING. [3] Graham, Webb.
- **3210, 3211. Human Anatomy and Physiology I and II.** Introduction to the structure and function of the human organism. Integrates the gross anatomical structure of the human body and its organ systems with microscopic structure, physiological function, and homeostatic mechanisms. Emphasis also on the clinical relevance of selected topics. Prerequisite: at least one semester of biology or chemistry. FALL, SPRING. [4-4] Cobb.
- **3222.** Scientific Communication Skills. (Also listed as Pharmacology 322) Techniques in effective oral communication of scientific research as well as practical experience in research and literature presentation and in the preparation of grant proposals. FALL. [1] Iverson.
- **3224.** Current Topics in Experimental Pathology. (Also listed as Cell and Molecular Pathology 332) Students and faculty participate in a weekly discussion of current research projects and literature. SPRING. [1] Hoover and Staff.
- **3226. Immunology.** (Also listed as Biological Sciences 226) The molecular and cellular basis of immunity. Emphasis on molecular structure, the genetic origin of diversity in B-cell and T-cell receptors, antigen presentation, and the cellular interactions leading to the immune response. Tolerance, tumor and transplantation immunity, autoimmune and immunodeficiency diseases, and allergy. Prerequisite: Biological Sciences 201 or 210. FALL. [3] Carter.
- **3240.** Pharmacology/Receptor Theory and Signal Transduction. (Also listed as Pharmacology 324) Structure and function of cell-surface receptors and the molecular bases by which they activate cellular function. Topics include receptor identification; quantitation of simple and complex binding phenomena; molecular bases for receptor coupling to GTP-binding proteins; the structure and function of ligand-operated ion channels, receptor-tyrosine kinases and receptor-induced signal transduction cascades receptors as oncogenes and proto-oncogenes. SUMMER. [1–3] A. Brown.
- **3250. Cardiovascular Pharmacology.** (Also listed as Pharmacology 325) Cardiovascular physiology and pharmacology from the molecular to the organismal level. Classic experimental studies, molecular studies, and clinical observations will be presented to demonstrate the power of interdisciplinary approaches in answering complex questions in biology. Students will have the opportunity to identify specific areas or pathophysiologic states for emphasis. Topics covered: development of the cardiovascular system, regulation of cardiac contractility and electrophysiology, blood pressure regulation, coagulation, and select cardiovascular pathophysiologies. SPRING, odd numbered years. [2] Barnett.
- **3266.** Advanced Molecular Genetics. (Also listed as Biological Sciences 266) Principles of classical and molecular genetic analysis: mutation and recombination, mapping, and the application of genetic methodology to the study of complex systems. Special emphasis on modern genomic approaches. Prerequisite: Biological Sciences 210. SPRING. [3] Friedman.
- **3271. Modern Drug Discovery.** (Also listed as Pharmacology 327) The course will provide an introduction and overview to the drug discovery process. Focus will be on target selection, target validation, and the process of discovery of early drug leads and optimization of those leads into compounds suitable for clinical development. This will include approaches used to transition from discovery to the early clinical development phase of a program as well as medical and market considerations that impact launching and progress of a drug discovery program. FALL. [2] Conn.
- **3280. Molecular Virology.** (Also listed as Microbiology and Immunology 3282) The interaction of animal viruses with their host cells, discussed at the molecular and cellular level as

- model systems. Special emphasis is placed on current literature and methodology. Prerequisite: IGP 300 or an undergraduate course in biochemistry or microbiology. FALL. [3] Aiken/Dermody and Staff.
- **3300.** Human Physiology and Molecular Medicine. (Also listed as Molecular Physiology and Biophysics 330) Lectures and research correlations on advanced aspects of human physiology, with emphasis on communication between and control of the major tissue types and organ systems. Recent biochemical and molecular biology research findings will be incorporated into the study of normal physiology and pathophysiology. This course is required of all graduate students majoring in Molecular Physiology and Biophysics. Prerequisite: consent of instructor. FALL. [3] Cobb.
- **3310.** Scientific Communication. (Also listed as Biochemistry 327) This course will develop skills required for effective oral and written scientific communication. Students will present research from the current literature and will be required to write an NIH-formatted grant proposal to be critiqued by faculty assigned by the course director. Students not working for a degree in biochemistry must have the consent of the instructor to enroll. FALL. [2] Schey, Wagner, Osheroff, Cortez.
- **3312.** Introduction to Developmental Biology. This combined lecture and laboratory course will present students with the basics in the analysis of standard animal models used in modern developmental biology. Central concepts in development will be presented in lecture while the student will gain "hands-on" training in the growth and care of embryos and analysis of embryonic development in model organisms. Standard methods of analysis (e.g., basic microscopy/morphological analysis, immunolabeling, time-lapse imaging, embryo microinjection) will be presented. Prerequisite: IGP Curriculum. Tuesday/Thursday; SUMMER. [3] Bader, Jessen.
- **3320. Foundations in Microbiology and Immunology I.** (Also listed as Microbiology and Immunology 332) The objectives of this course are to alert students to important original research articles in microbial genetics and pathogenesis, to apply methods of scientific logic for critical analysis of the knowledge presented in the articles, and to help students present complex data and conclusions to an audience. SUMMER. [2] Skaar and Staff.
- **3324. Epithelial Pathobiology.** (Also listed as Cell and Developmental Biology 324) To introduce students to issues of polarized epithelial cell function in the context of normal physiology as well as alterations associated with disease. Two one-and-a-half-hour sessions per week, one-semester course; paper presentation and discussion on Wednesday, lecture on Friday by visiting scientists. During the course, ten visiting scientists from outside Vanderbilt will present special topics changing each year. Prerequisite: open to all graduate students. Offered every other year. SPRING. [3] Goldenring, Coffey.
- **3325.** Cancer and Development. (Also listed as Cell and Developmental Biology 320) A cross-listed CDB/CB graduate-level course that will examine relationships between cellular responses in normal tissue development and cancer. The goal of the course is to familiarize the students with major cellular pathways and responses that are regulated in normal embryonic and post-natal tissue development and how abnormal reactivation of these responses gives rise to malignant disease. Offered every other year. SPRING. [3] de Caestecker.
- **3326. Exercise Physiology.** (Also listed as Molecular Physiology and Biophysics 326) The responses of different physiological systems to exercise. The effect and role of exercise under special conditions such as diabetes, reproduction, heart disease, and orthopaedics and rehabilitation. Invited speakers will discuss the clinical and scientific aspects of the above topics. Prerequisite: consent of instructor. SPRING, odd numbered years. [1] Wasserman.

- **3327. Molecular Endocrinology.** (Also listed as Molecular Physiology and Biophysics 327) A survey of the molecular biology of hormone action from the target cell surface to the nucleus. Special emphasis on (1) diabetes and obesity, (2) how receptors and intracellular messengers mediate hormone action, and (3) how hormones regulate gene expression. Discussion of the use of genetic, molecular biology, and biochemical techniques to study hormone action. The faculty encourage an interactive atmosphere in the class through the discussion of seminal papers. FALL. [2] Colbran, Cone, O'Brien, Hasty, Niswender.
- **3328. Metabolic Regulation in Vivo.** (Also listed as Molecular Physiology and Biophysics 328) The hormonal regulation of fuel metabolism in the whole animal. Techniques which are used to study carbohydrate, lipid, and protein metabolism in vivo are discussed, as well as metabolic regulation in the normal and stressed state. Conditions such as fasting, exercise, infection, and hypoglycemia are also examined. A basic knowledge of physiology and biochemistry is required. Prerequisite: Molecular Physiology and Biophysics 321 or consent of instructor. FALL. [2] Shiota and Staff.
- **3329.** Lipoprotein Metabolism. (Also listed as Pathology 329) Lectures, discussions, and assigned readings in the metabolism of plasma lipoproteins. Topics include the composition and structure of plasma lipoproteins; lipoprotein biosynthesis and assembly; enzymes, exchange proteins, and receptors involved in lipoprotein catabolism; and disorders of lipid metabolism. Presentation of oral reports is required. Prerequisite: an introductory course in biochemistry. Minimum enrollment six students. SPRING. [2] Swift.
- **3330. Foundations in Microbiology and Immunology II.** (Also listed as Microbiology and Immunology 333) Second semester of course work. Original research articles focus on virology. FALL. [3] Ruley and Staff.
- **3331. Current Topics in Developmental Biology.** (Also listed as Cell and Developmental Biology 331) This course is offered in both the fall and spring semesters and meets once per week to hear a graduate student, postdoctoral fellow, or faculty member discuss a research paper from outside his or her field of research, followed by an audience question and answer session. Students taking this course are paired with a PI mentor and, together, they choose a topical scientific paper that the trainee presents at the end of the semester. FALL, SPRING. [1] Wright.
- **3333. Fundamentals of Scientific Communication (Pathology).** (Also listed as Cell and Molecular Pathology 333) Focuses on development and enhancement of skills in written and oral scientific communication, and critical thinking in scientific problem solving. Lectures, student projects, presentations, and class discussions emphasizing manuscript and research grant proposal writing, poster, and oral presentations. SPRING. [3] Bock, Hoover, and Staff.
- **3335.** The Molecular Endocrinology of Obesity and Diabetes. (Also listed as Molecular Physiology and Biophysics 333) This course is designed to introduce first-year IGP students to some of the major areas of interest in the fields of obesity and diabetes research. In the first part of the course, the lecturers will discuss the characteristics of diabetes and obesity in terms of whole-body metabolism. The use of mouse models, a major tool to study metabolism, will be emphasized. The second part of the course will focus on the insulin-producing cells of the pancreas: how they develop, how insulin secretion is regulated, and how insulin gene transcription is controlled. The third part of the course will focus on the mechanism of insulin action at the molecular level. The final part of the course will focus on the regulation of lipid metabolism and the latest theories on the molecular causes of insulin resistance and obesity. Each lecture will be presented by faculty followed by a discussion of a research paper on a related topic led by a current IGP student. JANUARY–FEBRUARY. [1] O'Brien and Staff.

- **3336. Biochemical Toxicology and Carcinogenesis.** (Also listed as Biochemistry 336 and Chemistry 336) Chemical and biological aspects of toxicology and carcinogenesis, including basic principles and mechanisms, metabolism and enzymology, cellular biology, chemistry of reactive intermediates, and a survey of several classes of environmentally important compounds. Prerequisite: organic chemistry and general biochemistry. Three lectures per week. FALL. [3] Armstrong, Guengerich, Liebler, Marnett, Pietenpol, Porter, Stone.
- **3337. Molecular Aspects of Cancer Research.** (Also listed as Cell and Developmental Biology 337 and Biochemistry 307) A focused series of seminars and discussions to explore the molecular basis of cancer. Seminars rely heavily on extramural speakers with recognized expertise in selected research areas. Discussion sections led by a faculty member follow each series of three to four seminars. SPRING. [1] Hiebert and Staff.
- **3342. Molecular Developmental Biology.** (Also listed as Cell and Developmental Biology 341) This course comprises three cutting-edge areas of developmental biology per year. The aim of this course is to provide the student with a comprehensive and up-to-date understanding of fundamental issues in modern developmental biology. Faculty didactic lectures provide essential background to facilitate critical reading and discussions of the recent scientific literature. This course is modular, with each module (approximately one month) corresponding to a single thematic topic. Students meet with external lecturers. Topics for 2010 to be selected. Offered every other year. SPRING. [Variable credit: 1–3] Wright.
- **3343. Foundations in Microbiology and Immunology III.** (Also listed as Microbiology and Immunology 334) Third semester of course work. Original research articles focus on immunology. SPRING. [1] Boothby and Staff.
- **3350, 3351.** Cellular and Molecular Basis of Disease. (Also listed as Cell and Developmental Pathology 351a and b) An introduction to human disease and the accompanying changes in normal structure and function. The course consists of modules focused on a physiologic system and its related diseases. Each module includes a review of normal anatomy and physiology and the pathological changes occurring with the disease, an in-depth discussion of the molecular and cellular mechanisms of the disease along with clinical correlates, as well as a discussion of high-profile papers relevant to the disease. 351a (Spring) and 351b (Fall) are offered as a series, but they can be taken in any order. Prerequisite: basic knowledge of biochemistry, cell, and molecular biology. [3–3] Abdulkadir, Sephel, and Staff.
- **3352. Current Topics in HIV/AIDS Research.** (Also listed as Microbiology and Immunology 352) This advanced course reviews recent progress in AIDS research as a platform for discussions of current research frontiers, with an emphasis on molecular interactions of the virus with host cells. Prerequisite: a graduate-level course in virology or immunology. SPRING. [3] Aiken.
- **3370. Cellular and Molecular Basis of Vascular Disease.** (Also listed as Cell and Developmental Pathology 337) Lectures on contemporary research in cell biology, protein and lipid biochemistry, and molecular biology of the vascular system. Open to graduate and medical students, postdoctoral fellows, and undergraduate students with consent of instructors and the Graduate School. Prerequisite: a suitable background in biochemistry and cell biology. FALL. [3] Bock, Hoover.
- **3385. Fundamentals of Genetic Analysis.** (Also listed as Human Genetics 385) This course is designed to accomplish three goals: (1) introduce students to critical topics of genetic research, (2) introduce students to important areas of genetic research not covered in first-year course work, and (3) promote an understanding of classical genetic analysis by learning genetics using the original literature. The approach will be to use classic literature that defined

- significant problems in genetic research. Specific topics will include: genetic analysis (segregation, independent assortment, and locus mapping), human pedigree analysis and disease gene mapping, and population/quantitative genetics. FALL. [4] Williams and Staff.
- **3400. Human Genetics I.** (Also listed as Molecular Physiology and Biophysics 340 and Human Genetics 340) Designed to cover background and latest advances in human molecular genetics. Topics will include an overview and in-depth look at molecular genetics including DNA, RNA, and chromosome basics. Gene structure and transcriptional processing. Mutational mechanisms, biochemical genetics (gene defects in biochemical pathways). Topics will be discussed with use of real-world examples and relevance to human research. FALL. [3] Summar, Mortlock, and Staff.
- **3410. Human Genetics II.** (Also listed as Molecular Physiology and Biophysics 341 and Human Genetics 341) This course will cover the statistical, population, and analytical aspects of modern human genetics research. Topics to be covered include human population genetics, quantitative genetics, disease gene discovery (emphasizing design, statistical and molecular techniques), linkage and association analyses, computational genetics, and evolutionary genetics. Clinical examples, subject ascertainment, and study design will also be emphasized. Students must have a strong understanding of Mendelian genetics and basic biostatistics. Prerequisite: consent of instructor. SPRING. [3] Haines and Staff.
- **3419.** Introduction to Cancer Biology. (Also listed as Cancer Biology 340) This is a didactic lecture series in which general concepts in cancer biology will be reviewed. Topics range from molecular biology of cancer (oncogene and tumor suppressors) to novel concepts such as cancer stem cells and therapeutic approaches. Prerequisite: IGP core course or consent of instructor. FALL. [2] Yull.
- **3420.** Advanced Concepts in Cancer Biology. (Also listed as Cancer Biology 342) Advanced concepts in cancer biology will be reviewed in depth using a combination of lectures and student-led discussion sessions based on current literature. This course is offered only in tandem with the Introduction to Cancer Biology course to be taken concurrently. Prerequisite: must be a Cancer Biology graduate student or have consent of instructor. FALL. [4] Fingleton.
- **3440. Systems Neuroscience.** (Also listed as Neuroscience 340) Allows students to develop a working knowledge of neural networks and brain systems and the techniques used to study these functions. Includes an introductory overview of neuroanatomy, physiology, and behavior, and then moves on to the sensory and motor systems, motivation, and learning and memory. FALL. [4] Casagrande/Deutch.
- **3444. Current Topics in Cancer Biology: Integrative Cancer Biology.** (Also listed as Cancer Biology 344) This is a graduate-level course focusing on cancer as a complex biological system. The goal of this course is to provide the students with comprehensive and up-to-date knowledge about the dynamic and spatial interactions that exist among molecules in a cancer cell, between cancer cells and their "microenvironment," and between the organism and its "macroenvironment." This class will integrate multiple cutting-edge research approaches from several disciplines, including cancer biology, proteomics and bioinformatics, functional imaging, mathematical modeling and bioengineering, and epidemiology. Class will include both presentations by the instructors and discussion of recent publications by students. SPRING. [2] Lin.
- **3455. Cellular and Molecular Neuroscience.** (Also listed as Cell and Developmental Biology 345, Molecular Physiology and Biophysics 345, Neuroscience 345, and Pharmacology 345) This course is a required entry-level course for students in the cell and molecular track of the neuroscience graduate program at Vanderbilt that should be taken in the first graduate school year. It also serves as an elective for medical students and graduate students in a number of

other programs. Its goal is to expose students to fundamental concepts and techniques in molecular and cellular neuroscience and provide a theoretical context for experimental analysis of brain function and disease. The course is divided into three modules. Module I: Neural Anatomy and Development provides an overview of the anatomy of the nervous system and neurotransmitters and examines concepts in neural pattern formation, neuronal migration, axon guidance, and synapse formation. Module II: Signaling, Plasticity, and Modulation reviews biophysical and molecular concepts relating to neuronal membrane excitability, secretion, and plasticity. Module III: Neural Diseases and Disease Models focuses on specific brain disorders such as epilepsy, pain disorders, Alzheimer's disease, depression, and schizophrenia and current models used to investigate their origin and/or treatment. This course combines faculty lecture with discussion of original articles, with an emphasis on fundamental concepts and the elucidation of important research paradigms in the discipline. Faculty and assistants guide students through important research paradigms with a critical analysis of the primary literature in the topic area. Prerequisite: Bioregulation I (IGP 300A) or consent of instructor. Course directors may consider undergraduate course work in cell biology or biochemistry to meet this requirement. SPRING. [4] Currie, Carter, and Staff.

- **3456. Molecular and Cellular Immunology.** (Also listed as Microbiology and Immunology 328C) The cellular and molecular foundations of the immune response system and the humoral and cellular reactions that result from immunologic interactions. Two lectures per week and seminars presented by students. Prerequisite: IGP 300 or any microbiology course. FALL. [3] Staff.
- **3500. Tutorials in Human Genetics.** (Also listed as Human Genetics 370) A weekly seminar critically evaluating current and past scientific literature from many areas of genetic research. The focus will be on study methods and analysis. FALL. [1] Canter, Kearney.
- **3510. Functional Genomics and Proteomics: Applications to Immunobiology.** (Also listed as Microbiology and Immunology 351) Biological applications of functional genomics and proteomics in immunology. Topics include (1) proteomic analysis of blood cells, vascular endothelial cells, and smooth muscle cells involved in immunity and inflammation, (2) functional genomics of immunobiology using genome-wide mutagenesis, (3) gene expression profiling of immune/inflammatory responses based on DNA microarray technology, (4) peptide/protein transduction and its applications to cell-based proteomics and intracellular protein therapy, (5) proteomic analysis of MHC antigens, (6) genomics and proteomic analysis of host-pathogen interactions, (7) genomic and proteomic analysis of immunological diseases, and (8) development and application of new genomic and proteomic strategies in immunology. SPRING. [2] Link, Hawiger, Staff.
- **3520. Analytical Proteomics.** (Also listed as Biochemistry 352) Introduces analytical proteomics methods and approaches through lectures, directed readings, and group and individual data analysis exercises. Topics include (1) characteristics of proteomes and protein diversity, (2) mass spectrometry approaches to protein and peptide analysis, (3) protein and peptide separation methods, (4) bioinformatics tools for identification of proteins from MS data, (5) quantitative proteomics methods, (6) applications of proteomics in common experimental designs, and (7) tissue proteome profiling and imaging approaches. SPRING. [2] Chaurand, Friedman, Ham, Liebler, Slebos, Tabb, Zhang, Zimmerman.
- **3540. Clinical Neuropsychology. (Also listed as Psychology 354)** Cognitive and behavioral disorders associated with brain injury and disease. Methods of neuropsychological assessment. Prerequisite: permission of instructor. [3] Zald. (Not offered 2009/2010)

# Medical Physics

Courses leading to the Doctor of Medical Physics and Master of Science in Medical Physics degrees

### Radiation Oncology Faculty

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ASSISTANT PROFESSORS George X. Ding, Steven R. Goertz, Zhaozhong Han, Corbin Johnson, Todd Tenenholz, Fen Xia

RESEARCH ASSISTANT PROFESSORS Kenneth B. E. Gagnon, Heping Yan, Eugenia M. Yazlovitskaya

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RESEARCH PROFESSOR A. Bertrand Brill

ADJUNCT PROFESSORS Ayman Al-Hendy, Arnold Burger, A. Everette James, Jr. ASSOCIATE PROFESSORS Edson James Andrews, Jr., Ronald Curtis Arildsen, André Lemont Churchwell, Keith B. Churchwell, Jeffrey L. Creasy, Thomas S. Dina, Mark D. Does, Edwin F. Donnelly, Daniel T. Fowler, Isabel Gauthier, M. Reza Habibian, John G. Huff, Stacy Stansell Klein, René Marois, William H. Martin, Murray J. Mazer, Robert Alan Mericle, Michael I. Miga, E. Paul Nance, Jr., Cynthia B. Paschal, David R. Pickens III, Thomas A. Powers, Anna Wang Roe, Glynis A. Sacks-Sandler, Max Israel Shaff, Stephanie E. Spottswood, Michael G. Stabin, Sharon M. Stein, Ronald C. Walker, George Young

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Rishi Gupta, Melissa A. Hilmes, Alice A. Hinton, Nancy Wingfield Darden Holland, Ralph Duane Holland, Tamarya L. Hoyt, Frederick M. Isaacson, James M. Joers, Laurie B. Jones-Jackson, Martin I. Jordanov, J. Herman Kan, Minh N. Kenney, Peter M. Lams, Mark A. Lawson, Henry Charles Manning, Jackiel R. Mayo, James H. McElmurray, Kevin T. McManus, Victoria L. Morgan, Todd E. Peterson, Wellington Pham, Christopher Chad Quarles, John Danforth Ross, Robert J. Singer, Sudha P. Singh, Seth A. Smith, LeAnn Simmons Stokes, Megan K. Strother, David S. Taber, Geoffrey E. Wile, Jennifer R. Williams, Curtis A. Wushensky, Thomas E. Yankeelov

VISITING ASSISTANT PROFESSOR Edward Brian Welch

RESEARCH ASSISTANT PROFESSORS Ning Guo, William R. Riddle, Baxter P. Rogers, Kevin W. Waddell

ADJUNCT ASSISTANT PROFESSORS Reuven Brenner, Jaydip Datta

ADJOINT ASSISTANT PROFESSOR Bennett A. Landman

ASSISTANT CLINICAL PROFESSORS Jung Ja Hong, Philip McGuire, Andrew J. Padgug ASSOCIATES Mohammad Sib Ansari, Jeffrey A. Clanton

INSTRUCTORS Christopher C. Bathurst, G. Nicole Davis, Annie M. Heemskerk, Geoffrey W. Horn, Cheryl A. Hubbard, John-Michael N. Khalil, Otto A. Sanchez, Jayne M. Seekins, Dennis A. Velez, Feng Wang, Huairen Zeng

ASSISTANT Sarah M. Baggette

#### **Diagnostic Radiology**

**5208. Differential Equations.** First- and second-order differential equations, applications, linear differential equations, series solutions, boundary-value problems, existence and uniqueness theorems. Intended for mathematics and advanced science majors. Prerequisite: multivariable calculus and linear algebra. (Cross-listed with MATH 208) SPRING. [3] Peterson.

**5210 and 5212. Anatomy and Physiology Part 1 and Part 2.** Introduction to the structure and function of the human organism. Integrates the gross anatomical structure of the human body and its organ systems with microscopic structure, physiological function, and homeostatic mechanisms. Emphasis also on the clinical relevance of selected topics. Prerequisite: at least one semester of biology or chemistry. (Cross-listed with Nursing 210a and 210b.) FALL, SPRING. [4-4] Cobb.

**5215** and **5216**. Introduction to Quantum Physics and Applications I and II. A survey of modern physics and applications based on elementary quantum mechanics: atomic and molecular structure, interaction of light with atoms and molecules, spectroscopy. One three-hour laboratory per week. (Cross listed with Physics 225W and 226W.) FALL. [4] Haglund, Velkovska. SPRING. [4] Maguire, Helms.

5217. Introduction to Quantum Physics and Applications I and II Lab. Lab only. [1]

**5218. Radiation Detectors and Measurements.** Basic physics principles and applications of radiation detecting instruments, with laboratory exercises. Techniques and instrumentation for nuclear radiation detection and measurements as they relate to health physics (radiation safety) and nuclear physics. (Cross-listed with Physics 285.) SPRING. [4] Stabin.

**5228. Physics of Medical Imaging.** Physics and engineering of image formation for medical applications. Mathematical concepts of image formation and analysis; techniques for recording images using ionizing radiation (including CT), ultrasound, magnetic resonance, and nuclear (including SPECT and PET). Methods of evaluating image quality. (Cross-listed with Physics 228.) SPRING. [3] Peterson.

- **5270. Ethics and Medicine.** Selected ethical issues raised by clinical practice, medical theories, and biomedical research and technology. SPRING. [3] Bliton.
- **5301. Medical Physics Masters Seminar.** Topics in medical imaging, techniques and applications. FALL. [1] Price.
- **5307. Radiation Dose Assessment.** Description of models and methods for internal and external dose assessments. Students will study both historical and modern calculational methods for calculating radiation dose to radiation workers, members of the general public, medical patients, and other subjects. SPRING. [3] Stabin.
- **5313. Clinical Diagnostic Physics.** Instrumentation and application of physics to clinical diagnostic imaging procedures including radiographic and fluoroscopic x-ray, CT, MRI, nuclear medicine, and ultrasound. FALL. [3] Pickens.
- **5315.** Laboratory in Clinical Diagnostic Physics. Laboratory in the application of principles, techniques, and equipment used in radiographic and fluoroscopic x-ray, CT, MRI, nuclear medicine, and ultrasound. (Cross-listed with PHY 315.) FALL. [2] Riddle.
- **5320–5323. Special Topics.** (Cross-listed with BME 395) FALL and SPRING. [1-3]
- **5329.** Advanced Computational Modeling and Analysis. Survey of current topics within biomedical modeling: biotransport, biomechanics, tumor and virus growth dynamics, model-based medical imaging techniques, etc. Mathematical development and analysis of biomedical simulations using advanced numerical techniques for the solution of ordinary and partial differential equations. Emphasis will be on graduate research related topics. (Cross-listed with BME 329.) SPRING. [3] Miga.
- **5343. Health Physics.** Theory and instrumentation used in health physics and radiological physics. Radiation shielding design, methods of external and internal design, and radiation regulatory issues. (Cross-listed with Physics 243.) FALL. [3] Stabin.
- **5355.** Quantitative and Functional Imaging. Introduction to quantitative analysis of non-invasive imaging techniques to assess the structure and function of tissues in the body. Applications of computed tomography, positron emission tomography, ultrasound, and magnetic resonance imaging to tissue characterization. Measurement of lesion volume, cardiac output, organ perfusion, brain function, and receptor density. (Cross-listed with Biomedical Engineering 277) FALL. [3] Anderson.
- **5390. Masters Independent Study (Diagnostic).** Introductory problem solving topic in diagnostic medical physics including data taking, analysis, and write-up. [1-2]
- **5391. Medical Physics Practicum (Diagnostic).** Experience and training in a diagnostic physics clinical setting; instrumentation methodology, calibration, and quality assurance. This course also includes diagnostic radiology patient interaction, clinical conference attendance, and review of imaging techniques in radiology. SPRING. [0-6] Price.
- **5393. Doctoral Independent Study (Diagnostic).** Advanced problem solving topic in diagnostic medical physics including literature survey, data taking, analysis, and manuscript submission. [6]
- **5395. Medical Physics Clinical Rotations (Diagnostic).** Advanced experience and clinical training in a diagnostic radiology department setting; instrumentation (methodology and calibration), quality assurance, and problem solving. For third- and fourth-year doctoral students. [3-6]
- 5401. Medical Physics Doctoral Seminar. [1]

#### Therapeutic Radiology

- **5248. Radiation Biophysics.** Response of mammalian cells and systems to ionizing radiation, the acute radiation syndromes, carcinogenesis, genetic effects, and radiobiological basis of radiotherapy. (Cross-listed with Physics 248) FALL. [2] Freeman.
- **5301. Medical Physics Masters Seminar.** Radiotherapy treatment techniques and current methodologies in clinical therapy physics. FALL, SPRING. [1] Chakravarthy.
- **5304. Radiation Interactions and Dosimetry.** Theory and instrumentation of ionization measurements of high-energy photon and electron beams. Methods of radiation absorbed dose calculations for photons, neutrons, and charged particles. (Cross-listed with PHY 304) SPRING. [3] Ding.
- **5311. Clinical Therapy Physics I.** Instrumentation and application of physics to clinical radiotherapy procedures, equations for absorbed dose calculations, phantoms, methodologies in computerized treatment planning, and introduction to the special techniques of IMRT, RAPID ARC, and stereoradiosurgery. (Cross-listed with PHY 311) FALL. [3] Coffey.
- **5312. Clinical Therapy Physics II.** Photon and electron beam algorithms for dosimetry calculations. Methodologies in three-dimensional treatment planning with specific applications to radiotherapy. SPRING. [2] Duggan.
- **5314.** Clinical Therapy Physics I: Lab. Introductory laboratory applications of physics to clinical radiotherapy procedures, experience with equipment in a modern clinical radiotherapy environment, and methodology and techniques for the verifications of simulated clinical procedures. SPRING. [2] Coffey.
- **5315.** Clinical Therapy Physics II: Lab. Advanced laboratory applications of physics to clinical radiotherapy procedures, experience with radiotherapy physics equipment including measurement of absorbed dose using multiple dosimetry systems and techniques for the quality assurance verification of special radiotherapy clinical procedures. FALL, SPRING. [2] Coffey.
- **5316. Brachytherapy Physics.** Instrumentation and applications of physics to clinical brachytherapy procedures, equations for absorbed dose calculations including TG#43, methodologies in computerized treatment planning, and introduction to special techniques. FALL. [3] Coffey.
- **5340. Cancer Biology.** This is a didactic lecture series in which general concepts in cancer biology will be reviewed. Topics range from molecular biology of cancer (oncogene and tumor suppressors) to novel concepts such as cancer stem cells and therapeutic approaches. FALL. [2] Yull.
- **5390. Masters Independent Study (Therapeutic).** Introductory problem-solving topic in therapy medical physics including data taking, analysis, and write-up. [1-2]
- **5391. Medical Physics Practicum (Therapy).** Experience and training in a radiotherapy physics clinical setting; treatment planning, instrumentation calibration, and quality assurance. This course also includes radiotherapy patient interaction, clinical conference attendance, and review of treatment techniques in radiation oncology. SPRING. [0–6] Coffey.
- **5393.** Doctoral Independent Study (Therapeutic). Advanced problem solving in therapy medical physics including literature survey, data taking, analysis, and manuscript submission. [6]

**5395. Medical Physics Clinical Rotations (Therapeutic).** Advanced experience and clinical training in a radiation oncology department setting; treatment planning, instrumentation calibration, quality assurance, and problem solving. For third- and fourth-year doctoral students. [3-6]

5401. Medical Physics Doctoral Seminar. [1]

# Public Health

Courses leading to the Master of Public Health degree

CHAIR William Schaffner

PROFESSOR EMERITUS Lewis B. Lefkowitz, Jr.

PROFESSORS William O. Cooper, Roy L. DeHart, William D. Dupont, David L. Page,

William Schaffner, Sten H. Vermund

ADJUNCT PROFESSOR Michael D. Decker

ASSOCIATE PROFESSOR Walter E. Smalley, Jr.

RESEARCH ASSOCIATE PROFESSOR Theodore Speroff

ADJUNCT ASSOCIATE PROFESSORS Bruce B. Dan, Bruce G. Gellin

ASSOCIATE CLINICAL PROFESSORS Allen Scott Craig, Timothy F. Jones

ASSISTANT PROFESSORS Muktar Hassan Aliyu, Ban Mishu Allos, Patrick G. Arbogast, Karen C. Bloch, Carlos G. Grijalva, J. Jonas Kalnas, Thomas R. Talbot III, Alfredo E. Vergara, Mary I. Yarbrough

ASSISTANT CLINICAL PROFESSORS John R. Dunn, Marion Angelika Kainer, David L. Kirschke, Abelardo C. Moncayo, Kelly L. Moore, William S. Paul, Robert S. Sanders

**5501. Epidemiology I.** This introduction to epidemiology focuses on measures of disease frequency and association, observational study design, and diagnostic and screening tests. The course reviews the use of these tools and the role of epidemiology in measuring disease in populations, estimating risks, and influencing public policy. Study designs reviewed include cross sectional, ecologic, case-control, and cohort studies. Enrollment is limited. FALL. [4] Griffin.

**5502. Biostatistics I.** Basic concepts and methods of biostatistics, including data description and exploratory data analysis, study design and sample size calculations, probability, sampling distributions, estimation, confidence intervals, hypothesis testing, nonparametric tests, analysis of continuous, categorical, and survival data, data analysis for cohort and case-control studies, relative risk and odds ratio estimation, and introduction to linear and logistic regression. Enrollment is limited. FALL. [4] Arbogast.

**5504. Clinical Trials.** Introduces issues in design, conduct, and data analysis of clinical trials, emphasizing practical use of methods. Topics include types/objectives of the clinical trials, study design, blindness, randomization and stratification, sample size determination, interim monitoring, ethical guidelines, data analysis and interpretation of results. The parallel design, factorial designs, cross-over designs, nested designs for superiority, non-inferiority, clinical equivalence and bioequivalence trials will be discussed. Other topics include role of clinical trials in FDA drug approval process, meta-analysis, and management of clinical trial data. Enrollment is limited. FALL. [4] Shyr.

- **5508.** Epidemiology II: Non-randomized Study Design. The design of non-randomized studies, including factors that are important in design selection. The design of cohort studies, including rationale for use of the cohort study, prospective and retrospective cohort studies, assembly and follow-up of the cohort, exposure measurement, outcome ascertainment, confounders, effect modification, calculation of measures of occurrence and effect, summary of multivariate statistical analyses for cohort studies. The case-control study, including rationale for use, conditions necessary for validity of the case-control study, selection of controls, sources of bias in case-control studies, and multivariate analysis. The ecological study, including when to use and when to avoid. Designs to usually avoid: cross-sectional, case-series, and exposed-subject designs. The course includes didactic lectures and critical reading of important epidemiologic studies from the current medical literature. The latter encompasses discussion of the articles in small groups and structured presentation to the class. Prerequisite: Epidemiology 1, Biostatistics 2, Clinical Trials, or approval of instructor. Enrollment is limited to twenty-four students due to space restrictions, with priority given to M.P.H. and M.S.C.I. students. SPRING. [4] Ray.
- **5509. Biostatistics II.** Modern multivariate analyses, based on the concept of generalized linear models. Includes linear, logistic, and Poisson regression, survival analysis, fixed effects analysis of variance, and repeated measures analysis of variance. Course emphasizes underlying similarity of these methods, choice of the right method for specific problems, common aspects of model construction, and the testing of model assumptions through influence and residual analyses. Prerequisite: Biostatistics 1 or consent of the course director. Enrollment is limited. SPRING. [4] Dupont.
- **5511. Program and Policy Evaluation.** The evaluation of changes in the health care delivery system, either through programs specifically implemented to achieve such changes or through changes in health care delivery/financing policies. The primary designs—before/after, concurrent/retrospective control, interrupted time-series—and their strengths and limitations. Class will include didactic lectures and small group critical reading/presentation of current program/policy evaluations published in leading medical journals. Prerequisite: Epidemiology 2, Biostatistics 2 or approval of instructor. Offered every other year. SPRING. [3] Ray.
- **5512. Clinical Economics and Decision Analysis.** This course will provide an overview of qualitative and quantitative decision making with a dominant focus on quantitative techniques for decision making, using clinical and economic endpoints and their role in clinical strategies of care and health policy. Topics include: cognitive heuristics, Baye's theorem, ROC analysis, the study of diagnostic tests, meta-analysis, health states and utility measurement using expected value decision making, decision tree analysis, Markov processes and network simulation modeling, quantitative management of uncertainty, cost theory and accounting, cost-effectiveness and cost-utility analysis. Students may substitute this elective course for a portion of the dissertation research credit. Offered every other year. FALL. [3] Dittus, Speroff, Stiles.
- **5514.** Health Behavioral Methods: Measurement and Motivation. The course will address two core areas in health behavior research: (1) the measurement of knowledge, attributes, attitudes, and behaviors that are relevant to health behavior research, with a focus on scale development and (2) the dispositional and situational variables that underlie current theories of behavior and behavior change, with current applications. SPRING. [3] Elasy.
- **5516. Environmental Health.** This course will review the three key public health functions of assessment, policy development, and assurance in relationship to environmental health issues. Topics covered will include public health surveillance activities including bioterrorism issues, food safety, air pollution, and genetics and public health. Students will learn

where to obtain publicly available population data on health-related events from a variety of surveillance activities and special surveys. SUMMER. [2] Vergara.

- **5517. Grant Writing and Scientific Communication.** Principles of scientific written and oral communication with a focus on grant writing will be discussed. The principles of scientific grant writing will include how to write the background and significance, previous work, and methods sections. Students will review grants submitted to public health service study sections, participate in a mock study section, and prepare a sample grant application. Enrollment limited to matriculants in the M.P.H. or M.S.C.I. programs. M.P.H. matriculants must have completed Epidemiology 2. Enrollment is limited. SUMMER. [1] Ray, Brown.
- **5518. Research Ethics.** Presents issues in the responsible conduct of research, including ethics, data management, research fraud, academic misconduct, and conflict of interest. The course covers federal and institutional guidelines regarding research in human and animal subjects. Topics include vulnerable populations in research, confidentiality, and the Institutional Review Board (IRB). SUMMER. [1] Cooper.
- **5519. MPH Seminar.** A research seminar at which each student presents the results of the thesis research. This will be organized into a one hour presentation with a background and significance, methods, results, and public health/research Implications covered. A total of four seminars are scheduled each year. Each student schedules a presentation at one of these (four maximum) on a first-come, first-served basis. Students are encouraged to attend all of the others and must attend at least one. Students must obtain approval of their thesis committee prior to presenting. FALL. [1] Cooper.
- **5527. Protocol Development.** This course focuses on development of the individual student's research protocol. Each student will present the background, methods, and limitations of their proposed research design in class. Each student will complete the research protocol for the student's master's thesis as a part of the course. Enrollment is limited to students in the M.P.H. program. SUMMER. [1] Cooper.
- 5528. MPH Project Extension. FALL, SPRING, SUMMER. [0] Staff.
- **5536.** Public Health Practicum. Each student will participate in a public health practicum which will provide students with opportunities to develop practical skills and competencies in public health practice settings. FALL. [4] Griffin.
- **5599.** Dissertation Research. The primary objective is completion of the thesis project. The student will coordinate dissertation research activities with the thesis committee. [1-6] Cooper.



# Faculty

## 25

# Named and Distinguished Professors

NAJI N. ABUMRAD, John L. Sawyers Professor of Surgery GEORGE S. ALLEN, William F. Meacham Professor of Neurological Surgery CARLOS L. ARTEAGA, Vice Chancellor's Professor of Breast Cancer Research JUDY L. ASCHNER, Julia Carell Stadler Professor of Neonatology MICHAEL ASCHNER, Gray E. B. Stahlman Professor of Neuroscience DAVID M. BADER, Gladys Parkinson Stahlman Professor of Cardiovascular Research H. SCOTT BALDWIN, Katrina Overall McDonald Professor of Pediatrics JEFFREY R. BALSER, James Tayloe Gwathmey Clinician-Scientist Professor R. DANIEL BEAUCHAMP, John Clinton Foshee Distinguished Professor of Surgery GORDON R. BERNARD, Melinda Owen Bass Professor of Medicine RANDY D. BLAKELY, Allan D. Bass Professor of Pharmacology JAMES F. BLUMSTEIN, University Professor of Constitutional Law and Health Law and Policy RICHARD M. BREYER, John B. Youmans Professor of Medicine H. ALEX BROWN, Ingram Professor of Cancer Research NANCY J. BROWN, Robert H. Williams Professor of Medicine LONNIE S. BURNETT, Frances and John C. Burch Professor of Obstetrics and Gynecology JOHN G. BYRNE, William S. Stoney Jr. Professor of Cardiac Surgery RICHARD M. CAPRIOLI, Stanley Cohen Professor of Biochemistry DAVID P. CARBONE, Harold L. Moses Professor of Cancer Research WALTER J. CHAZIN, Chancellor's Professor of Biochemistry and Physics: ALAN D. CHERRINGTON, Jacquelyn A. Turner and Dorothy J. Turner Professor of Diabetes Research LARRY R. CHURCHILL, Ann Geddes Stahlman Professor of Medical Ethics ELLEN WRIGHT CLAYTON, Rosalind E. Franklin Professor of Genetics and Health Policy: ROBERT J. COFFEY, JR., John B. Wallace Professor of Medicine CHERYL M. COFFIN, Ermest W. Goodpasture Professor of Pathology MICHAEL S. COOKSON, Patricia and Rodes Hart Professor of Urologic Surgery PALAYO CORREA, Ann Potter Wilson Distinguished Chair in Colon Cancer DAVID CORTEZ, Ingram Professor of Cancer Research JAMES E. CROWE, JR., Ingram Professor of Cancer Research RICHARD T. D'AQUILA, Addison B. Scoville Professor of Medicine STEPHEN NEIL DAVIS, Mark Collie Professor of Diabetes Research ROBERT S. DITTUS, Albert and Bernard Werthan Professor of Investigative Medicine SEAN P. DONAHUE, Sam and Darthea Coleman Professor of Ophthalmology and Visual Sciences THOMAS P. DOYLE, Ann and Monroe Carell Jr. Family Professor of Pediatric Cardiology ROLAND D. EAVEY, Guy M. Maness Professor of Otolaryngology KATHRYN M. EDWARDS, Sarah H. Sell Professor of Pediatrics TOM A. ELASY, Ann and Roscoe R. Robinson Associate Professor of Clinical Research RONALD B. EMESON, Joel G. Hardman Professor of Pharmacology STEPHEN W. FESIK, Ingram Professor of Cancer Discovery AGNES B. FOGO, John L. Shapiro Professor of Pathology DEBRA L. FRIEDMAN, Ingram Associate Professor of Pediatric Oncology MARK E. FRISSE, Accenture Professor of Biomedical Informatics WILLIAM H. FRIST, University Distinguished Professor ALFRED L. GEORGE, JR., Grant W. Liddle Professor of Medicine JONATHAN D. GITLIN, James C. Overall Professor of Pediatrics JAMES RICHARD GOLDENRING, Paul W. Sanger Professor of Experimental Surgery JOHN C. GORE, Chancellor's University Professor of Radiology and Radiological Sciences and Biomedical Engineering; F. PETER GUENGERICH, Harry Pearson Broquist Professor of Biochemistry VOLKER H. HAASE, Krick-Brooks Associate Professor of Medicine JONATHAN LEE HAINES, T. H. Morgan Professor of Human Genetics HEIDI ELIZABETH HAMM, Earl W. Sutherland Jr. Professor of Pharmacology RAYMOND C. HARRIS, JR., Ann and Roscoe R. Robinson Professor of Nephrology JACEK HAWIGER, Oswald T. Avery Distinguished Professor of Microbiology and Immunology STEPHAN H. W. HECKERS, James G. Blakemore Professor of Psychiatry GERALD B. HICKSON, Joseph C. Ross Professor of Medical Education and Administration GEORGE C. HILL, Levi Watkins Jr. Professor for Diversity in Medical Education

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MICHAEL D. HOLZMAN, Lester and Sara Jayne Williams Associate Professor of Academic Surgery
BILLY GERALD HUDSON, Elliot V. Newman Professor of Medicine
TALAT ALP IKIZLER, Catherine McLaughlin Hakim Associate Professor of Medicine
TADASHI INAGAMI, Stanford Moore Professor of Biochemistry
DAVID H. JOHNSON, Cornelius Abernathy Craig Professor of Medical and Surgical Oncology
HOWARD W. JONES III, Betty and Lonnie S. Burnett Professor of Obstetrics and Gynecology
JEREMY J. KAYE, Carol D. and Henry P. Pendergrass Professor of Radiology and Radiological Sciences
DOUGLAS S. KERNODLE, David E. Rogers Associate Professor of Medicine
ROBERT M. KESSLER, Wilhelm Roentgen Professor of Radiology and Radiological Sciences
PHILIP J. KREGOR, Jeffrey W. Mast AssociateProfessor of Orthopaedic Trauma and Hip Surgery
JOHN F. KUTTESCH, JR., Ingram Associate Professor of Cancer Research
DANIEL C. LIEBLER, Ayers Professor of Biochemistry
JAMES E. LOYD, Rudy W. Jacobson Professor of Pulmonary Medicine
MARK A. MAGNUSON, Earl W. Sutherland, Jr. Professor of Molecular Physiology and Biophysics
LAWRENCE J. MARNETT, Mary Geddes Stahlman Professor of Cancer Research
LYNN M. MATRISIAN, Ingram Professor of Cancer Research
HERBERT Y. MELTZER, Bixler/Johnson/Mays Professor of Psychiatry
RANDOLPH A. MILLER, Donald A. B. and Mary M. Lindberg University Professor of Biomedical Informatics
HAROLD L. MOSES, Hortense B. Ingram Professor of Molecular Oncology
LOUIS J. MUGLIA. Edward Claiborne Stahlman Professor of Pediatrics
GREGORY R. MUNDY, John A. Oates Professor of Translational Medicine
ERIC G. NEILSON, Hugh J. Morgan Professor of Medicine
JAMES L. NETTERVILLE, Mark C. Smith Professor of Otolaryngology, Head and Neck Surgery
JOHN H. NEWMAN, Elsa S. Hanigan Professor of Pulmonary Medicine
JOHN A. OATES, Thomas F. Frist Professor of Medicine
NEIL OSHEROFF, John Coniglio Professor of Biochemistry
ROBERT H. OSSOFF, Maness Professor of Laryngology and Voice
RICHARD M. PEEK, JR., Mina Cobb Wallace Professor of Gastroenterology and Cancer Prevention
JOHN S. PENN, Phyllis G. and William B. Snyder M.D. Professor of Ophthalmology and Visual Sciences
JOHN A. PHILLIPS III, David T. Karzon Professor of Pediatrics
JENNIFER A. PIETENPOL, B. F. Byrd Jr. Professor of Oncology
C. WRIGHT PINSON, H. William Scott Professor of Surgery
FERNANDO P. POLACK, Cesar Milstein Associate Professor of Pediatrics
DAVID BRENT POLK, William K. Warren Sr. Professor of Pediatric Gastroenterology
ALVIN C. POWERS, Joe C. Davis Professor of Biomedical Sciences
RONALD R. PRICE, Godfrey Hounsfield Professor of Radiology and Radiological Sciences
JOE B. PUTNAM, JR., Ingram Professor of Cancer Research
J. ANN RICHMOND. Ingram Professor of Cancer Research
WILLIAM RUSSELL RIES, Carol and John S. Odess Professor of Facial, Plastic, and Reconstructive Surgery
L. JACKSON ROBERTS II, T. Edwin Rogers Professor of Pharmacology
DAVID ROBERTSON, Elton Yates Professor of Autonomic Disorders
DAN M. RODEN, William Stokes Professor of Experimental Therapeutics
BRUCE J. ROTH, Paul V. Hamilton M.D. and Virginia E. Howd Professor of Urologic Oncology
SAMUEL ANDREW SANTORO, Dorothy B. and Theodore R. Austin Professor of Pathology
DOUGLAS B. SAWYER, Lisa R. Jacobson Associate Professor of Medicine
JOHN F. SCHNELLE, Paul V. Hamilton M.D. Professor of Geriatrics
FRIEDRICH G. SCHUENING, Ingram Professor of Cancer Research
RICHARD C. SHELTON, James G. Blakemore Research Professor of Psychiatry
YU SHYR, Ingram Professor of Cancer Research
JEFFREY R. SMITH, William L. Bray Professor of Urologic Surgery
JOSEPH A. SMITH, JR., William L. Bray Professor of Urologic Surgery
KURT P. SPINDLER, Kenneth D. Schermerhorn Professor of Orthopaedics and Rehabilitation
SUBRAMANIAM SRIRAM, William C. Weaver III Professor of Experimental Neurology
WILLIAM W. STEAD, McKesson Foundation Professor of Biomedical Informatics
C. MICHAEL STEIN, Dan May Professor of Medicine
PAUL STERNBERG, JR., George W. Hale Professor of Opthalmology and Visual Sciences
KEVIN STRANGE, John C. Parker Professor of Anesthesiology
STEN H. VERMUND, Amos Christie Professor of Global Health
DAVID H. WASSERMAN, Ronald E. Snato Professor of Diabetes Research
MICHAEL R. WATERMAN, Natalie Overall Warren Distinguished Professor of Biochemistry
MATTHEW BRET WEINGER, Norman Ty Smith Professor of Patient Safety and Medical Simulation
JAMES ALAN WHITLOCK, Craig-Weaver Professor of Pediatrics
JOHN P. WIKSWO, JR., Gordon A. Cain University Professor
DAVID XIAO-MING ZHAO, Harry and Shelley Page Associate Professor of Interventional Cardiology
WEI ZHENG, Ingram Professor of Cancer Research
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MARY M. ZUTTER, Ingram Professor of Cancer Research

## Faculty

ORAN S. AARONSON, Assistant Professor of Neurological Surgery

B.Sc., M.B., B.S. (London 1992, 1997) [2004]

MATTHEW J. ABBATE, Instructor in Clinical Medicine

A.B. (Brown 1987); M.D. (Tufts 1991) [1995]

RASUL ABDOLRASULNIA, Research Assistant Professor of Medicine

B.S. (Shiraz [Iran] 1961); M.S. (Pahlavi [Iran] 1972); Ph.D. (Tennessee 1978) [1988]

SARKI A. ABDULKADIR, Associate Professor of Pathology; Associate Professor of Cancer Biology

B.S., M.D. (Ahmadu Bello [Nigeria] 1984, 1990); Ph.D. (Johns Hopkins 1995) [2005]

TY WILLIAM ABEL, Assistant Professor of Pathology

B.A. (Boise State 1989); M.S., Ph.D., M.D. (Arizona 1991, 1993, 2001) [2005]

VIRGINIA D. ABERNETHY, Professor of Psychiatry (Anthropology), Emerita

B.A. (Wellesley 1955); A.M., Ph.D. (Harvard 1968, 1970); M.B.A. (Vanderbilt 1981) [1975]

ANTOINNE C. ABLE, Associate Professor of Surgery at Meharry Medical College; Associate Professor of Orthopaedics and Rehabilitation at Vanderbilt

B.A. (Tennessee 1980); M.S. (Tennessee State 1982); M.D. (Meharry Medical 1989) [2002]

JOSEPH G. ABOOD, Assistant Professor of Oral and Maxillofacial Surgery

B.A. (California, Santa Barbara 1957); D.D.S. (McGill [Canada] 1962) [2009]

BASSEL W. ABOU-KHALIL, Professor of Neurology; Director, Division of Epilepsy

B.S., M.D. (American University of Beirut 1974, 1978) [1988]
RIMA ABOU-KHALIL, Assistant Professor of Clinical Hearing and Speech Sciences

B.A., M.A. (American University of Beirut 1982, 1985); M.S., Ph.D. (Vanderbilt 1991, 2003) [2009]

CHADI T. ABOUASSALY, Instructor in Surgery

B.S., M.D. (lowa 1998, 2002) [2009]

ROBERT L. ABRAHAM, Assistant Professor of Medicine

B.A. (Dartmouth 1985); M.D. (Medical College of Georgia 2000) [2008]

THOMAS JAMES ABRAMO, Professor of Pediatrics; Professor of Emergency Medicine B.S. (Canisius 1978); M.D. (Meharry Medical 1982) [2005]

TAREK S. ABSI, Assistant Professor of Cardiac Surgery

B.S., M.D. (American University of Beirut 1991, 1995) [2005]

AHMAD ABU-HALIMAH, Assistant Professor of Clinical Medicine

M.D. (Ain-Shams [Egypt] 1993) [2009]

NAJI N. ABUMRAD, John L. Sawyers Professor of Surgery; Chair of the Department of Surgery

B.S., M.D. (American University of Beirut 1966, 1971) [2002]

SARI A. ACRA, Associate Professor of Pediatrics

B.Sc. (North Carolina State 1985); M.D. (American University of Beirut 1995); M.P.H. (Vanderbilt 2005) [2001]

MAURICE M. ACREE, JR., Assistant Clinical Professor of Pathology

B.A. (Vanderbilt 1949); M.D. (Tennessee 1961) [1970]

CARLTON Z. ADAMS, JR., Associate Clinical Professor of Surgery at Meharry Medical College; Assistant Clinical Professor of Surgery at Vanderbilt

B.S. (Southern California 1979); M.D. (Howard 1983) [2001]

GEORGE A. ADAMS, SR., Assistant Clinical Professor of Oral and Maxillofacial Surgery (Pedodontics)

D.D.S., M.D.S. (Indiana 1974, 1976) [1978]

GEORGE A. ADAMS, JR., Assistant Clinical Professor of Oral and Maxillofacial Surgery B.A. (Southern Methodist 1995); D.M.D. (Kentucky 1999) [2004]

MARK C. ADAMS, Professor of Urologic Surgery; Professor of Pediatrics

A.B., M.D. (Vanderbilt 1979, 1983) [1995]

RAEANNA C. ADAMS, Instructor in Surgery

B.S. (Georgia 1998); M.D. (Mercer 2002) [2009]

TAMMY H. ADAMS, Assistant Clinical Professor of Pediatrics

B.S. (Belmont 1993); M.D. (East Tennessee State 1997) [2007]

R. TERRY ADKINS, Clinical Instructor in Obstetrics and Gynecology

A.B. (Tennessee 1980); M.D. (Baylor 1983) [1989]

THOMAS G. ADKINS, Clinical Instructor in Anesthesiology

B.A. (Appalachian State 1972); Ph.D. (Wake Forest 1977); M.D. (Bowman Gray 1979) [2009]

DEANNA LEE AFTAB-GUY, Assistant Professor of Pediatrics

B.A. (Vassar 1985); M.D. (Northeastern Ohio 1991) [2002]

ANITA AGARWAL, Associate Professor of Ophthalmology and Visual Sciences M.D. (Mangalore [India] 1985); M.S. (Chandigarh [India] 1990) [1999]

HEMANT S. AGARWAL, Assistant Professor of Pediatrics; Assistant Professor of Anesthesiology

M.B.B.S. (Seth Gordhandas Sunderdas Medical College [India] 1989); M.D. (Mumbai [India] 1993) [2007]

VINCENT AGBOTO, Assistant Professor of Biostatistics at Meharry Medical College;

Assistant Professor of Biostatistics at Vanderbilt

B.S. (Lome [Togo] 1995); M.S., Ph.D. (Minnesota 2005, 2006) [2009]

RUPA MEENA AGRAWAL, Assistant in Medicine

B.A., M.S.N. (Case Western Reserve 2004, 2007) [2008]

RASHID M. AHMAD, Assistant Professor of Cardiac Surgery; Assistant Professor of Biomedical Informatics

Sc.B. (Brown 1988); M.D. (Columbia 1992) [2002]

NAZNEEN AHMED, Assistant Clinical Professor of Pediatrics

M.D. (Bangalore Medical 1986) [2005]

CHRISTOPHER R. AIKEN, Professor of Microbiology and Immunology

B.S. (California, Santa Barbara 1983); Ph.D. (Illinois 1991) [1995]

DAVID C. AIREY, Research Assistant Professor of Pharmacology

B.S. (Maryland 1992); Ph.D. (Cornell 1999) [2005]

JOSEPH AKAMAH, Assistant Clinical Professor of Medicine

M.D. (Ghana 1993); M.P.H. (Illinois, Chicago 2005) [2009]

WENDELL SCOTT AKERS, Associate Clinical Professor of Medicine; Clinical Associate Professor of Nursing

Pharm.D. (Tennessee 1991); Ph.D. (Kentucky 1998) [2007]

FAITH WURM AKIN, Adjunct Associate Professor of Hearing and Speech Sciences B.A. (Tennessee 1984); M.S. (Texas, Dallas 1987); Ph.D. (Vanderbilt 1997) [2002]

JUDITH B. AKIN, Assistant Clinical Professor of Psychiatry Pharm.D., M.D. (University of Arkansas for Medical Sciences 1982, 1986) [1990]

SYLVIE A. AKOHOUE, Adjunct Assistant Professor of Medicine

B.S. (National 1986); M.S. (California State, Fresno 1990); Ph.D. (Pennsylvania State 2003) [2008]

AYMAN AL-HENDY, Professor of Obstetrics and Gynecology at Meharry Medical College; Adjunct Professor of Radiology and Radiological Sciences at Vanderbilt

M.D. (Zagazig [Egypt] 1986); Ph.D. (Turku [Finland] 1992) [2008]

TAMMY SUGGS ALBERICO, Assistant Clinical Professor of Psychiatry

B.S. (Georgia 1998); M.D. (Mercer 2002) [2009]

NORMAN ALBERTSON, Clinical Instructor in Pediatrics

B.S. (Texas A & M 1981); M.D. (Texas 1991) [1995]

DONALD J. ALCENDOR, Assistant Professor of Cancer Biology at Meharry Medical College; Adjunct Assistant Professor of Cancer Biology at Vanderbilt

B.Sc. (Southern 1983); M.S. (Louisiana State 1986); Ph.D. (California, Davis 1992) [2009]

KARLI ALDERSON, Instructor in Clinical Family Medicine

B.A., M.D. (Kansas 1998, 2002) [2007]

SAMIR LUTF ALERYANI, Instructor in Pathology

B.S. (Sana'a [Yemen] 1988); M.S. (Northeastern 1994); Ph.D. (Cleveland State 1999) [2009]

DAVID DWIGHT ALFERY, Adjunct Associate Professor of Anesthesiology

B.A. (Tulane 1970); M.D. (Louisiana State 1976) [1995]

ROBERT H. ALFORD, Clinical Professor of Medicine

B.A., M.D. (Vanderbilt 1958, 1961) [1967]

WILLIAM C. ALFORD, JR., Clinical Professor of Cardiac and Thoracic Surgery, Emeritus B.A., M.D. (Vanderbilt 1952, 1955) [1962]

HOLLY M. ALGOOD, Research Instructor in Medicine

B.S. (Mt. Union 1998); Ph.D. (Pittsburgh 2003) [2008]

JOHN T. ALGREN, Professor of Anesthesiology; Professor of Pediatrics; Director, Division of Pediatric Anesthesiology

B.S. (Kentucky 1971); M.D. (Louisville 1975) [1999]

SYED ASAD ALI, Adjunct Assistant Professor of Pediatrics M.D. (Aga Khan 2001) [2009]

YASMINE SUBHI ALI, Assistant Professor of Medicine at Meharry Medical College;

Assistant Clinical Professor of Medicine at Vanderbilt

B.A., M.D., M.S.C.I. (Vanderbilt 1997, 2001, 2007) [2008]

CONSTANTIN ALIFERIS, Adjunct Associate Professor of Biomedical Informatics; Adjunct Associate Professor of Biostatistics

M.D. (Athens 1990); M.S., Ph.D. (Pittsburgh 1994, 1998) [2000]

MUKTAR HASSAN ALIYU, Assistant Professor of Preventive Medicine; Assistant Professor of Family Medicine

M.D. (Ahmadu Bello [Nigeria] 1994); M.P.H. (George Washington 2002); Dr.P.H. (Alabama, Birmingham 2005) [2009]

ANNA MARIE ALLEN, Assistant Professor of Emergency Medicine

B.S., M.D. (East Tennessee State 1982, 1986) [1998]

DAVID W. ALLEN, Assistant Clinical Professor of Medicine

B.S. (Vanderbilt 1984); M.D. (East Tennessee State 1989) [1994]

GEORGE S. ALLEN, William F. Meacham Professor of Neurological Surgery and Chair of the Department

B.A. (Wesleyan 1963); M.D. (Washington University 1967); Ph.D. (Minnesota 1975) [1984]

GREGG P. ALLEN, Clinical Instructor in Family Medicine

A.B. (Oberlin 1974); M.D. (Jefferson Medical College 1978) [1998]

JAMES D. ALLEN, Associate Clinical Professor of Oral and Maxillofacial Surgery B.A., D.D.S. (Tennessee 1980, 1984) [1994]

JOSEPH H. ALLEN, JR., Professor of Radiology and Radiological Sciences, Emeritus M.D. (Washington University 1948) [1956]

NEWTON PERKINS ALLEN, JR., Assistant Clinical Professor of Medicine

B.S. (Davidson 1982); M.D. (Vanderbilt 1986) [2003]

PATRICIA FLYNN ALLEN, Adjunct Assistant Professor of Hearing and Speech Sciences B.A. (Fordham 1970); M.A., M.S. (Vanderbilt 1973, 1976) [1990]

TERRY R. ALLEN, Assistant Clinical Professor of Surgery

B.A. (Swarthmore 1962); M.D. (Virginia 1966) [1974]

FRED ALLISON, JR., Professor of Medicine, Emeritus

B.S. (Alabama Polytechnic Institute, Auburn 1944); M.D. (Vanderbilt 1946) [1987]

BAN MISHU ALLOS, Assistant Professor of Medicine; Assistant Professor of Preventive Medicine

B.A. (Emory 1981); M.D. (Tennessee, Memphis 1985) [1993]

SUHAIL H. ALLOS, Assistant Clinical Professor of Surgery

M.D. (University of Mosul [Iraq] 1980) [2000]

JOHN W. ALLRED III, Assistant Professor of Radiology and Radiological Sciences B.S., M.D. (Alabama 1996, 2000) [2005]

LAUREL V. ALSENTZER, Assistant Clinical Professor of Pediatrics

B.S.N. (Vanderbilt 1983); M.D. (Medical College of Pennsylvania 1987) [1990]

HERNAN O. ALTAMAR, Instructor in Urologic Surgery

B.S. (United States Naval Academy 1993); M.D. (Uniform Services University of the Health Sciences 1997) [2008]

DARRINGTON PHILLIPS ALTENBERN, Clinical Instructor in Obstetrics and Gynecology B.A. (North Carolina 1984); M.D. (Vanderbilt 1988) [1992]

JOSEPH M. AMANN, Research Assistant Professor of Cancer Biology

B.S. (Pennsylvania State 1985); Ph.D. (Alabama 1996) [2003]

KALYANI AMARNATH, Research Assistant Professor of Pathology

B.S., M.S. (Madras Christian 1968, 1970); Ph.D. (Utah 1981) [1995] VENKATARAMAN AMARNATH, Research Associate Professor of Pathology

B.S. (Madras Christian 1968); M.S. (Indian Institute of Technology 1970); Ph.D. (Carnegie-Mellon 1973) [1995]

KATAYOUN I. AMIRI, Research Instructor in Cancer Biology

B.A. (Wittenberg 2000); M.D. (Meharry Medical 2005) [2008]

LORI L. AMIS, Clinical Instructor in Pediatrics

B.S. (Auburn 1989); M.D. (Tennessee, Memphis 1993) [1996]

J. DAVID AMLICKE, Assistant Clinical Professor of Medicine

B.A. (Williams 1980); M.D. (Northwestern 1988) [2007]

HANBING AN, Research Instructor in Otolaryngology

B.S., M.S. (Liaoning Normal [China] 1993, 1996); Ph.D. (Northeast Normal [China] 1999) [2006]

VINITA ANAND, Assistant Clinical Professor of Medicine

M.B., B.S. (Bangalore [India] 1978) [1990]

ADAM W. ANDERSON, Associate Professor of Biomedical Engineering; Associate Professor of Radiology and Radiological Sciences; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Williams 1982); M.S., M.Phil., Ph.D. (Yale 1984, 1986, 1990) [2002]

ALEXANDER R. A. ANDERSON, Visiting Professor of Cancer Biology

B.Sc. (Paisley 1991); M.Sc., Ph.D. (Dundee 1992, 1995) [2005]

ANNE F. ANDERSON, Clinical Instructor in Obstetrics and Gynecology

B.S. (Rhodes 1992); M.D. (Vanderbilt 1996) [2000]

JAMES C. ANDERSON, Assistant Clinical Professor of Pediatrics

B.A. (Illinois Wesleyan 1985); M.D. (Vanderbilt 1989) [1993]

JEFFREY VAN ANDERSON, Clinical Instructor in Obstetrics and Gynecology

B.S., M.D. (Louisiana State 1989, 1992) [2008]

JOHN E. ANDERSON, Assistant Clinical Professor of Medicine

B.A. (Virginia 1982); M.D. (Vanderbilt 1986) [1989]

JULIA L. ANDERSON, Assistant Professor of Pediatrics

B.S. (University of the South 1996); M.D. (Mercer 2001); M.S.C.I. (Vanderbilt 2008) [2006]

PHILIP BRADLEY ANDERSON, Assistant Clinical Professor of Psychiatry

B.S. (Oregon 1982); M.D. (Vanderbilt 1986) [2003]

TED L. ANDERSON, Associate Professor of Obstetrics and Gynecology; Associate Clinical Professor of Nursing

B.S., M.S. (Southern Mississippi 1976, 1978); Ph.D., M.D. (Vanderbilt 1985, 1993) [1998]

CLAUDIA D. ANDL, Assistant Professor of Surgery; Assistant Professor of Cancer Biology M.S. (Heidelberg [Germany] 1997); Ph.D. (Essen [Germany] 2001) [2008]

THOMAS ANDL, Assistant Professor of Medicine

M.S., Ph.D. (Ruprecht-Karls, Heidelberg [Germany] 1994, 1998) [2008]

ROCHELLE FILKER ANDREOTTI, Professor of Clinical Radiology and Radiological Sciences; Associate Professor of Clinical Obstetrics and Gynecology

B.S., M.D. (Florida 1975, 1978) [2004]

CLAUDIA S. ANDREWS, Clinical Professor of Pediatrics

A.B., M.D. (Washington University 1968, 1972) [2006]

EDSON JAMES ANDREWS, JR., Associate Professor of Clinical Radiology and Radiological Sciences; Associate Professor of Obstetrics and Gynecology

B.A. (Haverford 1959); M.D. (Florida 1966) [2002]

HEATHER L. ANDREWS, Research Assistant Professor of Physics; Research Assistant Professor of Biomedical Informatics

B.A. (Whitman College 1995); Ph.D. (Dartmouth 2003) [2006]

JEFFREY C. ANDREWS, Associate Professor of Obstetrics and Gynecology B.Sc., M.D. (Toronto 1979, 1983) [2004]

MOHAMMAD SIB ANSARI, Associate in Radiology and Radiological Sciences B.S., M.S. (Karachi [Pakistan] 1977, 1978) [2002]

GOVINDARAJ ANUMANTHAN, Research Assistant Professor of Urologic Surgery B.S., M.Phil., M.S., Ph.D. (Madras [India] 1990, 1996, 1998, 2001) [2009]

TROY M. APPLE, Instructor in Clinical Pathology

B.S. (Rose-Hulman Institute of Technology 1986); D.V.M. (Tennessee College of Veterinary Medicine 1998) [2008]

BARBARA A. AQUINO, Assistant Clinical Professor of Pediatrics

M.D. (Santo Tomas 1978) [2005]

AMIR M. ARAIN, Assistant Professor of Neurology

M.D. (Karachi [Pakistan] 1987); B.S. (Pakistani Community College 1994) [2000]

GEORGE W. ARANA, Adjunct Professor of Psychiatry

A.B. (Princeton 1970); M.D. (Tufts 1974) [2008]

R. RAO ARASADA, Research Instructor in Medicine

B.Sc. (Maharaja Autonomous 1993); M.Sc. (Hyderabad 1996); Ph.D. (Indian Institute of Science 2002) [2006]

PATRICK G. ARBOGAST, Associate Professor of Biostatistics; Assistant Professor of Preventive Medicine

B.S. (Washington State 1989); M.S., Ph.D. (University of Washington 1997, 2000) [2000]

KRISTIN R. ARCHER, Assistant Professor of Orthopaedics and Rehabilitation

B.A. (Colby College 1993); M.S.P.T., D.P.T. (Colorado Health Science Center 2000, 2004); Ph.D. (Johns Hopkins 2007) [2008]

KAREN MICHELLE ARDISSON, Associate in Urologic Surgery

B.A. (Kentucky 1993); M.S.N. (Vanderbilt 2004); R.N. [2005]

MARY ANN THOMPSON ARILDSEN, Assistant Professor of Pathology

B.S., M.S. (Yale 1977, 1977); M.D., Ph.D. (Pennsylvania 1983, 1983) [2001]

RONALD CURTIS ARILDSEN, Associate Professor of Radiology and Radiological Sciences B.S., M.S. (Yale 1977, 1977); M.D. (Columbia 1981) [1992]

COLIN ARMSTRONG, Assistant Clinical Professor of Psychiatry; Research Assistant Professor of Nursing

B.S.N. (California State 1990); Ph.D. (California, San Diego 1998); R.N. [2002]

RICHARD N. ARMSTRONG, Professor of Biochemistry; Professor of Chemistry

B.S. (Western Illinois 1970); Ph.D. (Marquette 1975) [1995]

CASEY C. ARNEY, Assistant Clinical Professor of Psychiatry

B.A. (Kentucky 1984); M.D. (Louisville 1988) [1993]

DONALD HAYES ARNOLD, Associate Professor of Pediatrics; Associate Professor of Emergency Medicine

B.A., M.D. (Emory 1975, 1979); M.P.H. (Johns Hopkins 2006) [2002]

DOMINIK ARONSKY, Associate Professor of Biomedical Informatics; Associate Professor of Emergency Medicine

M.D. (Berne [Switzerland] 1989); Ph.D. (Utah 2000) [2000]

CARLOS L. ARTEAGA, Vice Chancellor's Professor of Breast Cancer Research; Professor of Medicine; Professor of Cancer Biology

M.D. (Guayaquil 1979) [1988]

CATHERINE E. ARTHUR, Assistant Professor of Pediatrics

B.S. (Oakwood 1979); M.D. (Meharry Medical 1983) [1999]

SCOTT T. ARTHUR, Assistant Professor of Clinical Orthopaedics and Rehabilitation B.S. (Tennessee 1996); M.D. (Tennessee, Memphis 2000) [2009]

MUHAMMAD ASAD, Assistant Clinical Professor of Medicine

F.Sc. (Government College, Multan [Pakistan] 1986); M.D. (Nishtar Medical College, Multan [Pakistan] 19192) [2009]

NAVAID ASAD, Assistant Professor of Clinical Medicine M.D. (Russian State Medical, Moscow 1994) [2009]

SAEEDAH ASAF, Assistant Professor of Anesthesiology M.D. (Rawalpindi Medical College 1996) [2007]

JUDY LYNN ASCHNER, Professor of Pediatrics; Julia Carell Stadler Professor of Neonatology; Director, Division of Neonatology; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Union 1977); M.D. (Rochester 1981) [2004]

MICHAEL ASCHNER, Gray E. B. Stahlman Professor of Neuroscience; Professor of Pediatrics; Professor of Pharmacology; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience B.S., M.S., Ph.D. (Rochester 1980, 1983, 1985) [2004]

NATHAN EDWARD ASHBY, Assistant Professor of Anesthesiology B.A. (Vanderbilt 1998); M.D. (Tennessee 2003) [2008]

JORDAN ROSS ASHER, Assistant Clinical Professor of Medicine

B.S. (Emory 1986); M.D. (Vanderbilt 1990); M.S. (Texas, Dallas 2001) [2001]

JOHN R. ASHFORD, Adjunct Assistant Professor of Hearing and Speech Sciences B.S., M.S. (Southern Mississippi 1967, 1968); Ph.D. (Vanderbilt 1999) [1985]

LINDA GAYLE ASHFORD, Assistant Professor of Pediatrics; Assistant Professor of Psychology, College of Arts and Science; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S., M.S. (Tennessee 1971, 1973); Ph.D. (Vanderbilt 1988) [1995]

DANIEL H. ASHMEAD, Professor of Hearing and Speech Sciences; Associate Professor of Psychology, College of Arts and Science; Investigator, Vanderbilt Kennedy Center for Research on Human Development

Sc.B. (Brown 1976); Ph.D. (Minnesota 1983) [1984]

AUDREY HUDSON ATKINS, Clinical Instructor in Pediatrics

B.S. (Samford 1996); M.D. (South Alabama 2001) [2008]

ANABEL ROBERTSON ATKINSON, Associate in Orthopaedics and Rehabilitation B.A. (George Washington 2005); M.S.N. (Vanderbilt 2008); R.N. [2009]

JAMES B. ATKINSON III, Professor of Pathology

B.A., M.D., Ph.D. (Vanderbilt 1973, 1981, 1981) [1985]

MARY E. ATUBRA, Clinical Instructor in Pediatrics

B.S., M.D. (Science and Technology [Ghana] 1985, 1988) [2009]

ROBERT WILLIAMS ATWOOD, Assistant in Anesthesiology

B.S. (Alabama 1983); C.R.N.A. [2003]

CAROLYN SUE AUBREY, Associate in Orthopaedics and Rehabilitation

B.S.N. (Evansville 1973); M.S.N. (Vanderbilt 1974); R.N. [1991]

JOSEPH M. AULINO, Assistant Professor of Radiology and Radiological Sciences

B.S. (Richmond 1991); M.D. (Medical College of Virginia 1995) [2001]

THOMAS M. AUNE, Professor of Medicine; Associate Professor of Microbiology and Immunology

B.S. (Rhodes 1973); Ph.D. (Tennessee, Memphis 1976) [1995]

ERIC D. AUSTIN, Assistant Professor of Pediatrics

B.A. (Pennsylvania 1996); M.D. (Emory 2001) [2008]

LINDA L. AUTHER, Adjunct Assistant Professor of Hearing and Speech Sciences

B.S., M.Ed. (James Madison 1986, 1988); Ph.D. (Vanderbilt 1996) [1997]

GEORGE R. AVANT, Associate Professor of Medicine

B.S., M.D. (North Carolina 1963, 1967) [1974]

MALCOLM JOHN AVISON, Professor of Radiology and Radiological Sciences; Professor of Neurology; Professor of Pharmacology; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Cambridge 1979); M.Phil., Ph.D. (Yale 1985, 1986) [2003]

JOSEPH ALBERT AWAD, Associate Professor of Medicine; Associate Professor of Pharmacology

B.A. (Vanderbilt 1980); M.D. (Washington University 1985) [1992]

MICHAEL JOSEPH AYAD, Assistant Professor of Neurological Surgery; Assistant Professor of Radiology and Radiological Sciences

B.S. (Stanford 1981); Ph.D., M.D. (California, Los Angeles 1994, 1994) [2005]

DAVID W. AYER, Assistant Clinical Professor of Psychiatry

B.S., M.A. (Middle Tennessee State 1994, 1998); Ph.D. (Western Michigan 2007) [2009]

GREGORY DANIEL AYERS, Senior Associate in Biostatistics

B.S. (Virginia Tech 1982); M.S., M.S. (Louisiana State 1985, 1990) [2006]

SARAH B. AYLOR, Assistant Clinical Professor of Psychiatry

B.A., M.D. (Vanderbilt 1978, 1983) [1987]

KAREN LUBELL AYRES, Clinical Instructor in Pediatrics

B.S. (Princeton 1997); M.D. (Texas, San Antonio 2001) [2004]

NABIL J. AZAR, Assistant Professor of Neurology

B.S., M.D. (American University of Beirut 1993, 2000) [2007]

VLADIMIR R. BABAEV, Research Assistant Professor of Medicine

M.D. (Volgograd Medical Institute 1972); Ph.D., D.Sci. (U.S.S.R. Academy of Medical Science 1979, 1992) [2000]

KENNETH S. BABE, JR., Assistant Clinical Professor of Medicine

B.S. (Pennsylvania State 1987); M.D. (Vanderbilt 1991) [1997]

BRIAN O. BACHMANN, Assistant Professor of Chemistry; Assistant Professor of Biochemistry B.S. (Virginia Polytechnic Institute 1992); M.S. (Southern Methodist 1994); M.A., Ph.D. (Johns Hopkins 1997, 2000) [2003]

DANA BACKLUND, Assistant Professor of Medicine

B.S., M.D. (North Carolina, Chapel Hill 1997, 2003) [2009]

DAVID M. BADER, Gladys Parkinson Stahlman Professor of Cardiovascular Research; Professor of Medicine; Professor of Cell and Developmental Biology

B.A. (Augustana 1974); Ph.D. (North Dakota 1978) [1995]

JAYANT BAGAI, Assistant Professor of Medicine

M.D. (Delhi [India] 1994) [2008]

KANIKA BAGAI, Assistant Professor of Neurology

M.B.B.S. (Delhi [India] 1995) [2004]

SARAH M. BAGGETTE, Assistant in Radiology and Radiological Sciences

B.A. (Birmingham-Southern 1993); B.S.N. (Alabama 1997); M.S.N. (Johns Hopkins 2001) [2009]

NICOLE O. BAGGOTT, Clinical Instructor in Pediatrics

B.S. (Vanderbilt 1995); M.D. (Tulane 2000) [2004]

ELIZABETH WARD BAILES, Assistant Clinical Professor of Pediatrics

B.S., M.D. (Kentucky 1998, 2002) [2005]

JENNIFER C. BAKER, Assistant in Medicine

B.S.N. (St. Paul College of Iloilo, Philippines 1987); M.S.N. (California, Los Angeles 2000) [2006]

MICHAEL T. BAKER, Assistant Professor of Medicine

B.A. (Tennessee 1986); M.D. (Tennessee, Memphis 1990) [2002]

RAMYA BALACHANDRAN, Research Assistant Professor of Otolaryngology

B.E. (Madras [India] 2001); M.S., Ph.D. (Vanderbilt 2003, 2008) [2008]

JORGE M. BALAGUER, Assistant Professor of Cardiac Surgery

M.D. (Buenos Aires 1985) [2004]

H. SCOTT BALDWIN, Katrina Overall McDonald Professor of Pediatrics; Professor of Cell and Developmental Biology

B.A., M.D. (Virginia 1977, 1981) [2002]

ROBERT LEWIS BALDWIN, Adjunct Assistant Professor of Hearing and Speech Sciences B.A. (Rhodes 1993); M.S. (Tennessee, Knoxville 1997); M.A., Ph.D. (Gallaudet 2001, 2002) [2007]

RONALD M. BALDWIN, Research Associate Professor of Radiology and Radiological Sciences B.S., Ph.D. (California, Berkeley 1969, 1974) [2004]

CHARLES A. BALL, Clinical Instructor in Family Medicine

B.S. (Tennessee, Martin 1973); M.D. (Tennessee, Memphis 1976) [1998]

ROBERT H. BALL, Associate Clinical Professor of Obstetrics and Gynecology

B.A., M.A. (Cambridge [England] 1982, 1985); M.D. (Oxford [England] 1985) [2007]

STEPHEN K. BALL, Assistant Professor of Cardiac Surgery

B.S. (Mississippi State 1983); M.D. (Mississippi 1987) [2007]

BILLY R. BALLARD, Professor of Pathology at Meharry Medical College; Professor of Pathology at Vanderbilt

B.S. (Southern 1961); D.D.S., M.D. (Meharry Medical 1965, 1980) [2004]

DEAN WILLIAMS BALLARD, Professor of Microbiology and Immunology

B.S. (Marshall 1978); M.S., Ph.D. (Illinois 1981, 1984) [1992]

JEANNE F. BALLINGER, Assistant Clinical Professor of Surgery at St. Thomas Medical Center

B.A. (Texas 1973); M.D. (Harvard 1977) [1982]

JEFFREY R. BALSER, Vice Chancellor for Health Affairs; Dean of the School of Medicine; James Tayloe Gwathmey Clinician-Scientist Professor; Interim Chair, Department of Medical Education and Administration; Professor of Anesthesiology; Professor of Pharmacology; Investigator, Center for Molecular Neuroscience B.S.E. (Tulane 1984); M.D., Ph.D. (Vanderbilt 1990, 1990) [1998]

THOMAS A. BAN, Professor of Psychiatry, Emeritus

M.D. (Budapest 1954) [1976]

ARNA BANERJEE, Assistant Professor of Anesthesiology; Assistant Professor of Surgery M.D. (NRS Medical College, Calcutta 1994) [2003]

SHICHUN BAO, Assistant Professor of Medicine

M.D. (Shanghai Medical 1989); Ph.D. (Indiana 1997) [2005]

SHARI BARKIN, Professor of Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development

A.B. (Duke 1986); M.D. (Cincinnati 1991); M.S.H.S. (California, Los Angeles 1998) [2006]

ALISON B. BARLOW, Instructor in Obstetrics and Gynecology; Instructor in Clinical Nursing B.S.N., M.S.N. (Vanderbilt 1995, 2000); R.N. [2005]

GREGORY NEAL BARNES, Assistant Professor of Neurology; Assistant Professor of Pediatrics B.S. (Vanderbilt 1985); Ph.D., M.D. (Kentucky 1990, 1992) [2004]

DONALD R. BARNETT, Clinical Instructor in Obstetrics and Gynecology

A.B., M.D. (West Virginia 1964, 1968) [1978]

JOEY V. BARNETT, Professor of Pharmacology; Professor of Medicine; Professor of Pediatrics B.S. (Indiana State [Evansville] 1980); Ph.D. (Vanderbilt 1986) [1992]

ROBERT B. BARNETT, Assistant Clinical Professor of Urologic Surgery

B.A., M.D. (Vanderbilt 1966, 1969) [1974]

DANIEL A. BAROCAS, Instructor in Urologic Surgery

B.A., B.S.E. (Pennsylvania 1992, 1992); M.D. (Johns Hopkins 2001) [2007]

MICHAEL J. BARON, Assistant Clinical Professor of Psychiatry

B.A. (Emory 1981); M.D., M.P.H. (Tulane 1986, 1986) [2003]

FREDERICK E. BARR, Associate Professor of Pediatrics; Associate Professor of Anesthesiology

B.S. (West Virginia 1984); M.D. (Virginia 1988) [1995]

RALPH I. BARR, Assistant Clinical Professor of Psychiatry

B.A., M.D. (Vanderbilt 1968, 1972) [1978]

DONNA MARIE BARRETT, Clinical Instructor in Psychiatry

B.S.N. (Molloy College 2000); M.S. (SUNY, Stony Brook 2004) [2008]

TYLER W. BARRETT, Assistant Professor of Emergency Medicine

B.S. (Michigan 1997); M.D. (Vanderbilt 2001) [2005]

ANNE P. BARTEK, Assistant Professor of Psychiatry

B.S., M.D. (Michigan 1975, 1979) [1990]

DAVID BARTON, Clinical Professor of Psychiatry

B.S. (Alabama 1958); M.D. (Tulane 1962) [1971] LYNN P. BARTON, Assistant Clinical Professor of Psychiatry

B.A. (Tulane 1963); M.S.S.W. (Tennessee 1977) [1986]

JOHN ALLAN BARWISE, Assistant Professor of Clinical Anesthesiology; Director, Division of Critical Care Anesthesia; Assistant Professor of Neurological Surgery

M.B., Ch.B. (Zimbabwe 1983) [1998]

TISHA BARZYK, Associate in Orthopaedics and Rehabilitation

B.S.N. (Middle Tennessee State 2005); M.S.N. (Vanderbilt 2007); R.N. [2007]

DENNIS J. BASILA, Clinical Instructor in Pediatrics

B.A. (Notre Dame 1999); M.D. (St. George [Grenada] 2004) [2009]

JULIE A. BASTARACHE, Assistant Professor of Medicine

B.A. (Holy Cross 1996); M.D. (Vanderbilt 1999) [2005]

SAMUEL R. BASTIAN, Clinical Instructor in Pediatrics

B.S. (Middle Tennessee State 1984); M.D. (Tennessee, Memphis 1989) [1996]

CHRISTOPHER C. BATHURST, Instructor in Radiology and Radiological Sciences B.S., M.D. (Texas A & M 2000, 2004) [2009]

JAMES H. BATSON, Clinical Instructor in Pediatrics; Clinical Instructor in Nursing B.A. (Transylvania 1988); M.D. (East Tennessee State 1992) [2003]

ROBERT BAUM, Assistant Professor of Orthopaedics and Rehabilitation; Health Professions Adviser

B.S., M.S. (SUNY, Buffalo 1970, 1972); M.D. (Cincinnati 1988) [1996]

ELIZABETH A. BAXTER, Assistant Clinical Professor of Psychiatry

B.S. (Rhodes 1985); M.D. (Vanderbilt 1990) [2003]

CURTIS L. BAYSINGER, Associate Professor of Anesthesiology

B.S., M.D. (Vanderbilt 1974, 1978) [2003]

SUSAN E. BEAIRD, Assistant in Neurology; Instructor in Nursing

B.S.N. (Middle Tennessee State 2006); M.S.N. (Vanderbilt 2007); R.N., C.P.N.P. [2008]

XYLINA D. BEAN, Clinical Professor of Pediatrics at Vanderbilt; Professor of Pediatrics at Meharry Medical College

B.A. (Mount Holyoke 1969); M.D. (Pennsylvania 1973) [2007]

R. DANIEL BEAUCHAMP, Chair, Section of Surgical Sciences; John Clinton Foshee Distinguished Professor of Surgery; Professor of Cell and Developmental Biology; Professor of Cancer Biology

B.S. (Texas Tech 1978); M.D. (Texas 1982) [1994]

DAWN BEAULIEU, Assistant Professor of Medicine

B.S. (Tennessee 1993); M.D. (Tennessee, Memphis 2003) [2009]

MARK W. BECHER, Associate Professor of Pathology; Associate Professor of Neurological Surgery

B.S. (Dickinson 1982); M.D. (Nebraska 1988) [2004]

JOY E. BECK, Assistant Professor of Pediatrics

B.S. (Grinnell 1996); M.S., M.D. (Pittsburgh 2002, 2006) [2008]

WARREN ERNEST BECK, Assistant Professor of Medical Education and Administration; Director of Finance, Vanderbilt University Hospital

B.A. (Rutgers 1977); M.B.A. (Farleigh Dickinson 1985) [1999]

SAMUEL S. BECKER, Clinical Instructor in Otolaryngology

B.A. (Amherst 1991); M.A. (Boston University 1995); M.D. (California, San Francisco 2002) [2007]

BETTINA M. BEECH, Adjunct Associate Professor of Medicine; Associate Professor of Surgery; Associate Professor of Pediatrics

B.A. (Temple 1990); M.P.H., Dr.P.H. (Texas Health Science Center 1992, 1995) [2006]

DERRICK J. BEECH, Professor of Surgery at Meharry Medical College; Professor of Surgery at Vanderbilt

B.A. (Duke 1984); M.D. (Medical College of Virginia 1988) [2006]

ROBERT O. BEGTRUP, Clinical Professor of Psychiatry

M.D. (Tulane 1966) [2004]

RICHARD S. BELCHER, Assistant Professor of Emergency Medicine

B.A. (Tennessee, Chattanooga 1985); M.D. (Tennessee 1989) [1992] MICHAEL A. BELFORT, Clinical Professor of Obstetrics and Gynecology

M.D. (Witwatersrand 1981); Ph.D. (Cape Town 1990); Ph.D. (Karolinska Institute 2001)

ABBES BELKHIRI, Research Assistant Professor of Surgery

M.Phil. (Reading, U.K. 1988); Ph.D. (Manitoba [Canada] 1995) [2005]

DEANNA SMITH BELL, Clinical Instructor in Pediatrics

B.S. (Belmont 1996); M.D. (East Tennessee State 2000) [2003]

LEWIS J. BELLARDO, Clinical Instructor in Obstetrics and Gynecology

B.A. (Vanderbilt 1987); M.D. (Kentucky 1991) [2007]

HARVEY W. BENDER, JR., Professor of Cardiac and Thoracic Surgery, Emeritus M.D. (Baylor 1959) [1971]

NANCY MAYER BENEGAS, Assistant Professor of Clinical Ophthalmology and Visual Sciences

B.A. (Harvard 1988); M.D. (Minnesota 1993) [2009]

JOHN G. BENITEZ, Associate Professor of Clinical Medicine

B.A., M.D. (Southern Illinois 1978, 1981); M.P.H. (Pittsburgh 1995) [2008]

MARIA C. BENITEZ, Clinical Instructor in Pediatrics

B.S. (University of the Philippines 1985); M.D. (University of the East Ramon-Magsaysay Memorial Medical Center 1989) [2004]

KELLY A. BENNETT, Assistant Professor of Obstetrics and Gynecology

B.S. (Concordia [Canada] 1988); B.S., M.D. (Memorial [Canada] 1990, 1992) [2009]

MARC L. BENNETT, Assistant Professor of Otolaryngology

B.S. (Emory 1996); M.D. (Johns Hopkins 2000) [2007]

KELLY S. BENNIE, Clinical Instructor in Pediatrics

B.S. (Miami [Ohio] 1988); M.D. (Tennessee, Memphis 1994) [1997]

RICHARD K. P. BENNINGER, Research Instructor in Molecular Physiology and Biophysics M.S.C.I., Ph.D. (Imperial College, London [U.K.] 2002, 2006) [2009]

MARGARET MCCULLOUGH BENNINGFIELD, Assistant Professor of Psychiatry; Assistant Professor of Pediatrics

B.A. (Washington University 1996); M.D. (Vanderbilt 2002) [2008]

KIMBERLY C. BERGERON, Clinical Instructor in Pediatrics

B.S. (Millsaps 1983); M.D. (Mississippi 1993) [1998]

ROBERT J. BERKOMPAS, Assistant Clinical Professor of Medicine

B.S. (Calvin 1982); M.D. (Texas Southwestern 1986) [1990]

JORDAN D. BERLIN, Associate Professor of Medicine; Clinical Director, Gastrointestinal Oncology Program

B.S., M.D. (Illinois 1985, 1989) [1999]

M. LAWRENCE BERMAN, Professor of Anesthesiology, Emeritus

B.S. (Connecticut 1951); M.S., Ph.D. (University of Washington 1954, 1956); M.D. (North Carolina 1964) [1974]

ROBERT J. BERMAN, JR., Clinical Instructor in Pediatrics

B.A. (Rice 1993); M.D. (Tennessee, Memphis 1997) [2002]

SUZANNE KATHLEEN BERMAN, Clinical Instructor in Pediatrics

B.A. (Rice 1994); M.D. (Tennessee, Memphis 1998) [2002]

GORDON R. BERNARD, Melinda Owen Bass Professor of Medicine; Associate Vice Chancellor for Research; Senior Associate Dean for Clinical Sciences

B.S. (Southern [Louisiana] 1972); M.D. (Louisiana State 1976) [1981]

WILLIAM BERNET, Professor of Psychiatry; Director, Division of Forensic Psychiatry;

Member, Vanderbilt Kennedy Center for Research on Human Development

A.B. (Holy Cross 1963); M.D. (Harvard 1967) [1992]

JAMES MICHAEL BERRY, Professor of Anesthesiology

B.A. (Rice 1980); M.D. (Texas, Houston 1984) [2003]

PHILLIP D. BERTRAM, Associate Clinical Professor of Medicine

B.S. (Tennessee Technological 1966); M.D. (Tennessee 1968) [1983]

TYLER W. BERUTTI, Assistant Professor of Pediatrics; Assistant Professor of Anesthesiology

B.E. (Vanderbilt 1995); M.S. (Michigan 1997); M.D. (Ohio State 2001) [2006]

FRED H. BESS, Professor of Hearing and Speech Sciences; Professor of Otolaryngology;

Member, Vanderbilt Kennedy Center for Research on Human Development A.B. (Carthage 1962); M.S. (Vanderbilt 1964); Ph.D. (Michigan 1970) [1976]

ALBERT H. BETH, Professor of Molecular Physiology and Biophysics

B.S. (Murray State 1974); Ph.D. (Vanderbilt 1977) [1977]

JON E. BETTS, Clinical Instructor in Pediatrics

B.S. (Vanderbilt 1992); M.D. (Alabama 2000) [2003]

JOHN H. BEVERIDGE, Professor of Radiology and Radiological Sciences, Emeritus B.S., M.D. (Virginia 1941, 1944) [1952]

NANCY GRAVES BEVERIDGE, Assistant Clinical Professor of Pediatrics

B.A. (North Carolina 1984); M.D. (Wake Forest 1988) [1991]

BRUCE ROBERT BEYER, Assistant Professor of Obstetrics and Gynecology

B.A., M.D. (Vanderbilt 1977, 1981) [1986]

DEBORAH D. BEYER, Clinical Instructor in Pediatrics

B.S. (Pepperdine 1987); M.D. (Vanderbilt 1991) [1995]

VIVAK BHATT, Instructor in Clinical Family Medicine

B.S. (Austin College 1995); M.D. (Ross 1999) [2006]

NEIL ADRI BHOWMICK, Assistant Professor of Urologic Surgery; Assistant Professor of Cancer Biology

B.S. (Florida 1991); Ph.D. (Georgia 1998) [2003]

ITALO BIAGGIONI, Professor of Medicine; Professor of Pharmacology M.D. (Universidad Peruana 'Cayetano Heredia' [Peru] 1980) [1986] ADRIANA BIALOSTOZKY, Assistant Professor of Pediatrics M.D. (National Autonomous University of Mexico 1994) [2004] JOSETTE MARIE BIANCHI-HAYES, Clinical Instructor in Pediatrics B.A. (Case Western Reserve 2002); M.D. (SUNY, Buffalo 2006) [2009] DAVID P. BICHELL, Professor of Clinical Cardiac Surgery B.A. (Johns Hopkins 1980); M.D. (Columbia 1987) [2006] JULIAN S. BICK, Assistant Professor of Anesthesiology B.S. (Virginia Commonwealth 2000); M.D. (Virginia 2004) [2009] LEONARD BICKMAN, Betts Professor of Psychology and Human Development; Professor of Psychology, Peabody College; Director, Center for Evaluation and Program Improvement, Peabody College; Professor of Psychiatry; Investigator, Vanderbilt Kennedy Center for Research on Human Development (On leave 2009/2010) B.S. (City College of New York 1963); M.A. (Columbia 1965); Ph.D. (City University of New York 1969) [1981] RONALD J. BIERNACKI, Associate in Ophthalmology and Visual Sciences B.A. (Pennsylvania State 1981); C.O.M.T. [2009] BRIAN STUART BIESMAN, Assistant Clinical Professor of Ophthalmology and Visual Sciences; Assistant Clinical Professor of Otolaryngology; Assistant Clinical Professor of Medicine B.S., M.D. (Michigan 1984, 1988) [2003] VIRGIL L. BIGHAM IV, Associate Clinical Professor of Pediatrics B.A., M.D. (Mississippi 1988, 1993) [2007] JAMES F. BIHUN, Assistant Professor of Emergency Medicine B.A., M.B.A. (Michigan 1985, 1994) [1999] CHERYL LEE RAINEY BILLANTE, Assistant Professor of Otolaryngology B.A. (Harding 1986); M.S., Ph.D. (Vanderbilt 1988, 1997) [2001] DANIEL H. BILLER, Assistant Professor of Obstetrics and Gynecology B.A. (Texas, Austin 1994); M.D. (Tennessee 1999) [2007] FREDERIC T. BILLINGS IV, Assistant Professor of Anesthesiology B.S. (Washington and Lee 1998); M.D. (Louisiana State 2002) [2008] JAMES L. BILLS, Assistant Professor of Medical Education and Administration B.S. (Maryland 1989); M.S. (Southern Mississippi 1996); M.Ed. (Vanderbilt 1998); Ed.D. (Tennessee State 2005) [2006] AWADH A. BINHAZIM, Associate Professor of Pathology at Meharry Medical College; Adjunct Associate Professor of Pathology at Vanderbilt D.V.M. (King Faisal 1983); M.S. (Nairobi [Kenya] 1987); Ph.D. (Georgia 1992) [1999] JOHN Q. BINHLAM, Adjunct Instructor in Medicine B.S. (Vanderbilt 1985); M.D. (Louisville 1990) [1997] DANIEL A. BIRCHMORE, Assistant Professor of Medicine B.S. (Georgia 1972); M.D. (Medical College of Georgia 1976) [1997] KELLY A. BIRDWELL, Instructor in Medicine B.A. (Tennessee 1997); M.D. (Emory 2001); M.S.C.I. (Vanderbilt 2008) [2009] JEFFREY BISHOP, Associate Professor of Medicine B.A. (Texas 1988); B.S. (Institute of Christian Studies 1989); M.D. (Texas, Houston 1993) [2007] EMMA M. BISSON, Assistant Professor of Radiology and Radiological Sciences B.A. (Boston University 1995); M.D. (Tulane 2003) [2008] SWATI BISWAS, Research Assistant Professor of Cancer Biology

Ph.D. (Jadavpur [India] 1998); B.S., M.S. (Kalyani [India] 2000, 2002) [2007]

DAVID L. BLACK, Associate Clinical Professor of Pathology B.S. (Loyola 1974); Ph.D. (Maryland 1982) [2009]

JENNIFER BLACK, Assistant Professor of Pathology

B.S., B.S. (University of the South 1999, 1999); M.D. (Emory 2003) [2009]

JENNIFER URBANO BLACKFORD, Assistant Professor of Psychiatry; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Florida State 1990); M.S., Ph.D. (Vanderbilt 1994, 1998) [1999]

JANET G. BLACKWELL, Clinical Instructor in Pediatrics

B.A. (David Lipscomb 1975); M.D. (Tennessee 1981) [1986]

TIMOTHY S. BLACKWELL, Professor of Medicine; Professor of Cell and Developmental Biology; Professor of Cancer Biology

B.A. (Vanderbilt 1983); M.D. (Alabama 1988) [1995]

JAMES L. BLAIR, Assistant Professor of Clinical Anesthesiology

B.S. (Iowa 1978); M.D. (University of Osteopathic Medicine and Health Sciences, Des Moines 1983) [2007]

MARY ANNE BLAKE, Clinical Instructor in Obstetrics and Gynecology

A.B. (Tennessee 1976); M.D. (Alabama, Birmingham 1982) [1987]

RANDOLPH BLAKE, Centennial Professor of Psychology, College of Arts and Science; Professor of Ophthalmology and Visual Sciences; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Texas 1967); M.A., Ph.D. (Vanderbilt 1969, 1972) [1988]

RANDY D. BLAKELY, Allan D. Bass Professor of Pharmacology; Professor of Psychiatry; Director, Center for Molecular Neuroscience; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Emory 1981); Ph.D. (Johns Hopkins 1987) [1995]

STEPHEN T. BLANKS, Senior Associate in Anesthesiology

B.S. (Middle Tennessee State 1972); C.R.N.A. [1987]

MARK J. BLITON, Associate Professor of Medicine; Associate Professor of Obstetrics and Gynecology; Chief, Clinical Ethics Consultation Service, VUMC

B.A. (Allegheny 1984); Ph.D. (Vanderbilt 1993) [1993]

ANNA L. BLOBAUM, Research Instructor in Biochemistry

B.A. (West Virginia 1999); Ph.D. (Michigan 2004) [2008]

KAREN C. BLOCH, Assistant Professor of Medicine; Assistant Professor of Preventive Medicine

B.S. (Duke 1986); M.D. (California, Berkeley 1990); M.P.H. (Virginia 1996) [1997]

JOHN J. BLOCK, Assistant Professor of Radiology and Radiological Sciences; Assistant Professor of Orthopaedics and Rehabilitation; Assistant Professor of Emergency Medicine B.S., M.D. (Oklahoma 1991, 1995) [2001]

WILLIAM J. BLOT, Professor of Medicine

B.S., M.S. (Florida 1964, 1966); Ph.D. (Florida State 1970) [2000]

JEFFREY D. BLUME, Associate Professor of Biostatistics

B.A. (SUNY, Buffalo 1994); Ph.D. (Johns Hopkins 1999) [2008]

JAMES F. BLUMSTEIN, University Professor of Constitutional Law and Health Law and Policy; Director, Center for Health Policy

B.A., LL.B., M.A. (Yale 1966, 1970, 1970) [1970]

MICHAEL L. BOBO, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.S., D.D.S. (Tennessee 1990, 1994); M.D. (Vanderbilt 1997) [2003]

WILLIAM V. BOBO, Assistant Professor of Psychiatry

B.S. (Northwest Missouri State 1994); M.D. (Missouri 1998) [2006]

PAUL E. BOCK, Professor of Pathology; Professor of Medicine

B.A. (California, San Diego 1971); Ph.D. (Washington University 1976) [1991]

ERIK M. BOCZKO, Assistant Professor of Biomedical Informatics

B.A. (Manhattanville 1998); Ph.D. (Carnegie Mellon 1995); Ph.D. (Georgia Institute of Technology 2002) [2002]

STANLEY J. BODNER, Associate Clinical Professor of Medicine; Clinical Associate Professor of Nursing

A.B. (Upsala 1963); M.D. (SUNY, Buffalo 1967); D.C.M.T. (London 1972) [1975]

FRANK H. BOEHM, Professor of Obstetrics and Gynecology; Clinical Professor of Nursing B.A., M.D. (Vanderbilt 1962, 1965) [1972]

PAOLO BOFFETTA, Adjunct Professor of Medicine

M.D., M.P.H. (Turin [Italy] 1985, 1988) [2002]

DEVIN L. BOGUS, Clinical Instructor in Pediatrics

B.A. (Fisk 1998); M.D. (Meharry Medical 2001) [2006]

JOHN DUNNING BOICE, JR., Professor of Medicine

B.S. (Texas, El Paso 1967); M.S. (Rensselaer Polytechnic Institute 1968); Sc.D. (Harvard 1977) [2000]

GEORGE C. BOLIAN, Professor of Psychiatry, Emeritus

A.B. (Chicago 1950); A.B. (Harvard 1952); M.D. (Tulane 1957) [1987]

ROGER A. BONAU, Associate Clinical Professor of Surgery at St. Thomas Medical Center B.A. (Emory 1977); M.D. (Tulane 1981) [1989]

JOHN B. BOND, Clinical Professor of Ophthalmology and Visual Sciences B.S. (Austin Peay State 1952); M.D. (Vanderbilt 1955) [1962]

JOHN B. BOND III, Assistant Professor of Ophthalmology and Visual Sciences B.S., M.D. (Vanderbilt 1979, 1984) [1989]

JENNIFER BONDURANT, Clinical Instructor in Pediatrics

B.E. (Vanderbilt 1993); M.D. (Tennessee, Memphis 1997) [2000]

ROBERT C. BONE, Adjunct Associate Professor of Surgery B.A., M.D., M.B.A. (Vanderbilt 1958, 1962, 1985) [2005]

CHAD S. BOOMERSHINE, Assistant Professor of Medicine

B.S. (Dayton 1994); M.D. (Ohio State 2002) [2006]

JOHN M. BOONE, JR., Instructor in Clinical Family Medicine

B.S., M.D. (Mississippi State 1985, 1991) [2008]

JEFFREY B. BOORD, Assistant Professor of Medicine B.S. (Miami 1992); M.D. (Wake Forest 1996) [2002]

MARK R. BOOTHBY, Professor of Microbiology and Immunology; Professor of Medicine B.S. (Wisconsin 1976); M.D., Ph.D. (Washington University 1983, 1983) [1992]

SCOTT C. BORINSTEIN, Assistant Professor of Pediatrics

B.S. (Richmond 1994); M.D., Ph.D. (Medical College of Virginia 2002, 2002) [2009]

DORIN BOGDAN BORZA, Assistant Professor of Medicine: Assistant Professor of Pathology M.Sc. (Bucharest [Romania] 1992); Ph.D. (Missouri, Kansas City 1997) [2002]

ESWARA C. V. BOTTA, Assistant Professor of Anesthesiology

M.D. (Andhra [India] 1976) [2007]

ALLYSON BOUDREAUX, Instructor in Obstetrics and Gynecology

B.S., M.D. (Louisiana State 2001, 2005) [2009]

OLIVIER GILLES BOUTAUD, Research Associate Professor of Pharmacology

B.S., M.S., Ph.D. (Université Louis Pasteur [France] 1990, 1991, 1996) [1998]

MICHAEL E. BOWEN, Instructor in Clinical Medicine; Instructor in Clinical Pediatrics B.A. (Wake Forest 2000); M.D., M.P.H. (Vanderbilt 2005, 2005) [2009]

CLIFFORD BOWENS, JR., Assistant Professor of Anesthesiology

B.S. (Illinois 1986); M.D. (Duke 1993) [2005]

MEGAN G. BOWLES, Assistant Professor of Clinical Medicine B.S., M.D. (Georgetown 1996, 2001) [2007]

TRAVIS CARL BOWLES, Assistant Professor of Medicine; Assistant Professor of Pediatrics B.S. (Texas A & M 1997); M.D. (Texas 2001) [2005]

AARON B. BOWMAN, Assistant Professor of Neurology; Investigator, Center for Molecular Neuroscience; Investigator, Vanderbilt Kennedy Center for Research on Human

B.S. (Brigham Young 1995); Ph.D. (California, San Diego 2000) [2006]

ALAN STUART BOYD, Professor of Medicine; Professor of Pathology

B.S. (Abilene Christian 1982); M.D. (Texas, Houston 1986) [1993]

KELLI LYNN BOYD, Assistant Professor of Pathology

B.S., D.V.M. (Mississippi State 1993, 1996); Ph.D. (Georgia 2001) [2009]

SCOTT B. BOYD, Research Professor of Medical Education and Administration; Research Professor of Neurology

B.S., D.D.S. (Michigan 1976, 1980); Ph.D. (Texas 1984) [2008]

JILL K. BOYLE, Associate Professor of Clinical Anesthesiology

B.A. (Converse 1977); M.D. (Medical University of South Carolina 1980) [2003]

ANDREA C. BRACIKOWSKI, Associate Professor of Pediatrics; Associate Professor of Emergency Medicine; Assistant Professor of Orthopaedics and Rehabilitation B.A. (Mount Holyoke 1977); M.D. (SUNY, Buffalo 1981) [1993]

JAMES P. BRACIKOWSKI, Assistant Professor of Clinical Medicine

B.S. (Syracuse 1975); M.D. (SUNY, Buffalo 1979) [1993]

TAMALA SELKE BRADHAM, Assistant Professor of Hearing and Speech Sciences

B.A. (Columbia College 1992); M.Aud., Ph.D. (South Carolina 1994, 1998) [2004]

JOEL F. BRADLEY, JR., Associate Clinical Professor of Pediatrics B.S. (Davidson 1973); M.D. (Wake Forest 1977) [2001]

MELITA M. BRADLEY, Assistant Clinical Professor of Pediatrics

B.S. (Middle Tennessee State 1991); M.D. (Miami (Florida) 1996) [2007]

LEONARD ALAN BRADSHAW, Research Assistant Professor of Surgery; Research Assistant Professor of Physics

B.S. (Abilene Christian 1990); M.S., Ph.D. (Vanderbilt 1992, 1995) [1996]

DONALD W. BRADY, Professor of Medicine; Professor of Medical Education and Administration; Associate Dean for Graduate Medical Education

B.S., M.D. (Vanderbilt 1986, 1990) [2007]

LINDA DIANE BRADY, Clinical Instructor in Pediatrics

B.A., M.D. (Vanderbilt 1988, 1992) [1996]

JAN LEWIS BRANDES, Assistant Clinical Professor of Neurology

B.S. (Mississippi University for Women 1975); M.S. (Tennessee 1980); M.D. (Vanderbilt 1989) [1993]

STEPHEN J. BRANDT, Professor of Medicine; Professor of Cancer Biology; Professor of Cell and Developmental Biology

B.S. (Duke 1976); M.D. (Emory 1981) [1990]

DANA M. BRANTLEY-SIEDERS, Research Assistant Professor of Medicine

B.A. (Maryville 1995); Ph.D. (Vanderbilt 2000) [2003]

H. VICTOR BRAREN, Associate Clinical Professor of Urologic Surgery; Associate Clinical Professor of Pediatrics

A.B. (Duke 1962); M.D. (Tulane 1968) [1973]

BARRY W. BRASFIELD, Adjunct Assistant Professor of Anesthesiology

B.A. (Tennessee 1978); M.M.Sc. (Emory 1981); M.D. (East Tennessee State 1985) [1999]

ALAN R. BRASH, Professor of Pharmacology

B.A. (Cambridge 1970); Ph.D. (Edinburgh 1973) [1977]

GENE W. BRATT, Associate Professor of Hearing and Speech Sciences; Adjunct Associate Professor of Speech Pathology at Meharry Medical College

B.A. (Calvin 1969); M.A. (Michigan State 1975); Ph.D. (Vanderbilt 1980) [1980]

DAVID M. BRATTON, Assistant Professor of Clinical Orthopaedics and Rehabilitation B.S. (Vanderbilt 1971); M.D. (Tennessee, Memphis 1975) [2009]

OTEDUANE ALAIN DRAIN Assistant Designation of District Occasion

STEPHANE ALAIN BRAUN, Assistant Professor of Plastic Surgery

B.S., M.D. (Ottawa [Canada] 1991, 1995) [2009]

PETER R. BREAM, JR., Assistant Professor of Radiology and Radiological Sciences B.S. (Davidson 1990); M.D. (North Carolina 1996) [2001]

LORI ANTOINETTE BREAUX-MITCHELL, Clinical Instructor in Pediatrics

B.S. (Spelman 1992); M.D. (Meharry Medical 1996) [2000]

KIMBERLY COLLIS BRENNAN, Assistant Professor of Radiology and Radiological Sciences B.S. (Indiana 1994); M.D. (Kentucky 1998) [2004]

REUVEN BRENNER, Adjunct Assistant Professor of Radiology and Radiological Sciences B.Sc. (Technion–Israel Institute of Technology 1987) [2005]

PHILLIP L. BRESSMAN, Clinical Instructor in Obstetrics and Gynecology

B.S. (Oklahoma 1974); M.D. (Vanderbilt 1979) [1983]

MATTHEW D. BREYER, Adjunct Professor of Medicine

B.S. (Michigan 1975); M.D. (Harvard 1979) [1985]

RICHARD M. BREYER, John B. Youmans Professor of Medicine; Professor of Pharmacology; Professor of Biochemistry

B.S. (Michigan 1978); M.S., Ph.D. (Massachusetts Institute of Technology 1982, 1988) [1991]

A. BERTRAND BRILL, Research Professor of Radiology and Radiological Sciences; Research Professor of Physics

M.D. (Utah 1956); Ph.D. (California 1961) [1997]

VANESSA J. BRISCOE, Research Assistant Professor of Medicine; Adjunct Assistant Professor of Nursing

B.S. (Western Kentucky 1982); M.S.N. (Vanderbilt 1987); Ph.D. (Walden 2004) [2008]

MARCELA BRISSOVA, Research Assistant Professor of Medicine M.S., Ph.D. (Slovak Technical University 1990, 1994) [2001]

ANDREW M. BRITTAN, Assistant Professor of Radiology and Radiological Sciences B.S. (Creighton 1984); M.D. (Kansas 1992) [2006]

KENDAL SCOT BROADIE, Stevenson Professor of Neurobiology; Professor of Biological Sciences; Professor of Pharmacology; Professor of Cell and Developmental Biology; Investigator, Vanderbilt Kennedy Center for Research on Human Development B.S. (Oregon 1989); Ph.D. (Cambridge [England] 1994) [2002]

DEBORAH BROADWATER, Librarian; Assistant Director, Eskind Biomedical Library B.A. (Spelman 1971); M.S.L.S. (Atlanta 1975) [1990]

CAROL H. BROADWAY, Clinical Professor of Pediatrics

B.A., M.D. (Tennessee 1983, 1988) [2006]

E. JANE BROCK, Associate Professor of Clinical Anesthesiology

B.S. (Tennessee, Chattanooga 1983); D.O. (Kirksville College of Osteopathic Medicine 1989) [2008]

JOHN W. BROCK III, Professor of Urologic Surgery; Professor of Pediatrics; Director, Division of Pediatric Urology

B.A. (Vanderbilt 1974); M.D. (Medical College of Georgia 1978) [1983]

ARTHUR SCOTT BROOKS, Associate Clinical Professor of Pediatrics

B.A. (Vanderbilt 1977); M.D. (Tennessee 1981) [1984]

MICHELLE E. BROOKS, Assistant Professor of Psychiatry

B.S. (Michigan 1998); M.D. (South Florida 2004) [2009]

JAMES T. BROOME, Assistant Professor of Surgery

A.B. (Harvard 1999); M.D. (Michigan 2003) [2009]

COLLEEN M. BROPHY, Professor of Surgery

B.S., M.D. (Utah 1979, 1983) [2008]

HARRY P. BROQUIST, Professor of Biochemistry, Emeritus

B.S. (Beloit 1940); M.S., Ph.D. (Wisconsin 1941, 1949) [1969]

DONALD T. BROTHERS, JR., Clinical Instructor in Pediatrics

B.S. (Vanderbilt 1985); M.D. (Tennessee, Memphis 1989) [1994]

KYLE B. BROTHERS, Instructor in Pediatrics

B.S. (Centre College 2000); M.D. (Louisville 2004) [2007]

CHRISTOPHER BRIAN BROWN, Assistant Professor of Pediatrics; Assistant Professor of Pharmacology

B.S. (Auburn 1990); Ph.D. (Vanderbilt 1997) [2003]

DOUGLAS H. BROWN, Clinical Instructor in Obstetrics and Gynecology

B.S. (Birmingham-Southern 1973); M.D. (Alabama 1976) [1980]

H. ALEX BROWN, Professor of Pharmacology; Ingram Professor of Cancer Research; Professor of Chemistry; Professor of Biochemistry

B.S. (Florida Institute of Technology 1983); M.S. (Syracuse 1986); Ph.D. (North Carolina 1992) [2002]

KIMBERLY P. BROWN, Assistant Professor of Psychiatry; Assistant Professor of Psychology, College of Arts and Science

B.A. (Duke 1995); Ph.D. (Alabama 2000) [2002]

LAUREL LESLIE BROWN, Assistant Clinical Professor of Psychiatry

B.A. (Hendrix 1977); Ph.D. (Vanderbilt 2000) [2001]

NANCY J. BROWN, Robert H. Williams Professor of Medicine; Professor of Pharmacology; Associate Dean for Clinical and Translational Scientist Development

B.A. (Yale 1981); M.D. (Harvard 1986) [1992]

STEVEN HOLLOWAY BROWN, Associate Professor of Biomedical Informatics; Chief Information Officer, VAMC

A.B., M.D. (Brown 1981, 1987) [1994]

WHITNEY L. BROWNING, Assistant Professor of Pediatrics

B.S., M.D. (Kentucky 2001, 2005) [2009]

MARINO A. BRUCE, Associate Professor of Family Medicine at Meharry Medical College; Associate Professor of Family Medicine at Vanderbilt

Ph.D. (North Carolina State 1997) [2005]

STEPHEN P. BRUEHL, Associate Professor of Anesthesiology; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Belmont 1985); M.A., Ph.D. (Kentucky 1991, 1994) [2000]

KAYLON L. BRUNER-TRAN, Assistant Professor of Obstetrics and Gynecology

B.S. (Delta State 1985); Ph.D. (Vanderbilt 1995) [1999]

ALEXANDER JEFFREY BRUNNER, Clinical Instructor in Pediatrics

B.S. (Dartmouth 1996); M.D. (Case Western Reserve 2001) [2005]

DEBORAH MOBLEY BRYANT, Assistant Professor of Pediatrics; Adjunct Assistant Professor of Pediatrics at Meharry Medical College

B.A. (Wellesley 1976); M.D. (Vanderbilt 1980) [1990]

JEREMY BRYWCZYNSKI, Assistant Professor of Emergency Medicine

B.S. (Dayton 2000); M.D. (Wright State 2004) [2007]

MICHAEL BUBSER, Research Instructor in Pharmacology

B.S., Ph.D. (Stuttgart [Germany] 1987, 1992) [2002]

RICHARD D. BUCHANAN, Associate Clinical Professor of Pathology

B.A., M.D. (Vanderbilt 1957, 1961) [1966]

KRISTINA M. BUCHHOLZ, Instructor in Medicine

B.S. (Pepperdine 2001); M.D. (South Dakota 2006) [2009]

MACIEJ S. BUCHOWSKI, Research Professor of Medicine; Adjunct Professor of Family Medicine, Meharry Medical College; Research Professor of Pediatrics

B.S. (Poznan University of Technology [Poland] 1973); M.Sc., Ph.D. (Agricultural University of Poznan 1975, 1982) [1997]

CARI L. BUCKINGHAM, Assistant Professor of Radiology and Radiological Sciences B.S. (Auburn 1999); M.D. (South Alabama 2002) [2007]

TAMARA L. BUCKLES, Instructor in Clinical Pediatrics

B.S. (Northwestern 2000); M.D. (Vanderbilt 2005) [2009]

MARY BUFWACK, Adjunct Assistant Professor of Medical Education and Administration B.A. (Pittsburgh 1968); M.A., Ph.D. (Washington University 1972, 1975) [1989]

BRADLEY N. BULLOCK, Clinical Instructor in Pediatrics; Clinical Instructor in Medicine B.S., M.D. (Florida 1989, 1993) [1997]

NADA M. BULUS, Research Assistant Professor of Medicine

M.D. (American University of Beirut 1986) [1992]

ROY P. BURCH, JR., Clinical Instructor in Obstetrics and Gynecology

B.S. (David Lipscomb 1983); M.D. (Tennessee 1987) [1991]

G. PAMELA BURCH-SIMS, Adjunct Assistant Professor of Hearing and Speech Sciences B.S. (Hampton 1977); M.A. (Tennessee 1978); Ph.D. (Vanderbilt 1993) [1995]

ARNOLD BURGER, Adjunct Professor of Radiology and Radiological Sciences B.Sc., M.Sc., Ph.D. (Hebrew [Israel] 1976, 1981, 1985) [2004]

ELIZABETH B. BURGOS, Instructor in Clinical Family Medicine

B.S., M.D. (South Alabama 1986, 1990) [2002]

THOMAS G. BURISH, Provost, Emeritus; Professor of Psychology, Emeritus, College of Arts and Science; Professor of Medicine, Emeritus

B.A. (Notre Dame 1972); M.A., Ph.D. (Kansas 1975, 1976) [1976]

RAYMOND F. BURK, Professor of Medicine; Professor of Pathology

B.A. (Mississippi 1963); M.D. (Vanderbilt 1968) [1987]

BRIAN BERNARD BURKEY, Professor of Otolaryngology

B.A. (Johns Hopkins 1981); M.D. (Virginia 1986) [1991]

LONNIE S. BURNETT, Frances and John C. Burch Professor of Obstetrics and Gynecology B.A., M.D. (Texas 1948, 1953) [1976]

PATRICK E. BURNETT, Assistant Professor of Medicine

B.A. (lowa 1993); M.D. (Johns Hopkins 2000) [2004]

COURTNEY P. BURNETTE, Assistant Professor of Pediatrics; Assistant Professor of Psychiatry; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Johns Hopkins 1998); M.S., Ph.D. (Miami [Florida] 2002, 2006) [2007]

W. BRYAN BURNETTE, Assistant Professor of Neurology; Assistant Professor of Pediatrics B.S., M.S. (Emory 1992, 1995); M.D. (Vanderbilt 2001) [2007]

NATHAN A. BURNS, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.S. (Mississippi State 1999); D.M.D. (Mississippi 2003) [2007]

IAN M. BURR, Professor of Pediatrics, Emeritus

M.B., B.S. (Melbourne 1959); M.D. (Monash 1969) [1988]

ALVIN M. BURT III, Professor of Cell Biology, Emeritus; Professor of Cell Biology in Nursing, Emeritus

B.A. (Amherst 1957); Ph.D. (Kansas 1962) [1966]

ELIZABETH JANE BUSKIRK, Clinical Instructor in Pediatrics

B.S. (North Carolina 2002); M.D. (East Carolina 2006) [2009]

BRENDA J. BUTKA, Assistant Professor of Clinical Medicine

B.A. (Andrews 1970); A.M. (Michigan 1972); M.D. (Emory 1979) [1984]

JEFFREY DAVID BYERS, Assistant Professor of Clinical Medicine

B.A. (Rice 1988); M.D. (Duke 1992) [2004]

BENJAMIN F. BYRD III, Professor of Medicine

A.B. (Princeton 1973); M.D. (Vanderbilt 1977) [1984]

DANIEL W. BYRNE, Senior Associate in Biostatistics; Senior Associate in Medicine B.A. (SUNY, Albany 1983); M.S. (New York Medical 1991) [1999]

JOHN G. BYRNE, William S. Stoney Jr. Professor of Cardiac Surgery and Chair of the Department; Professor of Surgery; Professor of Medicine

B.S. (California, Davis 1982); M.D. (Boston University 1987) [2004]

BRYAN BYRNSIDE, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.A. (Emory 1998); D.M.D. (Medical University of South Carolina 2003) [2007] WANDA B. CADE, Associate Clinical Professor of Pediatrics

B.S. (Mississippi State 1989); M.D. (Mississippi 1993) [2007]

HUI CAI, Research Assistant Professor of Medicine

M.D. (Nantong Medical College [China] 1982); M.S. (China Medical 1987); Ph.D. (West China 1995) [2005]

JIYANG CAI, Assistant Professor of Ophthalmology and Visual Sciences

M.D. (Shanghai Medical 1992); Ph.D. (Emory 1999) [2004]

QIUYIN CAI, Associate Professor of Medicine

M.S. (Chinese Academy, Beijing 1990); M.D. (Shanghai Medical 1984); Ph.D. (Alabama 2000) [2000]

CHRISTINA CAIN-SWOPE, Clinical Instructor in Obstetrics and Gynecology

B.A. (Vanderbilt 1990); M.D. (Georgetown 1995) [2007]

M. WADE CALCUTT, Research Instructor in Biochemistry

B.S. (Francis Marion 1996); Ph.D. (Wake Forest 2001) [2005]

SUSAN A. CALDERWOOD, Associate Professor of Clinical Anesthesiology

B.A. (Winthrop 1972); M.D. (Duke 1976) [1999]

MIRNA A. CALDWELL, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.S., D.M.D. (Tufts 1997, 2001) [2006]

ROBERT CALDWELL, Assistant Clinical Professor of Oral and Maxillofacial Surgery; Assistant Professor of Orthopaedics and Rehabilitation

B.S. (Tennessee, Martin 1994); D.M.D. (Tufts 2003) [2006]

CORY L. CALENDINE, Assistant Professor of Clinical Orthopaedics and Rehabilitation B.S. (Freed-Hardeman 1996); M.D. (Tennessee, Memphis 2001) [2009]

CYNTHIA R. CALISI, Clinical Instructor in Pediatrics

B.S. (Western Kentucky 1995); M.D. (Louisville 1999) [2003]

DAVID J. CALKINS, Associate Professor of Ophthalmology and Visual Sciences

B.S. (Michigan 1989); Ph.D. (Mahoney Institute 1994) [2004]

ALFRED S. CALLAHAN, Clinical Professor of Nursing; Associate Clinical Professor of Medicine

S.B. (Massachusetts Institute of Technology 1971); M.D. (Vanderbilt 1975) [2005]

DEBRA L. CALLAHAN, Assistant Professor of Pathology

B.S. (Ohio State 1979); M.S. (Michigan 1981); M.D. (Ohio State 1996) [2008]

STEPHEN TODD CALLAHAN, Assistant Professor of Pediatrics

B.S. (Arkansas Technical 1990); M.D. (Arkansas 1994); M.P.H. (Harvard 2002) [2002]

TAMARA L. CALLAHAN, Assistant Professor of Obstetrics and Gynecology

B.S. (Massachusetts, Amherst 1989); M.P.P., M.D. (Harvard 1995, 1995) [2006]

MICHAEL D. CALLAWAY, Assistant Clinical Professor of Medicine

B.S. (Emory 1979); M.D. (Vanderbilt 1983) [1989]

THOMAS H. CALLAWAY, Assistant Clinical Professor of Medicine

B.S. (Emory 1977); M.D. (Tennessee 1984) [1989]

MARY N. CAMARATA, Assistant Professor of Hearing and Speech Sciences

B.A. (San Diego State 1979); M.S. (Purdue 1983) [1998]

STEPHEN M. CAMARATA, Professor of Hearing and Speech Sciences; Associate Professor of Special Education; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A., M.A. (San Diego State 1979, 1981); Ph.D. (Purdue 1984) [1990]

REENA M. CAMOENS, Assistant Clinical Professor of Psychiatry

B.S. (Fatima [India] 1972); M.D. (Meharry Medical 1983) [2004]

DANIEL BRIAN CAMPBELL, Adjunct Research Assistant Professor of Pharmacology

B.S. (Westminster College 1989); Ph.D. (Pennsylvania State 1998) [2007]

DUNCAN R. CAMPBELL, Assistant Clinical Professor of Pediatrics

B.A. (Vanderbilt 1971); M.D. (Kentucky 1975) [1998]

SUSAN B. CAMPBELL, Assistant Clinical Professor of Pediatrics

B.A. (Delaware 1969); M.D. (Thomas Jefferson 1973) [1987]

THOMAS W. CAMPBELL, Assistant Clinical Professor of Psychiatry B.A., M.D. (Vanderbilt 1964, 1968) [1977] W. BARTON CAMPBELL, Professor of Medicine B.A. (Carleton 1959); M.D. (Rochester 1963) [1970] DANIEL D. CANALE, JR., Assistant Clinical Professor of Pathology B.A. (Notre Dame 1967); M.D. (Vanderbilt 1971) [1981] CHRISTOPHER L. CANLAS, Assistant Professor of Clinical Anesthesiology B.S. (Duke 1996); M.A. (Portland 1998); M.D. (Louisiana State 2004) [2008] JAMES L. CANNON, Assistant Professor of Clinical Oral and Maxillofacial Surgery D.D.S. (Emory 1963); M.S. (Montreal 1968) [2008] JEFFREY A. CANTER, Assistant Professor of Molecular Physiology and Biophysics B.A. (Kenyon 1977); M.D. (Cincinnati 1981); M.P.H. (Vanderbilt 2003) [2003] ZHENG CAO, Research Assistant Professor of Medicine M.D., M.S. (Nantong Medical 1983, 1990); Ph.D. (Shanghai Medical 1998) [2004] JORGE H. CAPDEVILA, Professor of Medicine; Professor of Biochemistry B.S. (Chile 1960); Ph.D. (Georgia 1974) [1986] RICHARD M. CAPRIOLI, Stanley Cohen Professor of Biochemistry; Professor of Pharmacology; Professor of Chemistry; Director, Center in Mass Spectrometry; Investigator, Center for Molecular Neuroscience B.S., Ph.D. (Columbia 1965, 1969) [1998] DAVID P. CARBONE, Harold L. Moses Professor of Cancer Research; Professor of Medicine; Professor of Cell and Developmental Biology; Professor of Cancer Biology B.A. (Amherst 1977); M.D., Ph.D. (Johns Hopkins 1985, 1985) [1996] JAMES L. CAREY, Assistant Professor of Orthopaedics and Rehabilitation B.S.E. (Duke 1996); M.D. (Pennsylvania 2001); M.P.H. (Johns Hopkins 2009) [2006] CRAIG R. CARMICHEL, Assistant Professor of Medical Education and Administration; Director of Finance, Academic, and Research Enterprise M.S. (State University of New York 1975) [1999] ROBERT H. CARNAHAN, Research Assistant Professor of Cancer Biology B.S. (Indiana 1995); Ph.D. (Vanderbilt 2003) [2007] ANA MARIN DIAS CARNEIRO, Research Assistant Professor of Pharmacology B.S., M.A., Ph.D. (Minas Gerais [Brazil] 1998, 2002, 2002) [2007] GRAHAM F. CARPENTER, Professor of Biochemistry; Professor of Medicine B.S., M.S. (Rhode Island 1966, 1969); Ph.D. (Tennessee 1974) [1974] LAVENIA B. CARPENTER, Assistant Professor of Obstetrics and Gynecology B.S. (Vanderbilt 1988); M.D. (Tennessee 1992) [2006] CHRISTOPHER CARR, Instructor in Surgery B.A. (Swarthmore 1993); M.D. (Pennsylvania 1997) [2009] THOMAS JOSEPH CARR, Clinical Instructor in Pediatrics B.A. (Notre Dame 1992); M.D. (Loyola, Chicago 1996) [1999] YSELA MARIA CARRILLO, Assistant Professor of Surgery B.S., M.D. (New Mexico 1990, 1994) [2007] FRANK E. CARROLL, JR., Professor of Clinical Radiology and Radiological Sciences; Professor of Physics, Emeritus B.S. (Saint Joseph's [Pennsylvania] 1963); M.D. (Hahnemann Medical College 1967) [1983] KECIA NICOLE CARROLL, Assistant Professor of Pediatrics B.A. (Vassar 1991); M.D., M.P.H. (Vanderbilt 1996, 2004) [2005] MARY ANNE CARROLL, Assistant Professor of Obstetrics and Gynecology

B.S. (SUNY, Albany 1983); M.D. (SUNY, Brooklyn 1996) [2009]

B.S. (David Lipscomb 1979); M.D. (Tennessee, Memphis 1983) [1999]

BRIAN SCOTT CARTER, Professor of Pediatrics

BRUCE D. CARTER, Professor of Biochemistry; Investigator, Center for Molecular Neuroscience; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Alma 1986); Ph.D. (Michigan 1992) [1997]

JEFFREY B. CARTER, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.S. (Tufts 1972); D.M.D. (Connecticut 1976); M.D. (Vanderbilt 1978) [1988]

TEKUILA CARTER, Instructor in Clincal Anesthesiology

B.A. (Emory 2000); M.D. (Meharry Medical 2005) [2009]

KEITH A. CARUSO, Assistant Clinical Professor of Psychiatry

B.A. (New York 1981); M.D. (Cornell 1990) [2000]

LUCIA CARVELLI, Research Assistant Professor of Pharmacology

Ph.D (Milan [Italy] 1999) [2005]

VIVIEN A. CASAGRANDE, Professor of Cell and Developmental Biology; Professor of Psychology, College of Arts and Science; Professor of Ophthalmology and Visual Sciences; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience

B.A. (Colorado 1964); Ph.D. (Duke 1973) [1976]

CARISSA J. CASCIO, Assistant Professor of Psychiatry; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Baylor 1997); Ph.D. (Emory 2003) [2007]

GERALD D. CASE, Assistant Clinical Professor of Psychiatry

B.G.S. (Kentucky 1974); M.A. (Western Kentucky 1978); Ph.D. (Ball State 1993) [2006]

AMY E. CASSIDY, Associate in Orthopaedics and Rehabilitation

B.S. (Grand Canyon 2003); M.S.N. (Vanderbilt 2008); A.C.N.P., B.C. [2009]

KAREN V. CASSIDY, Assistant Clinical Professor of Medicine; Assistant Clinical Professor of Pediatrics

B.S., M.D. (Florida 1990, 1994); M.P.H. (Harvard 1995) [2001]

MARCIE S. CASTLEBERRY, Associate Clinical Professor of Pediatrics

B.S. (Abilene Christian 1987); M.D. (Louisiana State 1993) [2007]

JUSTIN MERRILL MARKE CATES, Assistant Professor of Pathology

B.S., M.D., Ph.D. (Tufts 1989, 1997, 1997) [2005]

JAMES R. CATO, Associate Clinical Professor of Medicine

B.A., M.D. (Vanderbilt 1974, 1979) [1986]

THOMAS F. CATRON, Associate Professor of Psychiatry; Associate Professor of Psychology, Peabody College; Associate Professor of Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development; Co-Director, Center for Psychotherapy Research, Institute for Public Policy Studies

B.A. (Virginia 1979); M.S., Ph.D. (Peabody 1982, 1989) [1990]

MICHAEL F. CAUCCI, Assistant Professor of Psychiatry

B.S. (Scranton 2000); M.D. (Georgetown 2004) [2009]

KERRI L. CAVANAUGH, Assistant Professor of Medicine

A.B. (Dartmouth 1995); M.D. (Yale 1999); M.H.S. (Johns Hopkins 2006) [2006]

ANURADHA BAPSI CHAKRAVARTHY, Associate Professor of Radiation Oncology B.S. (Johns Hopkins 1978); M.D. (George Washington 1983) [1998]

G. ROGER CHALKLEY, Senior Associate Dean, Biomedical Research, Education, and Training; Professor of Molecular Physiology and Biophysics; Professor of Medical Education and Administration

B.A., M.A., D.Phil. (Oxford 1961, 1962, 1964) [1986]

ALEXANDER J. CHALKO III, Assistant Clinical Professor of Psychiatry

B.A. (Dartmouth 1974); M.D. (Virginia 1978) [1997]

DAVID E. CHAMBERS, Assistant Clinical Professor of Medicine

B.S. (Austin Peay State 1978); Ph.D., M.D. (South Alabama 1983, 1986) [2009]

EUGENE PRICHARD CHAMBERS, JR., Assistant Clinical Professor of Surgery B.S. (Millsaps 1983); 1990 (Mississippi M.D.) [2008] JILL F. CHAMBERS, Associate Clinical Professor of Obstetrics and Gynecology B.S. (Vanderbilt 1971); M.D. (Alabama 1974) [1978] JOHN W. CHAMBERS, Clinical Instructor in Pediatrics B.S. (Lee 1991); M.D. (Tennessee, Memphis 1995) [1998] EMILY CHAN, Assistant Professor of Medicine B.A. (Harvard 1989); M.D., Ph.D. (Cornell 1998, 1998) [2005] CHARLES G. CHANDLER, Associate Clinical Professor of Pediatrics B.A., M.D. (Tennessee 1976, 1980) [2007] MEERA CHANDRASHEKAR, Assistant Professor of Clinical Anesthesiology M.D. (Bangalore Medical [India] 1978) [1999] DAVID K. CHANG, Assistant Clinical Professor of Psychiatry B.A. (Vanderbilt 1988); M.D. (Medical University of South Carolina 1993) [1997] MIN SHEN CHANG, Assistant Professor of Ophthalmology and Visual Sciences; Assistant Professor of Biomedical Engineering B.A. (Case Western Reserve 1983); M.D. (Ohio State 1987) [2001] SAM S. CHANG, Associate Professor of Urologic Surgery B.S. (Princeton 1988); M.D. (Vanderbilt 1992) [2000] NILUFER E. YALMAN CHANIN, Assistant Clinical Professor of Psychiatry B.Sc. (Sussex [U.K.] 1975); M.Phil, D.Phil (London [U.K.] 1981); M.A. (Middle Tennessee State 1997); Ph.D. (Tennessee State 2004) [2008] PHILIP CHANIN, Assistant Clinical Professor of Psychiatry B.A. (Amherst 1970); M.Ed., Ed.D. (Massachusetts 1972, 1975) [2005] J. CALVIN CHANNELL, Clinical Instructor in Obstetrics and Gynecology B.S. (David Lipscomb 1984); M.D. (Vanderbilt 1989) [1997] JUDY JEAN CHAPMAN, Professor of Nursing, Emerita; Senior Associate in Emergency Medicine B.S.N. (Vanderbilt 1963); M.N. (Florida 1966); R.N. [1991] JAMES DAVID CHAPPELL, Assistant Professor of Pathology; Assistant Professor of Pediatrics B.S., M.S. (Murray State 1988, 1991); Ph.D., M.D. (Vanderbilt 1997, 2001) [2005] EVONNE J. CHARBONEAU, Research Assistant Professor of Psychiatry B.S. (Northern State 1973); M.A. (Purdue 1975); J.D. (University of Washington 2001); M.D. (Vanderbilt 2007) [2009] RAVI S. CHARI, Clinical Professor of Surgery; Associate Professor of Cancer Biology M.D. (Saskatchewan 1989) [2008] PHILIP DAVID CHARLES, Associate Professor of Neurology B.S., M.D. (Vanderbilt 1986, 1990) [1994] RUPESH CHATURVEDI, Research Instructor in Medicine M.Sc. (Jamia Millia Islamia [India] 1995); Ph.D. (King George's Medical 2004) [2005] PIERRE CHAURAND, Research Associate Professor of Biochemistry Ph.D. (Université de Paris-Sud 1994) [1998] ERIC MARTIN CHAZEN, Clinical Professor of Pediatrics B.A. (Vanderbilt 1952); M.D. (Tennessee 1955) [1961] WALTER J. CHAZIN, Chancellor's Professor of Biochemistry and Physics; Professor of Biochemistry; Professor of Physics; Director, Center for Structural Biology B.Sc. (McGill 1975); Ph.D. (Concordia 1983) [1999] ABRAHAM PACHA CHEIJ, Assistant Clinical Professor of Ophthalmology and Visual Sciences

M.D. (Santo Domingo 1950) [1961]

GEORGE N. CHEIJ, Clinical Instructor in Ophthalmology and Visual Sciences

B.S. (Rice 1984); M.D. (East Tennessee State 1988) [1996]

CHIU-LAN CHEN. Associate in Biostatistics

B.S., M.S. (National Taiwan 1982, 1984); Ph.D. (North Carolina State 1995) [2004]

JIAN-CHUN CHEN, Research Assistant Professor of Medicine

M.D. (Kunming Medical [China] 1998) [2007]

JIAN-KANG CHEN, Research Assistant Professor of Medicine

M.D. (Dali Medical 1987); M.S. (Beijing Medical 1995) [2000]

JIAN-XIONG CHEN, Research Assistant Professor of Pediatrics

M.D. (Hunan Medical [China] 1985); M.S. (Henan [China] 1990); Ph.D. (Southern Illinois 1998) [2002]

JIN CHEN, Associate Professor of Medicine; Associate Professor of Cell and Developmental Biology; Associate Professor of Cancer Biology

M.D. (Shanghai Medical [China] 1984); Ph.D. (Harvard 1991) [1997]

KONG Y. CHEN, Adjunct Assistant Professor of Medicine; Assistant Professor of Surgery B.S. (Tennessee Technological 1993); Ph.D., M.S.C.I. (Vanderbilt 1997, 2002) [1997]

LI MIN CHEN, Assistant Professor of Radiology and Radiological Sciences

M.D., M.S., Ph.D. (Fourth Military Medical [China] 1989, 1992, 1997) [2006]

QINGXIA CHEN, Assistant Professor of Biostatistics

B.S. (University of Science and Technology [China] 1999); M.S. (Pittsburgh 2001); Ph.D. (North Carolina 2005) [2005]

SHENG-SONG CHEN, Research Instructor in Molecular Physiology and Biophysics B.S. (Quangxi Medical [China] 1985); Ph.D. (Osaka [Japan] 1994) [2003]

WENBIAO CHEN, Assistant Professor of Molecular Physiology and Biophysics

B.S. (Hunan Normal 1985); M.S. (Washington State 1993); Ph.D. (Oregon Health Sciences 1997) [2008]

XI CHEN, Assistant Professor of Biostatistics

B.S. (Lanzhou [China] 1999); M.S., Ph.D. (North Carolina State 2002, 2006) [2009]

XIWU CHEN, Research Assistant Professor of Medicine

M.D. (Anhui Medical 1989); Ph.D. (Shanghai Medical 1997) [2005]

YUEJIN CHEN, Assistant Clinical Professor of Psychiatry

M.D. (Wannan Medical [China] 1982); M.S. (Jinan [China] 1986); Ph.D. (East Tennessee State 1994) [2004]

HUI-FANG CHENG, Research Associate Professor of Medicine

M.D. (Peking Union Medical 1968); M.S. (Beijing Medical 1981) [1995]

JOSEPH S. CHENG, Associate Professor of Neurological Surgery

B.S. (Tennessee 1990); M.D. (Medical College of Wisconsin 1994); M.S. (Marquette 2002) [2002]

EDWARD F. CHERNEY, Associate Professor of Clinical Ophthalmology and Visual Sciences A.B. (California, Davis 1969); M.D. (California, Los Angeles 1973) [2002]

ALAN D. CHERRINGTON, Jacquelyn A. Turner and Dorothy J. Turner Professor of Diabetes Research; Professor of Molecular Physiology and Biophysics; Professor of Medicine B.Sc. (New Brunswick 1967); M.Sc., Ph.D. (Toronto 1969, 1972) [1974]

CAROLINE H. CHESTER, Assistant Clinical Professor of Plastic Surgery; Assistant Clinical Professor of Pediatrics

B.S. (Vanderbilt 1975); M.D. (Tennessee, Memphis 1983) [2002]

SERGIY CHETYRKIN, Research Instructor in Medicine

M.S. (Kiev State 1991); Ph.D. (National Academy of Sciences of Ukraine 1999) [2007]

JOYCE CHEUNG-FLYNN, Research Assistant Professor of Surgery

B.S., M.S. (Northern Arizona 1992, 1995); M.D. (Arizona State 1999) [2008]

CHIN CHIANG, Professor of Cell and Developmental Biology; Member, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience

B.S. (SUNY, Buffalo 1984); M.D., Ph.D. (Washington State 1986, 1990) [1997]

GEOFFREY CHIDSEY, Assistant Professor of Medicine

B.S. (Purdue 1986); M.D. (Indiana 1994) [2006]

SALLAYA CHINRATANALAB, Assistant Professor of Medicine

M.D. (Siniraj Medical, Mahidol [Thailand] 1991) [2000]

WICHAI CHINRATANALAB, Assistant Professor of Medicine

M.D. (Mahidol, Bangkok [Thailand] 1990) [2002]

SANIKA S. CHIRWA, Associate Professor of Anatomy and Physiology at Meharry Medical

College; Adjunct Associate Professor of Pharmacology at Vanderbilt

B.Pharm., M.D., Ph.D. (British Columbia 1981, 1985, 1988) [2000]

YONG-JIG CHO, Research Instructor in Surgery

B.A. (Korea 1979); Ph.D. (Düsseldorf [Germany] 1999) [2007]

JEONG-YUN CHOI, Visiting Assistant Professor of Biochemistry

M.D., M.S., Ph.D. (Seoul National 1994, 1996, 1999) [2009]

LEENA CHOI, Assistant Professor of Biostatistics

B.S., M.S. (Seoul National 1988, 1995); Ph.D. (Johns Hopkins 2005) [2005]

MYOUNGSOO CHOI, Assistant Clinical Professor of Oral and Maxillofacial Surgery Ph.D., M.S.D. (Dankook [Korea] 1991, 1996) [2009]

NEESHA NAIK CHOMA, Assistant Professor of Medicine

B.S. (Rensselaer Polytechnic Institute 2000); M.D. (Albany Medical College 2002) [2006]

AMY S. CHOMSKY, Associate Professor of Ophthalmology and Visual Sciences; Director, Ophthalmology Service, Veterans Administration Medical Center

B.A. (Gettysburg 1986); M.D. (Medical College of Pennsylvania 1990) [1994]

WILLIAM CHOPP, Instructor in Pathology

B.S., B.A. (Western Michigan 1999, 2000); M.D. (Michigan State 2004) [2009]

SHAHANA A. CHOUDHURY, Associate Professor of Pediatrics at Meharry Medical College; Assistant Clinical Professor of Pediatrics at Vanderbilt

M.D. (Dhaka Medical [India] 1982) [2000]

GOUTAM CHOWDHURY, Research Instructor in Biochemistry

B.Sc. (Maulana Azad College [India] 1995); M.Sc. (Calcutta [India] 1997); Ph.D. (Missouri 2005) [2009]

KARLA G. CHRISTIAN, Associate Professor of Cardiac Surgery

B.S., M.D. (University of Washington 1981, 1985) [1994]

MICHAEL J. CHRISTIE, Associate Clinical Professor of Orthopaedics and Rehabilitation

B.A. (DePauw 1974); M.P.H. (Johns Hopkins 1975); M.D. (Loyola, Chicago 1978) [1984]

BRIAN W. CHRISTMAN, Professor of Medicine B.S. (Tulane 1977); M.D. (Oklahoma 1981) [1987]

JOHN W. CHRISTMAN, Adjunct Professor of Medicine B.S., M.D. (Indiana 1974, 1978) [1988]

MARK R. CHRISTOFERSEN, Assistant Clinical Professor of Orthopaedics and Rehabilitation B.A. (Chicago 1974); M.D. (Southern Illinois 1978) [2002]

CHANG YONG CHUNG, Assistant Professor of Pharmacology; Assistant Professor of **Biological Sciences** 

B.S., M.S. (Seoul National [Korea] 1986, 1988); Ph.D. (Duke 1995) [2001]

CHRISTINE HWAYONG CHUNG, Assistant Professor of Medicine; Assistant Professor of Cancer Biology

B.S. (California, Berkeley 1991); M.S. (Johns Hopkins 1994); M.D. (Eastern Virginia 1998) [2003]

DAI H. CHUNG, Assistant Professor of Pediatric Surgery; Assistant Professor of Cancer Biology B.A. (Texas, Austin 1984); M.D. (Texas, Galveston 1988) [2009]

OK YUNG CHUNG, Associate Professor of Clinical Anesthesiology

B.A. (Johns Hopkins 1979); M.D. (Northwestern University Medical School 1983); M.B.A. (Vanderbilt 1997) [1994]

LARRY R. CHURCHILL, Ann Geddes Stahlman Professor of Medical Ethics; Professor of Medicine; Professor of Religion

B.A. (Rhodes 1967); M.Div., Ph.D. (Duke 1970, 1973) [2002]

ANDRÉ LEMONT CHURCHWELL, Associate Professor of Medicine; Associate Professor of Radiology and Radiological Sciences; Associate Dean for Diversity in Graduate Medical Education and Faculty Affairs

B.S. (Vanderbilt 1975); M.D. (Harvard 1979) [1991]

KEITH B. CHURCHWELL, Associate Professor of Medicine; Associate Professor of Radiology and Radiological Sciences; Executive Director and Chief Medical Officer, Vanderbilt Heart and Vascular Institute

A.B. (Harvard 1983); M.D. (Washington University 1987) [1998]

KEVIN B. CHURCHWELL, Associate Professor of Pediatrics; Associate Professor of Anesthesiology; Chief Executive Officer and Executive Director, Monroe Carell Jr. Children's Hospital at Vanderbilt; Associate Professor of Biomedical Informatics

B.S. (Massachusetts Institute of Technology 1983); M.D. (Vanderbilt 1987) [1995]

FRANK CHYTIL, Professor of Biochemistry, Emeritus

R.T.Dr. (School of Chemical Technology [Prague] 1952); C.Sc. (Czechoslovakia Academy of Sciences 1956) [1969]

PHILIP J. CIAMPA, Instructor in Clinical Medicine; Instructor in Clinical Pediatrics

B.A. (Cornell 1999); M.D. (Vanderbilt 2004) [2009]

STEPHEN JOHN CICO, Assistant Professor of Emergency Medicine; Assistant Professor of Medicine; Assistant Professor of Pediatrics

B.S. (Wright State 1993); M.D. (Cincinnati 1997) [2004]

WALTER K. CLAIR, Assistant Professor of Medicine

A.B., M.D., M.P.H. (Harvard 1977, 1981, 1985) [1999]

JEFFREY A. CLANTON, Associate in Radiology and Radiological Sciences

B.S. (Samford 1976); M.S. (Southern California 1977) [1978]

BERTHA SMITH CLARK, Adjunct Assistant Professor of Hearing and Speech Sciences

B.S. (Tennessee State 1964); M.A. (Peabody 1965); Ph.D. (Vanderbilt 1982) [1970]

CRAIG A. CLARK, Assistant Clinical Professor of Psychiatry

B.S., M.D. (Marshall 1984, 1988) [1993]

JOHN THOMAS CLARK, Adjunct Professor of Pharmacology

B.A. (Southampton 1974); M.A. (San Francisco State 1980); Ph.D. (Stanford 1983) [2001]

NATHANIEL KIM CLARK, Assistant Professor of Psychiatry

B.A. (Yale 1994); M.D. (Boston University 2001) [2007]

PETER E. CLARK, Associate Professor of Urologic Surgery

B.A. (Cornell 1989); M.D. (Harvard 1994) [2006]

KATHERINE L. CLARKE-HANEY, Clinical Instructor in Obstetrics and Gynecology

B.A., M.D. (Vanderbilt 1992, 1997) [2001]

STEPHEN H. CLAYCOMB, Clinical Instructor in Pediatrics

B.S. (Northeast Louisiana 1984); M.D. (Arkansas 1989) [2002]

ANNA S. CLAYTON, Assistant Professor of Medicine

B.S. (Maryland, College Park 1985); M.D. (Uniformed University of Health Sciences 1990) [2007]

ELLEN WRIGHT CLAYTON, Rosalind E. Franklin Professor of Genetics and Health Policy; Director, Health Policy Center; Professor of Pediatrics; Professor of Law; Co-Director, Center for Biomedical Ethics and Society; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Duke 1974); M.S. (Stanford 1976); J.D. (Yale 1979); M.D. (Harvard 1985) [1988]

GEORGE H. CLAYTON, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.A. (Wake Forest 1983); D.D.S. (North Carolina 1987) [2004]

WARREN CLAYTON, JR., Instructor in Clinical Medicine

B.S. (Tuskegee 1995); M.S. (Johns Hopkins 1997); M.D. (Alabama, Birmingham 2003) [2009]

JOHN H. CLEATOR, Assistant Professor of Medicine

B.S. (The Citadel 1991); M.D., Ph.D. (Medical University of South Carolina 1999, 1999) [2007]

THOMAS F. CLEVELAND, Professor of Otolaryngology

B.A., B.M. (Mississippi 1964, 1969); M.M., Ph.D. (Southern California 1970, 1976) [1991]

RUFUS CLIFFORD, Clinical Professor of Pediatrics

B.S. (Lipscomb 1954); M.D. (Tennessee 1959) [2006]

BARBARA CLINTON, Director, Center for Health Services; Adjoint Instructor in Social Work in Nursing; Adjunct Assistant Professor of Medical Education and Administration;

Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (SUNY, Buffalo 1970); M.S.W. (Georgia 1980) [1986]

MARY ELLEN CLINTON, Assistant Clinical Professor of Neurology

B.S. (Loyola, Los Angeles 1972); M.D. (Southern California 1976) [1982]

MARK A. CLYMER, Assistant Clinical Professor of Otolaryngology B.S., M.D. (Iowa 1986, 1990) [2000]

ANTHONY J. CMELAK, Associate Professor of Radiation Oncology

B.S. (California, Berkeley 1987); M.D. (Northwestern 1992) [1996]

JERRY P. CO, Assistant Clinical Professor of Psychiatry

B.S., M.D. (Santo Tomas 1984, 1988) [2006]

CHARLES E. COBB, Research Associate Professor of Molecular Physiology and Biophysics; Associate Professor of Nursing

B.S., M.S. (Michigan Technological 1980, 1981); Ph.D. (Vanderbilt 1986) [1990]

LAYLA M. COCHRAN, Assistant in Medicine

B.S. (Tennessee Technological 2002); M.S.N. (Vanderbilt 2007) [2008]

MICHELLE MACHT COCHRAN, Assistant Clinical Professor of Psychiatry

B.S. (Centre College 1988); M.D. (Louisville 1992) [1996]

SIMONA G. CODREANU, Research Instructor in Biochemistry

B.S. (Bucharest Polytechnic Institute 1989); M.S., Ph.D. (Vanderbilt 2000, 2003) [2005]

CHARLES WILLIAM COFFEY II, Professor of Radiation Oncology; Associate Professor of Physics

B.S., M.S. (Kentucky 1971, 1972); Ph.D. (Purdue 1975) [2004]

ROBERT J. COFFEY, JR., John B. Wallace Professor of Medicine; Professor of Cell and Developmental Biology; Ingram Professor of Cancer Research

A.B. (Princeton 1970); M.D. (Georgetown 1976) [1986]

CHERYL M. COFFIN, Ernest W. Goodpasture Professor of Pathology

A.B. (Bowdoin 1975); M.D. (Vermont 1980) [2008]

JOY DARLENE COGAN, Research Associate Professor of Pediatrics

A.B. (Transylvania 1983); Ph.D. (Vanderbilt 1991) [2003]

ALAN G. COHEN, Associate Clinical Professor of Medicine

B.S. (Washington and Lee 1967); M.D. (Johns Hopkins 1971) [1979]

JONATHAN A. COHEN, Assistant Clinical Professor of Surgery at St. Thomas Medical Center B.S. (California, Berkeley 1990); M.D. (New York 1994) [2003]

MELINDA P. COHEN, Associate in Pediatrics

B.S. (Rutgers 1973); M.S. (Georgetown 1976) [1985]

RENEE L. COHEN, Assistant Clinical Professor of Medicine

B.A. (Dartmouth 1990); M.D. (New York 1994) [2001]

STANLEY COHEN, Distinguished Professor of Biochemistry, Emeritus

B.A. (Brooklyn College 1943); M.A. (Oberlin 1945); Ph.D. (Michigan 1948); D.Sc. (hon., Chicago 1985); D.Sc. (hon., City University of New York, Brooklyn College 1987); D.Sc. (hon., Oberlin 1989) [1959]

MARVIN HARRIS COHN, Assistant Clinical Professor of Medicine

B.A., M.D. (Vanderbilt 1958, 1961) [2003]

ROGER J. COLBRAN, Professor of Molecular Physiology and Biophysics; Investigator,

Vanderbilt Kennedy Center for Research on Human Development

B.Sc. (Bristol 1982); Ph.D. (Newcastle upon Tyne 1985) [1986]

ROSANNE COLEMAN, Clinical Instructor in Pediatrics

B.S. (Christian Brothers 1985); M.D. (Tennessee 1994) [2009]

ERIC E. COLGROVE, Clinical Instructor in Pediatrics

B.A. (California, Davis 1991); M.D. (Vanderbilt 1995) [2006]

KEVIN B. COLLEN, Clinical Instructor in Psychiatry

B.S. (Texas Tech 1991); M.D. (Texas, San Antonio 1999) [2005]

BRYAN RICHARD COLLIER, Assistant Professor of Surgery; Assistant Professor of Medicine B.S. (Wake Forest 1992); D.O. (Philadelphia College of Osteopathic Medicine 1997) [2004]

DAVID REID COLLINS, Clinical Instructor in Pediatrics

B.E. (Vanderbilt 1993); M.D. (Tennessee, Memphis 1997) [2000]

DOUGLAS JERRY COLLINS, Clinical Instructor in Pediatrics

B.S. (Memphis State 1987); M.D. (Arkansas 1991) [2006]

HAROLD BRECKINRIDGE COLLINS II, Associate Clinical Professor of Obstetrics and Gynecology

B.A. (Vanderbilt 1985); M.D. (Tennessee 1989) [2008]

JO ANN COOK COLLINS, Instructor in Clinical Pediatrics

B.S. (Birmingham Southern 1993); M.D. (Vanderbilt 1997) [2000]

MERI SHAW COLLINS, Clinical Instructor in Pediatrics

B.S. (University of the South 1992); M.D. (Tennessee, Memphis 1996) [2002]

ROBERT D. COLLINS, Professor of Pathology

B.A., M.D. (Vanderbilt 1948, 1951) [1957]

BRUCE E. COMPAS, Patricia and Rodes Hart Professor of Psychology and Human Development; Professor of Psychology, Peabody College; Professor of Pediatrics; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A., M.A., Ph.D. (California, Los Angeles 1973, 1975, 1980) [2002]

RAOUL S. CONCEPCION, Assistant Clinical Professor of Urologic Surgery B.S. (Toledo 1979); M.D. (Medical College of Ohio 1984) [1990]

ROGER D. CONE, Professor of Molecular Physiology and Biophysics and Chair of the

B.A. (Princeton 1980); Ph.D. (Massachusetts Institute of Technology 1985) [2008]

PETER JEFFREY CONN, Professor of Pharmacology; Director, Program in Translational Neuropharmacology; Investigator, Center for Molecular Neuroscience B.S. (Lee 1981); Ph.D. (Vanderbilt 1986) [2003]

JOHN J. CONNORS, Professor of Radiology and Radiological Sciences; Professor of Neurological Surgery: Professor of Neurology

B.E. (Vanderbilt 1971); M.D. (Mississippi 1975) [2009]

EDWARD GAGE CONTURE, Professor of Hearing and Speech Sciences; Director, Division of Graduate Studies; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Emerson 1967); M.S. (Northwestern 1968); Ph.D. (lowa 1972) [1997]

ALICE C. COOGAN, Associate Professor of Pathology

B.A. (Stanford 1984); M.D. (Vanderbilt 1988) [1997]

PHILIP GERLACH COOGAN, Assistant Clinical Professor of Orthopaedics and Rehabilitation A.B. (Harvard 1984); M.D. (Vanderbilt 1988) [2000]

REBECCA S. COOK, Research Assistant Professor of Cancer Biology

B.S. (Vanderbilt 1993); Ph.D. (Cincinnati 1998) [2008]

MICHAEL S. COOKSON, Patricia and Rodes Hart Professor of Urologic Surgery B.A., M.D. (Oklahoma 1984, 1988) [1998]

LINDSEY W. COOPER, SR., Assistant Clinical Professor of Oral and Maxillofacial Surgery D.M.D. (Kentucky 1975) [2003]

MICHAEL KANE COOPER, Assistant Professor of Neurology; Member, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience

B.S. (Rhodes 1987); M.D. (Alabama 1992) [2002]

ROBERT SETH COOPER, Clinical Professor of Medicine

B.S., M.D. (Louisiana State 1967, 1971) [1976]

TIMOTHY J. COOPER, Assistant Professor of Pediatrics

B.A. (Christian Brothers College 1986); M.A. (Middle Tennessee State 1992); Psy.D. (Spalding 1999) [2006]

WILLIAM O. COOPER, Professor of Pediatrics; Professor of Preventive Medicine B.A. (Transylvania 1987); M.D., M.P.H. (Vanderbilt 1991, 1997) [1996]

REGINALD W. COOPWOOD, Associate Clinical Professor of Surgery

B.S. (Oakwood 1981); M.D. (Meharry Medical 1985) [2001]

JACKIE D. CORBIN, Professor of Molecular Physiology and Biophysics

B.S. (Tennessee Technological 1963); Ph.D. (Vanderbilt 1968) [1971]

KYLIE M. CORMIER, Assistant Professor of Clinical Pediatrics

B.S. (Northeast Louisiana 1997); M.D. (Louisiana State 2003) [2007]

LALA A. CORNELIUS, Assistant Professor of Clinical Medicine

M.D. (People Friendship [Russia] 1990) [2005]

CARLTON CORNETT, Assistant Clinical Professor of Psychiatry

B.A. (Huntington College 1982); M.S.S.W. (Georgia 1984); L.C.S.W. [2007]

HERNAN CORREA, Associate Professor of Pathology

M.D. (Universidad del Valle, Cali [Colombia] 1982) [2006]

PELAYO CORREA, Ann Potter Wilson Distinguished Chair in Colon Cancer; Professor of Medicine; Professor of Pathology

M.D. (Universidad de Antioquia [Colombia] 1949) [2005]

DAVID CORTEZ, Professor of Biochemistry; Ingram Professor of Cancer Research B.S. (Illinois 1993); Ph.D. (Duke 1997) [2002]

JACKSON DANIEL COTHREN, Clinical Instructor in Obstetrics and Gynecology M.D. (Tennessee 1968) [1978]

ROBERT B. COTTON, Professor of Pediatrics

B.A., M.D. (Virginia 1961, 1965) [1972]

R. STEVEN COUCH, Assistant Professor of Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Austin 1978); M.D. (Baylor 1982) [1993]

ALLISON CUMMINGS COUDEN, Clinical Instructor in Pediatrics

B.S. (Furman 1992); M.D. (Tennessee, Memphis 1996) [2002]

THOMAS L. COURTNEY, Clinical Instructor in Pediatrics

B.S. (Pennsylvania 1987); M.S., M.D. (Virginia 1989, 1993) [2008]

TIMOTHY L. COVER, Professor of Medicine; Associate Professor of Microbiology and Immunology

B.S. (Muhlenberg 1980); M.D. (Duke 1984) [1990]

RONALD L. COWAN, Assistant Professor of Psychiatry; Assistant Professor of Radiology and Radiological Sciences; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Christian Brothers 1984); Ph.D. (Tennessee 1990); M.D. (Cornell 1994) [2002]

CHARLES L. COX III, Assistant Professor of Orthopaedics and Rehabilitation

B.E. (Vanderbilt 1998); M.D. (Tennessee 2002) [2007]

JENNIFER E. COX, Clinical Instructor in Pediatrics

B.S. (Vanderbilt 2000); M.D. (Tennessee 2004) [2007]

DAVID ROBERTSON COXE, Assistant Professor of Medicine

B.S. (Davidson 1985); M.D. (Vanderbilt 1989) [1992]

ALLEN SCOTT CRAIG, Associate Clinical Professor of Preventive Medicine; Associate Clinical Professor of Family Medicine

B.A. (SUNY, Geneseo 1978); M.D. (Albert Einstein College of Medicine 1982) [1998]

TERESA PERRY CRASE, Assistant Clinical Professor of Pediatrics

B.S. (Illinois 1997); M.D. (Kentucky 2002) [2005]

DANA C. CRAWFORD, Assistant Professor of Molecular Physiology and Biophysics

B.S. (Vanderbilt 1995); Ph.D. (Emory 2000) [2006]

ERICA L. CRAWFORD, Instructor in Clinical Pediatrics

B.S. (Hampton 2000); M.D. (Meharry Medical 2004) [2007]

JEFFREY L. CREASY, Associate Professor of Radiology and Radiological Sciences

B.S. (Michigan State 1976); M.D. (North Carolina 1980) [1996] CLARENCE B. CREECH II, Assistant Professor of Pediatrics

B.S. (Vanderbilt 1995); M.D. (Tennessee 1999); M.P.H. (Vanderbilt 2006) [2006]

MARSHALL H. CRENSHAW, Assistant Professor of Medicine

B.S. (Rhodes 1978); M.D. (Tulane 1982) [1989]

SARAH PETERS CRIBBS, Assistant Professor of Medicine; Assistant Professor of Orthopaedics and Rehabilitation

B.A. (Texas 1999); M.D. (Baylor 2003) [2008]

KIMBERLY CRIMIN, Research Associate Professor of Biostatistics

B.S. (Lake Superior State 1991); M.S., Ph.D. (Western Michigan 1993, 2002) [2009]

MARTA ANN CRISPENS, Assistant Professor of Obstetrics and Gynecology

B.S. (Emory 1987); M.D. (Alabama 1991) [2002]

GENEA S. CROCKETT, Assistant in Molecular Physiology and Biophysics

B.A., M.S. (Auburn 1986, 1988) [2001]

OSCAR B. CROFFORD, JR., Professor of Medicine, Emeritus

B.A., M.D. (Vanderbilt 1952, 1955) [1965]

ANGUS M. G. CROOK, Associate Clinical Professor of Obstetrics and Gynecology

B.A. (University of the South 1949); M.D. (Virginia 1953) [1968]

DEBORAH O. CROWE, Assistant Clinical Professor of Pathology

B.S. (Kentucky 1974); Ph.D. (Louisville 1985) [1989]

DONNA J. CROWE, Clinical Instructor in Obstetrics and Gynecology

B.S. (Birmingham-Southern 1989); M.D. (Vanderbilt 1993) [1997]

JAMES E. CROWE, JR., Professor of Pediatrics; Ingram Professor of Cancer Research; Professor of Microbiology and Immunology

B.S. (Davidson 1983); M.D. (North Carolina 1987) [1995]

CRISTINA REYES CRUZ, Assistant Clinical Professor of Pediatrics B.S., M.D. (Santo Tomas 1984, 1988) [2005]

SUZANNE T. CSORNA, Instructor in Obstetrics and Gynecology

B.A., M.S.N. (Vanderbilt 2000, 2006) [2007]

RAMON FONTANILLA CUEVAS, Assistant Professor of Neurology; Assistant Professor of Pediatrics

B.A., M.D. (lowa 1995, 1999) [2004]

YONG CUI, Assistant Professor of Internal Medicine at Meharry Medical College; Assistant Professor of Medicine at Vanderbilt

M.D. (Anhui Medical [China] 1982); M.Sc. (Nanjing Medical [China] 1987); M.S.P.H. (Meharry Medical 2004) [2006]

MICHAEL JOHN CULL, Associate in Psychiatry

B.S.N. (Tennessee 1997); M.S.N. (Vanderbilt 2000) [2002]

KELLY E. CUNNINGHAM, Assistant Professor of Medicine

B.S. (Emory 1999); M.D. (Pennsylvania State 2004) [2008]

LEON W. CUNNINGHAM, Professor of Biochemistry, Emeritus

B.S. (Auburn 1947); M.S., Ph.D. (Illinois 1949, 1951) [1953]

KEVIN P. M. CURRIE, Assistant Professor of Anesthesiology; Assistant Professor of

Pharmacology; Investigator, Center for Molecular Neuroscience

B.Sc. (Edinburgh 1990); Ph.D. (London 1994) [2002]

KIMBERLY ARNOLD CURRIER, Assistant in Medicine; Clinical Instructor in Nursing

B.B.A. (Houston 1989); M.S.N. (Vanderbilt 2001); R.N. [2004]

RICHARD T. D'AQUILA, Addison B. Scoville Professor of Medicine; Professor of Microbiology and Immunology; Director, Center for AIDS Research

B.A. (Yale 1975); M.D. (Albert Einstein 1979) [2001]

KATHRYN MCCRYSTAL DAHIR, Assistant Professor of Medicine

B.A. (Virginia 1995); M.D. (Eastern Virginia 1999) [2004]

CHUN-HUA DAI, Research Assistant Professor of Medicine M.D., M.Sc. (Hunan Medical 1975, 1986) [1992]

QI DAI, Assistant Professor of Medicine

M.D. (Shanghai Medical 1990); Ph.D. (South Carolina 2001) [2003]

DONNA KATHRYN DAILY, Associate Professor of Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Kansas State 1966); M.D., M.A. (Kansas 1972, 1983) [2003]

ARTHUR FREDERICK DALLEY II, Professor of Cell and Developmental Biology; Professor of Orthopaedics and Rehabilitation

B.S., Ph.D. (Utah 1970, 1975) [1998]

BRUCE M. DAMON, Assistant Professor of Radiology and Radiological Sciences; Assistant Professor of Molecular Physiology and Biophysics; Assistant Professor of Biomedical Engineering

B.S. (Massachusetts 1987); M.S., Ph.D. (Illinois 1993, 2000) [2002]

JULIE B. DAMP, Assistant Professor of Medicine

B.S. (Tennessee 1997); M.D. (Vanderbilt 2001) [2007]

BRUCE B. DAN, Adjunct Associate Professor of Preventive Medicine

S.B. (Massachusetts Institute of Technology 1968); M.D. (Vanderbilt 1974) [1994]

THAO P. DANG, Assistant Professor of Medicine; Assistant Professor of Cancer Biology B.S. (Chestnut Hill 1988); M.D. (Medical College of Pennsylvania 1993) [2000]

JULIET MARIE DANIEL, Clinical Instructor in Pediatrics

B.S. (Georgetown 1991); M.D. (Northwestern 1995) [2009]

JAMES F. DANIELL, JR., Clinical Professor of Obstetrics and Gynecology; Clinical Professor of Nursing

B.S. (David Lipscomb 1965); M.D. (Tennessee 1967) [1976]

TITUS LUTHER DANIELS, Assistant Professor of Medicine

B.S. (Wichita State 1997); M.D. (Kansas 2001); M.P.H. (Vanderbilt 2007) [2006]

BENJAMIN J. DANZO, Professor of Obstetrics and Gynecology, Emeritus; Research Professor of Biochemistry, Emeritus

B.A. (Steubenville 1965); M.S. (Arkansas 1968); Ph.D. (Michigan 1971) [1972]

ANH H. DAO, Associate Professor of Pathology, Emeritus

B.A. (Nguyen Trai College 1951); M.D. (Saigon 1960); M.S. (Vermont 1964) [1975]

DAWOOD DARBAR, Associate Professor of Medicine

M.B., Ch.B., M.D. (Dundee [Scotland] 1989, 2001) [2002]

JAYASRI DASGUPTA, Research Instructor in Pathology

B.Sc., M.Sc., Ph.D. (Calcutta 1973, 1975, 1988) [2007]

JAYDIP DATTA, Adjunct Assistant Professor of Radiology and Radiological Sciences M.D. (Delhi [India] 1991) [2004] PRAN KRISHNA DATTA, Associate Professor of Surgery; Associate Professor of Cancer Biology B.Sc., M.Sc. (Burdwan [India] 1979, 1982); Ph.D. (Bose Institute [India] 1987) [2000]

SUKDEB DATTA, Associate Professor of Anesthesiology

M.D. (N.R.S. Medical College [India] 1989) [2005]

JEFFERY B. DATTILO, Assistant Professor of Surgery B.S. (Eckerd 1987); M.D. (East Carolina 1993) [2002]

JASON T. DAUME, Assistant Professor of Anesthesiology

B.S. (University of Washington 1991); M.D. (Ohio State 2002) [2007]

UTPAL P. DAVE, Assistant Professor of Medicine; Assistant Professor of Cancer Biology B.S., M.D. (Northwestern 1990, 1994) [2005]

SUANNE M. DAVES, Associate Professor of Clinical Anesthesiology

B.S. (Cameron 1981); M.D. (Oklahoma 1987) [2008]

JEFFREY MARK DAVIDSON, Professor of Pathology

B.S. (Tufts 1967); M.S., Ph.D. (Stanford 1969, 1975) [1986]

WILLIAM RAYMOND DAVIDSON, Clinical Instructor in Pediatrics

B.S. (Tennessee, Martin 1985); M.D. (Tennessee 1989) [1992]

SEAN S. DAVIES, Assistant Professor of Pharmacology B.S., Ph.D. (Utah 1993, 1999) [2002]

CARLA M. DAVIS, Clinical Instructor in Pathology

B.S. (Illinois 1970); M.D. (Vanderbilt 1974) [1978]

G. NICOLE DAVIS, Instructor in Radiology and Radiological Sciences B.A. (Texas A & M 1998); M.A., Ph.D. (Colorado 2005, 2006) [2009]

GORDON B. DAVIS, Clinical Instructor in Pediatrics

B.A. (California, Berkeley 1972); M.D. (Creighton 1976) [2006]

PATRICIA C. DAVIS, Clinical Professor of Pediatrics

B.S., M.D. (Tennessee 1962, 1965) [2006]

RICHARD A. DAVIS, Assistant Professor of Orthopaedics and Rehabilitation

B.A. (Cornell 1994); M.D. (Georgetown 1998) [2004]

RODNEY DAVIS, Professor of Urologic Surgery

B.S. (Ouachita Baptist 1978); M.D. (Tulane 1982) [2007]

STEPHEN M. DAVIS, Assistant Clinical Professor of Plastic Surgery

B.S. (Vanderbilt 1976); M.D. (Meharry Medical 1981) [1998]

STEPHEN NEIL DAVIS, Mark Collie Professor of Diabetes Research; Professor of Medicine;

Professor of Molecular Physiology and Biophysics; Chief, Division of Diabetes,

Endocrinology, and Metabolism

M.B.B.S. (London 1979); F.R.C.P. [1988]

THOMAS L. DAVIS, Associate Professor of Neurology; Director, Division of Movement Disorders

B.A. (Wooster 1981); M.D. (Mississippi 1985) [1991]

WILLIAM G. DAVIS, Clinical Instructor in Otolaryngology

B.A. (Vanderbilt 1961); M.D. (Tennessee 1964) [1970]

BENOIT M. DAWANT, Professor of Electrical Engineering; Professor of Computer Science; Professor of Radiology and Radiological Sciences

M.S. (Université catholique de Louvain 1982); Ph.D. (Houston 1987) [1988]

SHEILA PATRICIA DAWLING, Associate Professor of Pathology

B.Sc. (Surrey 1976); Ph.D. (London 1981) [1996]

ERIC S. DAWSON, Research Assistant Professor of Biochemistry

B.S. (Alabama 1994); Ph.D. (Vanderbilt 2001) [2005]

MARK P. DE CAESTECKER, Associate Professor of Medicine; Assistant Professor of Cancer Biology; Associate Professor of Cell and Developmental Biology; Associate Professor of Surgery

B.A., M.A. (Cambridge 1980, 1980); M.B.B.S. (London 1983); Ph.D. (Manchester 1994) [2000]

NIELS DE JONGE, Assistant Professor of Molecular Biology and Biophysics

B.S., M.S. (Amsterdam [Netherlands] 1994, 1994); Ph.D. (Freiburg [Germany] 1999) [2007]

MICHAEL DE RIESTHAL, Assistant Professor of Hearing and Speech Sciences

B.S. (Northwestern 1997); M.S., Ph.D. (Vanderbilt 1999, 2003) [2007]

NATASHA GRANT DEANE, Research Associate Professor of Surgery; Research Associate Professor of Radiology and Radiological Sciences

B.S. (Brown 1984); Ph.D. (Texas 1995) [2004]

DAVID K. DEBOER, Assistant Clinical Professor of Orthopaedics and Rehabilitation B.A. (Westmar 1983); M.S., M.D. (Vanderbilt 1986, 1990) [1995]

JILL DEBONA, Assistant Clinical Professor of Psychiatry

B.A. (Virginia 1986); M.D. (Vanderbilt 1990) [1994]

MICHAEL D. DECKER, Adjunct Professor of Preventive Medicine

B.S. (California Institute of Technology 1969); M.D. (Rush 1978); M.P.H. (Illinois 1982) [1986]

ROBERT J. DEEGAN, Associate Professor of Clinical Anesthesiology; Director, Division of Cardiac Anesthesiology

B.Sc., M.D., Ph.D. (University College, Dublin 1988, 1986, 1991) [1996]

MATTHEW A. DEELEY, Instructor in Radiation Oncology

B.A., M.D. (Vanderbilt 2002, 2006) [2009]

THOMAS A. DEERING, Assistant Clinical Professor of Pathology

B.S., M.D. (lowa 1979, 1988) [2002]

MARY ELLEN DEES, Assistant Professor of Pediatrics

B.A., M.D. (Case Western Reserve 1986, 1991) [1999] K. HUDSON DEETER, Associate in Orthopaedics and Rehabilitation

B.A. (Kansas 1994); D.P.M. (Ohio College of Podiatric Medicine 1999) [2006]

ROY L. DEHART, Professor of Medicine; Professor of Preventive Medicine

B.S., M.D. (Tennessee 1957, 1960); M.P.H. (Johns Hopkins 1965) [1999]

DOMINIQUE DELBEKE, Professor of Radiology and Radiological Sciences

M.D., Ph.D. (Free University of Brussels 1978, 1985) [1990]

AUBREY M. DELK, Clinical Instructor in Emergency Medicine

B.S. (David Lipscomb 2002); M.D. (Tennessee, Memphis 2006) [2009]

JAN STALLINGS DELOZIER, Assistant Professor of Clinical Medicine

A.B., M.D. (Tennessee 1978, 1982) [1991]

JOSEPH B. DELOZIER III, Assistant Clinical Professor of Plastic Surgery

B.A. (University of the South 1977); M.D. (Tennessee, Memphis 1982) [2000]

ERIC DELPIRE, Professor of Anesthesiology; Professor of Molecular Physiology and

Biophysics; Investigator, Vanderbilt Kennedy Center for Research on Human

Development; Investigator, Center for Molecular Neuroscience

B.S., M.S., Ph.D. (Liège [Belgium] 1981, 1983, 1989) [1997]

SAMUEL HOUSTON DEMENT, Assistant Clinical Professor of Pathology

A.B. (Tennessee 1977); M.D. (Vanderbilt 1982) [1989]

SANDRÀ L. DEMING, Assistant Professor of Medicine

B.S. (Southern California, Los Angeles 1992); M.P.H. (George Washington 1996); Ph.D. (North Carolina, Chapel Hill 2005) [2009]

JEFFREY M. DENDY, Assistant Professor of Medicine

B.E., M.D. (Vanderbilt 1996, 2000) [2007]

NANETTE ELDRIDGE DENDY, Assistant Professor of Clinical Medicine

B.S. (Western Kentucky 1997); M.D. (Tennessee, Memphis 2001) [2004]

MARK R. DENISON, Professor of Pediatrics; Professor of Microbiology and Immunology B.S., M.D. (Kansas 1977, 1980) [1991]

THOMAS WADE DENNEY, Clinical Professor of Pediatrics

B.S. (Lipscomb 1962); M.D. (Tennessee 1986) [2006]

JOSHUA C. DENNY, Assistant Professor of Clinical Biomedical Informatics; Assistant Professor of Medicine

B.S., M.D. (Vanderbilt 1998, 2003) [2006]

JEROD SCOTT DENTON, Assistant Professor of Anesthesiology; Assistant Professor of Pharmacology

B.S., M.S. (Central Arkansas 1995, 1997); Ph.D. (Dartmouth 2001) [2005]

MARK DENTZ, Clinical Instructor in Anesthesiology

B.S., M.D. (Michigan 1986, 1989) [2009]

MARIA PIA G. DEPASQUALE, Research Assistant Professor of Medicine; Research Assistant Professor of Microbiology and Immunology Ph.D. (Milan [Italy] 1990) [2001]

CHARLES V. DEPRIEST, Assistant Professor of Radiology and Radiological Sciences A.B., M.D. (Harvard 1977, 1982) [2008]

TERENCE S. DERMODY, Professor of Pediatrics; Professor of Microbiology and Immunology B.S. (Cornell 1978); M.D. (Columbia 1982) [1990]

RONALD G. DERR, Assistant Professor of Clinical Orthopaedics and Rehabilitation B.S. (Ohio State 1979); D.O. (Ohio University 1988) [2009]

NEERAV A. DESAI, Assistant Professor of Pediatrics

B.E. (Vanderbilt 1998); M.D. (Tennessee 2002) [2006]

JAYANT K. DESHPANDE, Professor of Anesthesiology; Professor of Pediatrics; Director, Division of Pediatric Pulmonary Medicine

A.B. (Boston University 1973); M.D. (Tennessee 1976) [1990]

M. SHEILA DESMOND, Professor of Clinical Pediatrics

B.A. (CUNY 1971); M.D. (New York Medical College 1975) [2009]

WOLF-DIETRICH DETTBARN, Professor of Pharmacology, Emeritus

M.D. (Georg-August-Universität Göttingen 1953) [1968]

KRISTEN DETTORRE, Instructor in Emergency Medicine

B.S. (Kent State 2002); M.D. (Northeastern Ohio 2006) [2009]

ARIEL Y. DEUTCH, Professor of Psychiatry; Professor of Pharmacology; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience

B.A. (Vanderbilt 1973); Ph.D. (Georgia 1983) [1996]

VAITHILINGAM G. DEV, Assistant Clinical Professor of Pathology

B.V.Sc. (Madras [India] 1959); M.S., Ph.D. (Missouri 1961, 1965) [1998]

CLINT J. DEVIN, Assistant Professor of Orthopaedics and Rehabilitation

B.S. (Wyoming 1998); M.D. (Vanderbilt 2002) [2008]

VICTORIA J. DEVITO, Associate Professor of Clinical Pediatrics

B.S. (Ohio 1976); M.D. (Medical College of Ohio, Toledo 1979) [2005]

JOSEPH EDWARD DEWEESE, Adjunct Assistant Professor of Biochemistry

B.S. (Freed-Hardeman 2004); Ph.D. (Vanderbilt 2009) [2009]

CHARLENE M. DEWEY, Associate Professor of Medical Education and Administration; Associate Professor of Medicine

B.S. (Bradley 1985); M.D. (Morehouse 1990); M.Ed. (Houston 2004) [2007]

PUNITA DHAWAN, Assistant Professor of Surgery; Assistant Professor of Cancer Biology B.S. (Delhi [India] 1991); M.S. (India Institute 1993); Ph.D. (Arkansas 1999) [2002]

THOMAS G. DI SALVO, Associate Professor of Medicine

A.B. (Harvard 1980); M.D. (Cincinnati 1987); M.Sc. (Harvard 1995); M.B.A. (Vanderbilt 2007) [2004]

ALEX B. DIAMOND, Assistant Professor of Orthopaedics and Rehabilitation

B.A. (Duke 1998); D.O. (Philadelphia College of Osteopathic Medicine 2003) [2008]

JOSE J. DIAZ, JR., Associate Professor of Surgery; Associate Professor of Medicine; Clinical Assistant Professor of Nursing

B.S. (Houston Baptist 1988); M.D. (Texas 1992) [1999]

EMMANUELE DIBENEDETTO, Centennial Professor of Mathematics; Professor of Molecular Physiology and Biophysics

B.A. (Università di Firenze 1975); Ph.D. (Texas 1979) [2000]

S. KENT DICKESON, Research Assistant Professor of Pathology B.S. (Missouri State 1985); Ph.D. (Kansas 1991) [2003]

WILLIAM W. DICKINSON, Assistant Professor of Hearing and Speech Sciences B.A., M.A. (Michigan State 1990, 1991); Au.D. (Central Michigan 2004) [2004]

IRINA A. DIDIER, Instructor in Clinical Family Medicine

B.S. (Gomel Medical 1980); M.D. (Minsk State Medical Institute 1987) [2005]

ANDRE MICHAEL DIEDRICH, Research Associate Professor of Medicine; Research Assistant Professor of Biomedical Engineering

M.D. (Second Medical Institute [Moscow] 1985); Ph.D. (Humboldt [Germany] 1991) [2000]

MARY S. DIETRICH, Research Associate Professor of Nursing; Research Associate Professor of Psychiatry; Research Associate Professor of Biostatistics; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Bethel 1979); M.S. (Fort Hays State 1982); Ph.D. (Vanderbilt 1996) [2002]

JOSEPH DIGGS, Assistant Professor of Radiology and Radiological Sciences

B.S. (Cuttington College [Liberia] 1958); M.D. (University of Geneva [Switzerland] 1967) [2000]

MIKHAIL M. DIKOV, Research Assistant Professor of Cancer Biology Ph.D. (Moscow State 1980) [1992]

HOLLI H. DILKS, Research Assistant Professor of Molecular Physiology and Biophysics B.A. (David Lipscomb 1996); Ph.D. (Vanderbilt 2002) [2009]

ELIA C. DIMITRI, Clinical Professor of Pediatrics

B.A. (East Tennessee 1957); M.D. (Tennessee 1960) [2005]

THOMAS S. DINA, Associate Professor of Radiology and Radiological Sciences B.S. (Notre Dame 1961); M.D. (Northwestern 1965) [1994]

GEORGE X. DING, Assistant Professor of Radiation Oncology

B.Sc., M.Sc. (XuZhou Teacher's 1982, 1985); Ph.D. (Carleton 1995) [2004]

ZHAOHUA DING, Assistant Professor of Radiology and Radiological Sciences; Assistant Professor of Electrical Engineering; Assistant Professor of Biomedical Engineering; Assistant Professor of Chemical and Physical Biology

B.E. (University of Electronic Science 1990); M.S., Ph.D. (Ohio State 1997, 1999) [2002]

ANDREW DITTBERNER, Adjunct Assistant Professor of Hearing and Speech Sciences B.A. (North Dakota 1996); M.S. (Arizona 1998); Ph.D. (lowa 2002) [2006]

ROBERT S. DITTUS, Albert and Bernard Werthan Professor of Investigative Medicine; Director, Center for Health Services Research; Director, Institute for Medicine and Public Health

B.S.I.E. (Purdue 1974); M.D. (Indiana 1978); M.P.H. (North Carolina 1984) [1997]

BRYCE W. DIXON, Assistant Clinical Professor of Medicine

A.B. (Tennessee 1974); M.D. (Baylor 1983) [1992]

JOHN H. DIXON, JR., Associate Professor of Medicine B.S. (Duke 1969); M.D. (Vanderbilt 1973) [1978]

ROGER R. DMOCHOWSKI, Professor of Urologic Surgery B.A. (Trinity 1979); M.D. (Texas Medical Branch 1983) [2001] KATHERINE DOBIE, Assistant Professor of Clinical Anesthesiology B.S. (South Carolina 1998); M.D. (East Tennessee State 2003) [2009] DEBRA A. DODD, Associate Professor of Pediatrics B.A., M.D. (Johns Hopkins 1980, 1984) [1990] TRACEY E. DOERING, Assistant Clinical Professor of Medicine B.S. (Rutgers 1981); M.D. (Johns Hopkins 1985) [1989] MARK D. DOES, Associate Professor of Biomedical Engineering; Associate Professor of Radiology and Radiological Sciences B.S., M.S., Ph.D. (Alberta 1991, 1993, 1997) [2002] MICHAEL R. DOHN, Research Assistant Professor of Cancer Biology B.S. (Florida Institute of Technology 1998); Ph.D. (Medical College of Georgia 2001) [2009] RACHEL DOLHUN, Instructor in Neurology B.A. (San Diego 2001); M.D. (Wake Forest 2005) [2009] JENNIFER A. DOMM, Assistant Professor of Pediatrics B.S. (Brown 1996); M.D. (Vanderbilt 2000) [2006] BRIAN S. DONAHUE, Associate Professor of Anesthesiology B.S. (Dayton 1985); Ph.D., M.D. (Emory 1990, 1992) [1996] JOHN P. DONAHUE, Research Assistant Professor of Medicine A.B. (Holy Cross 1971); M.S., Ph.D. (West Virginia 1979, 1981) [1990] RAFE M. DONAHUE, Adjunct Associate Professor of Biostatistics; Research Associate Professor of Surgery B.S. (Dayton 1987); Ph.D. (Colorado State 1992) [2005] SEAN P. DONAHUE, Sam and Darthea Coleman Professor of Ophthalmology and Visual Sciences; Associate Professor of Neurology B.S. (Dayton 1984); Ph.D., M.D. (Emory 1988, 1989) [1995] XINHONG DONG, Adjunct Assistant Professor of Medicine B.S. (Wuhan 1992); Ph.D. (Chinese Academy of Sciences 1997) [2006] EDWIN F. DONNELLY, Associate Professor of Radiology and Radiological Sciences B.S., M.D. (Cincinnati 1992, 1996); Ph.D. (Vanderbilt 2003) [2000] JENNIFER MARIE DONNELLY, Clinical Instructor in Pediatrics B.S., M.D. (Cincinnati 1992, 1996) [1999] PETER D. DONOFRIO, Professor of Neurology B.S. (Notre Dame 1972); M.D. (Ohio State 1975) [2006] TODD J. DORAN, Associate in Urologic Surgery B.S. (Willamette 1989); M.S. (Oregon State 1997); P.A.-C. [2004] THOMAS W. DOUB, Assistant Clinical Professor of Psychiatry B.S. (Oral Roberts 1991); M.S., Ph.D. (Vanderbilt 1994, 2001) [2007] KATHERINE B. DOUGHERTY, Clinical Instructor in Pediatrics B.A. (Siena College 2000); M.D. (Albany 2004) [2008] GLENN C. DOUGLAS, Instructor in Clinical Medicine B.A. (South Florida 1991); M.D. (East Tennessee State 1998) [2003] JOHN DOULIS, Assistant Professor of Biomedical Informatics M.B., B.S. (Monash [Australia] 1993) [2009] CHRISTINE K. DOVE, Assistant Professor of Radiology and Radiological Sciences B.A. (Bowdoin 1996); M.D. (Vanderbilt 2002) [2007] WILLIAM L. DOWNEY, Assistant Clinical Professor of Otolaryngology B.A., M.D. (Vanderbilt 1960, 1963) [1971]

JOHN E. DOWNING, Clinical Professor of Ophthalmology and Visual Sciences

B.S. (Baylor 1959); M.D. (Louisville 1962) [1987]

JOHN WATSON DOWNING, Professor of Anesthesiology; Professor of Obstetrics and Gynecology

M.B., B.Ch. (Witwatersrand 1961) [1989]

THOMAS P. DOYLE, Ann and Monroe Carell Jr. Family Professor of Pediatric Cardiology; Associate Professor of Pediatrics

B.S., M.D. (Arizona 1983, 1987) [1994]

WONDER PURYEAR DRAKE, Assistant Professor of Medicine; Assistant Professor of Microbiology and Immunology

B.S. (Alabama 1990); M.D. (Vanderbilt 1994) [2001]

DEBBIE J. DRAKE-DAVIS, Assistant in Medicine

B.S.N. (Western Kentucky 1995); M.B.A. (David Lipscomb 2002); M.S.N. (Vanderbilt 2004) [2007]

JON W. DRAUD, Assistant Clinical Professor of Psychiatry

B.A. (Thomas More 1986); M.D., M.S. (Kentucky 1990, 1991) [2007]

RICHARD P. DRIESSNACK, Assistant Professor of Orthopaedics and Rehabilitation B.S. (Michigan 1976); M.D. (Wayne State 1980) [2009]

DAVIS C. DRINKWATER, JR., Clinical Professor of Cardiac Surgery at Monroe Carell Jr. Children's Hospital at Vanderbilt

B.A. (Harvard 1969); M.D. (Vermont 1976) [1997]

FRANKLIN J. DRUMMOND, Assistant Clinical Professor of Psychiatry

B.S. (Emory 1988); M.D. (Medical University of South Carolina 1993) [2009]

SUSAN B. DRUMMOND, Assistant in Obstetrics and Gynecology

B.S.N., M.S.N. (Vanderbilt 1988, 1989); R.N. [2005]

LIPING DU, Research Instructor in Pharmacology

B.S. (Dalian [China] 1993); M.S. (Tianjin 1996); Ph.D. (Vanderbilt 2001) [2005]

RAYMOND N. DUBOIS, JR., Professor of Medicine; Professor of Cancer Biology; Professor of Cell and Developmental Biology

B.S. (Texas A & M 1977); Ph.D. (Texas, Dallas 1981); M.D. (Texas Health Science Center, San Antonio 1985) [1991]

MARTHA SHAW DUDEK, Associate in Obstetrics and Gynecology; Associate in Pediatrics B.A. (Washington University 1993); M.S. (Cincinnati 1995) [2001]

B. STEPHENS DUDLEY, Assistant Clinical Professor of Obstetrics and Gynecology B.A., M.D. (Vanderbilt 1973, 1977) [1984]

CAROLINE V. DULEY, Assistant in Medicine

B.S.N. (Arizona 1997); M.S.N. (Vanderbilt 2000); R.N., W.H.N.P. [2003]

CHRISTOPHER J. DULL, Assistant Clinical Professor of Psychiatry

B.A. (Michigan 1989); J.D. (Indiana 1994); M.D. (Vanderbilt 2001) [2005]

J. STEPHEN DUMMER, Professor of Medicine; Professor of Surgery

B.A. (Wesleyan 1966); M.D. (Pittsburgh 1977) [1990]

LAURA L. DUNBAR, Clinical Instructor in Surgery at St. Thomas Medical Center B.A. (Illinois Wesleyan 1976); M.D. (Southern Illinois 1979) [1987]

GARY W. DUNCAN, Professor of Clinical Neurology; Clinical Professor of Hearing and Speech Sciences

B.A., M.D. (Vanderbilt 1963, 1966) [1975]

JAMES A. DUNCAVAGE, Professor of Otolaryngology

B.S. (SUNY, Buffalo 1971); M.D. (Medical College of Wisconsin 1975) [1986]

MARY CATHERINE DUNDON, Associate Clinical Professor of Pediatrics

B.S. (William and Mary 1975); M.D. (Vanderbilt 1979) [1982]

JAMES E. DUNLAP, Instructor in Clinical Family Medicine

B.S. (Southern California 1985); M.D. (Nevada 1990) [2008]

G. DEWEY DUNN, Associate Professor of Medicine

B.A. (Louisiana College 1956); M.D. (Louisiana State 1960) [1971]

JOHN R. DUNN, Assistant Clinical Professor of Preventive Medicine

B.S., D.V.M., Ph.D. (Louisiana State 1991, 1997, 2003) [2005]

JULIA DUNN, Instructor in Medicine

B.S. (Auburn 1998); M.D. (South Alabama 2002) [2008]

MELANIE A. DUNN, Clinical Instructor in Obstetrics and Gynecology

B.S., M.D. (Texas A & M 1983, 1987) [1994]

WARREN REID DUNN, Assistant Professor of Orthopaedics and Rehabilitation; Assistant Professor of Medicine

B.S. (Florida State 1993); M.D. (South Florida 1997); M.P.H. (Columbia 2003) [2004]

JOY LOUISE DUONG, Clinical Instructor in Obstetrics and Gynecology

B.A., M.D. (Vanderbilt 1998, 2002) [2007]

WILLIAM D. DUPONT, Professor of Biostatistics; Professor of Preventive Medicine B.Sc., M.Sc. (McGill 1969, 1971); Ph.D. (Johns Hopkins 1976) [1977]

WILLIAM D. DUTTON, Instructor in Surgery

B.S. (Oklahoma 1992); M.D. (Kansas 1997) [2009]

RYSZARD DWORSKI, Assistant Professor of Medicine

M.D. (Copernicus Academy [Poland] 1985) [2005]

JAMIE P. DWYER, Assistant Professor of Medicine

Sc.B., M.D. (Brown 1996, 2000) [2008]

ELIZABETH PONDER DYKSTRA, Clinical Instructor in Pediatrics

B.A. (Mississippi 1993); M.D. (Medical College of Georgia 1998) [2001]

SUSAN S. EAGLE, Assistant Professor of Clinical Anesthesiology

B.S. (Georgia 1994); M.D. (Medical College of Georgia 1999) [2003]

LETITIA JANE EASDOWN, Associate Professor of Anesthesiology

B.Sc., M.D.C.M. (McGill 1976, 1980) [1996]

EDWARD D. EASTHAM, Clinical Instructor in Pediatrics

B.S. (Rhodes 1978); M.D. (Tennessee, Memphis 1982) [2000]

ROLAND D. EAVEY, Guy M. Maness Professor of Otolaryngology and Chair of the Department; Director, Vanderbilt Bill Wilkerson Center for Otolaryngology and Communication Sciences; Professor of Hearing and Speech Sciences

B.S. (St. Joseph's College 1971); M.D. (Pennsylvania 1975); S.M. (Harvard 2004) [2009]

JON S. EBERT, Assistant Professor of Psychiatry

B.A. (Bethel College 1995); M.A. (Trinity International 1998); Psy.D. (Wheaton College 2003) [2008]

ABBY C. EBLEN, Clinical Instructor in Obstetrics and Gynecology

B.S. (East Tennessee State 1988); M.D. (Tennessee, Memphis 1992) [2002]

FORD F. EBNER, Professor of Psychology, College of Arts and Science; Professor of Cell and Developmental Biology; Member, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience D.V.M. (Washington State 1958); Ph.D. (Maryland 1965) [1991]

CHARLES W. ECKSTEIN, Associate Clinical Professor of Urologic Surgery B.A. (lowa 1972); M.D. (Vanderbilt 1976) [1981]

DALE SCOTT EDGERTON, Research Assistant Professor of Molecular Physiology and Biophysics

B.Sc. (Boise State 1996); Ph.D. (Vanderbilt 2002) [2005]

CHARLES E. EDMISTON, JR., Adjunct Professor of Hearing and Speech Sciences B.A. (SUNY, Plattsburg 1972); M.S. (Michigan State 1975); Ph.D. (Vanderbilt 1982) [2004]

WILLIAM D. EDMONDSON, Clinical Instructor in Pediatrics; Clinical Instructor in Medicine B.S. (Tennessee 1989); M.D. (Tennessee, Memphis 1993) [1997]

JOHN O. EDMUNDS, JR., Visiting Professor of Orthopaedics and Rehabilitation B.A. (Stanford 1962); M.D. (Florida 1967) [2005]

CLAIRE SHIPMAN EDWARDS, Research Assistant Professor of Cancer Biology

B.S., Ph.D. (Sheffield [England] 1995, 1999) [2006]

DAVID L. EDWARDS, Assistant Clinical Professor of Medicine

B.S. (North Carolina State 1971); M.S., M.D. (North Carolina 1979, 1983) [1990]

JAMES ROBIN EDWARDS, Research Instructor in Medicine

B.Sc. (West England 1997); D.Phil. (Oxford [England] 2006) [2008]

JOE MICHAEL EDWARDS, Clinical Instructor in Obstetrics and Gynecology

B.S. (Hendrix 1961); M.D. (Arkansas 1966) [1972]

KATHRYN M. EDWARDS, Sarah H. Sell Professor of Pediatrics; Director, Division of Pediatric Clinical Research; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S., M.D. (lowa 1969, 1973) [1980]

MARY F. EDWARDS, Assistant in Medicine

B.S. (Vanderbilt 1981); M.S.N. (San Diego 1995) [2008]

ROBERT H. EDWARDS, Associate Clinical Professor of Urologic Surgery

B.S. (Western Kentucky 1957); M.D. (Vanderbilt 1960) [1968]

WILLIAM H. EDWARDS, SR., Professor of Surgery, Emeritus

B.A., M.D. (Vanderbilt 1949, 1953) [1960]

WILLIAM H. EDWARDS, JR., Associate Clinical Professor of Surgery at St. Thomas Medical Center

B.A., M.D. (Vanderbilt 1977, 1981) [1988]

MARTIN EGLI, Professor of Biochemistry

B.S., M.S., Ph.D. (ETH-Zurich [Switzerland] 1984, 1988, 1988) [2000]

KRISTIN JOY EHST, Instructor in Clinical Pediatrics; Instructor in Clinical Emergency Medicine B.S., M.D. (Vanderbilt 1999, 2003) [2007]

BRANDT F. EICHMAN, Assistant Professor of Biological Sciences; Assistant Professor of Biochemistry

B.S. (Mississippi 1993); Ph.D. (Oregon State 2000) [2004]

JOSIANE EDWARD EID, Assistant Professor of Cancer Biology

B.S., M.D. (American University of Beirut 1979, 1983) [2002]

TIMOTHY H. EIDSON, Clinical Instructor in Pediatrics

B.S. (Bob Jones n.d.); M.D. (Tennessee, Memphis 1996) [2000]

CHRISTINE MARIE EISCHEN, Associate Professor of Pathology; Associate Professor of Cancer Biology

B.S. (Creighton 1992); Ph.D. (Mayo Clinic 1997) [2006]

ESTHER EISENBERG, Professor of Obstetrics and Gynecology; Director, Division of Reproductive Endocrinology

B.A. (City University of New York, Queens 1973); M.D. (Albert Einstein 1976) [1992]

ROSANA EISENBERG, Assistant Professor of Pathology

M.D. (Universidade Federal do Rio de Janeiro [Brazil] 1981) [2009]

WA'EL EL-RIFAI, Professor of Surgery; Professor of Cancer Biology

M.D., M.Sc. (Ain Shams 1986, 1992); Ph.D. (Helsinki 1996) [2005]

ROY O. ELAM III, Associate Professor of Medicine

B.A. (University of the South 1968); M.D. (Tennessee 1971) [2004]

TOM A. ELASY, Ann and Roscoe R. Robinson Associate Professor of Clinical Research; Associate Professor of Medicine

B.A., M.D. (Maryland 1987, 1991) [1998]

FLORENT ELEFTERIOU, Assistant Professor of Medicine; Assistant Professor of Pharmacology Ph.D. (Claude-Bernard [France] 1999) [2006]

KATE L. J. ELLACOTT, Assistant Professor of Molecular Physiology and Biophysics B.Sc. (Edinburgh 1999); Ph.D. (Manchester 2002) [2008]

JAMES H. ELLIOTT, Professor of Ophthalmology and Visual Sciences, Emeritus B.A. (Phillips 1949); M.D. (Oklahoma 1952) [1966]

CHRISTOPHER R. ELLIS, Assistant Professor of Medicine

B.S. (Cornell 1995); M.D. (Rochester 2000) [2005]

DARREL L. ELLIS, Associate Professor of Medicine

B.S. (Kansas State 1973); M.D. (Kansas 1976) [1984]

SHELLEY E. ELLIS, Instructor in Clinical Medicine

B.A. (Vanderbilt 1992); M.D. (Texas 1996); M.P.H. (Vanderbilt 2001) [2002]

JAMES PATRICK ELROD, Assistant Clinical Professor of Pathology

B.S. (New Mexico Institute of Mining and Technology 1968); Ph.D., M.D. (Kansas 1975, 1978) [1990]

E. WESLEY ELY, Professor of Medicine

B.S., M.D. (Tulane 1985, 1989) [1998]

KIM ADAMS ELY, Assistant Professor of Pathology

B.S. (Massachusetts Institute of Technology 1985); M.D. (Tulane 1989) [1998]

STEVEN A. EMBRY, Assistant Clinical Professor of Medicine

B.S., M.D. (Cincinnati 1980, 1984) [2001]

EDWIN BOYETTE EMERSON, Instructor in Otolaryngology

B.S. (Tennessee, Martin 1977); M.D. (Tennessee 1981) [1986]

RONALD B. EMESON, Joel G. Hardman Professor of Pharmacology; Professor of Molecular Physiology and Biophysics; Professor of Psychiatry; Investigator, Center for Molecular Neuroscience; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Johns Hopkins 1980); Ph.D. (Colorado 1986) [1991]

ESSAM E. ENAN, Research Professor of Biochemistry

B.S, M.Sc., Ph.D. (University of Alexandria [Egypt] 1972, 1976, 1979) [1999]

JEANNINE Z. P. ENGEL, Assistant Professor of Medicine

B.A. (Washington University 1987); M.D. (California, Berkeley 1992) [1996]

BARBARA ENGELHARDT, Associate Professor of Pediatrics

Dr.med. (Ruprecht-Karl-Universität Heidelberg 1976) [1986]

BRIAN GEORGE ENGELHARDT, Assistant Professor of Medicine

B.S. (Michigan 1996); M.D. (Case Western Reserve 2000) [2006]

DAVID ENGLER, Clinical Instructor in Pediatrics

B.A. (Dartmouth 1990); M.D. (Illinois, Chicago 1994) [2004]

STEPHEN S. ENTMAN, Professor of Obstetrics and Gynecology, Emeritus

A.B. (Harvard 1964); M.D. (Duke 1968) [1980]

ROBERT L. EOFF, Research Instructor in Biochemistry

B.S. (Henderson State 2000); Ph.D. (Arkansas 2005) [2009]

MARCIA EPELBAUM, Librarian; Assistant Director, Eskind Biomedical Library

B.A. (Hebrew University of Jerusalem 1976); M.A. (Colorado 1980) [1992]

RICHARD A. EPSTEIN, Assistant Professor of Psychiatry

B.A. (Bates 1995); M.A., Ph.D. (Chicago 1998, 2005) [2008]

STEFAN K. ERCEG, Instructor in Clinical Anesthesiology

B.A., B.S. (Mercer 1995, 1997); M.B., B.S. (Sydney [Australia] 2004) [2009]

KEVIN ERREGER, Research Instructor in Molecular Physiology and Biophysics

B.S. (SUNY, Buffalo 1998); Ph.D. (Emory 2004) [2009]

ANDREW CARL ERTL, Research Assistant Professor of Medicine

B.S. (Wisconsin 1982); M.S., Ph.D. (California, Berkeley 1988, 1993) [2002]

WARREN D. ERVIN, Associate Clinical Professor of Pediatrics

B.S., M.S. (Stanford 1975, 1975); M.D. (Duke 1980) [2003]

JEFFREY B. ESKIND, Assistant Clinical Professor of Medicine

A.B. (Harvard 1976); M.D. (Tulane 1980) [1985]

STEVEN J. ESKIND, Associate Clinical Professor of Surgery at St. Thomas Medical Center A.B. (Washington University 1973); M.D. (Tulane 1977) [1983]

FERDINAND S. ESPELETA, Clinical Instructor in Pediatrics

B.S., M.D. (Santo Tomas [Philippines] 1987, 1991) [2009]

JENNIFER ESS, Clinical Instructor in Pediatrics

B.A. (Pittsburgh 1981); B.S.N. (Creighton 1983); M.S. (Kansas 1989); M.D. (Colorado 1999) [2006]

KEVIN C. ESS, Assistant Professor of Neurology; Assistant Professor of Pediatrics; Assistant Professor of Cell and Developmental Biology; Member, Vanderbilt Kennedy Center for Research on Human Development

B.M., Ph.D., M.D. (Cincinnati 1986, 1996, 1998) [2006]

ROBERT L. ESTES, Associate Professor of Clinical Ophthalmology and Visual Sciences; Associate Professor of Clinical Pediatrics

B.S. (Stanford 1972); M.D. (California, Los Angeles 1976) [1995]

CRISTINA MARIA ESTRADA, Assistant Professor of Pediatrics; Assistant Professor of Emergency Medicine

B.S., M.D. (Florida 1998, 2001) [2005]

LOURDES ESTRADA, Research Assistant Professor of Cancer Biology

B.S. (Puerto Rico 1991); M.S., Ph.D. (Michigan 1994, 1997) [2004]

AMY HURST EVANS, Clinical Instructor in Pediatrics

B.S. (Duke 1983); M.D. (North Carolina 1989) [1999]

LEA HELEN EVANS, Assistant Professor of Hearing and Speech Sciences

B.S. (Lambuth 1987); M.S. (Mississippi 1992); Ph.D. (Tennessee 1997) [2008]

ERNEST WILLIAM EWERS, Clinical Professor of Medicine

B.A. (Emory 1946); M.D. (Vanderbilt 1948) [1954]

ALICIA P. EWING, Clinical Instructor in Pediatrics

B.S. (Mississippi State 2000); M.D. (Mississippi 2004) [2007]

VERNAT J. EXIL, Assistant Professor of Pediatrics

B.S. (State University of Haiti 1978); M.D. (Panama 1985) [2000]

JOHN H. EXTON, Professor of Molecular Physiology and Biophysics; Professor of

Pharmacology: Investigator, Howard Hughes Medical Institute

B.Med.Sc., M.B., Ch.B. (New Zealand 1955, 1958); Ph.D., M.D. (Otago 1963, 1984) [1964]

MARALIE GAFFRON EXTON, Associate in Pathology; Director of the Program in Medical Technology

B.A. (Randolph-Macon Woman's 1978) [1987]

MEREDITH A. EZELL, Assistant Clinical Professor of Ophthalmology and Visual Sciences B.S. (David Lipscomb 1978); M.D. (Tennessee 1982) [1986]

ROBERT B. FABER, Clinical Instructor in Urologic Surgery

B.A., M.D. (Vanderbilt 1966, 1970) [1977]

OLUWOLE FADARE, Assistant Professor of Pathology

B.S. (University of the District of Columbia 1995); M.D. (Howard 2000) [2009]

JOHN M. FAHRENHOLZ, Assistant Professor of Medicine

B.A. (Miami [Ohio] 1992); M.D. (Ohio State 1997) [2004]

ELIZABETH HEATHER FAIRBANK, Clinical Instructor in Pediatrics

B.S. (Tufts 1982); M.D. (New York Medical College 1997) [2001]

SARAH FANDRE, Instructor in Clinical Anesthesiology

B.A. (Texas 1995); M.D. (Texas A & M 2005) [2009]

JOHN Y. FANG, Assistant Professor of Neurology

B.S. (Pennsylvania State 1989); M.D. (Jefferson Medical College 1991) [1998]

JOSEPH B. FANNING, Instructor in Medicine

B.A. (Birmingham-Southern 1993); M.S. (Princeton Theological Seminary 2000); Ph.D. (Vanderbilt 2008) [2009]

RACHEL E. FARMER, Clinical Instructor in Pediatrics

B.A. (Union [Tennessee] 1999); M.D. (Louisville 2004) [2007]

KRISTINA FASIG, Instructor in Pathology

B.S. (Illinois 1994); M.S. (Illinois State 1996); M.D. (Illinois 2003) [2009]

CHERYL ANN FASSLER, Assistant Clinical Professor of Medicine

B.S. (Notre Dame 1979); M.D. (Ohio State 1982) [1987]

MARQUETTA L. FAULKNER, Assistant Clinical Professor of Medicine

B.S. (Texas Southern 1977); M.D. (Meharry Medical 1981) [1993]

WILLARD R. FAULKNER, Professor of Biochemistry, Emeritus

B.S. (Idaho 1940); M.S. (Denver 1950); Ph.D. (Vanderbilt 1956) [1968]

LARRY MCNEILL FAUST, Associate Clinical Professor of Pediatrics

B.A., M.D. (Tennessee 1969, 1973); F.A.A.P. [2005]

MOHAMMAD FAROOQ FAZILI, Assistant Professor of Pediatrics

M.D. (Nishtar Medical [Pakistan] 1984) [2003]

SERGIO FAZIO, Professor of Medicine; Professor of Pathology

M.D. (Rome 1983); Ph.D. (Siena [Italy] 1989) [1993]

CHARLES F. FEDERSPIEL, Professor of Preventive Medicine (Biostatistics), Emeritus

B.A., M.A. (Michigan 1950, 1952); Ph.D. (North Carolina State 1959) [1959]

JAMES W. FELCH, Associate Professor of Clinical Ophthalmology and Visual Sciences B.S. (Delaware 1968); Ph.D., M.D. (Vanderbilt 1973, 1977) [1981]

HUA-JIN FENG, Research Assistant Professor of Neurology

M.D., M.S. (Hunan Medical 1993, 1996); Ph.D. (Southern Illinois 2001) [2005]

GERALD M. FENICHEL, Professor of Neurology; Professor of Pediatrics; Director, Division of Pediatric Neurology

B.A. (Johns Hopkins 1955); M.D. (Yale 1959) [1969]

IGOR ALEXANDROVICH FEOKTISTOV, Associate Professor of Medicine; Associate Professor of Pharmacology

C.Sc., Ph.D. (Tomsk Institute of Medicine [Russia] 1985, 1985) [1992]

CLAUDE L. FERRELL III, Adjunct Assistant Professor of Anesthesiology

B.A. (Tennessee 1985); M.D. (Tennessee, Memphis 1989) [1997]

MICHAEL CRAIG FERRELL, Professor of Clinical Orthopaedics and Rehabilitation B.S. (Notre Dame 1971); M.D. (Tulane 1974) [1981]

STEPHEN W. FESIK, Professor of Biochemistry; Ingram Professor of Cancer Discovery; Professor of Pharmacology

B.A. (Holy Cross 1975); Ph.D. (Connecticut 1981) [2009]

MARVIN FEUERBERG, Adjunct Assistant Professor of Medicine

B.S. (Portland State 1972); Ph.D. (Oregon 1978) [2008]

IRENE FEURER, Research Professor of Surgery; Research Professor of Biostatistics

B.S. (Ursinus 1976); M.S.Ed., Ph.D. (Pennsylvania 1983, 1997) [1997]

JAMES F. FIECHTL, Assistant Professor of Emergency Medicine

B.S. (Missouri, Rolla 1996); M.D. (Tennessee 2001) [2006]

JAMES P. FIELDS, Associate Clinical Professor of Medicine

B.S., M.S. (Texas 1953, 1954); M.D. (Texas, Galveston 1958) [1978]

ELLIOT M. FIELSTEIN, Assistant Professor of Psychiatry; Adjunct Assistant Professor of Psychology, College of Arts and Science

B.A. (SUNY, Buffalo 1976); Ph.D. (Vermont 1984) [1996]

MARY KATHLEEN FIGARO, Assistant Professor of Medicine; Adjunct Assistant Professor of Internal Medicine at Meharry Medical College

B.A. (Princeton 1992); M.D. (Yale 1996); M.S. (Cornell 2001) [2001]

ESTUARDO FIGUEROA, Assistant Professor of Clinical Pediatrics

M.D. (San Carlos 1993) [2009]

CANDICE DENISE FIKE, Professor of Pediatrics

B.A. (Rice 1975); M.D. (Colorado 1979) [2005]

JO-DAVID FINE, Professor of Medicine; Professor of Pediatrics

B.S. (Yale 1972); M.D. (Kentucky 1976); M.P.H. (North Carolina 1992) [2004]

BARBARA MARY FINGLETON, Assistant Professor of Cancer Biology

B.Sc., Ph.D. (Dublin City University 1992, 1996) [2001]

FREDERICK L. FINKE, Clinical Instructor in Obstetrics and Gynecology

B.A., M.D. (Ohio State 1967, 1970) [1978]

YORAM FINKELSTEIN, Visiting Professor of Pediatrics

M.D. (Degli [Italy] 1974); Ph.D. (Hebrew University of Jerusalem 1994) [2008]

ALISTAIR JAMES REID FINLAYSON, Assistant Professor of Psychiatry

M.D. (Western Ontario 1969) [2001]

MARY SUE FINO-SZUMSKI, Assistant Professor of Hearing and Speech Sciences B.S. (Marywood 1986); M.S., Ph.D. (Vanderbilt 1987, 1997) [1997]

JEAN-TERESE FISCHER, Assistant Professor of Clinical Anesthesiology

B.S. (St. Edward's 1977); M.D. (Texas 1981) [2000]

REBECCA M. FISCHER, Adjunct Assistant Professor of Hearing and Speech Sciences

B.S. (Trinity 1973); M.Sc. (McGill 1980); Ph.D. (Vanderbilt 1990) [1998]

MICHELLE FISCUS, Clinical Instructor in Pediatrics

B.S., M.D. (Indiana 1990, 1994) [1998]

FRANK A. FISH, Associate Professor of Pediatrics; Associate Professor of Medicine A.B. (Wabash 1978); M.D. (Indiana 1983) [1990]

P. TOBY FISHEL, Assistant Professor of Psychiatry; Assistant Professor of Pediatrics B.A. (SUNY, Binghamton 1984); Ph.D. (Miami [Florida] 1990) [1998]

JACK FISHER, Associate Clinical Professor of Plastic Surgery

B.S. (Illinois 1969); M.D. (Emory 1973) [1987]

JACK C. FISHER, Assistant Professor of Clinical Oral and Maxillofacial Surgery D.M.D. (Louisville School of Dentistry 1979) [2008]

CHRISTINA TAULIEN FISKE, Instructor in Medicine

B.S. (Pennsylvania State 1999); M.D. (Loyola 2003) [2009]

ROBERT WARNE FITCH, Assistant Professor of Emergency Medicine; Assistant Professor of Orthopaedics and Rehabilitation

B.S., M.D. (Wake Forest 1997, 2001) [2006]

FERN FITZHENRY, Research Assistant Professor of Biomedical Informatics B.S.N. (Pennsylvania 1974); M.Mgt. (Northwestern 1983); M.D. (Illinois, Chicago 1997) [2000]

J. MICHAEL FITZPATRICK, Professor of Computer Science; Professor of Computer Engineering; Professor of Radiology and Radiological Sciences; Professor of Neurological Surgery; Professor of Electrical Engineering

B.S. (North Carolina 1967); Ph.D. (Florida State 1972); M.S. (North Carolina 1982) [1982]

JERI EILEEN FITZPATRICK, Assistant Professor of Psychiatry; Assistant Professor of Pediatrics B.S. (Tennessee 1981); M.D. (East Tennessee State 1986) [1992]

ARTHUR C. FLEISCHER, Professor of Radiology and Radiological Sciences; Professor of Obstetrics and Gynecology

B.S. (Emory 1973); M.D. (Medical College of Georgia 1976) [1980]

AMY E. FLEMING, Assistant Professor of Pediatrics

B.A., M.D. (Virginia 1993, 1997) [2007]

GEOFFREY M. FLEMING, Assistant Professor of Pediatrics; Assistant Professor of Anesthesiology

B.S. (Florida 1993); M.D. (Virginia 1997) [2007]

PHILIP E. FLEMING, Assistant Clinical Professor of Plastic Surgery

B.A. (Vanderbilt 1974); M.D. (Alabama, Birmingham 1979) [1987]

JOHN M. FLEXNER, Professor of Medicine, Emeritus

B.A. (Yale 1950); M.D. (Johns Hopkins 1954) [1959]

MARK D. FLORA, Assistant Clinical Professor of Urologic Surgery

B.S. (Purdue 1981); M.D. (Indiana 1985) [1991]

ANN MARIE FLORES, Assistant Professor of Orthopaedics and Rehabilitation; Clinical Assistant Professor of Nursing

B.A. (Maryland 1988); M.S. (Miami [Florida] 1990); M.A., Ph.D. (Ohio State 1995, 2000) [2003]

CHARLES ROBERT FLYNN, Assistant Professor of Surgery

B.S. (Montana State 1995); Ph.D. (Arizona State 2001) [2008]

M. DOROTHY FOGERTY, Assistant Professor of Surgery

M.D. (New Mexico 1992); M.P.H. (Vanderbilt 2007) [2004]

AGNES B. FOGO, John L. Shapiro Professor of Pathology; Professor of Pediatrics; Professor of Medicine; Director, Division of Renal Pathology

B.A. (Tennessee, Chattanooga 1976); M.D. (Vanderbilt 1981) [1987]

NINA FOLEY, Assistant Clinical Professor of Oral and Maxillofacial Surgery D.M.D. (Kentucky 1993) [2004]

BRADLEY S. FOLLEY, Assistant Professor of Neurology; Assistant Professor of Psychiatry B.S. (Maryland 1994); M.A., M.D. (Vanderbilt 2002, 2006) [2009]

PETE P. FONG, Assistant Professor of Medicine

B.S., M.D. (Vanderbilt 1994, 1998) [2007]

RICARDO B. FONSECA, Assistant Professor of Radiology and Radiological Sciences M.D. (Federal University of São Paulo 1993) [2003]

JAMES T. FORBES, Associate Professor of Medicine; Associate Professor of Pathology B.A. (University of the South 1967); Ph.D. (Mississippi 1971) [1977]

JILL A. FORBESS, Clinical Instructor in Pediatrics

B.S. (Oglethorpe 1984); M.D. (Medical College of Georgia 1991) [1994]

ANTHONY CARLYLE FORSTER, Assistant Professor of Pharmacology

B.Sc., Ph.D. (Adelaide [Australia] 1983, 1987); M.D. (Harvard 1996) [2005]

HENRY W. FOSTER, Clinical Professor of Obstetrics and Gynecology

B.S. (Morehouse 1954); M.D. (Arkansas 1958) [1977]

JENNIFER E. FOSTER, Instructor in Surgery

B.A. (Colgate 1999); M.D. (Wisconsin 2004) [2009]

JAY H. FOWKE, Assistant Professor of Medicine

B.A. (Clark 1987); M.S. (Michigan 1990); Ph.D. (Massachusetts 2000) [2001]

CHAD E. FOWLER, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.E. (Vanderbilt 1994); D.D.S., M.S. (Virginia Commonwealth 2005, 2007) [2008]

DANIEL T. FOWLER, Associate Professor of Clinical Radiology and Radiological Sciences B.S., M.D. (Tennessee 1967, 1970) [2009]

ERIN PAIGE FOWLER, Assistant Professor of Psychiatry

B.A. (Wisconsin 1987); M.S., Ph.D. (Vanderbilt 1997, 2001) [2002]

MICHAEL J. FOWLER, Assistant Professor of Medicine

B.A., M.D. (East Tennessee State 1994, 1998) [2002]

DANIEL J. FRANCE, Research Assistant Professor of Anesthesiology; Research Associate Professor of Medicine; Research Assistant Professor of Emergency Medicine

B.S.E., M.S.E. (Louisville 1990, 1991); Ph.D. (Vanderbilt 1997); M.P.H. (Utah 2000) [2003]

SHARRON H. FRANCIS, Research Professor of Molecular Physiology and Biophysics B.S. (Western Kentucky 1965); Ph.D. (Vanderbilt 1970) [1976]

SHARONE ELIZABETH FRANCO, Assistant Clinical Professor of Psychiatry

M.D. (Cape Town [South Africa] 1983) [2002]

AYDAR ADIR FRANGOLIL Associate Professor of Pediatrics: Assistant Professor

HAYDAR ADIB FRANGOUL, Associate Professor of Pediatrics; Assistant Professor of Medicine B.S., M.S., M.D. (American University of Beirut 1984, 1986, 1990) [1999]

BEVERLY A. FRANK, Clinical Instructor in Pediatrics B.S., M.D. (Pittsburgh 1980, 1992) [1997] GERALD D. FRANK, Research Assistant Professor of Biochemistry B.S. (Alabama Agricultural and Mechanical 1991); Ph.D. (Meharry Medical 1999) [2004] JENNY JO FRANKE, Assistant Clinical Professor of Urologic Surgery B.S. (Illinois 1983); M.D. (Vanderbilt 1987) [2001] JEFFREY L. FRANKLIN, Research Assistant Professor of Cell and Developmental Biology B.A. (Haverford 1984); Ph.D. (Vanderbilt 1992) [2000] LLOYD D. FRANKLIN, Clinical Professor of Pediatrics B.S. (Birmingham-Southern 1976); M.D. (Alabama 1980) [2007] JOHN J. FRANKS, Professor of Anesthesiology, Emeritus B.A., M.D. (Colorado 1951, 1954) [1986] RAND T. FREDERIKSEN, Assistant Professor of Clinical Medicine B.A. (Texas Tech 1963); M.D. (Washington University 1967) [1975] JOSEPH L. FREDI, Assistant Professor of Medicine A.B. (Rutgers 1976); M.D. (Tennessee 1983) [2007] LIANE K. FREELS, Associate Clinical Professor of Pediatrics B.S., M.D. (Arizona 1993, 1998) [2006] BRADLEY W. FREEMAN, Assistant Professor of Psychiatry B.S. (Florida 1996); M.D. (South Florida 2003) [2009] LEE ANN FREEMAN, Assistant Clinical Professor of Pediatrics A.B., M.D. (Tennessee 1977, 1982) [1986] MICHAEL L. FREEMAN, Professor of Radiation Oncology; Professor of Radiology and Radiological Sciences; Professor of Cancer Biology B.S., Ph.D. (Colorado State 1974, 1978) [1983] RUFUS JACK FREEMAN, Assistant Clinical Professor of Pathology B.S. (Kentucky 1957); M.D. (Vanderbilt 1961) [1963] FRANK R. FREEMON, Professor of Neurology, Emeritus B.S., M.D. (Florida 1962, 1965) [1972] MARIA E. FREXES-STEED, Assistant Clinical Professor of Surgery B.S. (Miami [Florida] 1978); M.D., Ph.D. (Vanderbilt 1982, 1990) [1990] MARK R. FREY, Research Instructor in Pediatrics B.A. (Chicago 1990); Ph.D. (SUNY, Roswell Park Cancer Institute 2001) [2007] WALTER W. FREY, Assistant Clinical Professor of Ophthalmology and Visual Sciences B.A. (Transylvania 1956); M.D. (Harvard 1960) [1972] DANIEL L. FRIEDMAN, Assistant Clinical Professor of Psychiatry B.A., M.D., Ph.D. (Western Reserve 1958, 1965, 1965) [1993] DAVID B. FRIEDMAN, Research Associate Professor of Biochemistry B.S. (California, Berkeley 1987); Ph.D. (University of Washington 1993) [2001] DEBRA L. FRIEDMAN, Associate Professor of Pediatrics; Ingram Associate Professor of Pediatric Oncology B.A. (Queens College 1975); M.S. (Pace 1981); M.D. (University of Medicine and Dentistry of New Jersey 1991); M.S. (Pennsylvania 1997) [2008] GOTTLIEB C. FRIESINGER II, Professor of Medicine, Emeritus B.S. (Muskingum 1951); M.D. (Johns Hopkins 1955) [1971] GOTTLIEB CHRISTIAN FRIESINGER III, Assistant Professor of Clinical Medicine B.S. (Davidson 1979); M.D. (Tennessee, Memphis 1984) [2000] MARK E. FRISSE, Accenture Professor of Biomedical Informatics B.S. (Notre Dame 1974); M.S. (Stanford 1978); M.D., M.B.A. (Washington University 1987, 1997) [2004]

WILLIAM H. FRIST, University Distinguished Professor at Owen Graduate School of

Management and the School of Medicine A.B. (Princeton 1974); M.D. (Harvard 1978) [1986] ALAN H. FRUIN, Clinical Professor of Neurological Surgery

B.A., M.D. (Vanderbilt 1964, 1967) [2002]

D. CATHERINE FUCHS, Associate Professor of Psychiatry; Associate Professor of Pediatrics B.A., M.D. (Vanderbilt 1978, 1982) [1987]

HOWARD A. FUCHS, Associate Professor of Medicine

B.S. in Eng. (Colorado School of Mines 1977); M.D. (Vanderbilt 1981) [1986]

MELISSA E. FULLER, Clinical Instructor in Pediatrics

B.S. (Texas A & M 2002); M.D. (Texas 2006) [2009]

WILLIAM R. FURMAN, Professor of Anesthesiology; Professor of Surgery

B.S. (Michigan State 1972); M.D. (Cornell 1976) [2009]

CYNTHIA S. GADD, Associate Professor of Biomedical Informatics

B.S. (North Carolina State 1976); M.B.A. (Winthrop 1979); Ph.D. (Pittsburgh 1995); M.S. (Duke 1998) [2005]

F. ANDREW GAFFNEY, Professor of Medicine

A.B. (California, Berkeley 1968); M.D. (New Mexico 1972) [1992]

KENNETH B. E. GAGNON, Research Assistant Professor of Anesthesiology; Research Assistant Professor of Pediatrics; Research Assistant Professor of Radiation Oncology B.S. (British Columbia 1990); Ph.D. (Wright State 2003) [2009]

DAVID GAILANI, Professor of Pathology; Professor of Medicine

B.A. (Cornell 1980); M.D. (Illinois 1984) [1995]

JAMES V. GAINER III, Assistant Professor of Medicine

B.S. (Virginia 1986); M.D. (West Virginia 1990) [1996]

LAWRENCE S. GAINES, Associate Professor of Psychiatry; Associate Professor of Medicine B.A. (City University of New York 1965); M.A., Ph.D. (Maryland 1969, 1972) [1983]

MARTIN J. GALLAGHER, Assistant Professor of Neurology; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Notre Dame 1989); M.D., Ph.D. (Washington University 1997, 1997) [2002]

AURELIO GALLI, Associate Professor of Molecular Physiology and Biophysics; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience

B.A., Ph.D. (Milan [Italy] 1988, 1992) [2002]

HOLLYE R. GALLION, Assistant in Pediatrics

B.S.N. (Tennessee, Chattanooga 1995); M.S.N. (Belmont 1997) [2003]

ROBERT L. GALLOWAY, JR., Professor of Biomedical Engineering; Professor of Surgery; Professor of Neurological Surgery

B.S.E. (Duke 1977); M.E. (Virginia 1979); Ph.D. (Duke 1983) [1987]

ALFREDO GAMBOA, Research Assistant Professor of Medicine

M.D. (Universidad Peruana 'Cayetano Heredia' [Peru] 1998) [2005]

JOSHUA T. GAMSE, Assistant Professor of Biological Sciences; Assistant Professor of Cell and Developmental Biology; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Rice 1994); Ph.D. (Massachusetts Institute of Technology 2000) [2005]

AMY DINESH GANDHI, Clinical Instructor in Pediatrics

B.S. (Emory 2001); M.D. (Alabama 2005) [2009]

MAUREEN ANNE GANNON, Associate Professor of Medicine; Associate Professor of Molecular Physiology and Biophysics; Associate Professor of Cell and Developmental Biology B.S. (Molloy 1985); M.S. (Adelphi 1988); Ph.D. (Cornell 1995) [2001]

JUDY GARBER, Professor of Psychology, Peabody College; Professor of Psychiatry; Associate Professor of Psychology, College of Arts and Science; Senior Fellow, Institute for Public Policy Studies; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A. (SUNY, Buffalo 1973); Ph.D. (Minnesota 1987) [1985]

MARIA GARBER, Clinical Instructor in Ophthalmology and Visual Sciences

M.D. (Rizskiy Medicinskiy Institut [Riga] 1967) [1998]

KIM F. M. GARDNER, Adjunct Assistant Professor of Pediatrics

B.S. (Florida State 1999); M.S.P.H. (North Carolina, Chapel Hill 2003); M.D. (Duke 2003) [2006]

VIRGINIA S. GARDNER, Instructor in Psychiatry

B.A. (Duke 2001); M.S.N. (Vanderbilt 2005); R.N. [2006]

EMILY M. GARLAND, Research Assistant Professor of Medicine

B.S. (Duke 1973); Ph.D. (Maryland 1982) [2003]

RICHARD W. GARMAN, JR., Associate Clinical Professor of Medicine

B.S. (David Lipscomb 1976); M.D. (Louisville 1980) [1984]

C. GAELYN GARRETT, Professor of Otolaryngology

A.B., M.D. (North Carolina 1984, 1988) [1994]

ETOI A. GARRISON, Assistant Professor of Obstetrics and Gynecology

B.A. (Chicago 1991); M.D., Ph.D. (Tulane 1997, 1997) [2006]

G. WALDON GARRISS III, Assistant Professor of Medicine; Assistant Professor of Pediatrics B.S. (Asbury 1981); M.S. (Kentucky 1990); M.D. (North Carolina 1993); M.S. (Virginia 1999) [1999]

JAMES CHRISTOPHER GATENBY, Assistant Professor of Radiology and Radiological Sciences B.Sc. (Bristol [England] 1987); Ph.D. (London 1994) [2002]

WILLIAM G. GATES, Assistant Clinical Professor of Ophthalmology and Visual Sciences B.S. (Northeast Louisiana 1985); M.D. (Louisiana State 1989), [1993]

DEBORAH FAYE GATLIN-RAULSTON, Assistant Professor of Psychiatry

B.S. (Kentucky 1983); M.S. (Florida State 1987); M.D. (Florida 1990) [2003]

JAMES A. GAUME, Assistant Clinical Professor of Medicine

B.S. (Loyola, Los Angeles 1972); M.D. (Southern California 1976) [1990]

ISABEL GAUTHIER, Professor of Psychology, College of Arts and Science; Associate Professor of Radiology and Radiological Sciences; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Université du Québec à Montréal 1993); M.S., Ph.D. (Yale 1995, 1998) [1999]

JAMES C. GAY, Associate Professor of Pediatrics

B.S. (Davidson 1974); M.D. (Emory 1978) [1985]

VOLNEY P. GAY, Professor of Religious Studies and Chair of the Department; Professor of Psychiatry

B.A. (Reed 1970); M.A., Ph.D. (Chicago 1973, 1976) [1979]

LINDSAY GEBHART, Assistant in Anesthesiology

B.A. (Tennessee 2005); M.S.N. (Vanderbilt 2007); R.N. [2009]

TEBEB GEBRETSADIK, Associate in Biostatistics

B.S. (San Francisco State 1988); M.P.H. (California, Berkeley 1993) [2003]

RICHARD J. GEER, Assistant Clinical Professor of Surgery at St. Thomas Medical Center B.S. (Alabama 1979); M.D. (Alabama, Birmingham 1983) [1992]

SUNIL K. GEEVARGHESE, Assistant Professor of Surgery

B.A. (Tennessee 1990); M.D., M.S.C.I. (Vanderbilt 1994, 2006) [2005]

BRUCE G. GELLIN, Adjunct Associate Professor of Preventive Medicine; Assistant Professor of Nursing (Preventive Medicine)

B.A. (North Carolina 1977); M.D. (Cornell 1983); M.P.H. (Columbia 1991) [1996]

FUGIANG GENG, Research Instructor in Cell and Developmental Biology

B.S., M.S. (Shanghai Medical [China] 1992, 1995); Ph.D. (SUNY Health Science Center 2003) [2009]

LING GENG, Research Associate Professor of Pathology

M.D. (Suzhou Medical [China] 1983) [1998]

RICHARD H. GENTZLER III, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.S. (Austin Peay State 1998); D.D.S. (Tennessee, Memphis 2001) [2006]

ALFRED L. GEORGE, JR., Grant W. Liddle Professor of Medicine; Professor of Pharmacology; Director, Division of Genetic Medicine; Director, Institute of Integrative Genomics; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience B.A. (Wooster 1978); M.D. (Rochester 1982) [1996] DONALD I. GEORGE, JR., Assistant Professor of Clinical Oral and Maxillofacial Surgery B.S. (Kentucky 1973); D.M.D. (Louisville 1977); M.S. (Michigan 1987) [2008] SABINA B. GESELL, Research Assistant Professor of Pediatrics B.A. (Vassar College 1993); M.A., Ph.D. (Notre Dame 1997, 1999) [2008] PETER J. GIAMMALVO, Assistant Professor of Medical Education and Administration A.B. (Holy Cross 1968); M.A. (Vanderbilt 1972); Ph.D. (Peabody 1978) [2007] GIANLUIGI GIANNELLI, Adjunct Associate Professor of Cancer Biology M.D. (Bari [Italy] 1987) [2003] S. JULIAN GIBBS, Professor of Radiology and Radiological Sciences, Emeritus D.D.S. (Emory 1956); Ph.D. (Rochester 1969) [1970] JOHN R. GIBSON, Associate Clinical Professor of Medicine B.A. (Vanderbilt 1974); M.D. (Washington University 1979) [1982] JOSEPH GIGANTE, Associate Professor of Pediatrics; Clinical Associate Professor of Nursing B.A. (Brooklyn 1984); M.D. (SUNY, Stony Brook 1988) [1994] FELISA L. GILBERT, Clinical Instructor in Pediatrics B.S. (Vanderbilt 1993); M.D. (Tennessee 1997) [2007] JILL GILBERT, Assistant Professor of Medicine B.S. (North Carolina, Chapel Hill 1990); M.D. (Alabama, Birmingham 1994) [2006] LYNETTE A. GILLIS, Assistant Professor of Pediatrics B.A. (Bucknell 1992); M.D. (Pennsylvania State 1996) [2004] MARY JO STRAUSS GILMER, Professor of Nursing; Associate Professor of Pediatrics; Investigator, Vanderbilt Kennedy Center for Research on Human Development B.S.N. (Michigan State 1971); M.S.N. (Illinois, Chicago 1978); M.B.A. (Queens 1989); Ph.D. (North Carolina 1997); R.N. [1998] MARY KATHERINE GINGRASS, Assistant Clinical Professor of Plastic Surgery B.S. (Boston College 1985); M.D. (Medical College of Wisconsin 1989) [2000] VINCENT L. GIRANDA, Adjunct Professor of Cancer Biology B.S. (Pennsylvania State 1981); M.D., Ph.D. (Temple 1987, 1989) [2007] TIMOTHY D. GIRARD, Assistant Professor of Medicine B.A. (Baylor 1996); M.D. (Texas, Southwestern 2000) [2008] MARIA GABRIELLA GIRO, Research Associate Professor of Pathology Ph.D. (Padova [Italy] 1968) [1986] JONATHAN D. GITLIN, James C. Overall Professor of Pediatrics and Chair of the Department; Assistant Vice Chancellor for Maternal and Child Health Affairs; Physician in Chief, Monroe Carell Jr. Children's Hospital at Vanderbilt; Associate Dean for Clinical Affairs, School of Medicine; Professor of Cell and Developmental Biology; Member, Vanderbilt Kennedy Center for Research on Human Development B.S., M.D. (Pittsburgh 1974, 1978) [2008] DAVID R. GIUS, Adjunct Associate Professor of Radiation Oncology B.S. (Illinois, Chicago 1983); Ph.D. (Chicago 1989); M.D. (Loyola 1992) [2009] DARIO A. GIUSE, Associate Professor of Biomedical Informatics

M.S., Ph.D. (Carnegie-Mellon 1993, 1979) [1999]
NUNZIA B. GIUSE, Professor of Biomedical Informatics; Director, Eskind Biomedical Library; Professor of Medicine
M.D. (Brescia [Italy] 1985); M.L.S. (Pittsburgh 1992) [1994]
MICHAEL E. GLASSCOCK III. Adjunct Professor of Hearing and Speech Sciences

MICHAEL E. GLASSCOCK III, Adjunct Professor of Hearing and Speech Sciences (Otolaryngology)

B.S. (Tennessee Technological 1955); M.D. (Tennessee 1958) [1977]

MARK DENNIS GLAZER, Assistant Professor of Medicine B.A. (Emory 1975); M.D. (Louisville 1979) [1998] A. JOEL GLUCK, Assistant Professor of Clinical Oral and Maxillofacial Surgery B.A. (Washington University 1977); D.D.S. (Tennessee 1981) [2009] FRANCIS W. GLUCK, JR., Associate Clinical Professor of Medicine; Clinical Associate Professor of Nursing B.A. (Williams 1961); M.D. (Johns Hopkins 1965) [1971] JOSEFINA DEE GO, Assistant Professor of Clinical Pediatrics B.S., M.D. (Santo Tomas [Philippines] 1984, 1988) [2009] WALTER G. GOBBEL, JR., Professor of Surgery, Emeritus B.S., M.D. (Duke 1944, 1944) [1955] ALAIN P. GOBERT, Research Assistant Professor of Medicine B.S. (Orleans [France] 1995); M.S., Ph.D. (Bordeaux [France] 1996, 1999) [2009] DANIEL FRANK GOCHBERG, Assistant Professor of Radiology and Radiological Sciences; Assistant Professor of Physics B.S. (Massachusetts Institute of Technology 1991); M.S., Ph.D. (Yale 1994, 1998) [2002] JAMES C. GODFREY III, Clinical Instructor in Pediatrics B.S. (Tennessee, Martin 1997); M.D. (Tennessee, Memphis 2001) [2004] LESLIE WYTTENBACH GOEBEL, Instructor in Medicine M.S.N. (Vanderbilt 2006) [2008] LISA GOEHRING, Instructor in Obstetrics and Gynecology B.S. (Texas Women's 1990); M.S.N. (Vanderbilt 2007); R.N., C.R.N.P. [2009] STEVEN R. GOERTZ, Assistant Professor of Radiation Oncology B.S. (Davidson 1980); M.D. (Medical College of Virginia 1985) [2001] SYLVIA L. GOGRAFE, Assistant Professor of Pathology D.V.M., Ph.D. (Leipzig [Germany] 1986, 1994) [2007] KAREN PEARCE GOLD, Instructor in Clinical Obstetrics and Gynecology M.D. (Oklahoma 1994) [2008] MICHAEL ALAN GOLD, Associate Professor of Obstetrics and Gynecology B.S. (Penn State 1977); M.D. (Jefferson Medical College 1992) [2008] MICHAEL H. GOLD, Assistant Clinical Professor of Medicine; Clinical Assistant Professor of Nursing B.S. (Tulane 1981); M.D. (Chicago 1985) [2006] JAMES RICHARD GOLDENRING, Paul W. Sanger Professor of Experimental Surgery; Professor of Surgery: Professor of Cell and Developmental Biology A.B. (Harvard 1980); M.Phil., M.D. (Yale 1984, 1986) [2002] MARK S. GOLDFARB, Assistant Clinical Professor of Medicine B.S. (Michigan 1975); M.D. (George Washington 1979) [1989] FRED GOLDNER, JR., Clinical Professor of Medicine, Emeritus B.A., M.D. (Vanderbilt 1945, 1948) [1954] LEE ANN C. GOLPER, Professor of Hearing and Speech Sciences; Director, Division of Speech-Language Pathology B.S. (Indiana 1971); M.S. (Portland State 1976); Ph.D. (Oregon 1982) [1999] THOMAS A. GOLPER, Professor of Medicine B.A. (Northwestern 1969); M.D. (Indiana 1973) [1999] ADRIANA L. GONZALEZ, Assistant Professor of Pathology B.S., M.D. (Louisiana State 1990, 1994) [2000] STACEY ANN GOODMAN, Associate Professor of Medicine M.D. (New York 1987) [1993] MAJE D. GOODWIN, Clinical Instructor in Pediatrics

B.S. (Emory 1999); M.D. (Meharry Medical 2003) [2006] PAUL B. GOOGE, Associate Clinical Professor of Pathology

B.S. (Tennessee 1979); M.D. (Tennessee, Memphis 1983) [1997]

DAVID LEE GORDEN, Associate Professor of Surgery; Associate Professor of Cancer Biology (On leave 2009)

A.B. (Brown 1985); M.D. (Vanderbilt 1990) [2001]

JEFFRY S. GORDON, Professor of Educational Informatics of Nursing, Technology of Nursing; Assistant Professor of Biomedical Informatics

B.S. (Emory 1970); M.Ed., Ph.D. (Illinois 1972, 1976) [2002]

SHARON M. GORDON, Assistant Clinical Professor of Psychiatry

B.A. (Albion 1974); M.A. (Western Michigan 1985); Ph.D. (Antioch New England Graduate School 1993) [1995]

JAMES E. GORE, Instructor in Clinical Medicine

B.S., M.D. (Kentucky 1995, 1999) [2007]

JOHN C. GORE, Chancellor's University Professor of Radiology and Radiological Sciences and Biomedical Engineering; Professor of Molecular Physiology and Biophysics; Professor of Physics; Director, Institute of Imaging Science; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.Sc. (Manchester 1972); Ph.D. (London 1976); B.A. (Ealing 1983) [2002]

MATTHIAS J. GORHAM, JR., Assistant Clinical Professor of Oral and Maxillofacial Surgery (General Practice)

D.D.S. (Saint Louis 1961) [1992]

GERALD S. GOTTERER, Professor of Medical Education and Administration, Emeritus A.B. (Harvard 1955); M.D. (Chicago 1958); Ph.D. (Johns Hopkins 1964) [1986]

STEVEN L. GOUDY, Assistant Professor of Otolaryngology

B.S. (Centre College 1992); M.D. (Louisville 1998) [2005]

KATHLEEN L. GOULD, Professor of Cell and Developmental Biology; Investigator, Howard Hughes Institute

A.B. (California, Berkeley 1981); Ph.D. (California, San Diego 1987) [1991]

ROBERT P. GRAHAM, JR., Assistant Clinical Professor of Medicine

A.B., M.D. (Tennessee 1976, 1981) [1985]

THOMAS BRENT GRAHAM, Associate Professor of Pediatrics

B.S. (Rhodes College 1988); M.D. (Vanderbilt 1992); M.S. (Cincinnati 2000) [2008]

THOMAS P. GRAHAM, JR., Professor of Pediatrics, Emeritus

B.A., M.D. (Duke 1959, 1963) [1971]

TODD R. GRAHAM, Professor of Biological Sciences; Professor of Cell and Developmental Biology

B.S. (Maryville 1984); Ph.D. (Saint Louis 1988) [1992]

ANTONIO M. GRANDA, Assistant Clinical Professor of Medicine

B.A. (Delaware 1968); M.D. (Jefferson Medical 1974) [2000]

DARYL K. GRANNER, Professor of Molecular Physiology and Biophysics, Emeritus B.A., M.D., M.S. (Iowa 1958, 1962, 1962) [1984]

MERIDA M. GRANT, Assistant Professor of Psychology, College of Arts and Science; Assistant Professor of Psychiatry

B.A. (Temple 1988); M.S., Ph.D. (Duke 1994, 1997) [2007]

D. WESLEY GRANTHAM, Professor of Hearing and Speech Sciences; Director, Division of Research

Ph.D. (Indiana 1975) [1980]

ANA M. GRAU, Associate Professor of Surgery

M.D. (Universidad Católica de Chile 1990) [2007]

JUDITH S. GRAVEL, Adjunct Professor of Hearing and Speech Sciences

B.A., M.A. (Massachusetts 1970, 1971); Ph.D. (Vanderbilt 1985) [1991]

JAMES P. GREELISH, Assistant Professor of Cardiac Surgery

B.A. (Emory 1986); M.D. (Wake Forest 1992) [2002]

CYNTHIA A. GREEN, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.S. (Austin Peay State 1998); D.D.S. (Meharry School of Dentistry 2003) [2007]

DANIEL M. GREEN, Clinical Professor of Medicine

B.S. (Massachusetts Institute of Technology 1969); M.D. (St. Louis 1973) [2008]

JAMES D. GREEN, Assistant Professor of Radiology and Radiological Sciences

B.A. (Michigan 1970); M.D. (Illinois 1977) [2006]

JENNIFER KISER GREEN, Instructor in Clinical Medicine; Instructor in Pediatrics

B.S. (Elon 1999); M.D. (North Carolina, Chapel Hill 2003) [2007]

NEIL EDWARD GREEN, Professor of Orthopaedics and Rehabilitation and Vice Chair of the Department; Associate Professor of Pediatrics; Director, Division of Pediatric Orthopaedics

B.A. (Franklin and Marshall 1962); M.D. (Union, Albany Medical College 1968) [1976]

BRAD A. GREENBAUM, Clinical Instructor in Pediatrics

B.A. (Texas, Austin 1991); M.D. (Tennessee, Memphis 1995) [1998]

MONICA M. GREENBAUM, Clinical Instructor in Pediatrics

A.B. (Harvard 1999); M.D. (Baylor 2003) [2009]

RALPH M. GREENBAUM, Clinical Professor of Pediatrics

M.D. (Tennessee 1962) [1970]

JOHN W. GREENE, Professor of Pediatrics; Professor of Obstetrics and Gynecology;

Clinical Professor of Nursing

B.A. (West Georgia 1966); M.D. (Medical College of Georgia 1970) [1977]

JOHN P. GREER, Professor of Medicine; Professor of Pediatrics

B.A., M.D. (Vanderbilt 1972, 1976) [1984]

ROBERT ALAN GREEVY, JR., Assistant Professor of Biostatistics

B.A. (Hampshire 1997); M.A., Ph.D. (Pennsylvania 2002, 2004) [2004]

WILLIAM M. GREGG, Assistant Professor of Biomedical Informatics; Assistant Professor of Medicine

B.E.E. (Georgia Institute of Technology 1991); M.D. (Miami [Florida] 1997) [2003]

ANDREW K. GREGORY, Assistant Professor of Orthopaedics and Rehabilitation; Assistant Professor of Pediatrics

B.S. (Indiana 1993); M.D. (Alabama 1997) [2001]

DAVID W. GREGORY, Associate Professor of Medicine, Emeritus

B.A., M.D. (Vanderbilt 1963, 1967) [1973]

BRUCE W. GREIG, Associate in Pathology

B.S. (Auburn 1979) [2002]

PAUL JAMES GRESCH, Assistant Professor of Psychiatry

B.S. (Wisconsin 1984); M.S. (Pittsburgh 1992); Ph.D. (Wayne State 1999) [2004]

JOHN J. GRIFFIN, Assistant Clinical Professor of Psychiatry

B.A. (Notre Dame 1965); M.D. (Saint Louis 1969) [1976]

MARIE R. GRIFFIN, Professor of Preventive Medicine (Pharmacoepidemiology); Professor of Medicine

A.B. (Immaculata 1972); M.D. (Georgetown 1976); M.P.H. (Johns Hopkins 1982) [1986]

CARLOS G. GRIJALVA, Assistant Professor of Preventive Medicine

B.S., M.D. (Universidad Nacional 'San Luis Gonzaga' [Peru] 2001, 2001); M.P.H. (Vanderbilt 2006) [2006]

ERIC L. GROGAN, Assistant Professor of Thoracic Surgery

B.S. (David Lipscomb 1995); M.D., M.P.H. (Vanderbilt 1999, 2004) [2008]

THOMAS E. GROOMES, Assistant Professor of Orthopaedics and Rehabilitation

B.S. (Vanderbilt 1983); M.D. (Tennessee, Memphis 1987) [1994]

KIRBY R. GROSS, Instructor in Surgery

B.S., M.D. (Indiana State 1976, 1980) [2009]

MARY A. GROVE, Assistant in Medicine

B.S. (D'Youville College 1983); M.S.N. (SUNY, Stony Brook 1989); R.N., A.C.N.P.-B.C., A.N.P.-B.C. [2009]

JAMES H. GROWDON, JR., Associate Clinical Professor of Obstetrics and Gynecology B.A., M.D. (Vanderbilt 1966, 1969) [1973]

PETER H. GRUBB, Assistant Professor of Pediatrics

B.S. (Texas A & M 1987); M.D. (Uniformed Services University 1992) [2005]

MICHELLE SAVIDGE GRUNDY, Assistant Professor of Medical Education and Administration B.S., Ph.D. (Vanderbilt 1993, 2000) [2002]

EWA F. GRZESZCZAK, Assistant Professor of Radiology and Radiological Sciences M.D. (Wroclaw University of Medicine [Poland] 1984) [2000]

MAREK GRZESZCZAK, Assistant Professor of Pediatrics; Assistant Professor of Anesthesiology

M.D. (Medical Academy of Wroclaw [Poland] 1984) [2002]

GUOQIANG GU, Assistant Professor of Cell and Developmental Biology

B.S. (Ji Lin [China] 1988); M.S. (Chinese Academy of Science 1991); Ph.D. (Columbia 1998) [2002]

YOUFEI GUAN, Assistant Professor of Medicine

M.D., M.S. (Nantong Medical [China] 1986, 1989); Ph.D. (Beijing Medical 1993) [1999]

F. PETER GUENGERICH, Harry Pearson Broquist Professor of Biochemistry; Director, Center in Molecular Toxicology

B.S. (Illinois 1970); Ph.D. (Vanderbilt 1973) [1975]

OSCAR D. GUILLAMONDEGUI, Assistant Professor of Surgery

B.A. (Dallas 1989); M.D. (Texas, Galveston 1993) [2003]

SUBHADRA C. GUNAWARDANA, Research Assistant Professor of Molecular Physiology and Biophysics

B.V.Sc. (D.V.M.) (Peradeniya [Sri Lanka] 1990); M.S. (Iowa State 1995); Ph.D. (Cornell 2001) [2007]

VERONICA LAWSON GUNN, Assistant Professor of Pediatrics (On leave 2009)

B.A. (Rhodes 1991); M.D. (Vanderbilt 1997); M.P.H. (Johns Hopkins 2001) [2002]

NING GUO, Research Assistant Professor of Radiology and Radiological Sciences Ph.D. (Chinese Academy of Science 1993) [2008]

RAJNISH KUMAR GUPTA, Assistant Professor of Anesthesiology

B.A., M.D. (Vanderbilt 1998, 2002) [2006]

RISHI GUPTA, Assistant Professor of Neurology; Assistant Professor of Radiology and Radiological Sciences

B.S. (Columbia 1995); M.D. (Meharry Medical 1999) [2009]

EUGENIA V. GUREVICH, Assistant Professor of Pharmacology

B.S., Ph.D. (Moscow State 1980, 1985) [2001]

VSEVOLOD V. GUREVICH, Professor of Pharmacology; Investigator, Center for Molecular Neuroscience

B.S., M.S. (Moscow State 1980); Ph.D. (Shemyakin Institute 1990) [2001]

LARRY D. GURLEY, Clinical Instructor in Obstetrics and Gynecology

B.A. (Vanderbilt 1970); M.D. (Tennessee 1977) [1983]

SCOTT OSBORN GUTHRIE, Assistant Professor of Clinical Pediatrics

B.A. (David Lipscomb 1995); M.D. (East Tennessee State 1999) [2007]

GLORIA E. GUTIERREZ, Visiting Research Associate Professor of Medicine M.D. (Universidad Nacional Autónoma de Mexico 1978) [2006]

MICHELLE LYN GUTMANN, Assistant Professor of Clinical Hearing and Speech Sciences B.S. (Toronto 1985); M.S. (Emerson 1988) [2009]

JEFFREY S. GUY, Associate Professor of Surgery

B.S. (Kent State 1987); M.D. (Northeastern Ohio 1991); M.Sc. (Akron 1996) [1999]

RODNEY KIPLIN GUY, Adjunct Professor of Biochemistry

B.A. (Reed 1990); Ph.D. (Scripps Research Institute 1996) [2006]

RAUL J. GUZMAN, Associate Professor of Surgery; Assistant Professor of Cell and Developmental Biology

Sc.B. (Brown 1982); M.D. (Johns Hopkins 1986) [1997]

HARRY E. GWIRTSMAN, Associate Professor of Psychiatry; Director, Division of Geropsychiatry B.A. (Yale 1972); M.D. (Columbia 1976) [1995]

DAVID WILLIAM HAAS, Associate Professor of Medicine; Associate Professor of Microbiology and Immunology

A.B. (Indiana 1979); M.D. (Vanderbilt 1983) [1990]

KEVIN F. HAAS, Assistant Professor of Neurology; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Duke 1991); Ph.D., M.D. (Michigan 1998, 1999) [2004]

VOLKER H. HAASE, Krick-Brooks Associate Professor of Medicine; Associate Professor of Cancer Biology; Associate Professor of Molecular Physiology and Biophysics

B.A. (Gymnasiale Oberstufenschule 1980); M.D. (Johann Wolfgang Goethe Universität 1990) [2008]

RALF C. HABERMANN, Assistant Professor of Medicine

M.D. (Freie [Germany] 1989) [1996]

M. REZA HABIBIAN, Associate Professor of Clinical Radiology and Radiological Sciences M.D. (University of Tehran Medical School 1960) [1984]

SARA HABIBIAN, Clinical Instructor in Obstetrics and Gynecology

B.S. (Virginia 1995); M.D. (Vanderbilt 2002) [2007]

DAVID L. HACHEY, Professor of Pharmacology; Professor of Biochemistry B.A. (Oakland 1967); Ph.D. (California, Santa Barbara 1972) [1998]

TROY ALAN HACKETT, Associate Professor of Hearing and Speech Sciences; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A., M.A. (Indiana 1987, 1989); Ph.D. (Vanderbilt 1996) [1999]

DAVID D. HAGAMAN, Assistant Professor of Medicine

B.S. (Bowling Green State 1983); M.D. (Ohio State 1987) [2001]

KEITH W. HAGAN, Associate Clinical Professor of Urologic Surgery B.A. (Kentucky 1965); M.D. (Vanderbilt 1969) [1977]

KEVIN F. HAGAN, Associate Professor of Plastic Surgery

B.A., M.D. (Johns Hopkins 1971, 1974) [1982]

ELIE HAGE-KORBAN, Assistant Clinical Professor of Medicine

B.S., M.D. (American University of Beirut 1993, 1997) [2005]

DEBORAH HAGGARD, Assistant in Medicine

B.S., M.S.N. (Alabama, Huntsville 1999, 2001) [2007]

MAUREEN KAY HAHN, Assistant Professor of Medicine; Assistant Professor of Pharmacology; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Pennsylvania 1987); M.S. (Pittsburgh 1993); Ph.D. (Wayne State 1999) [2002]

ANNE-MARIE ETHIER HAIN, Clinical Instructor in Pediatrics

B.A. (North Carolina 1991); M.D. (Medical College of Georgia 1996) [1999]

PAUL D. HAIN, Assistant Professor of Pediatrics; Associate Chief of Staff, Monroe Carell Jr. Children's Hospital at Vanderbilt

B.S. (Rice 1991); M.D. (Vanderbilt 1998) [2001]

JONATHAN LEE HAINES, T. H. Morgan Professor of Human Genetics; Professor of Molecular Physiology and Biophysics; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience; Director, Center for Human Genetics Research

B.A. (Colby 1979); Ph.D. (Minnesota 1984) [1997]

TAHAR HAJRI, Research Assistant Professor of Surgery

B.S. (Université Pierre et Marie Curie [Tunisia] 1984); Ph.D. (Université de Paris XI-Orsay 1988) [2005]

RAYMOND M. HAKIM, Clinical Professor of Medicine

M.S. (Rensselaer Polytechnic Institute 1965); Ph.D. (Massachusetts Institute of Technology 1968); M.D. (McGill 1976) [1987]

NATASHA B. HALASA, Assistant Professor of Pediatrics; Instructor in Emergency Medicine B.S. (Akron 1994); M.D. (Medical College of Ohio 1998) [2002]

DOUGLAS A. HALE, Assistant Professor of Surgery

B.S. (St. Bonaventure 1980); M.D. (Georgetown 1984) [2009]

SUE T. HALE, Assistant Professor of Hearing and Speech Sciences

B.A.E., M.C.D. (Mississippi 1972, 1975) [2000]

CONNIE ALLEN HALEY, Assistant Clinical Professor of Medicine

B.A. (Virginia 1990); M.D. (Vanderbilt 1995) [2001]

SPENCER A. HALEY, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.S. (Tennessee, Martin 1991); D.D.S. (Tennessee, Memphis 1995) [2003]

JOHN DAVID HALL, Assistant Professor of Anesthesiology

B.S. (Texas 1999); M.D. (McGill 2004) [2009]

JOHN STEVEN HALLE, Adjunct Professor of Cell and Developmental Biology

B.S., M.S. (Oregon 1975, 1977); Ph.D. (Iowa 1990) [2001]

LINDA R. HALPERIN, Assistant Professor of Orthopaedics and Rehabilitation

B.S. (Duke 1977); M.D. (Tennessee, Memphis 1981) [2000]

JENNIFER L. HALPERN, Assistant Professor of Orthopaedics and Rehabilitation

B.A. (Princeton 1995); M.D. (Vanderbilt 1999) [2007]

SUSAN A. HALTER, Associate Professor of Pathology, Emerita

B.A. (Miami [Ohio] 1967); M.S. (Syracuse 1971); M.D. (Queen's [Ontario] 1973) [1977]

AMY-JOAN LORNA HAM, Research Associate Professor of Biochemistry

B.S., M.S., Ph.D. (Arizona 1988, 1991, 1995) [2003]

OMAR L. HAMADA, Associate Clinical Professor of Pediatrics

B.S. (Union 1986); M.D. (Tennessee, Memphis 1993) [2005]

TARA N. HAMADA, Associate Clinical Professor of Pediatrics

B.S. (Tennessee 1991); M.D. (Tennessee, Memphis 1995) [2005]

KIRSTEN L. HAMAN, Research Assistant Professor of Psychiatry

B.S. (Florida 1988); M.A., Ph.D. (Vanderbilt 1993, 2000) [2002]

ASHRAF HOSNI HAMDAN, Assistant Clinical Professor of Pediatrics

M.B., B.Ch., M.S. (Alexandria 1984, 1989); M.D. (Liverpool [England] 1999) [2004]

RIZWAN HAMID, Assistant Professor of Pediatrics

M.D. (Allama Igbal Open University [Islamabad] 1985); Ph.D. (Vanderbilt 1994) [2003]

EDDIE D. HAMILTON, Clinical Professor of Pediatrics

B.S. (Tennessee 1981); M.D. (Vanderbilt 1985) [1988]

KATHERINE STOKES HAMILTON, Assistant Clinical Professor of Pathology

B.S., M.D. (Vanderbilt 1991, 1996) [2005]

RALPH F. HAMILTON, Clinical Instructor in Ophthalmology and Visual Sciences

B.S. (Florida State 1974); M.D. (Tennessee 1976) [1999]

RODNEY M. HAMILTON, Clinical Instructor in Pediatrics

B.S. (South Alabama 1994); M.D. (Tennessee, Memphis 1999) [2002]

HEIDI ELIZABETH HAMM, Earl W. Sutherland Jr. Professor of Pharmacology and Chair of the Department; Professor of Ophthalmology and Visual Sciences; Professor of

Orthopaedics and Rehabilitation; Investigator, Center for Molecular Neuroscience

B.A. (Atlantic Union 1973); Ph.D. (Texas 1980) [2000]

ELIZABETH ANNE HAMMOCK, Instructor in Pediatrics

B.S. (Berry College 1999); Ph.D. (Emory 2005) [2009]

MARY SUZANNE HAMPSON, Instructor in Emergency Medicine

B.S., M.D. (Maryland 2002, 2006) [2009]

JIN HO HAN, Assistant Professor of Emergency Medicine

B.A. (New York 1993); M.D. (SUNY Health Science Center, Brooklyn 1999) [2005]

ZHAOZHONG HAN, Assistant Professor of Radiation Oncology; Assistant Professor of Cancer Biology

B.S. (Wuhan [China] 1991); M.S. (Beijing Institute of Microbiology and Epidemiology 1994); Ph.D. (Institute of Biotechnology, Beijing 1997) [2005]

KENNETH R. HANDE, Professor of Medicine; Professor of Pharmacology

A.B. (Princeton 1968); M.D. (Johns Hopkins 1972) [1978]

THOMAS E. HANES, Assistant Clinical Professor of Pathology

B.A., M.D. (Vanderbilt 1968, 1972) [1979]

STEVEN K. HANKS, Professor of Cell and Developmental Biology; Associate Professor of Medicine

B.S. (Utah 1977); Ph.D. (Texas Health Science Center, Houston 1982) [1990]

STEPHEN R. HANN, Professor of Cell and Developmental Biology

A.B. (California, Berkeley 1974); Ph.D. (California, Riverside 1981) [1986]

GENE ALAN HANNAH, Assistant Professor of Orthopaedics and Rehabilitation; Assistant Professor of Family Medicine

B.S. (Auburn, Montgomery 1984); M.D. (Alabama, Birmingham 1988) [2002]

VICKIE L. HANNIG, Associate in Pediatrics

B.A. (Pennsylvania 1976); M.S. (Sarah Lawrence 1981) [1998]

DAVID E. HANSEN, Associate Professor of Medicine

B.A. (Amherst 1976); M.D. (Cornell 1980) [1987]

KATHERINE LOUISE HANSON, Assistant Professor of Clinical Medicine; Medical Director, Zerfoss Student Health Center

B.S. (Cornell 1986); M.D. (Vanderbilt 1990) [1999]

CHUAN-MING (JIMMY) HAO, Assistant Professor of Medicine

M.D., M.S. (Nantong Medical 1982, 1987); Ph.D. (Shanghai Medical 1990) [2000]

FRANK JOSEPH HARAF, JR., Clinical Instructor in Pediatrics

B.S. (Emory 1993); M.D. (East Tennessee State 1997) [2000]

MARY ALICE HARBISON, Assistant Clinical Professor of Medicine

B.A. (Yale 1978); M.D. (Vanderbilt 1983) [1990]

DOUGLAS P. HARDIN, Professor of Mathematics; Professor of Biomedical Informatics B.E.E. (Georgia Institute of Technology 1980); M.E.E. (Stanford 1982); Ph.D. (Georgia Institute of Technology 1985) [1986]

HOLLY RICHTER HARDIN, Assistant Professor of Anesthesiology

B.A. (DePauw 1998); M.D. (Indiana 2003) [2008]

JOEL G. HARDMAN, Professor of Pharmacology, Emeritus

B.S.Phar., M.S. (Georgia 1954, 1959); Ph.D. (Emory 1964) [1964]

NORMAN CHANDLER HARDMAN, JR., Assistant Professor of Medicine

B.S. (Georgia Institute of Technology 1981); M.D. (Medical College of Georgia 1985) [1993]

RAY HARGREAVES, Clinical Instructor in Surgery at St. Thomas Medical Center

A.B. (Franklin and Marshall 1981); M.D. (Vanderbilt 1985) [1992]

JOEL T. HARGROVE, Clinical Professor of Obstetrics and Gynecology

B.S. (Austin Peay State 1957); M.D. (Tennessee 1960) [1983]

DONNALITA HARMON, Assistant in Medicine

B.S. (Tennessee State 1999); M.S.N. (Vanderbilt 2005) [2008]

JOEL M. HARP, Research Assistant Professor of Biochemistry

B.A., M.S. (West Texas A & M 1973, 1975); Ph.D. (Tennessee 2000) [2003]

FRANK E. HARRELL, JR., Professor of Biostatistics and Chair of the Department; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Alabama 1973); Ph.D. (North Carolina 1979) [2003]

PHILIP R. HARRELSON, Instructor in Clinical Family Medicine

B.S. (Georgia College 1994); M.D. (Medical College of Georgia 1999) [2006]

HEATHER HARRIS, Assistant Clinical Professor of Psychiatry

B.A. (Southern 1994); M.D. (Loma Linda 1999) [2005]

PAUL A. HARRIS, Research Associate Professor of Biomedical Informatics; Research Associate Professor of Biomedical Engineering

B.S. (Tennessee Technological 1987); M.S., Ph.D. (Vanderbilt 1993, 1996) [1999]

RAYMOND C. HARRIS, JR., Ann and Roscoe R. Robinson Professor of Nephrology; Professor of Medicine; Director, George O'Brien Center for the Study of Renal Disease; Professor of Molecular Physiology and Biophysics; Director, Division of Nephrology B.S. (Yale 1974); M.D. (Emory 1978) [1986]

THOMAS R. HARRIS, Orrin Henry Ingram Distinguished Professor of Engineering, Emeritus; Professor of Biomedical Engineering, Emeritus; Professor of Chemical Engineering, Emeritus; Professor of Medicine, Emeritus

B.S., M.S. (Texas A & M 1958, 1962); Ph.D. (Tulane 1964); M.D. (Vanderbilt 1974) [1964]

VICKI S. HARRIS, Assistant Clinical Professor of Psychology, Peabody College; Assistant Clinical Professor of Psychiatry; Member, Vanderbilt Kennedy Center for Research on Human Development; Fellow, Institute for Public Policy Studies

B.S. (SUNY, Cortland 1984); M.S., Ph.D. (Pennsylvania State 1987, 1991) [1993]

VICTORIA L. HARRIS, Associate in Medicine

B.S., M.Ed. (Memphis 1974, 1976); Ed.D. (North Texas 1983) [1996]

ZENA LEAH HARRIS, Associate Professor of Pediatrics; Associate Professor of Anesthesiology B.S. (Illinois 1983); M.D. (Chicago Medical School 1987) [2009]

LAURIE A. HARRIS-FORD, Assistant Clinical Professor of Pediatrics

B.S., M.D. (Alabama 1985, 1989) [2005]

FIONA E. HARRISON, Research Assistant Professor of Medicine B.Sc., Ph.D. (Cardiff 2000, 2004) [2008]

JEREMY B. HARRISON, Assistant Clinical Professor of Pediatrics

B.S. (Freed-Hardeman 1990); M.D. (East Tennessee State 1996) [2007]

WALTER HARRISON, Clinical Instructor in Pediatrics

B.S. (Dartmouth 1966); M.D. (Hahnemann Medical College 1970) [2008]

CHARLES E. HART, Assistant Clinical Professor of Medicine

B.S. (California, Davis 1975); M.S. (Oregon State 1978); Ph.D. (University of Washington, Seattle 1987) [2007]

JAMES R. HART, Assistant Clinical Professor of Psychiatry

B.A., M.D. (Vanderbilt 1978, 1983) [1987]

TINA V. HARTERT, Associate Professor of Medicine

A.B. (Brown 1985); M.D., M.P.H. (Vanderbilt 1990, 1998) [1998]

EVA MARIE HARTH, Assistant Professor of Chemistry; Assistant Professor of Pharmacology B.S. (Friedrich-Wilhelms-Universität [Bonn] 1990); B.S., M.S. (Zurich 1994); Ph.D. (Mainz [Germany] 1998) [2004]

KATHERINE E. HARTMANN, Associate Professor of Obstetrics and Gynecology; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A., M.A., M.D. (Johns Hopkins 1986, 1986, 1992); Ph.D. (North Carolina 1999) [2006] STEPHEN T. HARVEY, Assistant Professor of Anesthesiology

B.A. (Milligan 1997); M.D. (Tennessee, Memphis 2004) [2009]

WILLIAM B. HARWELL, JR., Assistant Clinical Professor of Medicine

B.A. (University of the South 1968); M.D. (Tennessee 1971) [1977]

DANA J. HASELTON, Clinical Instructor in Pediatrics

B.S.E., M.S.E. (Michigan 1983, 1984); M.S., M.D., Ph.D. (University of Washington 1990, 1995, 1995) [2001]

FREDERICK R. HASELTON, Professor of Biomedical Engineering; Professor of Ophthalmology and Visual Sciences

A.B. (Haverford 1969); Ph.D. (Pennsylvania 1981) [1989]

JOHN H. HASH, Professor of Microbiology and Immunology, Emeritus

B.S. (Roanoke 1949); M.S., Ph.D. (Virginia Polytechnic 1955, 1957) [1964]

BRUCE S. HASKELL, Clinical Professor of Oral and Maxillofacial Surgery

B.A., M.A., D.M.D., Ph.D. (Pittsburgh 1969, 1972, 1973, 1978) [2007]

ALYSSA H. HASTY, Associate Professor of Molecular Physiology and Biophysics B.S. (Tennessee Technological 1994); Ph.D. (Vanderbilt 1998) [2001]

HELEN E. HATFIELD, Associate in Psychiatry

B.S.N. (Michigan State 1976); M.S.N. (Vanderbilt 2002); R.N. [2003]

JACOB WALTER HATHAWAY, Instructor in Medicine

B.A. (Carleton College 1996); M.D. (Vanderbilt 2005) [2009]

ANTONIS K. HATZOPOULOS, Associate Professor of Medicine; Associate Professor of Cell and Developmental Biology

B.S. (Aristotelion 1981); Ph.D. (Northwestern 1986) [2005]

CHARLES HOWARD HAUSMAN, Assistant Professor of Clinical Hearing and Speech Sciences B.S. (Cincinnati 1972); M.S. (Vanderbilt 1974) [2008]

JACEK HAWIGER, Oswald T. Avery Distinguished Professor of Microbiology and Immunology and Chair of the Department

M.D. (Copernicus School of Medicine 1962); Ph.D. (National Institute of Hygiene [Warsaw] 1967); M.A. (hon., Harvard 1987); M.D. (hon., Copernicus School of Medicine 1992) [1990]

ANNE B. HAWKINS, Clinical Instructor in Pediatrics

B.A. (Virginia 1987); M.D. (Tennessee, Memphis 1992) [1997]

MICHAEL D. HAWKINS, Clinical Instructor in Obstetrics and Gynecology

B.A. (Vanderbilt 1987); M.D. (Emory 1991) [1995]

BRIAN D. HAWORTH, Assistant Clinical Professor of Psychiatry

B.A. (Ohio State 1993); M.A., Psv.D. (Wheaton 2000, 2004) [2005]

MELINDA J. HAWS, Assistant Clinical Professor of Plastic Surgery

B.A. (Indiana State 1987); M.D. (Southern Illinois 1991) [2009]

GEOFFREY E. HAYDEN, Clinical Instructor in Emergency Medicine

B.A. (Stanford 1997); M.D. (Virginia 2002) [2007]

BENJAMIN B. HAYES, Assistant Clinical Professor of Medicine

B.A. (Davidson 1994), Ph.D. (Medical College of Virginia 1999); M.D. (Boston University 2003) [2007]

P. LYNN HAYES, Associate Professor of Hearing and Speech Sciences

B.A. (Lenoir-Rhyne College 1980); M.S. (Wisconsin, Milwaukee 1985); Ph.D. (Pittsburgh 1991) [2007]

DAVID S. HAYNES, Associate Professor of Otolaryngology; Associate Professor of Hearing and Speech Sciences

A.B. (Tennessee 1983); M.D. (Tennessee, Memphis 1987) [1995]

J. BREVARD HAYNES, JR., Assistant Clinical Professor of Medicine

B.S. (Vanderbilt 1968); B.A. (College of Saint Thomas 1970); M.D., J.D. (Vanderbilt 1972, 1973) [1979]

STEPHEN R. HAYS, Associate Professor of Anesthesiology; Associate Professor of Pediatrics B.S., M.S. (Yale 1987); M.D. (Johns Hopkins 1991) [1999]

SIMON WILLIAM HAYWARD, Associate Professor of Urologic Surgery; Associate Professor of Cancer Biology

B.Sc., M.Sc., Ph.D. (London 1981, 1984, 1991) [2001]

MARY FRAN HAZINSKI, Professor of Nursing; Assistant in Surgery; Assistant in Pediatrics B.S.N. (Vanderbilt 1974); M.S. in Nr. (Saint Louis 1975) [1990]

DAVID R. HEAD, Professor of Pathology and Vice Chair for Clinical Affairs

B.A. (Rice 1964); M.D. (Texas 1968) [2000]

BENJAMIN S. HEAVRIN, Assistant Professor of Emergency Medicine

B.A. (Princeton 1998); M.B.A., M.D. (Vanderbilt 2004, 2004) [2008]

STEPHAN H. W. HECKERS, James G. Blakemore Professor of Psychiatry and Chair of the Department; Professor of Radiology and Radiological Sciences; Member, Vanderbilt Kennedy Center for Research on Human Development

Ph.D. (Munich [Germany] 1981); M.D. (Cologne [Germany] 1988); M.Sc. (Harvard 2000) [2006]

PETER HEDERA, Assistant Professor of Neurology; Investigator, Center for Molecular Neuroscience; Member, Vanderbilt Kennedy Center for Research on Human Development M.D. (Ian Amos Comenius [Slovak Republic] 1987) [2002]

ANNIE M. HEEMSKERK, Instructor in Radiology and Radiological Sciences

Ph.D. (Eindhoven University of Technology 2006) [2008]

ALISON R. HEFFERNAN, Clinical Instructor in Pediatrics

B.S., M.D. (Louisiana State 1998, 2003) [2008]

A. CLYDE HEFLIN, JR., Assistant Clinical Professor of Medicine; Clinical Assistant Professor of Nursing

B.A. (Kentucky 1969); M.D. (Vanderbilt 1973) [1983]

JACQUES HEIBIG, Associate Clinical Professor of Medicine

B.S. (Amies [France] 1967); M.D. (Paris 1972) [1998]

PAUL JACOB HEIL, Assistant Clinical Professor of Pediatrics

B.S. (Stanford 1984); M.D. (Vanderbilt 1988) [1992]

ELIZABETH HEITMAN, Associate Professor of Medicine; Associate Professor of Anesthesiology

B.A., Ph.D. (Rice 1979, 1986) [2004]

J. HAROLD HELDERMAN, Professor of Medicine; Professor of Microbiology and Immunology B.A. (Rochester 1967); M.D. (SUNY, Downstate Medical Center 1971) [1989]

RICHARD M. HELLER, JR., Professor of Radiology and Radiological Sciences; Professor of Pediatrics

B.A. (Carleton 1959); M.D. (Northwestern 1963) [1975]

CARL G. HELLERQVIST, Professor of Biochemistry, Emeritus

fil. dr. docent (Stockholm 1971) [1974]

ANNA R. HEMNES, Assistant Professor of Medicine

B.A. (Columbia 1995); M.D. (Johns Hopkins 1999) [2006]

LYNNETTE M. HENDERSON, Research Assistant Professor of Pediatrics; Member,

Vanderbilt Kennedy Center for Research on Human Development

B.S. (Freed-Hardeman 1981); M.Ed. (Belmont 1992); Ph.D. (Vanderbilt 2000) [2003]

MELINDA SHAW HENDERSON, Clinical Instructor in Medicine

B.S. (Tennessee 1997); M.D. (Emory 2001) [2005]

ALEXANDRA WARREN HENDRICKS, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.S. (Western Kentucky 1996); D.M.D. (Tufts 2000) [2004]

JOAN COLLIER HENNING, Assistant Professor of Emergency Medicine

B.S. (Mississippi State 1991); M.D. (Vanderbilt 1997) [2001]

MELISSA HENRY, Assistant Professor of Hearing and Speech Sciences

B.A. (Western Michigan 1980); M.A. (Wayne State 1982) [2008]

TIMOTHY M. HENSCHEL, Clinical Instructor in Pediatrics

B.S. (Wheaton 1991); M.D. (Medical College of Wisconsin 1995) [1999]

JOSEPH A. HENSKE, Instructor in Clinical Medicine

B.S. (Trinity 1999); M.D. (Texas 2004) [2008]

ROBIN HENSLEY, Assistant in Medicine

B.S.N. (Virginia 1979); M.S.N. (Middle Tennessee State 2007) [2009]

ALAN JOSEPH HERLINE, Associate Professor of Surgery

B.E. (Vanderbilt 1987); M.D. (Medical College of Georgia 1994) [2002]

CASILDA I. HERMO, Clinical Instructor in Pediatrics

M.D. (Autonomous University of Santo Domingo 1980) [1996]

MARTA HERNANZ-SCHULMAN, Professor of Radiology and Radiological Sciences; Professor of Pediatrics

A.B. (Princeton 1973); M.D. (New York 1977) [1988]

S. DUKE HERRELL III, Associate Professor of Urologic Surgery

B.A. (Richmond 1986); M.D. (Virginia 1990) [2001]

PAULA C. HERRMANN, Assistant Professor of Clinical Medicine

B.S. (South Carolina 1999); M.D. (Medical University of South Carolina 2003) [2006]

SHANNON L. HERSEY, Associate Professor of Clinical Anesthesiology; Associate Professor of Clinical Pediatrics

B.A. (Kalamazoo 1977); M.D. (Maryland 1985) [1993]

CAROL B. HERSH, Assistant Clinical Professor of Psychiatry

B.A. (Delaware 1965); M.D. (Jefferson Medical College 1969) [1996]

DOUGLAS LANDON HESTER, Assistant Professor of Anesthesiology

A.B. (Georgia 1999); M.D. (Medical College of Georgia 2004) [2008]

WILLIAM A. HEWLETT, Associate Professor of Psychiatry; Associate Professor of Pharmacology; Member, Vanderbilt Kennedy Center for Research on Human Development

A.B. (California, Berkeley 1972); M.A., Ph.D., M.D. (Stanford 1973, 1982, 1983) [1991]

MARK DANIEL HICAR, Instructor in Pediatrics

B.A. (Chicago 1993); M.D., Ph.D. (Ohio State 2002, 2002) [2009]

GERALD B. HICKSON, Joseph C. Ross Professor of Medical Education and Administration; Professor of Pediatrics; Associate Dean for Clinical Affairs and Director of the Vanderbilt Center for Patient and Professional Advocacy; Clinical Associate Professor of Nursing; Associate Professor of Hearing and Speech Sciences; Professor of Psychiatry B.S. (Georgia 1973); M.D. (Tulane 1978) [1982]

SCOTT W. HIEBERT, Professor of Biochemistry: Associate Professor of Medicine B.S. (Bethel 1982); Ph.D. (Northwestern 1987) [1997]

JAMES N. HIGGINBOTHAM, Research Instructor in Medicine

B.S., M.S., Ph.D. (Mississippi State 1989, 1993, 2000) [2006]

LEAH R. HIGGINBOTHAM, Clinical Instructor in Pediatrics B.A., M.S., D.O. (North Texas 1999, 2000, 2004) [2007]

MICHAEL S. HIGGINS, Professor of Anesthesiology and Chair of the Department; Associate Professor of Biomedical Informatics; Associate Professor of Surgery

B.S. (Lewis and Clark 1984); M.D., M.P.H. (Vanderbilt 1989, 1998) [1994]

STANLEY B. HIGGINS, Research Associate Professor of Medicine (Biomedical Engineering) B.A., M.S., Ph.D. (Texas Christian 1964, 1967, 1969) [1976]

R. KEVIN HIGH, Associate in Emergency Medicine

B.S. (Regents College 1992); M.P.H. (Columbus 2000) [2007]

DANIEL R. HIGHTOWER, Assistant Clinical Professor of Otolaryngology

B.A., M.D. (Vanderbilt 1961, 1964) [1974]

GEORGE ALAN HILL, Assistant Clinical Professor of Obstetrics and Gynecology A.B., M.D. (Tennessee 1976, 1980) [1984]

GEORGE C. HILL, Levi Watkins Jr. Professor and Associate Dean for Diversity in Medical Education, School of Medicine; Professor of Medical Education and Administration; Professor of Microbiology and Immunology

B.A. (Rutgers 1961); M.S. (Howard 1963); Ph.D. (New York 1967) [2002]

KRISTINA E. HILL, Research Professor of Medicine

B.S. (Northeast Louisiana 1968); Ph.D. (Texas 1972) [1987]

MICHAEL D. HILL, Assistant Clinical Professor of Psychiatry

B.S. (Vanderbilt 1983); M.D. (Tennessee 1989) [1994]

MICHAEL F. HILL, Research Assistant Professor of Medicine

Ph.D. (Manitoba 1998) [2006]

TIFFANY P. HILL, Associate Clinical Professor of Pediatrics

B.A. (Boston University 1990); M.S., M.D. (Chicago 1994, 1994) [2006]

MELISSA A. HILMES, Assistant Professor of Radiology and Radiological Sciences B.S., M.D. (Vanderbilt 1996, 2000) [2007]

DANIEL P. HIMES, Assistant Professor of Emergency Medicine

B.S. (Wheaton 1989); M.D. (Bowman Gray 1993) [1996]

DONNA L. HINES, Clinical Instructor in Pediatrics

B.S. (Christian Brothers 1986); M.D. (Howard 1995) [2009]

TIFFANY ELDER HINES, Clinical Instructor in Pediatrics

B.S. (Auburn 1991); M.D. (South Alabama 1995) [1999]

ALICE A. HINTON, Assistant Professor of Radiology and Radiological Sciences

B.S. (Tulane 1976); M.D. (Vanderbilt 1982) [2003]

TIMOTHY JOHN HINTON, Assistant Professor of Medicine B.S. (Harding 1997); M.D. (Maryland 2002) [2005]

M. BRUCE HIRSCH, Clinical Instructor in Obstetrics and Gynecology B.S. (Georgia 1975); M.D. (Alabama, Birmingham 1980) [1984]

RICHARD HSINSHIN HO, Assistant Professor of Pediatrics

B.S. (Duke 1993); M.D., M.S.C.I. (Vanderbilt 1997, 2004) [2003]

RICHARD L. HOCK, Assistant Professor of Clinical Medicine

A.B. (Dartmouth 1983); M.D. (Vanderbilt 1987) [1995]

KATHERINE A. HOEFT, Clinical Instructor in Pediatrics

B.S. (SUNY, Geneseo 1999); M.D. (North Carolina 2003) [2006]

STEVEN J. HOFF, Assistant Professor of Cardiac Surgery

B.A. (Minnesota 1982); M.D. (Johns Hopkins 1986) [2007]

C. SCOTT HOFFMAN, Associate Professor of Clinical Anesthesiology

B.S. (Texas A & M 1971); M.D. (Meharry Medical 1990) [2000]

ROBERT D. HOFFMAN, Associate Professor of Pathology

B.A., M.D., Ph.D. (Johns Hopkins 1977, 1984, 1984) [2009]

GEORGE W. HOLCOMB, JR., Clinical Professor of Pediatric Surgery, Emeritus B.A., M.D. (Vanderbilt 1943, 1946) [1954]

NANCY WINGFIELD DARDEN HOLLAND, Assistant Professor of Radiology and Radiological Sciences

M.S.H.A. (Virginia Commonwealth 1968); B.S. (Virginia Polytechnic Institute 1973); M.D. (Medical College of Virginia 1977) [2004]

RALPH DUANE HOLLAND, Assistant Professor of Radiology and Radiological Sciences B.S. (Florida State 1971); M.D. (Medical College of Virginia 1975) [2004]

STEVEN D. HOLLON, Professor of Psychology, College of Arts and Science; Professor of Psychology, Peabody College; Professor of Psychiatry; Investigator, Vanderbilt

Kennedy Center for Research on Human Development

B.A. (George Washington 1971); M.S., Ph.D. (Florida State 1974, 1977) [1985]

HOWARD RHEA HOLLY, Assistant Clinical Professor of Psychiatry

B.S. (Tennessee Technological 1979); M.D. (Tennessee 1984) [2006]

KEREN HOLMES, Instructor in Clinical Family Medicine

B.S. (Georgia 1999); M.D. (Morehouse 2005) [2008]

KENNETH J. HOLROYD, Assistant Vice Chancellor for Research; Associate Professor of Anesthesiology; Associate Professor of Medicine

B.A., M.D., M.B.A. (Johns Hopkins 1980, 1984, 2000) [2005]

GINGER E. HOLT, Assistant Professor of Orthopaedics and Rehabilitation

B.S. (Alabama, Birmingham 1992); M.D. (Alabama 1996) [2002]

JENNIFER B. HOLZEN, Clinical Instructor in Pediatrics

B.A. (Miami 1991); M.D. (Wright State 1996) [2006]

THOMAS W. HOLZEN, Assistant Clinical Professor of Otolaryngology

B.A. (Yale 1966); M.D. (Tufts 1970) [1981]

MICHAEL D. HOLZMAN, Lester and Sara Jayne Williams Associate Professor of Academic Surgery; Associate Professor of Surgery

M.D. (Wake Forest 1988); M.P.H. (Vanderbilt 1999) [1996]

CHARLES C. HONG, Assistant Professor of Medicine; Assistant Professor of Pharmacology S.B. (Massachusetts Institute of Technology 1988); M.D., M.Phil., Ph.D. (Yale 1998, 1998, 1998) [2006]

JUNG JA HONG, Assistant Clinical Professor of Radiology and Radiological Sciences B.S., M.D. (Ewha Women's [Korea] 1962, 1966) [2000]

DARRYL B. HOOD, Adjunct Associate Professor of Pharmacology

B.S. (Johnson C. Smith 1985); Ph.D. (East Tennessee State 1990) [2008]

LINDA JEAN HOOD, Professor of Hearing and Speech Sciences; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Bowling Green State 1969); M.A. (Kent State 1974); Ph.D. (Maryland 1983) [2004]

MOLLY RAMONA HOOD, Clinical Instructor in Pediatrics

B.S. (Richmond 1995); M.D. (Tennessee, Memphis 1999) [2005]

ROB REID HOOD, Assistant Professor of Medicine; Clinical Assistant Professor of Nursing; Medical Director, Vanderbilt Health One Hunded Oaks

B.A. (South Florida 1973); B.S., M.D. (Tulane 1976, 1980) [1990]

ROBERT L. HOOKER, Instructor in Clinical Emergency Medicine

B.A. (Cornell 1996); M.D. (Medical University of South Carolina 2004) [2009]

RICHARD L. HOOVER, Professor of Pathology; Associate Professor of Pediatrics; Associate Dean of the Graduate School

B.A. (Ohio State 1966); M.S. (Kentucky 1969); Ph.D. (Michigan State 1972) [1985]

ROBERT D. HOOVER, JR., Assistant Clinical Professor of Medicine

B.S., M.D. (South Alabama 1984, 1990) [1996]

COREY R. HOPKINS, Research Assistant Professor of Pharmacology

B.S. (Indiana 1992); Ph.D. (Pittsburgh 2002) [2008]

ANNA K. HOPLA, Adjunct Instructor in Medicine

B.S., M.D. (Oklahoma 1976, 1980) [1998]

GEOFFREY W. HORN, Instructor in Radiology and Radiological Sciences

B.S., M.S. (Texas A & M 1992, 2000); D.O. (Touro 2004) [2009]

LEORA HORN, Assistant Professor of Medicine

B.S., M.S., M.D. (Toronto 1996, 1998, 2002) [2009]

ROBERT G. HORN, Clinical Professor of Pathology

B.A., M.D. (Vanderbilt 1954, 1958) [1960]

BENJAMIN W. Y. HORNSBY, Assistant Professor of Hearing and Speech Sciences; Member,

Vanderbilt Kennedy Center for Research on Human Development

B.A. (Maryville College 1985); M.S., Ph.D. (Vanderbilt 1995, 2001) [2001]

DAVID H. HOROWITZ, Assistant Clinical Professor of Medicine

B.A. (Emory 1966); M.D. (Meharry Medical 1970) [1994]

FREDERICK T. HORTON, JR., Associate Clinical Professor of Psychiatry

B.S. (North Carolina State 1966); M.D. (Virginia Commonwealth 1970) [1978]

MARCUS C. HOUSTON, Associate Clinical Professor of Medicine

B.A. (Southwestern at Memphis 1970); M.D. (Vanderbilt 1974) [1978]

GWENDOLYN A. HOWARD, Instructor in Clinical Medicine

B.S. (Yale 1984); M.D. (Temple 1990) [2001]

JANE ELLEN HOWARD, Assistant Professor of Neurology

A.B. (Washington University 1978); M.D. (Florida 1982) [1993]

RONALD F. HOWARD, Associate Clinical Professor of Pediatrics

B.S., M.D. (Louisville 1960, 1964) [1998]

TAMARYA L. HOYT, Assistant Professor of Radiology and Radiological Sciences

B.S., M.D. (Indiana 1998, 2002) [2007]

MEI HUANG, Research Assistant Professor of Psychiatry

Ph.D. (Vanderbilt 1992); B.A. (School of Chinese Traditional Medicine 1998) [2008]

SHAN HUANG, Research Instructor in Otolaryngology

M.D. (Fourth PLA Medical [China] 1968) [1995]

THOMAS HUANG, Assistant Professor of Pediatrics

B.S. (Yale 1989); M.D. (F. E. Hebert Uniformed Services 1994) [2005]

CHERYL A. HUBBARD, Instructor in Radiology and Radiological Sciences

B.S. (Virginia Tech 1994); M.D. (Medical College of Virginia 1999) [2009]

TODD C. HUBER, Instructor in Clinical Otolaryngology

B.A. (Emory 1995); M.D. (Vanderbilt 1999) [2004]

BILLY GERALD HUDSON, Elliot V. Newman Professor of Medicine; Professor of Biochemistry; Professor of Pathology; Director, Matrix Biology Center

B.S. (Henderson State Teachers 1962); M.S. (Tennessee 1963); Ph.D. (Iowa 1966) [2002]

DAVID R. HUDSON, Clinical Instructor in Pediatrics

B.S. (Mississippi 1989); M.D. (Vanderbilt 1993) [1996]

JULIE KAY HUDSON, Associate Professor of Medical Education and Administration; Assistant Vice Chancellor for Health Affairs; Associate Professor of Clinical Anesthesiology; Assistant Professor of Pediatrics

B.A. (Point Loma 1980); M.A., M.D. (Kansas 1987, 1990) [2002]

ELIZABETH COLVIN HUFF, Assistant Professor of Obstetrics and Gynecology; Adjunct Instructor in Nursing

B.S.N., M.S.N. (Vanderbilt 1974, 1979); R.N., F.N.P. [1997]

JOHN G. HUFF, Associate Professor of Clinical Radiology and Radiological Sciences B.S. (Georgia 1973); M.D. (Vanderbilt 1977) [2007]

ALEXANDER K. HUGHES, Assistant Professor of Clinical Anesthesiology

B.A. (Southern Maine 1993); M.D. (Vermont 1997) [2002]

SABINE S. HUKE, Research Assistant Professor of Medicine

M.S., Ph.D. (Westfaelische-Wilhelms Universitaet [Germany] 1996, 2000) [2008]

TODD M. HULGAN, Assistant Professor of Medicine

B.S. (South Alabama 1992); M.D. (Alabama 1996); M.P.H. (Vanderbilt 2003) [2002]

QUENTIN A. HUMBERD, Associate Clinical Professor of Pediatrics

B.S. (Tennessee 1975); M.D. (Tennessee, Memphis 1978) [2005]

DONNA M. SEDLAK HUMMELL, Associate Professor of Clinical Pediatrics

A.B. (Rutgers 1976); M.D. (Johns Hopkins 1980) [1986]

ROBERT S. HUMPHREY, Clinical Professor of Pediatrics

B.S. (Arkansas 1981); M.D. (Johns Hopkins 1986) [2007]

JERRY K. HUMPHREYS, Assistant Clinical Professor of Pathology

B.A., M.D. (Vanderbilt 1959, 1962) [1967]

ADRIANA M. HUNG, Assistant Professor of Medicine

M.D. (Universidad Central de Venezuela 1993) [2006]

CHRISTINE W. HUNLEY, Clinical Instructor in Pediatrics

B.S. (Vanderbilt 1988); M.D. (Tennessee, Memphis 1992) [1996]

TRACY E. HUNLEY, Assistant Professor of Pediatrics

B.A. (Vanderbilt 1987); M.D. (Tennessee, Memphis 1991) [1997]

ROSEMARY HUNTER, Associate Clinical Professor of Pediatrics

B.S. (Emory 1989); M.D. (Duke 1994) [2001]

STACEY S. HUPPERT, Assistant Professor of Cell and Developmental Biology B.S. (Purdue 1992); Ph.D. (Indiana 1998) [2005] ANDREW M. HUSS, Assistant Clinical Professor of Pediatrics B.S. (Oklahoma State 1996); M.D. (Oklahoma 2000) [2007] TARA M. HUSS, Assistant Professor of Pediatrics B.S. (Austin Peay State 1996); M.D. (Quillen 2000) [2007] ERIC J. HUSTEDT, Research Associate Professor of Molecular Physiology and Biophysics B.A. (Reed 1981); Ph.D. (University of Washington 1989) [1995] JOSEPH W. HUSTON III, Assistant Professor of Medicine B.S. (Washington and Lee 1967); M.D. (Vanderbilt 1971) [1979] LAURA J. HUSTON, Associate in Orthopaedics and Rehabilitation B.S.E., M.S. (Michigan 1988, 1990) [2005] KIMBERLY NIXON HUTCHISON, Assistant Professor of Neurology B.A. (Colorado College 1995); M.D. (Kansas 2004) [2005] ROY E. HUTTON, Assistant Clinical Professor of Psychiatry B.A. (David Lipscomb 1969); M.S. (Tennessee 1974); Ph.D. (Vanderbilt 1980) [2001] CAREY KANG-IUN HWANG, Instructor in Medicine B.A. (Princeton 1995); M.D., Ph.D. (West Virginia 2003, 2003) [2006] STEVE A. HYMAN, Associate Professor of Clinical Anesthesiology A.B., M.D. (Indiana 1975, 1979) [2003] JEFFREY L. HYMES, Clinical Instructor in Medicine B.A. (Yale 1974); M.D. (Albert Einstein 1977) [2000] IEKUNI ICHIKAWA, Professor of Pediatrics; Professor of Medicine B.S., M.D. (Keio 1968, 1972) [1985] JIRO ICHIKAWA, Research Instructor in Orthopaedics and Rehabilitation M.D., Ph.D. (Yamanashi [Japan] 2000, 2005) [2009] ROBERT W. IKARD, Assistant Clinical Professor of Surgery B.A., M.D. (Vanderbilt 1960, 1963) [1971] TALAT ALP IKIZLER, Catherine McLaughlin Hakim Associate Professor of Medicine M.D. (Istanbul 1987) [1996] ALDO A. ILARDE, Assistant Professor of Clinical Medicine B.S., M.D. (Philippines 1979, 1984) [1997] JEANETTE SISON ILARDE, Instructor in Clinical Medicine B.S., M.D. (Philippines 1982, 1986) [1997] TADASHI INAGAMI, Stanford Moore Professor of Biochemistry; Professor of Medicine; Director, Specialized Center of Research in Hypertension B.S. (Kyoto 1953); M.S., Ph.D. (Yale 1955, 1958); D.Sc. (Kyoto 1963) [1966] RAJU V. INDUKURI, Assistant Clinical Professor of Psychiatry B.S. (SKBR College [India] 1974); M.D. (Rangaraya Medical [India] 1981) [1998]

WALEED N. IRANI, Assistant Professor of Medicine

B.A., M.D. (North Carolina 1985, 1990) [1996]

FREDERICK M. ISAACSON, Assistant Professor of Radiology and Radiological Sciences B.S. (Brooklyn College 1966); M.D. (SUNY, Downstate Medical Center 1970) [2006]

REBECCA L. ISBELL, Clinical Instructor in Pediatrics B.S. (Southwestern 1999); M.D. (Texas 2003) [2006]

M. SHAHIDUL ISLAM, Assistant Clinical Professor of Psychiatry

M.D. (Dhaka Medical College [Bangladesh] 1969) [2002]

NUHAD M. ISMAIL, Associate Professor of Clinical Medicine

B.S. (American University [Beirut] 1974); M.D. (Beirut [Lebanon] 1978) [2004]

DAWN A. ISRAEL, Research Assistant Professor of Medicine

B.S., Ph.D. (Alabama 1988, 1994) [2000]

TINA M. IVERSON, Assistant Professor of Pharmacology; Assistant Professor of Biochemistry B.S. (St. John's 1995); Ph.D. (California Institute of Technology 2000) [2005]

KAREEM A. JABBOUR, Research Associate Professor of Surgery

B.S. (American University [Beirut] 1962) [1990]

KATHY JABS, Associate Professor of Pediatrics; Director, Division of Pediatric Nephrology B.S. (Trinity [Connecticut] 1978); M.D. (Columbia 1982) [2000]

GRETCHEN PURCELL JACKSON, Assistant Professor of Pediatric Surgery; Assistant Professor of Biomedical Informatics

B.S., M.D., Ph.D. (Stanford 1989, 1996, 1997) [2006]

JAMES C. JACKSON, Assistant Professor of Medicine; Assistant Professor of Psychiatry B.S. (Liberty 1991); M.A. (Georgia School of Professional Psychology 1993); M.A., Ph.D. (Biola 1998, 2001) [2003]

JOHN A. JACKSON, Assistant Clinical Professor of Psychiatry

B.S. (Tennessee Technological 1994); M.D. (Tennessee, Memphis 1999) [2004]

TRACY P. JACKSON, Assistant Professor of Anesthesiology

B.S., M.D. (North Carolina, Chapel Hill 1995, 2000) [2007]

J. KENNETH JACOBS, Professor of Surgery, Emeritus

B.A. (Vanderbilt 1950); M.D. (Northwestern 1954) [1962]

MONICA L. JACOBS, Assistant Professor of Hearing and Speech Sciences; Assistant Professor of Psychiatry

B.S. (Georgia 1997); M.S., Psy.D. (Georgia School of Professional Psychology 2001, 2005) [2007]

BARBARA JACOBSON, Assistant Professor of Otolaryngology; Assistant Professor of Hearing and Speech Sciences

B.A., M.A., Ph.D. (Cincinnati 1978, 1984, 1990) [2003]

GARY P. JACOBSON, Professor of Hearing and Speech Sciences; Director, Division of Audiology

B.A. (California State 1974); M.S. (Wisconsin 1975); Ph.D. (Kent State 1978) [2002]

GREGORY H. JACOBSON, Assistant Clinical Professor of Emergency Medicine

B.S. (Washington University 1997); M.D. (Baylor 2001) [2004]

HARRY R. JACOBSON, Vice Chancellor for Health Affairs, Emeritus; Adjunct Professor of Management (Health Care)

B.S. (Illinois, Chicago Circle 1969); M.D. (Illinois, Medical Center 1972) [1985]

NED ROBERT JACOBSON, Clinical Instructor in Anesthesiology

B.S. (Rutgers 1979); M.D. (Rush Medical College 1985) [2009]

MARK W. JACOKES, Assistant Professor of Clinical Medicine

B.A., M.D. (North Carolina 1977, 1983) [1988]

MADAN JAGASIA, Associate Professor of Medicine

B.S. (Ram Narain Ruia College [India] 1986); M.B.B.S. (King Edward Memorial College [India] 1992) [2001]

SHUBHADA JAGASIA, Assistant Professor of Medicine

B.Sc. (D. G. Ruparel College 1986); M.B.B.S. (King Edward Memorial 1992) [2001]

AMIR ALEX JAHANGIR, Assistant Professor of Orthopaedics and Rehabilitation B.S. (George Washington 1999); M.D. (Tennessee, Memphis 2003) [2009]

A. EVERETTE JAMES, JR., Adjunct Professor of Radiology and Radiological Sciences B.A. (North Carolina 1959); M.D. (Duke 1963); J.D. (Blackstone Law School 1966); Sc.M. (Johns Hopkins 1971) [1975]

ROBERT C. JAMIESON, Assistant Clinical Professor of Psychiatry

B.S., M.S., M.D. (Wisconsin 1971, 1973, 1976) [1979]

CHRISTOPHER J. JANETOPOULOS, Assistant Professor of Biological Sciences; Assistant Professor of Cell and Developmental Biology

B.A. (Augustana 1990); Ph.D. (Texas A & M 1999) [2005]

E. DUCO JANSEN, Professor of Biomedical Engineering; Professor of Neurological Surgery Drs. (M.Sc.) (Utrecht 1990); M.S., Ph.D. (Texas 1992, 1994) [1997]

DANA R. JANSSEN, Assistant Professor of Pediatrics

B.A. (Abilene Christian 1992); M.D. (Texas Health Science Center 1996) [2008]

BARRY KENT JARNAGIN, Associate Clinical Professor of Obstetrics and Gynecology; Instructor in Clinical Nursing

B.S. (Union [Tennessee] 1980); M.D. (Tennessee, Memphis 1984) [1996]

ADRIAN A. JARQUIN-VALDIVIA, Assistant Professor of Neurology; Assistant Professor of Anesthesiology

M.D. (Universidad Nacional Autónoma de Honduras 1993) [2002]

DANIEL S. JAVIER, Assistant Clinical Professor of Psychiatry

B.S. (Ateneo de Manila 1979); M.D. (Far Eastern 1983) [1994]

JASON ROBERT JEAN, Assistant in Medicine

B.S.N. (Tennessee 1996); M.S.N. (Vanderbilt 2000); F.N.P., R.N. [2004]

PETER F. JELSMA, Assistant Clinical Professor of Pathology

B.S. (Vanderbilt 1987); M.D. (Northwestern 1991) [2000]

HENRY S. JENNINGS III, Assistant Professor of Medicine

B.S. (Davidson 1973); M.D. (Vanderbilt 1977) [1982]

ERIC R. JENSEN, Assistant Professor of Pediatric Surgery B.S. (Illinois 1991); M.D. (Northwestern 1995) [2006]

ROY A. JENSEN, Adjunct Professor of Pathology

B.S. (Pittsburg State 1980); M.D. (Vanderbilt 1984) [2005]

REBECCA N. JEROME, Librarian, Eskind Biomedical Library; Assistant Professor of Biomedical Informatics

B.A. (Saginaw Valley State 1996); M.L.I.S. (Wayne State 1998); M.P.H. (Vanderbilt 2006) [1998]

WALTER GRAY JEROME III, Associate Professor of Pathology; Associate Professor of Cancer Biology

B.A. (St. Andrews 1971); Ph.D. (Virginia 1981) [2001]

JASON R. JESSEN, Assistant Professor of Medicine; Assistant Professor of Cancer Biology B.A. (Augustana 1992); M.S. (South Dakota State 1995); Ph.D. (Medical College of Georgia 1999) [2006]

YUJIANG JIA, Research Assistant Professor of Pediatrics

B.S. (Hebei Health School 1986); M.Sc. (Hebei Medical 1995); M.D. (Hebei Staff Medical 1992) [2005]

AIXIANG JIANG, Assistant in Biostatistics

B.S. (Huazhong Agricultural [China] 1984); M.S. (Minnesota 2005) [2007]

MING JIANG, Research Assistant Professor of Urologic Surgery

M.D., M.S. (Nantong China) 1986, 1991); Ph.D. (Fudan China) 1997) [2007]

REN JIE JIN, Research Assistant Professor of Urologic Surgery

M.D. (Southeast [China] 1985); M.S., Ph.D. (Seoul 1999, 2001) [2007]

JIM N. JIRJIS, Assistant Professor of Medicine; Assistant Professor of Biomedical Informatics B.S. (Illinois 1989); M.D. (Chicago 1993) [1999]

JAMES M. JOERS, Assistant Professor of Radiology and Radiological Sciences

B.S. (Wisconsin 1991); Ph.D. (Florida State 1997) [2002]

J. THOMAS JOHN, JR., Assistant Professor of Medicine

B.S. (Davidson 1965); M.D. (North Carolina 1969) [1978]

JAMES A. JOHNS, Professor of Pediatrics

B.S. (Yale 1976); M.D. (Vanderbilt 1980) [1987]

KARLA J. JOHNS, Associate Clinical Professor of Ophthalmology and Visual Sciences B.A. (Wisconsin 1976); M.D. (Vanderbilt 1980) [2000]

BENJAMIN W. JOHNSON, JR., Associate Professor of Anesthesiology

B.S. (Wheaton 1973); M.D. (Illinois 1980); M.B.A. (Vanderbilt 1996) [1991]

CARL H. JOHNSON, Professor of Biological Sciences; Professor of Molecular Physiology and Biophysics; Member, Vanderbilt Kennedy Center for Research on Human

Development; Investigator, Center for Molecular Neuroscience

B.A. (Texas 1976); Ph.D. (Stanford 1982) [1987]

CONSTANCE J. JOHNSON, Associate Clinical Professor of Neurology

B.S., M.S., M.D. (Maryland 1968, 1972, 1982) [2005]

CORBIN JOHNSON, Assistant Professor of Clinical Radiation Oncology

B.A. (Harvard 1981); M.D. (Washington University School of Medicine 1985) [2006]

DAVID H. JOHNSON, Cornelius Abernathy Craig Professor of Medical and Surgical Oncology;

Professor of Medicine; Deputy Director, Vanderbilt-Ingram Cancer Center B.S., M.S. (Kentucky 1970, 1972); M.D. (Georgia 1976) [1983]

DEREK K. JOHNSON, Assistant Clinical Professor of Pediatrics

B.S. (Maryland 1991); M.D. (Pittsburgh 1995) [2007]

H. KEITH JOHNSON, Associate Professor of Medicine, Emeritus; Associate Professor of Surgery, Emeritus

B.A. (Amherst 1959); M.D. (Tufts 1963) [1970]

JAMES NORRIS JOHNSON, Clinical Instructor in Family Medicine

B.A., M.D. (Vanderbilt 1989, 1993) [2003]

JOYCE E. JOHNSON, Professor of Pathology

B.A. (Rice 1979); M.D. (Vanderbilt 1986) [1992]

KEVIN B. JOHNSON, Professor of Biomedical Informatics and Vice Chair of the Department; Associate Professor of Pediatrics

B.S. (Dickinson 1983); M.D. (Johns Hopkins 1987); M.S. (Stanford 1992) [2002]

MARY HEATHER JOHNSON, Clinical Instructor in Pediatrics

B.S., M.D. (Vanderbilt 1987, 1994) [1998]

PAULETTE M. JOHNSON, Assistant Professor of Pediatrics; Assistant Professor of Anesthesiology

B.S., M.D. (South Florida 1990, 1994) [2003]

RAYMOND F. JOHNSON, Associate in Anesthesiology; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Belmont 1970) [1991]

SHARON B. JOHNSON, Assistant in Medicine

B.S. (Middle Tennessee State 2001); M.S.N. (Vanderbilt 2008); R.N. [2009]

WILLIAM STEPHEN JOHNSON, Assistant Clinical Professor of Pediatrics

B.S. (Arkansas State 1978); M.D. (Ross 1983) [2004]

DAVID G. JOHNSTON, Clinical Instructor in Pediatrics

B.S. (Duke 1995); M.D. (Tennessee, Memphis 1999) [2005]

MARGREETE G. JOHNSTON, Assistant Clinical Professor of Pediatrics

B.S. (Peabody 1974); M.D. (Meharry Medical 1979) [1986]

MICHAEL N. JOHNSTON, Assistant Professor of Emergency Medicine; Assistant Professor of Pediatrics

B.S. (Birmingham-Southern 1990); M.D. (Alabama 1994) [2007]

PHILIP EARL JOHNSTON, Clinical Professor of Medicine

B.S., Pharm.D. (Tennessee, Memphis 1973, 1974) [2002]

SUSAN E. JOHNSTON, Assistant Clinical Professor of Pediatrics

B.S. (Mississippi State 1992); M.D. (Mississippi 1996) [2008]

CARRIE K. JONES, Research Assistant Professor of Pharmacology

B.S., Ph.D. (Indiana 1992, 2001) [2007]

HOWARD W. JONES III, Betty and Lonnie S. Burnett Professor of Obstetrics and Gynecology and Chair of the Department; Director, Division of Gynecologic Oncology

B.A. (Amherst 1964); M.D. (Duke 1968) [1980]

IAN D. JONES, Assistant Professor of Emergency Medicine; Assistant Professor of

Biomedical Informatics; Director, Division of Adult Emergency Medicine

B.A. (Rhodes 1986); B.A. (Tennessee 1988); M.D. (Tennessee, Memphis 1993) [1998]

JILL L. JONES, Assistant Professor of Medicine

B.A. (Lawrence 1986); M.D. (Stanford 1991) [1997]

JODY JONES, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.S. (Vanderbilt 1994); D.D.S. (Tennessee, Memphis 1998) [2005]

SONYA NICOLE JONES, Assistant Clinical Professor of Psychiatry; Adjunct Assistant

Professor of Psychiatry at Meharry Medical College

B.S. (Rhodes 1995); M.D. (Tennessee 1999) [2005]

TIMOTHY F. JONES, Associate Clinical Professor of Preventive Medicine; Associate Clinical Professor of Family Medicine

B.A. (Amherst 1985); M.D. (Stanford 1990) [1999]

LAURIE B. JONES-JACKSON, Assistant Professor of Radiology and Radiological Sciences B.S., M.D. (Alabama, Birmingham 1992, 1996) [2007]

MYUNGSOO JOO, Adjunct Research Assistant Professor of Medicine

B.S., M.S. (Korea University 1986, 1988); Ph.D. (Texas 1994) [2003]

KAREN MARGARET JOOS, Associate Professor of Ophthalmology and Visual Sciences B.S., M.D., Ph.D. (lowa 1982, 1987, 1990) [1994]

CHARLES ANDREW JORDAN, Clinical Instructor in Pediatrics

B.S. (Tennessee, Martin 1983); M.D. (Tennessee, Memphis 1987) [1999]

HAROLD W. JORDAN, Assistant Clinical Professor of Psychiatry

B.S. (Morehouse 1958); M.D. (Meharry Medical 1968) [1968]

MARTIN I. JORDANOV, Assistant Professor of Radiology and Radiological Sciences;

Assistant Professor of Emergency Medicine

B.S. (Tennessee 1997); M.D. (Tennessee, Memphis 2001) [2006]

ASHA JOSEPH, Clinical Instructor in Pediatrics

B.S. (Tennessee, Chattanooga 1998); M.D. (Louisiana State 2003) [2009]

SEBASTIAN JOYCE, Professor of Microbiology and Immunology

B.Sc. (Bangalore [India] 1971); M.Sc. (Saurashtra [India] 1981); Ph.D. (Medical College of Virginia 1988) [1999]

JULIE S. KAALBERG, Associate in Obstetrics and Gynecology

B.A. (Illinois 2002); M.S. (New York 2006) [2008]

JON H. KAAS, Distinguished Professor of Psychology, College of Arts and Science;

Professor of Cell and Developmental Biology; Professor of Radiology and Radiological Sciences; Member, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience

B.A. (Northland 1959); Ph.D. (Duke 1965) [1972]

BARBARA F. KACZMARSKA, Clinical Professor of Pediatrics

M.D. (Medical College of Wroclaw [Poland] 1973) [2007]

KRISTOPHER MICHAEL KAHLIG, Research Instructor in Pharmacology

B.S. (Angelo State 1999); Ph.D. (Texas, San Antonio 20204) [2009]

MARION ANGELIKA KAINER, Assistant Clinical Professor of Preventive Medicine

M.B.B.S. (Melbourne [Australia] 1989); M.P.H. (Monash [Australia] 1989) [2002]

ALLEN B. KAISER, Professor of Medicine and Vice Chair for Clinical Affairs, Department of Medicine; Associate Chief Medical Officer, Vanderbilt University Medical Center; Chief of Staff, Vanderbilt University Hospital

B.A., M.D. (Vanderbilt 1964, 1967) [1972]

SPYROS A. KALAMS, Associate Professor of Medicine; Associate Professor of Microbiology and Immunology

B.A. (Harvard 1983); M.D. (Connecticut 1987) [2002]

ASHA R. KALLIANPUR, Assistant Professor of Medicine

B.A., M.D. (North Carolina 1984, 1988); M.P.H. (Vanderbilt 2002) [2001]

J. JONAS KALNAS, Assistant Professor of Medicine; Assistant Professor of Preventive Medicine; Clinical Director, Center for Occupational and Environmental Medicine B.E. (McMaster 1971); M.D. (Western Ontario 1976); M.I.H., M.Sc. (Harvard 1978, 1979) [2002]

JAYAKUMAR R. KAMBAM, Adjunct Professor of Anesthesiology M.D. (Andhra Medical [India] 1972) [2005]

JEFFREY A. KAMMER, Assistant Professor of Ophthalmology and Visual Sciences B.A. (Pennsylvania 1992); M.D. (Case Western Reserve 1996) [2002]

J. HERMAN KAN, Assistant Professor of Radiology and Radiological Sciences; Assistant Professor of Pediatrics

B.S. (California, Los Angeles 1994); M.D. (Albany Medical 1998) [2005]

AUDREY H. KANG, Associate Clinical Professor of Obstetrics and Gynecology B.A., M.D. (Brown 1988, 1992) [2008]

JEONG SUK KANG, Research Assistant Professor of Medicine

B.A., M.A. (Chosun [Korea] 1997, 1999); Ph.D. (Okayama [Japan] 2004) [2008]

JINGQIONG KANG, Research Assistant Professor of Neurology

M.D., Ph.D. (Tongji Medical 2001, 2001) [2004]

PRINCE J. KANNANKERIL, Assistant Professor of Pediatrics

B.S. (Pennsylvania State 1990); M.D. (Jefferson Medical College 1994); M.S.C.I. (Vanderbilt 2004) [2002]

CHANGQING C. KAO, Research Associate Professor of Neurological Surgery M.D., M.S. (Bethune 1980, 1983); Ph.D. (Virginia Commonwealth 1994) [2001]

HERMAN J. KAPLAN, Professor of Clinical Medicine

B.A. (Southwestern College 1950); M.D. (Vanderbilt 1954) [1962]

HILLARY R. KAPLAN, Assistant Professor of Clinical Medicine

B.A. (Yale 1989); M.D. (Case Western Reserve 1993) [1999]

MARK RANDALL KAPLAN, Assistant Clinical Professor of Medicine B.S.E. (Pennsylvania 1984); M.D. (Vanderbilt 1988) [2000]

KAVITA SINGH KARLEKAR, Clinical Instructor in Pediatrics

B.A., M.D. (Brown 1998, 2002) [2008]

MOHANA KARLEKAR, Assistant Professor of Medicine

B.S. (Cornell 1991); M.D. (SUNY, Stony Brook 1995) [2006]

SAAGAR B. KARLEKAR, Assistant Professor of Clinical Pediatrics

B.S. (Rochester Institute of Technology 1989); M.D. (St. Georges [Grenada, West Indies] 1997) [2007]

BERNICE KARNETT, Assistant Professor of Medicine

B.S. (SUNY, Stony Brook 1979); M.D. (Emory 1983) [1997]

DAVID T. KARZON, Professor of Pediatrics, Emeritus

B.S., M.S. (Ohio State 1940, 1941); M.D. (Johns Hopkins 1944) [1968]

ADETOLA KASSIM, Assistant Professor of Medicine

M.B., B.S. (Lagos [Nigeria] 1988) [2001]

JASON L. KASTNER, Clinical Instructor in Pediatrics

B.S. (Kansas State 1994); M.D. (Kansas 1998) [2002]

MELISSA R. KAUFMAN, Assistant Professor of Urologic Surgery

B.A. (Washington University 1987); Ph.D. (Tennessee 1993); M.D. (Arkansas College of Medicine 2002) [2007]

NEERU KAUSHIK, Assistant Professor of Pediatrics

B.A., M.D. (California, Los Angeles 1994, 2001) [2008]

ANN KAVANAUGH-MCHUGH, Assistant Professor of Pediatrics

B.S. (Yale 1980); M.D. (Johns Hopkins 1984) [1992]

IRINA N. KAVERINA, Assistant Professor of Cell and Developmental Biology

M.S. (Moscow Lomonosov State 1989); Ph.D. (Academy of Medical Sciences 1992) [2005]

JEREMY J. KAYE, Carol D. and Henry P. Pendergrass Professor of Radiology and Radiological Sciences and Chair of the Department; Professor of Emergency Medicine B.S. (Notre Dame 1961); M.D. (Cornell 1965) [2000]

JENNIFER A. KEARNEY, Assistant Professor of Medicine; Investigator, Center for Molecular Neuroscience

B.A. (Middlebury 1992); Ph.D. (Michigan, Ann Arbor 1997) [2007]

KATHLEEN R. KEARNEY, Assistant Clinical Professor of Medicine

B.S. (Kennesaw State 1981); M.D. (Medical College of Georgia 1990) [2006]

VICKI L. KEEDY, Assistant Professor of Medicine

B.S. (Indiana 1997); M.D. (Cincinnati 2002) [2008]

CHRISTOPHER J. KEEFER, Clinical Instructor in Pediatrics

B.S. (University of the South 1992); M.D. (Vanderbilt 2001) [2008]

DIANE S. KEENEY, Adjunct Assistant Professor of Medicine

B.S. (Pennsylvania State 1978); M.S. (Iowa State 1983); Ph.D. (Johns Hopkins 1989) [1992]

JAMES E. KEFFER, Instructor in Clinical Pediatrics; Instructor in Clinical Emergency Medicine B.A. (Auburn 1994); M.D. (Alabama 2001) [2006]

JEFFREY W. KEHLER, Clinical Instructor in Anesthesiology

B.S. (Albright 1983); M.D. (South Carolina 1987) [2009]

K. BRADLEY KEHLER, Assistant Professor of Ophthalmology and Visual Sciences B.S. (Vanderbilt 1997); O.D. (Illinois College of Optometry 2002) [2005]

LORI ANN F. KEHLER, Assistant Professor of Ophthalmology and Visual Sciences

B.S. (Stetson 1998); O.D. (Illinois College of Optometry 2002) [2003]

MARK C. KELLEY, Associate Professor of Surgery; Director, Division of Surgical Oncology B.S., M.D. (Florida 1986, 1989) [1997]

BURNETT S. KELLY, JR., Assistant Professor of Surgery; Adjunct Assistant Professor of Surgery at Meharry Medical College

B.S. (Michigan 1989); M.D. (Howard 1995) [2005]

ELLEN M. KELLY, Associate Professor of Hearing and Speech Sciences B.A. (St. Bonaventure 1981); M.S., Ph.D. (Syracuse 1984, 1989) [2007]

KEVIN J. KELLY, Associate Professor of Plastic Surgery

B.S. (Maryland 1972); D.D.S. (Columbia 1977); M.D. (SUNY, Downstate Medical Center 1982) [1989]

RAJAPPA KENCHAPPA, Research Instructor in Biochemistry

B.Sc., M.Sc. (Mysore [India] 1991, 1993); Ph.D. (National Brain Research Centre [India] 2004) [2006]

PEGGY L. KENDALL, Assistant Professor of Medicine

B.S. (Texas 1982); M.D. (Texas, Southwestern Medical Center 1996) [2003]

CRAIG HALL KENNEDY, Professor of Special Education and Chair of the Department;

Associate Professor of Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (California, Santa Barbara 1987); M.S. (Oregon 1988); Ph.D. (California, Santa Barbara 1992) [1997]

WILLIAM D. KENNER, Assistant Clinical Professor of Psychiatry

B.A., M.D. (Tennessee 1965, 1969) [1973]

MINH N. KENNEY, Assistant Professor of Radiology and Radiological Sciences B.A. (Delaware 1986); M.P.H. (Tennessee 1988); M.D. (Jefferson Medical College 1993) [2007]

ANNE K. KENWORTHY, Assistant Professor of Molecular Physiology and Biophysics; Assistant Professor of Cell and Developmental Biology

B.A. (Kenyon 1989); Ph.D. (Duke 1994) [2001]

MARY E. KEOWN, Associate Clinical Professor of Pediatrics

B.S. (Samford 1979); M.D. (Alabama 1983) [1986]

TAMARA S. KEOWN, Instructor in Obstetrics and Gynecology; Instructor in Clinical Nursing B.S. (Tennessee Technological 1991); M.S.N. (Vanderbilt 1995); R.N.C. [2001]

JENNIFER PATTON KER, Assistant Professor of Pediatrics

B.S. (Miami [Ohio] 1999); M.S. (Northwestern 2000); M.D. (Medical College of Ohio 2004) [2009]

DOUGLAS S. KERNODLE, David E. Rogers Associate Professor of Medicine; Associate Professor of Microbiology and Immunology

B.A., M.D. (North Carolina 1976, 1981) [1987]

ROBERT M. KESSLER, Wilhelm Roentgen Professor of Radiology and Radiological Sciences; Associate Professor of Psychiatry

B.S., M.D. (Yale 1967, 1971) [1984]

ALEXANDRA FONARYOVA KEY, Research Assistant Professor of Hearing and Speech Sciences; Investigator, Vanderbilt Kennedy Center for Research on Human Development B.A., M.A. (Moscow State 1997, 1997); Ph.D. (Louisville 2002) [2004]

DINEO KHABELE, Assistant Professor of Obstetrics and Gynecology; Assistant Professor of Cancer Biology; Adjunct Assistant Professor of Obstetrics and Gynecology at Meharry Medical College

B.A., M.D. (Columbia 1989, 1994) [2005]

JOHN-MICHAEL N. KHALIL, Instructor in Radiology and Radiological Sciences B.S., M.D. (Wisconsin 1999, 2004) [2009]

QASIM A. KHAN, Research Instructor in Biochemistry

B.Sc., M.Sc., Ph.D. (Aligarh Muslim [India] 1988, 1990, 1994) [2009]

HABIBEH KHOSHBOUEI, Adjunct Assistant Professor of Pharmacology

Ph.D. (Tehran [Iran] 1989); M.S., Ph.D. (Texas 1989, 2001) [2002]

JILL ERIN KILKELLY, Assistant Professor of Anesthesiology

B.A., M.D. (Cornell 1992, 1997) [2007]

SHANNON ROBERT KILKELLY, Assistant Professor of Clinical Anesthesiology

B.S. (Wake Forest 1994); D.O. (Midwestern 2001) [2005]

STACY ANN KILLEN, Assistant Professor of Pediatrics

B.A. (Rice 1997); M.D. (Texas Southwestern 2001); M.S. (Vanderbilt 2008) [2009]

ANTHONY W. KILROY, Associate Professor of Neurology; Associate Professor of Pediatrics M.B.,B.S. (Saint Bartholomew's [London] 1960) [1976]

ANNETTE S. KIM, Assistant Professor of Pathology

A.B., M.D., Ph.D. (Harvard 1991, 1998, 1998) [2009]

BETTY KIM, Assistant Professor of Cardiac Surgery; Assistant Professor of Thoracic Surgery B.A., M.D. (Yale 1986, 1991) [2007]

ESTHER KIM, Instructor in Otolaryngology

B.S. (West Point 2000); M.D. (Temple 2004) [2009]

KWANG WOON KIM, Research Instructor in Radiation Oncology

B.S. (Kosin 1992); M.S., Ph.D. (Pusan National 1995, 2001) [2008]

STEPHEN JAE KIM, Assistant Professor of Ophthalmology and Visual Sciences B.S. (Duke 1996); M.D. (Johns Hopkins 2001) [2008]

JOHN T. KING, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.A. (Tennessee 1989); D.M.D. (Louisville 1996) [1999]

LLOYD E. KING, JR., Professor of Medicine

B.A. (Vanderbilt 1961); M.D., Ph.D. (Tennessee 1967, 1969) [1977]

LLOYD G. KING, Assistant Professor of Clinical Medicine

B.S. (SUNY, Buffalo 1981); M.D. (New York 1985) [2000]

ROY KING, Assistant Clinical Professor of Pathology

M.D. (Witwatersrand [South Africa] 1988) [2005]

PHILIP JOHN KINGSLEY, Assistant in Biochemistry

B.S., M.A. (William and Mary 1990, 1992) [2001]

AARON MARSHALL KIPP, Research Instructor in Medicine

B.S. (Colorado State 2001); M.S.P.H., Ph.D. (North Carolina 2006, 2009) [2009]

FREDERICK K. KIRCHNER, JR., Associate Professor of Medical Education and Administration, Emeritus

B.Sc. (Dickinson 1963); M.D. (Cornell 1967) [1975]

SANDRA G. KIRCHNER, Professor of Radiology and Radiological Sciences, Emerita; Professor of Pediatrics, Emerita

B.A. (Wellesley 1962); M.D. (Cornell 1967) [1973]

DAVID L. KIRSCHKE, Assistant Clinical Professor of Preventive Medicine

B.A. (Holy Cross 1988); M.D. (Florida 1996) [2008]

HOWARD S. KIRSHNER, Professor of Neurology and Vice Chair of the Department; Director, Division of Stroke; Professor of Speech (Language Pathology); Professor of Psychiatry; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Williams 1968); M.D. (Harvard 1972) [1978]

NEIL E. KIRSHNER, Clinical Instructor in Pediatrics

B.S. (Rhodes 1985); M.D. (East Tennessee State 1990) [2000]

MARIA KIRZHNER, Instructor in Ophthalmology and Visual Sciences

B.S. (Wayne State 2000); M.D. (New York 2004) [2009]

HENRY B. KISTLER, JR., Clinical Instructor in Ophthalmology and Visual Sciences
A.B. (Stanford 1972); Ph.D. (California, San Francisco 1981); M.D. (George Washington 1988) [1995]

STACY STANSELL KLEIN, Associate Professor of the Practice of Biomedical Engineering; Associate Professor of Radiology and Radiological Sciences; Research Assistant Professor of Teaching and Learning; Associate Dean for Outreach, School of Engineering B.S.E. (Duke 1991); M.S. (Drexel 1993); Ph.D. (Vanderbilt 1996) [1999]

JOHN W. KLEKAMP, Assistant Professor of Clinical Orthopaedics and Rehabilitation B.S. (Miami [Ohio] 1986); M.D. (Mercer 1990) [2009]

MARY KLINE, Instructor in Clinical Pediatrics

B.A., M.D. (Missouri, Kansas City 2000, 2000) [2004]

LAWRENCE A. KLINSKY, Clinical Instructor in Pediatrics

B.S. (Illinois 1988); M.D. (Vanderbilt 1992) [1995]

KIMBERLY A. KLIPPENSTEIN, Clinical Instructor in Ophthalmology and Visual Sciences B.S., M.D. (Vanderbilt 1986, 1990) [1994]

ELA W. KNAPIK, Associate Professor of Medicine; Associate Professor of Cell and Developmental Biology; Investigator, Vanderbilt Kennedy Center for Research on Human Development

M.D. (Jagiellonian [Poland] 1987) [2004]

BJORN C. KNOLLMANN, Associate Professor of Medicine; Associate Professor of Pharmacology

M.D. (Cincinnati 1993); Ph.D. (Georgetown 1999) [2005]

HANAKO KOBAYASHI, Research Assistant Professor of Medicine

B.S. (Tennessee 1998); Ph.D. (California, Berkeley 2003) [2006]

JACK L. KOCH, JR., Assistant Clinical Professor of Psychiatry

B.S., M.D. (South Alabama 1989, 1994) [2000]

YASIN KOKOYE, Assistant Professor of Pathology

B.V.M.S. (Baghdad 1979); M.P.H. (Western Kentucky 2004) [1998]

CAMELLIA R. KOLEYNI, Instructor in Clinical Family Medicine

B.S. (California, San Diego 1995); M.S. (Tennessee, Memphis 2000) [2007]

MURALI KRISHNA KOLLI, Assistant Professor of Clinical Medicine

B.S. (Birmingham-Southern 1984); M.D. (Alabama 1989) [2009]

ELENA A. KOLOBOVA, Research Instructor in Surgery

M.S., Ph.D. (Moscow State [Russia] 1996, 2000) [2007]

PADMINI KOMALAVILAS, Research Associate Professor of Surgery

B.S., M.S. (Madras [India] 1978, 1980); Ph.D. (Oklahoma State 1988) [2008]

VALENTINA KON, Associate Professor of Pediatrics

A.B. (New York 1974); M.D. (Albert Einstein 1977) [1986]

SEKHAR R. KONJETI, Research Professor of Radiation Oncology

B.S. (Andhra [India] 1982); M.Sc. (Mangalore 1984); Ph.D. (Gulbarga 1989) [1995]

PETER E. KONRAD, Associate Professor of Neurological Surgery; Associate Professor of Biomedical Engineering

B.A. (Rockford 1983); Ph.D., M.D. (Purdue 1988, 1991) [1998]

CHRISTINE L. KONRADI, Professor of Pharmacology; Professor of Psychiatry; Investigator, Center for Molecular Neuroscience; Investigator, Vanderbilt Kennedy Center for Research on Human Development

Ph.D. (Vienna [Austria] 1987) [2006]

ZELJKA M. KORADE, Research Assistant Professor of Psychiatry; Member, Vanderbilt Kennedy Center for Research on Human Development

D.V.M. (Zagreb [Croatia] 1988); Ph.D. (Pittsburgh 1996) [2006]

LUCY KOROMA, Instructor in Obstetrics and Gynecology; Instructor in Nursing

B.S., M.S.N. (Vanderbilt 2004, 2005); W.H.N.P.-B.C. [2006]

NAOHIKO KOSHIKAWA, Adjunct Assistant Professor of Cancer Biology

B.Sc., M.Sc., Ph.D. (Yokohama City 1990, 1992, 1995) [2003]

HANANE A. KOTEICHE, Research Assistant Professor of Molecular Physiology and Biophysics B.S. (American University of Beirut 1991); Ph.D. (Medical College of Wisconsin 1997) [2003]

ALEXANDRE KOUMTCHEV, Assistant Clinical Professor of Psychiatry

M.D. (Medical Academy, Sofia [Bulgaria] 1990) [2007]

JORDANKA KOURTEVA, Research Instructor in Medicine

M.S. (Sofia [Bulgaria] 1976); Ph.D. (Bulgarian Academy of Sciences 1989) [1996]

MARK J. KOURY, Professor of Medicine

A.B. (Rutgers 1969); M.D. (Virginia 1973) [1980]

TATSUKI KOYAMA, Assistant Professor of Biostatistics

B.A. (California, Berkeley 1998); M.A., Ph.D. (Pittsburgh 2000, 2003) [2003]

SANFORD B. KRANTZ, Professor of Medicine, Emeritus

B.A., B.S., M.D. (Chicago 1954, 1955, 1959) [1970]

PHILIP JAMES KREGOR, Jeffrey W. Mast Chair in Orthopaedic Trauma and Hip Surgery;

Associate Professor of Orthopaedics and Rehabilitation

B.S. (Kentucky 1984); M.D. (Vanderbilt 1988) [2002]

SAPNA P. KRIPALANI, Assistant Professor of Medicine

B.S., M.D. (Emory 1995, 1999) [2007]

SUNIL KRIPALANI, Associate Professor of Medicine

B.A. (Rice 1993); M.D. (Baylor 1997); M.Sc. (Emory 2001) [2007]

MARK A. KROLL, Assistant Professor of Clinical Ophthalmology and Visual Sciences

B.S. (Southern Adventist 1994); J.D. (Vanderbilt 1997); M.D. (Loma Linda 2002) [2007]

MARVIN W. KRONENBERG, Professor of Medicine; Professor of Radiology and Radiological Sciences

B.A. (Miami [Ohio] 1965); M.D. (Ohio State 1969) [2002]

SUSAN FAYE KROOP, Assistant Professor of Medicine

B.A., M.D. (Cornell 1978, 1982) [2001]

ELIZABETH DUKE KRUEGER, Assistant Clinical Professor of Pediatrics

B.S. (Middle Tennessee State 1975); M.D. (Vanderbilt 1979) [1985]

JOHN KUCHTEY, Research Instructor in Ophthalmology and Visual Sciences

B.A., Ph.D. (Cornell 1985, 1998) [2005]

RACHEL WANG KUCHTEY, Assistant Professor of Ophthalmology and Visual Sciences M.D. (West China 1991); Ph.D. (Cornell 1999) [2005]

JOHN E. KUHN, Associate Professor of Orthopaedics and Rehabilitation

B.S. (SUNY, Syracuse 1982); M.D. (Michigan 1988) [2003]

TARAH M. KUHN, Assistant Professor of Psychiatry

B.A. (City University of New York 1994); M.A. (Adelphi 1998); Ph.D. (Vanderbilt 2003) [2005]

SABI S. D. KUMAR, Assistant Clinical Professor of Surgery

M.B., B.S. (Medical College [Amritsar, India] 1968) [1997]

SRINIVAS NARASIMHACHAR KUMAR, Research Assistant Professor of Medicine M.B.B.S. (Mysore Medical College [India] 1981); M.D. (Jawaharlal Institute [India] 1984); Ph.D. (SUNY, Buffalo 1991) [1999]

SABINA KUPERSHMIDT, Research Associate Professor of Anesthesiology; Research Associate Professor of Pharmacology

B.S. (Middle Tennessee State 1984); Ph.D. (Vanderbilt 1990) [1998]

BRYAN RICHARD KURTZ, Assistant Clinical Professor of Obstetrics and Gynecology; Clinical Instructor in Nursing

B.S. (Boston College 1982); M.D. (Tennessee 1987) [1991]

EMILY GRAHAM KURTZ, Assistant Professor of Medicine

B.S. (Wake Forest 1996); M.D. (Tennessee 2000); M.S.C.I. (Vanderbilt 2003) [2007]

JOHN FRANK KUTTESCH, JR., Associate Professor of Pediatrics; Ingram Associate Professor of Cancer Research

B.S. (Pennsylvania State 1975); Ph.D. (Texas, Galveston 1982); M.D. (Texas, Houston 1985) [2002]

KENT KYGER, Associate Clinical Professor of Psychiatry

B.S. (Oklahoma 1954); M.D. (Vanderbilt 1958) [1968]

ANNETTE E. A. KYZER, Clinical Instructor in Obstetrics and Gynecology

B.A. (Tennessee 1988); M.D. (Tulane 1995) [1999]

CARLO LA VECCHIA, Adjunct Professor of Medicine

M.D. (Milan [Italy] 1979); M.Sc. (Oxford 1983) [2002]

ROBERT F. LABADIE, Associate Professor of Otolaryngology

B.S. (Notre Dame 1988); Ph.D., M.D. (Pittsburgh 1995, 1996) [2001]

JOSEPH D. LABARBERA, Associate Professor of Psychiatry

A.B. (Brown 1973); M.A., Ph.D. (Vanderbilt 1975, 1977) [1978]

PATRICIA A. LABOSKY, Associate Professor of Cell and Developmental Biology; Associate Professor of Pharmacology

B.A. (Pennsylvania 1985); Ph.D. (Wesleyan 1992) [2006]

JOSHUA LABRIN, Assistant Professor of Medicine; Assistant Professor of Pediatrics B.A. (Taylor 1998); M.D. (Temple 2003) [2009]

LISA L. LACHENMYER, Assistant in Urologic Surgery

B.A. (Guilford 1998); M.S.N. (Vanderbilt 2005) [2007]

D. BORDEN LACY, Assistant Professor of Microbiology and Immunology; Assistant Professor of Biochemistry

B.S. (North Carolina, Chapel Hill 1994); Ph.D. (California, Berkeley 1999) [2006]

MICHAEL DAVID LADD, Clinical Instructor in Pediatrics

B.S. (Duke 1988); M.D. (Vanderbilt 1992) [1995]

ANDRE LAGRANGE, Assistant Professor of Neurology; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (University of Washington 1987); Ph.D., M.D. (Oregon Health Sciences 1996, 1997) [2002]

ALISON M. LAKE, Instructor in Urologic Surgery

B.S. (Pennsylvania State 1999); M.D. (Jefferson Medical College 2003) [2009]

CARMEL COLGROVE LAKHANI, Assistant Clinical Professor of Psychiatry

B.S. (California, Davis 1996); M.D. (Vanderbilt 2001) [2009]

VIPUL T. LAKHANI, Assistant Professor of Medicine

B.S. (Duke 1997); M.D. (Vanderbilt 2001) [2006]

DANIELLE L. LALONDE, Clinical Instructor in Pediatrics

B.A. (California, Santa Cruz 2000); M.D. (Vanderbilt 2005) [2008]

RUTH E. LAMAR, Assistant Clinical Professor of Medicine

B.A. (Vanderbilt 1982); M.D. (Tennessee 1987) [1994]

WILLIAM CHARLES LAMB, Clinical Instructor in Anesthesiology

B.A. (Baylor 1988); M.D. (Tennessee, Memphis 1992) [2009]

E. WARREN LAMBERT, Senior Associate in Biostatistics; Member, Vanderbilt Kennedy Center for Research on Human Development; Senior Research Associate Center for Evaluation and Program Improvement (CEPI)

B.A. (Texas, Arlington 1967); A.M., Ph.D. (Indiana 1970, 1973) [1992]

ERIC SHAWN K. LAMBRIGHT, Assistant Professor of Thoracic Surgery

B.S. (Ursinus 1991); M.D. (Pennsylvania 1995) [2004]

AUBREY AMOO LAMPTEY, Instructor in Pediatrics

M.D. (Ghana 1988); M.B.Ch.B. (West African College of Surgery 1991) [2002]

PETER M. LAMS, Assistant Professor of Radiology and Radiological Sciences M.B., B.S. (London 1967) [2003]

JAMES A. LANCASTER, Assistant Clinical Professor of Medicine

B.S. (Millsaps 1989); M.D. (Mississippi 1993) [2001]

LELAND J. LANCASTER, JR., Assistant in Anesthesiology

B.S., M.D. (Alabama 1989, 1996) [2004]

LISA HOOD LANCASTER, Assistant Professor of Medicine; Clinical Assistant Professor of Nursing

B.S. (Georgia 1989); M.D. (Medical College of Georgia 1993) [1999]

BENNETT A. LANDMAN, Adjoint Assistant Professor of Radiology and Radiological Sciences B.S., M.Eng. (Massachusetts Institute of Technology 2001, 2002); Ph.D. (Johns Hopkins 2008) [2009]

JEFFREY A. LANDMAN, Adjunct Associate Professor of Radiology and Radiological Sciences B.S. (Michigan 1973); M.D. (Michigan State 1979) [2000]

ERWIN J. LANDON, Associate Professor of Pharmacology, Emeritus

B.S., M.D. (Chicago 1945, 1948); Ph.D. (California, Berkeley 1953) [1959]

IRA S. LANDSMAN, Associate Professor of Anesthesiology; Associate Professor of Pediatrics B.A. (SUNY 1975); M.D. (SUNY, Buffalo 1979) [2001]

KIRK B. LANE, Research Assistant Professor of Medicine

B.S., M.S. (Iowa 1980, 1985); Ph.D. (Vanderbilt 1997) [1998]

LYNDA DENTON LANE, Senior Associate in Medicine

B.S., M.S. (Texas Women's 1978, 1987) [1996]

RICHARD G. LANE, Instructor in Clinical Medicine

A.B. (Franklin and Marshall 1969); M.D. (Tennessee 1973) [1995]

RALPH J. LANEVE, Assistant Professor of Clinical Surgery

B.S. (Pittsburgh 1981); M.D. (Jefferson Medical 1985) [2004]

ANTHONY JAMES LANGONE, Assistant Professor of Medicine

B.A. (Cornell 1992); M.D. (SUNY, Buffalo 1996) [2002]

SUSAN E. BEHR LANGONE, Clinical Instructor in Pediatrics

B.S. (Rochester 1992); M.D. (SUNY, Buffalo 1996) [1999]

DAVID L. LANIER, Clinical Instructor in Emergency Medicine

B.S., M.D. (North Carolina 1990, 1995) [2007]

BRENDAN COE LANPHER, Assistant Professor of Pediatrics

B.A. (Bowdoin 1997); M.D. (Virginia 2001) [2007]

LYNNE A. LAPIERRE, Research Assistant Professor of Surgery

B.S. (Southeastern Massachusetts 1981); Ph.D. (Rockefeller 1994) [2002]

MICHAEL LAPOSATA, Professor of Pathology

B.S. (Bucknell 1974); M.D., Ph.D. (Johns Hopkins 1981, 1982) [2008]

ROBIN ELIZABETH LAPRE, Assistant Professor of Clinical Medicine

A.B., M.D. (Dartmouth 1990, 1996) [2002]

EMMA K. LARKIN, Research Assistant Professor of Medicine

B.A. (Pennsylvania 1993); M.H.S. (Johns Hopkins 1996); Ph.D. (Case Western Reserve 2007) [2009]

JOEY C. LATHAM, Research Instructor in Biochemistry

B.S. (Texas Tech 2002); Ph.D. (Vanderbilt 2007) [2009]

ROBERT H. LATHAM, Associate Clinical Professor of Medicine

B.A., M.D. (Vanderbilt 1973, 1977) [1989]

DANA L. LATOUR, Assistant Clinical Professor of Medicine

B.S. (Georgia 1964); M.S. (Memphis State 1971); M.D. (Tennessee 1977) [1982]

THOMAS J. LAVIE, Assistant Professor of Psychiatry

B.A., M.D. (Louisiana State 1983, 1989) [2006]

PATRICK LAVIN, Professor of Neurology; Professor of Ophthalmology and Visual Sciences; Director, Division of Neuro-ophthalmology

M.B.,B.Ch. (Dublin 1970) [1998]

VIVIANA ALVARADO LAVIN, Clinical Instructor in Pediatrics

B.S. (Saint Mathew [Mexico] 1990); M.D. (Anahuac [Maxico] 1996) [2006]

JANICE C. LAW, Assistant Professor of Ophthalmology and Visual Sciences

B.A. (Miami [Ohio] 1999); M.D. (Wright State 2003) [2007]

DAVID W. LAWHORN, Assistant Clinical Professor of Emergency Medicine

B.A. (Tennessee 1975); M.D. (Tennessee, Memphis 1988) [1998]

LAURIE M. LAWRENCE, Assistant Professor of Emergency Medicine; Assistant Professor of Pediatrics

M.D. (Vanderbilt 1983) [1994]

LAURA LOUISE LAWSON, Clinical Instructor in Surgery

B.A. (West Virginia 1994); M.D. (Vanderbilt 1998) [2007]

MARK A. LAWSON, Assistant Professor of Medicine; Assistant Professor of Radiology and Radiological Sciences

B.S. (Christian Brothers 1984); M.D. (Tennessee, Memphis 1988) [2002]

WILLIAM EDWARD LAWSON, Assistant Professor of Medicine

B.S. (Tennessee Technological 1992); M.D. (Tennessee, Memphis 1996) [2004]

ALEXANDER R. LAWTON III, Professor of Pediatrics, Emeritus

B.A. (Yale 1960); M.D. (Vanderbilt 1964) [1980]

JILL E. LAWTON, Clinical Instructor in Emergency Medicine

B.S. (Vanderbilt 2002); M.D. (Miami [Florida] 2006) [2009]

WILLIAM LAYMAN, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.S. (The Citadel 1995); D.M.D. (Medical University of South Carolina 2001) [2009]

CARLA TUCKER LEE, Assistant Professor of Medicine; Assistant Professor of Pediatrics

B.S. (Vanderbilt 1989); Ph.D. (Harvard 1996); M.D. (Vanderbilt 2001) [2006]

DONALD HAN LEE, Professor of Orthopaedics and Rehabilitation

B.S. (Georgetown 1977); M.D. (West Virginia 1982) [2005]

ETHAN LEE, Assistant Professor of Cell and Developmental Biology

B.A. (Rice 1987); M.D., Ph.D. (Texas, Southwestern 1997, 1997) [2003]

EUN-SOOK LEE, Assistant Professor of Neurology at Meharry Medical College; Visiting Assistant Professor of Pediatrics

B.S. (Hyosung [Korea] 1965); Ph.D. (Florida A & M 1999) [2007]

EVON BATEY LEE, Associate Professor of Pediatrics; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A., M.A., Ph.D. (Vanderbilt 1976, 1978, 1980) [1981]

GEORGE S. LEE, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.S. (Weber State 1995); D.D.S. (Northwestern 1999); M.D. (Vanderbilt 2002) [2007]

JOHN T. LEE, Associate Professor of Medicine

B.A. (California, San Diego 1974); M.D. (California, San Francisco 1978) [1985]

LAURA ANNE LEE, Assistant Professor of Cell and Developmental Biology

B.A. (Rice 1987); M.D., Ph.D. (Texas, Southwestern 1996, 1996) [2003]

MARK ANDREW LEE, Clinical Instructor in Pediatrics

B.S. (Auburn 1990); M.D. (Alabama 1994) [1997]

MYUNG A. LEE, Associate Professor of Psychiatry

M.D. (Ewha Women's [Korea] 1976) [1996]

PATRICIA LEE, Librarian, Eskind Biomedical Library

B.A. (Georgia 1972); M.L.S. (Texas 1980) [1996]

STANLEY M. LEE, Associate Professor of Clinical Pediatrics; Assistant Clinical Professor of Medicine

B.A. hons., M.B., B.Ch., B.A.O. (Dublin 1967, 1970) [1989]

WILLIAM FITZHUGH LEE, Instructor in Clinical Obstetrics and Gynecology

B.S. (Alabama 1993); M.D. (Mississippi 1997) [2009]

H. BRIAN LEEPER, Clinical Instructor in Pediatrics

B.S. (Tennessee, Martin 1979); M.D. (Tennessee 1983) [1986]

LEWIS B. LEFKOWITZ, JR., Professor of Preventive Medicine, Emeritus; Professor of Clinical Nursing

B.A. (Denison 1951); M.D. (Texas, Dallas 1956) [1965]

HARRY LEWIS LEGAN, Professor of Oral and Maxillofacial Surgery (Orthodontics); Director, Division of Orthodontics

B.S., B.A., D.D.S. (Minnesota 1969, 1973) [1991]

HEATHER R. LEHMANN, Instructor in Clinical Pediatrics

B.S. (North Carolina, Chapel Hill 2000); M.D. (East Carolina 2005) [2008]

LI LEI, Assistant in Biochemistry

B.S. (Luzhou Medical 1987); M.D. (West China University of Medical Science 1987) [2004]

CHRISTINA M. LEINER-LOHSE, Clinical Instructor in Pediatrics

B.S. (Illinois 1999); M.D. (Ross 2003) [2007]

CHRISTOPHER M. LEMELLE, Assistant Professor of Anesthesiology

B.S. (Xavier 1995); M.D. (California, San Francisco 2000) [2006]

DANIEL J. LENIHAN, Professor of Clinical Medicine

B.A. (Tennessee 1984); M.D. (Tennessee, Memphis 1988) [2009]

JOSEPH F. LENTZ, Clinical Professor of Pediatrics

B.A., M.D. (Vanderbilt 1959, 1963) [1968]

TIFFANEE A. LENZI, Clinical Instructor in Obstetrics and Gynecology

B.S. (Michigan 1993); Ph.D., M.D. (Wayne State 1997, 1999) [2007]

JOHN M. LEONARD, Professor of Medicine

B.A. (Florida State 1963); M.D. (Vanderbilt 1967) [1974]

GALINA I. LEPESHEVA, Research Associate Professor of Biochemistry

M.S. (Belarussian State Technical 1983); Ph.D. (Institute of Bioorganic Chemistry [Belarus] 1993) [2002]

DONNA W. LETT, Assistant Clinical Professor of Pediatrics

B.S. (Austin Peay State 1984); M.D. (Tennessee 1988) [2007]

ROBERTA M. LEU, Instructor in Neurology

B.A., M.D. (Virginia 1999, 2004) [2008]

RICARDO LUIS LEVIN, Professor of Clinical Cardiac Surgery

M.D. (Buenos Aires 1984) [2006]

SCOTT R. LEVIN, Adjunct Assistant Professor of Anesthesiology

B.S. (Miami (Ohio) 2002); M.S., Ph.D. (Vanderbilt 2004, 2007) [2008]

BRUCE P. LEVY, Assistant Clinical Professor of Pathology

B.S. (New York 1982); M.D. (New York Medical 1988) [1997]

MIA A. LEVY, Assistant Professor of Biomedical Informatics; Assistant Professor of Medicine B.S. (Pennsylvania 1998); M.D. (Rush 2003) [2009]

SHAWN E. LEVY, Adjunct Associate Professor of Biomedical Informatics; Assistant Professor of Molecular Physiology and Biophysics

B.S. (New Hampshire 1994); Ph.D. (Emory 2000) [2000]

ADELE MAURER LEWIS, Assistant Clinical Professor of Pathology

B.A. (Bowdoin 1993); M.D. (Alabama 1997) [2007]

CONNIE LEWIS, Assistant in Medicine

B.S.N., M.S.N. (Alabama 1996, 1997) [2008]

JULIA G. LEWIS, Professor of Medicine

B.S., M.D. (Illinois 1976, 1980) [1986]

LARRY M. LEWIS, Clinical Instructor in Pathology

B.S., M.S., Ph.D. (Cleveland State 1972, 1972, 1977) [1981]

SUSAN M. LEWIS, Assistant Professor of Obstetrics and Gynecology

B.S.N. (Tennessee State 1993); M.S.N. (Vanderbilt 1998); R.N., C.N.M. [2003]

THOMAS C. LEWIS, Associate Professor of Clinical Anesthesiology

B.A. (Washington and Lee 1964); M.D. (Virginia 1973) [1986]

THOMAS J. LEWIS, JR., Assistant Clinical Professor of Medicine

B.S. (Georgia Institute of Technology 1985); M.D. (Medical College of Georgia 1989) [1995]

CHUN LI, Assistant Professor of Biostatistics; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Nankai [China] 1992); M.S. (Ohio State 1998); Ph.D. (Michigan 2002) [2002]

CUNXI LI, Research Assistant Professor of Medicine

M.D. (Fourth Military Medical [China] 1983); Ph.D. (Peking Union Medical [China] 1995) [1999]

FENG LI, Assistant Clinical Professor of Pathology

M.D. (Zhejiang Medical 1983); M.S. (Shanghai 1985); Ph.D. (Louisville 1992) [2000]

MING LI, Research Assistant Professor of Biostatistics

B.A. (Nankai 1995); M.S., Ph.D. (Michigan 1999, 2002) [2004]

ZHAOLIANG LI, Research Instructor in Cell and Developmental Biology

B.S., M.S. (Beijing Normal 1988, 1991); Ph.D. (Peking 1996) [2005]

ZHU LI, Research Assistant Professor of Psychiatry

B.S., Ph.D (Shenyang Pharmaceutical [China] 1995, 2000) [2004]

PENG LIANG, Associate Professor of Cancer Biology

B.S. (Beijing 1982); Ph.D. (Illinois 1990) [1995]

HONG-JUN LIAO, Research Assistant Professor of Biochemistry

M.D., M.Sc. (Second Medical College of PLA [China] 1984, 1991) [2001]

DANIEL CHRISTOPHER LIEBLER, Ayers Professor of Biochemistry; Professor of

Pharmacology; Professor of Biomedical Informatics; Director, Center in Proteomics

B.S. (Villanova 1980); Ph.D. (Vanderbilt 1984) [2003]

GEOFFREY D. LIFFERTH, Assistant Clinical Professor of Emergency Medicine B.S. (Brigham Young 1993); M.D. (Tennessee, Memphis 1997) [2009]

RICHARD W. LIGHT, Professor of Medicine

B.S. (Colorado 1964); M.D. (Johns Hopkins 1968) [1997]

FRANCES E. LIKIS, Research Assistant Professor of Medicine

B.S., M.S.N. (Vanderbilt 1993, 1994); Dr.P.H. (North Carolina, Chapel Hill 2008) [2009]

ROBERT HOWARD LILLARD, JR., Clinical Instructor in Pediatrics

B.S. (Rhodes 1989); M.D. (Alabama 1993) [1999]

CHEE C. LIM, Assistant Professor of Medicine

B.S. (Stevens Institute of Technology 1987); M.S. (Penn State 1990); Ph.D. (Boston 2000) [2006]

NOEL P. LIM, Assistant Clinical Professor of Neurology

B.S. (Velez [Philippines] 1989); M.D. (Cebu Institute of Medicine [Philippines] 1993) [2002]

LEE E. LIMBIRD, Adjunct Professor of Pharmacology

B.A. (Wooster 1970); Ph.D. (North Carolina 1973) [1979]

THOMAS J. LIMBIRD, Adjunct Professor of Orthopaedics and Rehabilitation

B.A. (Wooster 1969); M.D. (Duke 1973) [1979]

P. CHARLES LIN, Associate Professor of Radiation Oncology; Associate Professor of Cell and Developmental Biology; Associate Professor of Cancer Biology

B.S. (Beijing Normal [China] 1983); Ph.D. (Peking Union Medical College 1988) [1999]

QING LIN, Research Assistant Professor of Microbiology and Immunology

B.S., M.S., Ph.D. (Zhejiang [China] 1992, 1995, 1997) [2008]

CHRISTOPHER D. LIND, Professor of Medicine

B.A. (Pomona 1977); M.D. (Vanderbilt 1981) [1988]

ELIZABETH LINDSEY, Assistant Professor of Medicine

B.A. (Bowdoin 1994); M.D. (Medical University of South Carolina 2000) [2006]

JENNIFER L. LINDSEY, Assistant Professor of Ophthalmology and Visual Sciences

B.A. (Rice 1994); M.D. (Baylor 1998) [2006]

CRAIG W. LINDSLEY, Associate Professor of Pharmacology

B.S. (California State 1992); Ph.D. (California, Santa Barbara 1996) [2006]

FRANK WEN-YUNG LING, Clinical Professor of Obstetrics and Gynecology

A.B. (Wabash 1970); M.D. (Texas, Southwestern Medical Center 1974) [2004]

ANDREW J. LINK, Associate Professor of Microbiology and Immunology; Assistant Professor of Biochemistry; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A., B.S., M.A. (Washington University 1987); Ph.D. (Harvard 1994) [1999]

CATHERINE R. LINN, Assistant Professor of Clinical Medicine

B.A. (William and Mary 1994); M.D. (Vanderbilt 2002) [2005]

JOANNE LOVELL LINN, Professor of Anesthesiology, Emerita

B.A. (Tusculum 1946); M.D. (Vanderbilt 1950) [1955]

MACRAE F. LINTON, Professor of Medicine; Professor of Pharmacology

B.S. (Tulane 1978); M.D. (Tennessee 1985) [1993]

NANCY B. LIPSITZ, Assistant Clinical Professor of Obstetrics and Gynecology

B.A. (Brown 1987); M.D. (Rochester 1993) [1998]

MICHAEL R. LISKE, Associate Clinical Professor of Pediatrics

B.S. (Oral Roberts 1984); M.D. (Michigan 1989) [2003]

ERIC H. LIU, Assistant Professor of Surgery

A.B. (Harvard 1996); M.D. (Columbia 2000) [2009]

QINGDU LIU, Research Assistant Professor of Medicine

Ph.D. (University of Science and Technology [China] 2000) [2008]

YAN X. LIU, Research Assistant Professor of Microbiology and Immunology

M.D., M.S. (Fourth Military Medical University [China] 1978, 1992) [1998]

CHARLES MICHAEL LOCKE, Assistant Clinical Professor of Oral and Maxillofacial Surgery D.M.D. (Alabama 1993); M.D. (Vanderbilt 1996) [2003]

MARY CAROLINE LOGHRY, Clinical Instructor in Pediatrics

B.S. (Tennessee Technological 1998); M.D. (Meharry Medical 2003) [2006]

JOHN T. LOH, Research Assistant Professor of Medicine

B.Sc., Ph.D. (Michigan State 1988, 1994) [2002]

SAMER LOLEH, Assistant Clinical Professor of Pediatrics

B.S. (Jawat Al Hashimi [Syria] 1990); M.D. (Damascus [Syria] 1996) [2007]

JEFFERSON P. LOMENICK, Assistant Professor of Pediatrics

B.S., M.D. (Vanderbilt 1994, 1998) [2008]

KIMBERLY D. LOMIS, Assistant Professor of Surgery

B.A. (Texas 1988); M.D. (Texas Southwestern Medical School 1992) [1998]

JIRONG LONG, Assistant Professor of Medicine

B.A., M.S., Ph.D. (Sichuan Agricultural [China] 1994, 1997, 2001) [2004]

JOHN ROYSTON LONG, Clinical Instructor in Pediatrics

B.A. (Duke 1998); M.D. (Vanderbilt 2002) [2005]

RUTH BARRON LONG, Assistant Clinical Professor of Pediatrics

B.S. (Auburn 1978); M.D. (Vanderbilt 1982) [1986]

WILLIAM R. LONG, Clinical Professor of Pediatrics

B.A. (Vanderbilt 1969); M.D. (Kentucky 1973) [1976]

COLIN G. LOONEY, Assistant Professor of Clinical Orthopaedics and Rehabilitation

B.S. (Washington and Lee 1996); M.D. (Duke 2001) [2009]

PETER T. LOOSEN, Professor of Psychiatry, Emeritus

M.D., Ph.D. (Munich 1970, 1974) [1986]

NANCY M. LORENZI, Assistant Vice Chancellor for Health Affairs; Professor of Biomedical Informatics; Adjunct Professor of Nursing

A.B. (Youngstown State 1966); M.S. (Case Western Reserve 1968); M.A. (Louisville 1975); Ph.D. (Cincinnati 1980) [2000]

RICHARD R. LOTSHAW, Assistant Professor of Obstetrics and Gynecology

B.S. (Ohio State 1981); M.D. (West Virginia 1988) [2008]

STEVEN A. LOVEJOY, Assistant Professor of Orthopaedics and Rehabilitation

B.S. (Kentucky 1976); M.D. (West Virginia 1980) [2006]

HAROLD NEWTON LOVVORN III, Assistant Professor of Pediatric Surgery; Assistant Professor of Pediatrics

B.S. (Duke 1987); M.D. (Tennessee, Memphis 1993) [2002]

STEFANIE LOWAS, Assistant Professor of Pediatrics

B.S. (Loyola 1998); M.D. (Pennsylvania State 2002) [2008]

LISA L. LOWE, Clinical Professor of Pediatrics

B.S. (Middle Tennessee State 1980); M.D. (East Tennessee State 1984) [2007]

WHITSON LOWE, Assistant Clinical Professor of Urologic Surgery

B.A. (Yale 1981); M.D. (Vanderbilt 1986) [1992]

JAMES E. LOYD, Rudy W. Jacobson Professor of Pulmonary Medicine

B.S., M.D. (West Virginia 1969, 1973) [1983]

BO LU, Associate Professor of Radiation Oncology; Associate Professor of Cancer Biology M.D. (Baylor 1988); Ph.D. (Pittsburgh 1993) [2002]

JOHN A. LUCAS, Assistant Professor of Obstetrics and Gynecology

B.S. (Mississippi College 1970); M.D. (Alabama 1974) [2009]

JONATHAN D. LUCAS, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.A. (Mississippi 1991); D.D.S. (Tennessee 1997) [2008]

GWYNETTA M. LUCKETT, Clinical Instructor in Pediatrics

B.S. (Alabama State 1994); M.D. (South Alabama 1998) [2008]

ZIGMUND LUKA, Research Associate Professor of Biochemistry

Ph.D. (Belarus State University 1978) [1999]

JOHN N. LUKENS, Professor of Pediatrics, Emeritus

A.B. (Princeton 1954); M.D. (Harvard 1958) [1975]

WILLIAM E. LUMMUS, Assistant Professor of Emergency Medicine

B.S. (Birmingham Southern 1990); M.D. (Alabama 1994) [1998]

ELIZABETH LUNBECK, Nelson Tyrone Jr. Professor of American History; Professor of

History and Chair of the Department; Professor of Psychiatry

B.A. (Duke 1975); Ph.D. (Harvard 1984) [2006]

LEA ANN LUND, Clinical Instructor in Pediatrics

B.S., M.D. (Tennessee 1998, 2003) [2008]

LINDA S. LUNDIN, Assistant Clinical Professor of Psychiatry

B.S. (Tennessee 1972); M.D. (Vanderbilt 1977) [1984]

WENTIAN LUO, Research Instructor in Medicine

M.D. (Shanghai Medical [China] 1982); M.S. (Xi'an Medical University [China] 1987);

Ph.D. (Nagasaki [Japan] 1997) [2006]

MELANIE LUTENBACHER, Associate Professor of Nursing; Associate Professor of Pediatrics;

Member, Vanderbilt Kennedy Center for Research on Human Development

B.S.N. (Texas 1974); M.S.N. (California State 1986); Ph.D. (Kentucky 1994); R.N., C.S., F.N.P., P.N.P. [1993]

JAMES MATTHEW LUTHER, Assistant Professor of Medicine; Assistant Professor of Pharmacology

B.S. (David Lipscomb 1997); M.D., M.S.C.I. (Vanderbilt 2001, 2006) [2008]

TERRY P. LYBRAND, Professor of Chemistry; Professor of Pharmacology

B.S. (South Carolina 1980); Ph.D. (California, Berkeley 1984) [2001]

ALAN J. LYNCH, Assistant Clinical Professor of Psychiatry; Clinical Assistant Professor of Nursing

B.A. (Ouachita Baptist 1978); M.A. (Baylor 1983); M.Div. (Southern Baptist Seminary [Louisville] 1984); M.D. (Arkansas 1992) [1996]

AMY LARSEN LYNCH, Instructor in Pediatrics; Instructor in Clinical Anesthesiology

B.S. (Centre College 1986); M.D. (Louisville 1990) [2004]

BENITA LYNCH, Assistant in Molecular Physiology and Biophysics

B.A. (Western Kentucky 1974); M.S.N. (Vanderbilt 1977); R.N. [1999]

CONOR L. LYNCH, Assistant Professor of Orthopaedics and Rehabilitation; Assistant Professor of Cancer Biology

B.S., Ph.D. (Dublin City [Ireland] 1997, 2001) [2006]

JOHN B. LYNCH, Professor of Plastic Surgery, Emeritus

M.D. (Tennessee 1952) [1973]

AMOSY E. M'KOMA, Research Assistant Professor of Surgery

M.D. (Kharkov [Ukraine] 1984); M.Sc., Ph.D. (Karolinska [Sweden] 1999, 2001) [2007]

JI MA, Research Assistant Professor of Pediatrics

M.D., Ph.D. (Shanghai Medical 1993, 1998) [2002]

LIJUN MA, Research Associate Professor of Pathology

M.S., Ph.D. (Beijing Medical 1991, 1994); M.D. (Henan Medical [China] 1995) [2000]

JAMES R. MACDONALD, Instructor in Clinical Family Medicine

B.Sc., M.D. (Dalhousie 1991, 1995) [2003]

ROBERT L. MACDONALD, Professor of Neurology and Chair of the Department; Professor of Pharmacology; Professor of Molecular Physiology and Biophysics; Investigator,

Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience

S.B. (Massachusetts Institute of Technology 1966); Ph.D., M.D. (Virginia 1969, 1973) [2001]

RACHEL LENOX MACE, Assistant Professor of Pediatrics

B.S. (Purdue 1982); M.D. (Vanderbilt 1986) [1989]

JOHN W. MACEY, JR., Clinical Instructor in Obstetrics and Gynecology

B.A., M.D. (Vanderbilt 1982, 1986) [1991]

JAMES J. MADDEN, JR., Assistant Professor of Plastic Surgery

B.S., M.D. (Georgetown 1962, 1966) [1976]

NIRUPAMA SAI MADDURI, Assistant Professor of Pediatrics

B.A., M.D. (Missouri, Kansas City 1995, 1998) [2009]

MARK A. MAGNUSON, Earl W. Sutherland, Jr. Professor of Molecular Physiology and

Biophysics; Professor of Medicine; Professor of Cell and Developmental Biology;

Director, Center for Stem Cell Biology

B.A. (Luther 1975); M.D. (Iowa 1979) [1985]

ANITA MAHADEVAN-JANSEN, Professor of Biomedical Engineering; Professor of Neurological Surgery

B.Sc., M.Sc. (Bombay 1988, 1990); M.S. (Texas, Austin 1993); Ph.D. (Texas 1996) [1997]

ROSEANN MAIKIS, Clinical Instructor in Obstetrics and Gynecology

B.S. (Boston College 1992); M.D. (SUNY, Stony Brook 1996) [2000]

NATHALIE MAITRE, Assistant Professor of Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A., M.A. (Boston 1990, 1990); Ph.D., M.D. (South Carolina 1997, 2002) [2008]

OMID MAJDANI, Adjunct Research Assistant Professor of Otolaryngology

B.S. (Friedrich Alexander 1998); M.D. (Free University of Berlin 1998) [2007]

AMY S. MAJOR, Assistant Professor of Medicine; Assistant Professor of Pathology B.S. (Wheeling Jesuit 1991); Ph.D. (West Virginia 1998) [2002]

CHERYL W. MAJOR, Senior Associate in Pediatrics; Adjoint Instructor in Nursing B.S.N. (Skidmore 1968); R.N. [1975]

VIJAY RANI MAKRANDI, Adjunct Assistant Professor of Anesthesiology M.B.,B.S., M.D. (Delhi 1965, 1974) [1993]

RANDALL J. MALCHOW, Associate Professor of Clinical Anesthesiology B.S. (U.S. Military Academy 1983); M.D. (Wisconsin 1987) [2008]

ARNOLD WILLIAM MALCOLM, Associate Professor of Radiation Oncology and Interim Chair of the Department

B.A. (Kent State 1969); M.D. (Meharry Medical 1973) [2005]

BRADLEY A. MALIN, Assistant Professor of Biomedical Informatics; Research Assistant Professor of Computer Science

B.S., M.S., M.Phil., Ph.D. (Carnegie Mellon 2000, 2002, 2003, 2006) [2006]

ROBERT E. MALLARD, Clinical Professor of Pediatrics

B.A. (Rochester 1971); M.D. (Vanderbilt 1974) [1977]

NASREEN MALLIK, Assistant Clinical Professor of Psychiatry

M.D. (Jawaharlal Nehru Medical 1989) [2004]

BETH ANN MALOW, Professor of Neurology; Director, Sleep Center; Investigator,

Vanderbilt Kennedy Center for Research on Human Development

B.S., M.D. (Northwestern 1984, 1986); M.S. (Michigan 1997) [2003]

RAVINDER R. MANDA, Assistant Professor of Clinical Medicine

M.D. (Kakatiya Medical College [India] 1990) [2009]

TIMOTHY C. MANGRUM, Clinical Instructor in Pediatrics; Clinical Instructor in Nursing B.S. (David Lipscomb 1990); M.D. (Tennessee, Memphis 1994) [1998]

SUBRAMANI MANI, Assistant Professor of Biomedical Informatics; Assistant Professor of Computer Science

M.D. (Medical College, Trivandrum [India] 1987); M.S. (South Carolina 1994); Ph.D. (Pittsburgh 2005) [2006]

MARY VIRGINIA MANLEY, Associate in Psychiatry

B.S.N., M.S.N. (Vanderbilt 1966, 1981); R.N., C.N.P., P.M.H.N.P. [1990]

HENRY CHARLES MANNING, Assistant Professor of Radiology and Radiological Sciences; Assistant Professor of Neurological Surgery; Assistant Professor of Biomedical Engineering B.S. (Tarleton State 2000); Ph.D. (Texas Tech 2004) [2006]

JOHN F. MANNING, JR., Associate Vice Chancellor for Health Affairs; Chief Administrative Officer, VUMC; Senior Associate Dean for Operations and Administration, VUSM; Assistant Professor of Medical Education and Administration; Executive Director of Research Operations

B.S. (Worcester Polytechnic Institute 1980); Ph.D. (Notre Dame 1986); M.B.A. (Chicago 1997) [2004]

LINDA G. MANNING, Assistant Professor of Psychiatry

B.S., Ph.D. (Texas 1977, 1988) [1998]

KYLE MANNION, Assistant Professor of Otolaryngology

B.S. (North Carolina, Chapel Hill 1997); M.D. (Connecticut 2002) [2007]

SARAH MANTLE, Clinical Instructor in Pediatrics

B.S. (Birmingham-Southern 2002); M.D. (Alabama, Birmingham 2006) [2009]

CHARLES T. MARABLE, Clinical Instructor in Family Medicine

B.S. (Arkansas State 1984); M.D. (Arkansas 1991) [1999]

DEBORAH WEN-YEE MARK, Assistant Clinical Professor of Pediatrics

B.S. (Lehigh 1992); M.D. (Medical College of Pennsylvania 1997) [2008]

LARRY W. MARKHAM, Assistant Professor of Pediatrics; Assistant Professor of Medicine B.S. (Belmont 1992); M.D. (East Tennessee State 1996); M.S. (Cincinnati 2006) [2007]

MELINDA H. MARKHAM, Assistant Professor of Pediatrics

B.A. (Hendrix 1992); M.D. (Arkansas 1996) [2007]

PAMELA A. MARKS, Research Instructor in Surgery

B.S. (Tennessee State 1996); M.S. (Middle Tennessee State 1999) [2006]

LAWRENCE J. MARNETT, University Professor; Mary Geddes Stahlman Professor of Cancer Research; Professor of Biochemistry; Professor of Pharmacology; Professor of Chemistry; Director, Vanderbilt Institute of Chemical Biology

B.S. (Rockhurst 1969); Ph.D. (Duke 1973) [1989]

SAMUEL R. MARNEY, JR., Associate Professor of Medicine, Emeritus

B.A., M.D. (Virginia 1955, 1960) [1968]

RENÉ MAROIS, Associate Professor of Psychology, College of Arts and Science; Associate Professor of Radiology and Radiological Sciences; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.Sc. (McGill 1986); M.Sc. (Dalhousie 1989); Ph.D. (Yale 1996) [1999]

DAVID J. MARON, Associate Professor of Medicine; Associate Professor of Emergency Medicine

A.B. (Stanford 1976); M.D. (Southern California 1981) [1993]

BENJAMIN MARTEL, Instructor in Clinical Medicine; Instructor in Medicine

B.S., M.D. (Arizona 1999, 2004); M.P.H. (Harvard 2005) [2009]

DEBORAH BAKER MARTIN, Assistant in Medicine

B.S.N. (Troy State 1974); M.S.N. (Tennessee 1996) [2006]

JASON B. MARTIN, Clinical Instructor in Medicine

B.S. (Tulane 1997); M.D. (South Alabama 2002) [2009]

MICHELLE DAWN MARTIN, Research Instructor in Cancer Biology

B.S. (Texas Christian 1995); Ph.D. (Baylor 2002) [2008]

PETER R. MARTIN, Professor of Psychiatry; Professor of Pharmacology; Director, Division of Addiction Psychiatry; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.Sc., M.D. (McGill 1971, 1975); M.Sc. (Toronto 1979) [1986]

RAYMOND S. MARTIN III, Associate Clinical Professor of Surgery at St. Thomas Medical Center

B.A. (Vanderbilt 1972); M.D. (Johns Hopkins 1976) [1987]

SANDRA L. MARTIN, Librarian, Eskind Biomedical Library

B.S. (David Lipscomb 1969); M.Ed., Ed.D. (Georgia 1974, 1977); M.L.S. (Syracuse 1997) [1994]

WILLIAM H. MARTIN, Associate Professor of Radiology and Radiological Sciences; Associate Professor of Medicine

B.S. (William and Mary 1971); M.D. (Medical University of South Carolina 1975) [1995]

J. ANDRES MARTINEZ, Assistant Professor of Pediatrics

B.S., M.D. (South Alabama 1995, 1999) [2005]

JEFFREY E. MARTUS, Assistant Professor of Orthopaedics and Rehabilitation B.S.E., M.S., M.D. (Michigan 1996, 1998, 2001) [2007]

DIANA MARVER, Associate Professor of Medical Education and Administration; Clinical Associate Professor of Nursing: Director, Research and Training, Meharry-Vanderbilt Alliance

B.S. (Chicago 1963); Ph.D. (California, San Francisco 1977) [2000]

PIERRE PASCAL MASSION, Associate Professor of Medicine; Associate Professor of Cancer Biology

B.S., M.D. (Université Catholique de Louvain 1983, 1987) [2001]

DANIEL R. MASYS, Professor of Biomedical Informatics and Chair of the Department; Professor of Medicine

A.B. (Princeton 1971); M.D. (Ohio State 1974) [2005]

MICHAEL E. MATHENY, Assistant Professor of Medicine; Assistant Professor of Biomedical Informatics

B.S., M.D. (Kentucky 1997, 2001); M.S. (Massachusetts Institute of Technology 2006); M.P.H. (Harvard 2007) [2007]

PUTHENPURACKAL M. MATHEW, Associate Professor of Pediatrics

M.B., B.S., M.D. (Kasturba Medical India) 1968, 1972) [1997]

GEORGE M. MATHEWS, Assistant Clinical Professor of Psychiatry M.B., B.S., M.D. (Bombay 1979, 1982) [1989]

GREGORY C. MATHEWS, Assistant Professor of Neurology; Assistant Professor of Pharmacology; Member, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience

B.S. (Georgetown 1989); M.D., Ph.D. (Washington University 1996, 1996) [2003]

LETHA MATHEWS, Associate Professor of Clinical Anesthesiology B.Sc. (Kerala [India] 1975); M.D. (Gauhati [India] 1981) [1994]

LYNN M. MATRISIAN, Professor of Cancer Biology and Chair of the Department; Associate Professor of Obstetrics and Gynecology; Ingram Professor of Cancer Research

B.S. (Bloomsburg State 1975); Ph.D. (Arizona 1982) [1986]

ROBERT T. MATTHEWS, Research Associate Professor of Molecular Physiology and Biophysics; Member, Vanderbilt Kennedy Center for Research on Human Development B.S. (Ursinus 1971); Ph.D. (Florida 1978) [2005]

DAWN S. MATTHIES, Adjunct Instructor in Pharmacology

B.S. (California State 1993); Ph.D. (California, Davis 2000) [2006]

HEINRICH J. G. MATTHIES, Research Instructor in Molecular Physiology and Biophysics B.A., Ph.D. (Chicago 1983, 1993) [2006]

ROBERT J. MATUSIK, Professor of Urologic Surgery; Professor of Cell and Developmental Biology; Professor of Cancer Biology

B.S. (Loyola 1970); Ph.D. (Rochester 1976) [1996]

LOUISE ANN MAWN, Associate Professor of Ophthalmology and Visual Sciences; Associate Professor of Neurological Surgery

B.A. (Duke 1985); M.D. (Wake Forest 1990) [1998]

G. PATRICK MAXWELL, Assistant Clinical Professor of Plastic Surgery B.S., M.D. (Vanderbilt 1968, 1972) [1981]

ADDISON K. MAY, Professor of Surgery; Professor of Anesthesiology

B.A. (Virginia 1982); M.D. (Medical University of South Carolina 1988) [2001]

JAMES M. MAY, Professor of Medicine; Professor of Molecular Physiology and Biophysics; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Yale 1969); M.D. (Vanderbilt 1973) [1986]

MICHAEL E. MAY, Assistant Professor of Medicine

B.S. (Spring Hill 1971); Ph.D., M.D. (Medical University of South Carolina 1976, 1978) [1986]

INGRID MAYER, Assistant Professor of Medicine

M.D. (Federal University of São Paulo [Brazil] 1993); M.S.C.I. (Vanderbilt 2006) [2003]

WILLIAM H. MAYNARD, Assistant Professor of Clinical Medicine

B.A. (Vanderbilt 1987); M.D. (Tennessee, Memphis 1992) [1996]

JACKIEL R. MAYO, Assistant Professor of Radiology and Radiological Sciences M.D. (Cape Town 1968) [1996]

FRANCISCO J. MAYORQUIN, Assistant Clinical Professor of Medicine

B.A., M.D. (South Florida 1984, 1989) [1996]

MURRAY J. MAZER, Associate Professor of Radiology and Radiological Sciences; Assistant Professor of Surgery

B.Sc., M.D. (Manitoba 1965, 1969) [1982]

STEPHANIE A. MCABEE, Assistant Professor of Medicine B.S., M.D. (Vanderbilt 1997, 2001) [2008]

CRAIG F. MCCABE, Clinical Instructor in Ophthalmology and Visual Sciences

B.A. (Ohio Northern 1983); M.S. (Illinois State 1986); Ph.D., M.D. (Medical University of South Carolina 1992, 1995) [2002]

RICHARD C. MCCARTY, Provost and Vice Chancellor for Academic Affairs; Professor of Psychology, College of Arts and Science; Professor of Pharmacology B.S., M.S. (Old Dominion 1970, 1972); Ph.D. (Johns Hopkins 1976) [2001]

DEVIN LOCHLAN MCCASLIN, Assistant Professor of Hearing and Speech Sciences

B.S. (Northern Michigan 1992); M.S. (Wayne State 1995); Ph.D. (Ohio State 1999) [2003]

MICHAEL J. MCCAUGHEY, Research Assistant Professor of Molecular Physiology and **Biophysics** 

B.S. (Notre Dame 1985); M.S., Ph.D. (Illinois 1988, 1991) [2005]

LISA J. MCCAWLEY, Research Assistant Professor of Cancer Biology

B.A. (Pennsylvania 1992); Ph.D. (Northwestern 1998) [2003]

MARK S. MCCLAIN, Research Assistant Professor of Medicine

B.S. (Ohio State 1987); Ph.D. (Michigan 1992) [1999] CHRISTOPHER C. MCCLURE, Clinical Instructor in Medicine

B.S. (Vanderbilt 1977); M.D. (Tennessee, Memphis 1985) [1996]

ROBERT WALLACE MCCLURE, Assistant Clinical Professor of Medicine

B.S. (David Lipscomb 1982); M.D. (Vanderbilt 1986) [1992]

NICOLE S. MCCOIN, Assistant Professor of Emergency Medicine

B.S., M.D. (Vanderbilt 1999, 2003) [2006]

JOSHUA M. MCCOLLUM, Clinical Instructor in Pediatrics

B.S. (David Lipscomb 1993); M.D. (Tennessee, Memphis 1998) [2003]

DEBRA J. MCCROSKEY, Instructor in Clinical Medicine

B.S. (Wisconsin 1983); M.D. (Kansas 1989) [1995]

THOMAS L. MCCURLEY III, Associate Professor of Pathology B.E., M.D. (Vanderbilt 1970, 1974) [1983]

EDWARD C. MCDONALD, Associate Clinical Professor of Pathology

B.S. (Middle Tennessee State 1970); M.D. (Tennessee 1974) [1984]

MICHEL ALICE MCDONALD, Assistant Professor of Medicine

A.B. (Duke 1989); M.D. (Louisville 1993) [1997]

MORGAN FITZ MCDONALD, Assistant Professor of Medicine; Assistant Professor of Pediatrics B.A., M.D. (Vanderbilt 1999, 2003) [2008]

W. HAYES MCDONALD, Research Assistant Professor of Biochemistry

B.S. (University of the South 1993); Ph.D. (Vanderbilt 1999) [2008]

JAMES H. MCELMURRAY, Assistant Professor of Radiology and Radiological Sciences B.S. (Davidson 1995); M.D. (Medical University of South Carolina 2003) [2009]

JULIE MCELROY, Clinical Instructor in Pediatrics

B.S. (Georgia 2002); M.D. (Mercer 2006) [2009]

STEVEN JAMES MCELROY, Assistant Professor of Pediatrics

B.S. (Juniata 1995); M.D. (Hahnemann 1999) [2005]

LYNNE L. MCFARLAND, Associate in Psychiatry

B.S., M.A. (Tennessee 1966, 1969); M.Ed., M.S.N. (Vanderbilt 1985, 1991) [1997]

JAMES R. MCFERRIN, Assistant Clinical Professor of Psychiatry

B.A. (Vanderbilt 1971); M.D. (Tennessee 1974) [1982]

MICHAEL H. MCGHEE, Assistant Clinical Professor of Psychiatry

B.S. (Memphis State 1988); M.S., M.D. (Tennessee 1990, 1996) [2006]

CATHERINE C. MCGOWAN, Assistant Professor of Medicine B.A., M.D. (Kansas 1983, 1987) [1995]

STUART MCGRANE, Assistant Professor of Anesthesiology

M.D. (Glasgow [UK] 1998); M.S. (Vanderbilt 2009) [2009]

TRACY L. MCGREGOR, Assistant Professor of Pediatrics

B.S. (Notre Dame 1999); M.D. (Washington University 2003) [2008]

SUSAN G. MCGREW, Associate Professor of Clinical Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Vermont 1976); M.D. (Northwestern 1981) [1998]

OWEN PATRICK MCGUINNESS, Professor of Molecular Physiology and Biophysics B.S. (SUNY, Stony Brook 1978); Ph.D. (Louisiana State 1983) [1984]

PHILIP MCGUIRE, Assistant Clinical Professor of Radiology and Radiological Sciences B.S. (Notre Dame 1988); M.D. (Vanderbilt 1992) [2009]

HASSANE S. MCHAOURAB, Professor of Molecular Physiology and Biophysics; Professor of Chemistry; Professor of Physics

B.S., M.S. (American University of Beirut 1987, 1989); Ph.D. (Medical College of Wisconsin 1993) [2000]

MICHAEL J. MCHUGH, Assistant Professor of Orthopaedics and Rehabilitation

B.S. (Oregon 1980); M.D. (Johns Hopkins 1984) [2000]

JAMES OLIVER MCINTYRE, Research Professor of Cancer Biology B.A., M.A. (Cambridge 1972, 1975); Ph.D. (Vanderbilt 1978) [2001]

JAMES A. MCKANNA, Associate Professor of Cell and Developmental Biology, Emeritus; Member, Vanderbilt Kennedy Center for Research on Human Development B.A. (Saint Olaf 1966); Ph.D. (Wisconsin 1972) [1976]

SAMUEL JAY MCKENNA, Professor of Oral and Maxillofacial Surgery and Chair of the Department

B.A. (California, San Diego 1976); D.D.S. (California, Los Angeles 1980); M.D. (Vanderbilt 1983) [1985]

JARED JOHN MCKINNEY, Assistant Professor of Emergency Medicine

B.S. (Purdue 1999); M.D. (Vanderbilt 2003) [2006]

JEFFRY P. MCKINZIE, Assistant Professor of Emergency Medicine; Assistant Professor of Pediatrics

B.S. (Harding 1982); M.D. (Medical College of Virginia 1986) [1991]

BETHANN MCLAUGHLIN, Assistant Professor of Neurology; Assistant Professor of Pharmacology; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience B.A. (Skidmore 1990); Ph.D. (Pennsylvania 1997) [2002]

JOSEPH K. MCLAUGHLIN, Professor of Medicine

B.A. (West Chester 1971); M.S., M.P.H., Ph.D. (Minnesota 1974, 1979, 1981) [2000]

MICHAEL J. MCLEAN, Associate Professor of Neurology; Associate Professor of

Pharmacology; Director, Division of Pain/Neuromagnetics

A.B. (Chicago 1970); Ph.D., M.D. (Virginia 1976, 1978) [1985]

ALEXANDER C. MCLEOD, Clinical Professor of Medicine, Emeritus

A.B. (Princeton 1956); M.D. (Duke 1960); M.B.A. (Vanderbilt 1988) [1966]

BRUCE C. MCLEOD, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.S. (Texas Christian 1980); D.D.S. (International College of Dentistry 1993) [2007]

KARIE MCLEVAIN-WELLS, Clinical Instructor in Pediatrics

B.A. (David Lipscomb 1990); M.D. (East Tennessee State 1996) [2000]

DOUGLAS G. MCMAHON, Professor of Biological Sciences; Professor of Pharmacology;

Investigator, Center for Molecular Neuroscience; Investigator, Vanderbilt Kennedy

Center for Research on Human Development

B.A., Ph.D. (Virginia 1980, 1986) [2002]

YVONNE MCMAHON, Associate Clinical Professor of Pediatrics

B.A., M.D. (Vanderbilt 1978, 1982) [2007]

KEVIN T. MCMANUS, Assistant Professor of Radiology and Radiological Sciences; Director, Breast Center

B.S. (Gannon 1978); M.D. (Hahnemann Medical 1982) [1999]

AMY RALSTON MCMASTER, Assistant Clinical Professor of Pathology

B.S. (Middle Tennessee State 1992); M.D. (Meharry Medical 1996) [2002]

ELISE DAVID MCMILLAN, Senior Associate in Psychiatry; Director, Community Outreach, and Co-Director, Vanderbilt Kennedy Center for Excellence in Developmental Disabilities Education, Research, and Service

B.A. (Texas Tech 1974); J.D. (Nashville School of Law 1983) [2006]

SHEILA PATRICIA MCMORROW, Assistant Professor of Pediatrics; Assistant Professor of Emergency Medicine; Assistant Professor of Anesthesiology

B.B.E. (Catholic 1996); M.D. (Medical College of Georgia 2000) [2006]

PAUL C. MCNABB II, Adjunct Associate Professor of Medicine

B.S. (Memphis State 1971); M.D. (Tennessee 1974) [1989]

MICHAEL J. MCNAMARA, Associate Professor of Clinical Orthopaedics and Rehabilitation B.A. (Johns Hopkins 1980); M.D. (Duke 1984) [2009]

TIMOTHY P. MCNAMARA, Professor of Psychology, College of Arts and Science; Professor of Ophthalmology and Visual Sciences; Vice Provost for Faculty

B.G.S. (Kansas 1979); M.S., M.Phil., Ph.D. (Yale 1981, 1982, 1984) [1983]

MELISSA MCPHEETERS, Assistant Professor of Obstetrics and Gynecology; Assistant Professor of Medicine; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Wisconsin, Madison 1992); M.P.H., Ph.D. (North Carolina, Chapel Hill 1996, 2003) [2007]

JOHN A. MCPHERSON, Assistant Professor of Medicine

B.A. (Princeton 1989); M.D. (California, Los Angeles 1993) [2006]

JOHN R. MCRAE, Assistant Clinical Professor of Medicine

B.S. (Georgia Institute of Technology 1968); M.D. (Duke 1972) [1981]

ANGELA R. MCVIE, Clinical Instructor in Pediatrics

B.A. (Indiana 1997); M.D. (Vanderbilt 2001) [2004]

CHRISTY A. MEADE, Assistant Professor of Pediatrics; Assistant Professor of Emergency Medicine

B.S. (Washington and Lee 1997); M.D. (Utah 2002) [2008]

CLIFTON KIRKPATRICK MEADOR, Professor of Medicine; Professor of Nursing (Medicine); Executive Director, Meharry-Vanderbilt Alliance

B.A., M.D. (Vanderbilt 1952, 1955) [1973]

STEVEN R. MEADOR, Assistant Clinical Professor of Emergency Medicine E.M.T. [2001]

MARVIN PORTER MEADORS III, Assistant Clinical Professor of Medicine

B.S. (Washington and Lee 1979); M.D. (Mississippi 1984) [1990]

ANNA L. MEANS, Assistant Professor of Surgery; Assistant Professor of Cell and Developmental Biology

B.S. (Ohio 1984); Ph.D. (Wisconsin 1991) [2000]

JULIE A. MEANS-POWELL, Assistant Professor of Medicine

B.A. (Texas Tech 1991); M.D. (East Carolina 1997) [2004]

DEEPAK MEHROTRA, Clinical Instructor in Pediatrics

B.S. (Millsaps 1988); M.D. (Mississippi 1992) [1998]

SACHIN MEHTA, Instructor in Clinical Ophthalmology and Visual Sciences

B.S. (Ohio State 2000); M.D. (Case Western Reserve 2004) [2008]

JENS MEILER, Assistant Professor of Chemistry; Assistant Professor of Pharmacology; Assistant Professor of Biomedical Informatics

B.Sc., M.Sc. (Leipzig [Germany] 1995, 1998); Ph.D. (Frankfurt [Germany] 2001) [2005]

VLADA V. MELEKHIN, Instructor in Medicine

B.S., M.D. (Alabama 1998, 2002); M.P.H. (Vanderbilt 2008) [2006]

MARK RODNEY MELSON, Assistant Professor of Ophthalmology and Visual Sciences B.S., M.D. (Virginia 1994, 2002) [2008]

HERBERT Y. MELTZER, Bixler/Johnson/Mays Professor of Psychiatry; Professor of Pharmacology; Director, Division of Psychopharmacology; Investigator, Center for Molecular Neuroscience; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Cornell 1958); M.A. (Harvard 1959); M.D. (Yale 1963) [1996]

WILLIE V. MELVIN III, Assistant Professor of Surgery

B.S. (Texas Southern 1982); M.D. (Meharry Medical 1989) [2001]

GREGORY A. MENCIO, Professor of Orthopaedics and Rehabilitation

A.B., M.D. (Duke 1977, 1981) [1991]

LISA A. MENDES, Associate Professor of Medicine

M.D. (Connecticut 1987) [2002]

RAYMOND L. MENEELY, Associate Clinical Professor of Pediatrics

B.S. (Houghton 1969); M.D. (Pittsburgh 1973) [1981]

STEVEN G. MERANZE, Professor of Radiology and Radiological Sciences; Associate

Professor of Surgery: Associate Professor of Urologic Surgery

B.S. (Philadelphia College of Textiles and Science 1975); M.D. (Thomas Jefferson University 1979) [1992]

SUSAN L. MERCER, Adjunct Assistant Professor of Pharmacology

B.S. (Seton Hill 2004); Ph.D. (Maryland 2008) [2008]

NIPUN B. MERCHANT, Associate Professor of Surgery

B.A. (New York 1985); M.D. (SUNY, Health Science Center, Brooklyn 1990) [2001]

KAREN MEREDITH, Clinical Instructor in Pediatrics

B.A. (Georgia Institute of Technology 1998); M.D. (Vanderbilt 2002) [2005]

MARK L. MEREDITH, Assistant Professor of Pediatrics; Assistant Professor of Emergency Medicine

B.S., M.D. (Mississippi 1993, 2002) [2007]

ROBERT ALAN MERICLE, Associate Professor of Neurological Surgery; Associate Professor of Radiology and Radiological Sciences

B.S., B.A. (Oklahoma 1989, 1989); M.D. (Vanderbilt 1993) [2004]

LAWRENCE M. MERIN, Assistant Professor of Ophthalmology and Visual Sciences B.A. (Wayne State 1973) [2000]

RAYMOND L. MERNAUGH, Research Associate Professor of Biochemistry B.S., M.S. (South Dakota State 1973, 1976); Ph.D. (Iowa State 1987) [1996]

HOWARD R. MERTZ, Assistant Clinical Professor of Medicine

B.A. (Johns Hopkins 1982); M.D. (Baylor 1986) [2003]

MARION L. MESSERSMITH, Associate Professor of Clinical Oral and Maxillofacial Surgery

B.S. (Nebraska 1973); M.S. (St. Louis University 1984); D.D.S. (Nebraska 1984) [2008]

INGRID M. MESZOELY, Assistant Professor of Surgery

B.A. (Northeastern 1985); M.D. (Boston University 1993) [2004]

ALVIN H. MEYER, JR., Assistant Clinical Professor of Medicine

B.S., M.D. (Louisiana State 1963, 1967) [1974]

BARBARA O. MEYRICK, Professor of Pathology; Professor of Medicine

M.Phil., Ph.D. (London 1974, 1976) [1981]

HEATHER AURORA MICHALAK, Clinical Instructor in Pediatrics

B.A. (Wooster 1998); M.D. (Pennsylvania State 2002) [2009]

ANDREW ALAN MICHEL, Assistant Professor of Psychiatry

B.A. (Baylor 1999); M.D. (Vanderbilt 2003) [2009]

MARC MICKIEWICZ, Assistant Professor of Emergency Medicine

B.S. (Illinois 1995); M.D. (Illinois, Chicago 1999) [2003]

MARTHA K. MIERS, Assistant Professor of Medical Education and Administration

B.S. (Virginia Polytechnic 1972); M.S. (Virginia Commonwealth 1978); M.B.A. (Vanderbilt 1986) [1980]

MICHAEL I. MIGA, Associate Professor of Biomedical Engineering; Associate Professor of Radiology and Radiological Sciences

B.S., M.S. (Rhode Island 1992, 1994); Ph.D. (Dartmouth 1998) [2000]

MARTIN CHARLES MIHM, JR., Adjunct Professor of Pathology

B.A. (Duquesne 1955); M.D. (Pittsburgh 1961) [1989]

CAROL PROOPS MILAM, Assistant Clinical Professor of Psychiatry; Assistant Clinical Professor of Nursing

B.A., M.D. (West Virginia 1982, 1991) [2004]

DOUGLAS FRANKLIN MILAM, Associate Professor of Urologic Surgery

B.S.E. (Pennsylvania 1980); M.S., M.D. (West Virginia 1982, 1986) [1991]

DEJAN MILATOVIC, Research Assistant Professor of Pediatrics

B.Sc., M.Sc. (Zagreb [Croatia] 1985, 1988); Ph.D. (Belgrade [Yugoslavia] 1995) [2005]

ALISON N. MILLER, Assistant Professor of Medicine

B.S., M.D. (North Carolina, Chapel Hill 1996, 2001) [2007]

ANDREW C. MILLER, Assistant Professor of Anesthesiology

B.S., M.D. (Utah 2000, 2004) [2008]

ANNE M. MILLER, Assistant Professor of Nursing; Assistant Professor of Anesthesiology

B.A. (Monash [Australia] 1994); Ph.D. (Queensland 2004) [2007]

BONNIE M. MILLER, Senior Associate Dean for Health Sciences Education; Associate Professor of Medical Education and Administration; Associate Professor of Clinical Surgery B.A. (Colorado College 1975); M.D. (Oklahoma 1980) [1987]

DAVID M. MILLER III, Professor of Cell and Developmental Biology; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience

B.S. (Southern Mississippi 1973); Ph.D. (Rice 1981) [1994]

EVA KATHRYN MILLER, Assistant Professor of Pediatrics

B.S. (Abilene Christian 1997); M.D. (Texas A & M 2002) [2007]

GERALDINE G. MILLER, Professor of Medicine; Associate Professor of Microbiology and Immunology

S.B. (Massachusetts Institute of Technology 1969); M.D. (California, San Diego 1973) [1990]

JAMI L. MILLER, Assistant Professor of Medicine

B.A., M.D. (Virginia 1984, 1988) [1996]

KAREN F. MILLER, Senior Associate in Emergency Medicine B.S. (Nazareth College 1985); M.P.A. (Western Michigan 2001) [2007] LEANNA ROBBINS MILLER, Assistant in Surgery B.A. (Indiana 1977); M.A., B.S.N., M.S.N. (Ball State 1980, 1981, 1984); R.N. [2004] MATTHEW S. MILLER, Assistant Professor of Medicine; Assistant Professor of Pediatrics B.S. (Abilene Christian 1997); M.D. (Texas A & M 2002) [2007] NICOLE L. MILLER, Assistant Professor of Urologic Surgery B.A. (LaSalle 1995); M.D. (Pittsburgh 2000) [2007] RANDOLPH A. MILLER, Donald A. B. and Mary M. Lindberg University Professor of Biomedical Informatics; Professor of Medicine; Professor of Nursing A.B. (Princeton 1971); M.D. (Pittsburgh 1976) [1994] RICHARD S. MILLER, Professor of Surgery B.A. (South Florida 1980); M.D. (Dominican Republic 1983) [2002] ROBERT F. MILLER, Associate Professor of Clinical Medicine B.A. (Colorado College 1976); M.D. (Vanderbilt 1982) [1989] RONALD V. MILLER, Associate Professor of Clinical Pediatrics B.A., M.D. (Mississippi 1972, 1976) [1983] TODD W. MILLER, Research Assistant Professor of Cancer Biology B.S. (Connecticut 1998); Ph.D. (SUNY, Albany 2004) [2009] CORBI DIANELL MILLIGAN, Clinical Instructor in Pediatrics B.S. (Prairie View A & M 1996); M.D. (Tennessee, Memphis 2000) [2004] GINGER L. MILNE, Research Assistant Professor of Medicine; Research Assistant Professor of Pharmacology B.S. (Wake Forest 1997); Ph.D. (Vanderbilt 2002) [2005] STEPHEN B. MILNE, Research Assistant Professor of Pharmacology B.S. (Kentucky Wesleyan 1989); M.S., Ph.D. (Vanderbilt 1992, 1995) [2002] AARON P. MILSTONE, Associate Clinical Professor of Medicine B.A., M.D. (Wayne State 1990, 1994) [2000] KAROLY MIRNICS, Professor of Psychiatry; Investigator, Center for Molecular Neuroscience; Investigator, Vanderbilt Kennedy Center for Research on Human Development R.N., M.D., M.S. (Novi Sad [Yugoslavia] 1980, 1986, 1989) [2006] DINA H. MISHU, Clinical Instructor in Pediatrics M.D. (Spartan [Saint Lucia] 1985) [1991] REETA MISRA, Assistant Clinical Professor of Pediatrics M.B., B.S. (Kanpur 1973); M.D. (Lucknow 1978) [1988] SUMATHI K. MISRA, Assistant Professor of Medicine M.D. (Madras [India] 1991); M.P.H. (Pittsburgh 1996) [2001] KARL EDWARD MISULIS, Clinical Professor of Neurology B.Sc. (Queen's [Ontario] 1975); Ph.D. (SUNY, Upstate Medical Center 1980); M.D. (Vanderbilt 1982) [1986] ERIKA J. MITCHELL, Assistant Professor of Orthopaedics and Rehabilitation Sc.B., M.D. (Brown 1995, 1999) [2005] WILLIAM M. MITCHELL, Professor of Pathology B.A., M.D. (Vanderbilt 1957, 1960); Ph.D. (Johns Hopkins 1966) [1966] LAURA SERA MIZOUE, Research Assistant Professor of Biochemistry B.A. (Oberlin 1987); Ph.D. (California Institute of Technology 1995) [2000] SUKHBIR S. MOKHA, Adjunct Professor of Pharmacology B.Sc. (Punjabi 1974); M.Sc. (Southampton [England] 1977); Ph.D. (Edinburgh 1981) [1992] KEN MONAHAN, Assistant Professor of Medicine

B.S., M.S., M.D. (Virginia 1997, 1998, 2001) [2008]

TORIN MONAHAN, Associate Professor of Human and Organizational Development;

Associate Professor of Medicine

B.A., M.A. (California State, Northridge 1993, 1996); M.S., Ph.D. (Rensselaer Polytechnic Institute 2002, 2003) [2008]

ABELARDO C. MONCAYO, Assistant Clinical Professor of Preventive Medicine

B.S., M.S. (Ohio 1988, 1993); Ph.D. (Massachusetts 1998) [2005]

STEPHEN ANTHONY MONTGOMERY, Assistant Professor of Psychiatry

B.S. (Rhodes 1990); M.D. (Tennessee, Memphis 1994) [2002]

TROY D. MOON, Assistant Professor of Pediatrics

B.S. (Florida State 1992); M.P.H. (Alabama, Birmingham 1996); M.D. (Florida 2001) [2007]

KAREL MOONS, Adjunct Professor of Biostatistics

M.Sc. (Netherlands Institute for Health Sciences 1994); Ph.D. (Erasmus Medical Center 1996) [2005]

DEREK E. MOORE, Assistant Professor of Surgery

B.S., M.D., M.P.H. (Vanderbilt 1995, 1999, 2004) [2008]

DONALD E. MOORE, JR., Professor of Medical Education and Administration; Director, Continuing Medical Education

B.A. (Connecticut 1972); A.M., Ph.D. (Illinois 1975, 1982) [2000]

ILENE N. MOORE, Assistant Professor of Medical Education and Administration; Assistant Professor of Family Medicine

B.S. (SUNY, Stony Brook 1973); M.D. (New York 1977); J.D. (California, Berkeley 1989) [2005]

J. DONALD MOORE, Assistant Professor of Pediatrics

B.A., M.D. (Kentucky 1987, 1991) [2000]

JENNIFER E. MOORE, Clinical Instructor in Pediatrics

B.S., M.D. (North Carolina 1988, 1992) [1995]

KELLY L. MOORE, Assistant Clinical Professor of Preventive Medicine

B.S. (Vanderbilt 1994); M.P.H. (Harvard 2000); M.D. (Vanderbilt 2000) [2005]

MARY E. COURTNEY MOORE, Research Associate Professor of Molecular Physiology and Biophysics

B.S. (Baylor 1974); M.S.N. (Texas, San Antonio 1979); Ph.D. (Vanderbilt 1992) [1995]

PAUL E. MOORE, Associate Professor of Pediatrics; Assistant Professor of Pharmacology B.A. (Vanderbilt 1988); M.D. (Harvard 1992) [2001]

ROYANNE A. MOORE, Professor of Nursing; Senior Associate in Medicine

B.S.N., M.S.N. (Vanderbilt 1976, 1981); R.N., W.H.N.P. [2000]

STEPHEN B. MOORE, Assistant Professor of Medical Education and Administration; Vice Chair for Administration, Orthopaedics and Rehabilitation

B.S. (Jacksonville State 1975); M.B.A. (Florida Institute of Technology 1982) [1999]

TIFFANIE TATE MOORE, Clinical Instructor in Obstetrics and Gynecology

B.S. (California, Santa Barbara 1996); M.D. (Meharry Medical 2000) [2007]

WAYNE E. MOORE, Assistant Clinical Professor of Emergency Medicine

B.A. (Oakwood 1979); M.D. (Meharry Medical 1985) [2000]

WILLIAM R. MOORE, Assistant Clinical Professor of Pediatrics

B.S. (Memphis 1978); M.D. (Vanderbilt 1982) [2005]

WILLIAM THOMAS MOORE, Clinical Instructor in Otolaryngology

B.A., M.D. (Louisville 1958, 1962) [1968]

SHARON MOORE-CALDWELL, Clinical Instructor in Pediatrics

B.S. (Grambling State 1986); M.D. (Pittsburgh 1990) [1996]

PAUL L. MOOTS, Associate Professor of Neurology; Associate Professor of Medicine; Director, Division of Neuro-oncology

B.S. (Duke 1976); M.D. (Ohio State 1980) [1991]

ANNA WHORTON MORAD, Assistant Professor of Pediatrics

B.S. (Auburn 1993); M.D. (Alabama 1997) [2007]

MANUEL A. MORALES, Instructor in Radiation Oncology

B.Sc. (U.N.I. [Peru] 1990); M.S., Ph.D. (Vanderbilt 1997, 2001) [2008]

S. HOUSTON MORAN, Clinical Instructor in Obstetrics and Gynecology

A.B. (Tennessee 1975); M.D. (Meharry Medical 1981) [1987]

GABRIELA THOMAS MOREL, Clinical Instructor in Pediatrics

B.S. (Tulane 1987); M.D. (Louisiana State 1994) [1998]

VINCENT MORELLI, Associate Clinical Professor of Family Medicine

M.D. (Southern California 1983) [2008]

DAVID SCOTT MORGAN, Assistant Professor of Medicine

B.A. (Yale 1985); M.D. (Vanderbilt 1990) [1997]

SUSAN LYNN MORGAN, Assistant Clinical Professor of Pediatrics

B.S. (Tennessee Technological 1977); M.D. (East Carolina 1987) [1990]

THOMAS M. MORGAN, Assistant Professor of Pediatrics

B.A., M.D. (Boston 1993, 1997) [2008]

TODD M. MORGAN, Instructor in Urologic Surgery

B.A., M.D. (Harvard 1999, 2003) [2009]

VICTORIA L. MORGAN, Assistant Professor of Radiology and Radiological Sciences;

Assistant Professor of Biomedical Engineering; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Wright State 1990); M.S., Ph.D. (Vanderbilt 1994, 1996) [1999]

WALTER M. MORGAN III, Assistant Professor of Pediatric Surgery; Assistant Professor of Pediatrics

B.S.E. (Princeton 1978); M.D. (Vanderbilt 1982) [1990]

JOHN K. MORI, Assistant Professor of Neurology

B.S. (Stanford 1999); M.D. (Vanderbilt 2003) [2008]

CARRIE L. MORRIS, Clinical Instructor in Ophthalmology and Visual Sciences

B.S. (University of the South 1999); M.D. (Alabama, Birmingham 2003) [2008]

JOHN A. MORRIS, JR., Professor of Surgery, Director, Division of Trauma and Surgical Critical Care; Professor of Biomedical Informatics

B.A. (Trinity [Connecticut] 1969); M.D. (Kentucky 1977) [1984]

MERRI B. MORRIS, Clinical Instructor in Obstetrics and Gynecology

B.S. (Arizona State 1978); M.D. (Arizona 1982) [2003]

PAUL MORRIS, Clinical Instructor in Psychiatry

B.A. (Tennessee 1984), M.A. (Vanderbilt 1987); M.S.S.W. (Tennessee 1992) [2008]

DAVID G. MORRISON, Assistant Professor of Ophthalmology and Visual Sciences;

Assistant Professor of Pediatrics

B.S., M.D. (Kentucky 1994, 1999) [2003]

MARGARET A. MORRISON, Assistant in Medicine

B.S.N. (Bethel 2001); M.S.N. (Vanderbilt 2004) [2006]

STEPHEN ERIC MORROW, Assistant Professor of Pediatric Surgery

B.A. (Vanderbilt 1981); M.D. (Uniformed Services 1985) [2005]

DOUGLAS PAUL MORTLOCK, Assistant Professor of Molecular Physiology and Biophysics; Assistant Professor of Pediatrics

B.A. (Cornell 1990); Ph.D. (Michigan 1997) [2002]

HAROLD MOSES, JR., Assistant Professor of Neurology

B.S., M.D. (North Carolina, Chapel Hill 1985, 1993) [1997]

HAROLD L. MOSES, Hortense B. Ingram Professor of Molecular Oncology; Professor of Cancer Biology; Professor of Pathology; Professor of Medicine; Director, Emeritus, Vanderbilt-Ingram Cancer Center

B.A. (Berea 1958); M.D. (Vanderbilt 1962) [1985]

CHARLES A. MOSS III, Assistant Clinical Professor of Pediatrics

B.S. (Rhodes 1982); M.D. (Alabama 1987) [1990]

CLAUDIO A. MOSSE, Assistant Professor of Pathology

B.A. (Cornell 1992); M.D., Ph.D. (Virginia 2001, 2001) [2005]

DEDRICK EARL MOULTON, Assistant Professor of Pediatrics

B.S. (Alabama 1984); M.D. (Medical University of South Carolina 1992) [2002]

SANDRA A. MOUTSIOS, Assistant Professor of Medicine; Assistant Professor of Pediatrics B.S.E. (Duke 1989); M.D. (Florida 1993) [1998]

GARY L. MUELLER, Assistant Clinical Professor of Medicine

B.A., M.D. (Missouri 1968, 1972) [1997]

H. GUSTAV MUELLER, Professor of Hearing and Speech Sciences

B.S. (North Dakota State 1969); M.A. (New Mexico State 1971); Ph.D. (Denver 1976) [1991]

LOUIS JOSEPH MUGLIA, Edward Claiborne Stahlman Professor of Pediatrics; Professor of Molecular Physiology and Biophysics; Interim Associate Director, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Michigan 1981); Ph.D., M.D. (Chicago 1986, 1988) [2008]

CHETAN R. MUKUNDAN, Clinical Instructor in Pediatrics B.A., M.D. (Vanderbilt 1990, 1994) [1997]

ROBERTA LEE MULDOON, Assistant Professor of Surgery

B.S. (Loyola, Chicago 1985); M.D. (Stritch 1989) [2004]

JAMES A. S. MULDOWNEY III, Assistant Professor of Medicine

A.B. (Princeton 1994); M.D. (Vanderbilt 1999) [2006]

JOSEPH L. MULHERIN, JR., Clinical Professor of Surgery at St. Thomas Medical Center M.D. (Medical College of Georgia 1971) [1978]

WILLIAM MICHAEL MULLINS, Assistant Professor of Clinical Otolaryngology B.A. (Vanderbilt 1967); M.D. (Tennessee, Memphis 1971) [2001]

SHELAGH A. MULVANEY, Assistant Professor of Nursing; Assistant Professor of Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development B.S., M.S., Ph.D. (Arizona 1985, 1991, 2002) [2005]

GREGORY R. MUNDY, John A. Oates Professor of Translational Medicine; Professor of Medicine; Professor of Pharmacology; Professor of Cancer Biology; Professor of Orthopaedics and Rehabilitation; Director, Center in Bone Biology
 M.D. (University of Melbourne and Tasmania 1973) [2006]

DEBORAH G. MURDOCK, Research Assistant Professor of Molecular Physiology and Biophysics

B.S. (Georgia 1988); Ph.D. (Carnegie Mellon 1996) [2002]

HARVEY JOHNSON MURFF, Assistant Professor of Medicine

B.A. (Mississippi 1992); M.D. (Tennessee, Memphis 1996); M.P.H. (Harvard 2002) [2002]

SUZANNE SHELTON MURFF, Assistant Professor of Medicine

B.S. (Tennessee 1993); M.D. (Tennessee, Memphis 1997) [2004]

BARBARA A. MURPHY, Associate Professor of Medicine

B.S. (Duke 1983); M.D. (Wake Forest 1987) [1993]

MICHAEL J. MURPHY, Assistant Professor of Psychiatry

B.S. (Massachusetts, Amherst 1988); M.P.H., M.D. (Harvard 1994, 1994) [2006]

JOHN J. MURRAY, Adjunct Professor of Medicine; Adjunct Professor of Pharmacology A.B. (Harvard 1973); M.D., Ph.D. (Vanderbilt 1979, 1979) [1988]

KATHERINE T. MURRAY, Associate Professor of Medicine; Associate Professor of Pharmacology

B.S., M.D. (Duke 1976, 1980) [1989]

MICAH M. MURRAY, Adjunct Associate Professor of Hearing and Speech Sciences B.A. (Johns Hopkins 1995); M.S., Ph.D. (Albert Einstein 1999, 2001) [2008]

ROBERT E. MURRAY, Assistant Clinical Professor of Psychiatry

B.A. (Bellarmine 1965); M.S., Ph.D. (Yale 1967, 1969); M.D. (Meharry Medical 1979) [2006]

SAMUEL JUDSON MURRAY II, Assistant Professor of Clinical Pediatrics

B.S. (Virginia Polytechnic Institute 1991); M.D. (Medical College of Virginia 1996) [2004] GREGORY J. MYERS, Clinical Professor of Pediatrics

B.S. (SUNY 1973); M.D. (SUNY, Downstate Medical Center 1977) [2007]

JENNIFER BRADEN MYERS, Clinical Instructor in Pediatrics

B.A. (Duke 1992); M.D. (Tennessee, Memphis 1997) [2000]

JEREMY S. MYERS, Research Instructor in Biochemistry

B.S. (Bucknell 1999); Ph.D. (Louisiana State 2003) [2007]

KEVIN J. MYERS, Assistant Professor of Medicine

A.B. (Princeton 1979); M.D. (Vanderbilt 1983) [1993]

JOHN H. J. NADEAU, Professor of Medicine

B.A., M.D. (Ottawa 1967, 1973) [1977]

ALLEN J. NAFTILAN, Associate Professor of Medicine

B.A. (Oberlin 1972); Ph.D. (Chicago 1978); M.D. (Alabama 1982) [2006]

NAGARAJ S. NAGATHIHALLI, Research Instructor in Surgery

B.S., M.S., Ph.D. (Mysore [India] 1994, 1996, 2002) [2007]

MICHAEL LANGE NAHRWOLD, Adjunct Professor of Anesthesiology B.A., M.D. (Indiana 1965, 1969) [2009]

JAYGOPAL NAIR, Clinical Instructor in Pediatrics

B.A. (Maryland 1985); M.S. (Yale 1987); M.D. (Maryland 1997) [2001]

JENNIFER L. NAJJAR, Assistant Professor of Pediatrics

B.A. (Wisconsin 1971); M.D. (Tufts 1977) [1983]

KI TAEK NAM, Research Instructor in Surgery

B.S., M.S., Ph.D., D.V.M. (Seoul 1991, 1993, 2003, 2003) [2008]

E. PAUL NANCE, JR., Associate Professor of Radiology and Radiological Sciences; Assistant Professor of Orthopaedics and Rehabilitation; Associate Professor of Emergency Medicine

B.S., M.D. (North Carolina 1973, 1976) [1980]

LILLIAN B. NANNEY, Professor of Plastic Surgery; Professor of Cell and Developmental Biology; Professor of Medical Education and Administration

B.A. (Vanderbilt 1973); M.S. (Austin Peay State 1977); Ph.D. (Louisiana State 1980) [1980]

JAMES L. NASH, Associate Professor of Psychiatry, Emeritus M.D. (Duke 1966) [1980]

LEWIS M. NASHNER, Adjunct Professor of Hearing and Speech Sciences

S.B., S.M., Sc.D. (Massachusetts Institute of Technology 1965, 1967, 1970) [2009]

THOMAS C. NASLUND, Associate Professor of Surgery; Director, Division of Vascular Surgery

B.S. (Trinity [Texas] 1980); M.D. (Vanderbilt 1984) [1992]

CHANDRAMOHAN NATARAJAN, Research Assistant Professor of Medicine

B.Sc. (A.V.C. [India] 1988); M.Sc. (Annamala [India] 1990); Ph.D. (Madras [India] 1998)

J. RICHARD NAVARRE, Assistant Clinical Professor of Psychiatry

B.A. (Wisconsin, Madison 1992); M.D. (North Carolina, Chapel Hill 2001) [2007]

TULTUL NAYYAR, Assistant Professor of Obstetrics and Gynecology at Meharry Medical College; Adjunct Assistant Professor of Obstetrics and Gynecology at Vanderbilt B.Sc., M.Sc., Ph.D. (Calcutta [India] 1973, 1975, 1981) [2009]

ROBERT A. NEAL, Professor of Biochemistry, Emeritus

B.S. (Denver 1949); Ph.D. (Vanderbilt 1963) [1964]

WALLACE W. NEBLETT III, Professor of Pediatric Surgery and Chair of the Department; Professor of Pediatrics

B.A. (University of the South 1967); M.D. (Vanderbilt 1971) [1980]

ANDREW CHARLES NECK, Assistant Professor of Emergency Medicine; Assistant Professor of Pediatrics

B.S. (Stetson 1988); M.S. (Perkins School of Theology 1990); M.D. (Meharry Medical 2002) [2006]

M. DIANA NEELY, Research Assistant Professor of Neurology; Member, Vanderbilt Kennedy Center for Research on Human Development

Ph.D. (Brown 1990) [1999]

ANNE TAGGART NEFF, Assistant Professor of Medicine; Assistant Professor of Pathology A.B., M.D. (Missouri 1981, 1985) [1991]

ERIC G. NEILSON, Hugh J. Morgan Professor of Medicine and Chair of the Department; Professor of Cell and Developmental Biology

B.S. (Denison 1971); M.D. (Alabama 1975); M.S. (Pennsylvania 1987) [1998]

JOSEPH S. NEIMAT, Assistant Professor of Neurological Surgery

A.B. (Dartmouth 1992); M.S., M.D. (Duke 1996, 1998) [2006]

EUGENE C. NELSON, Adjunct Professor of Hearing and Speech Sciences

A.B. (Dartmouth 1970); M.P.H. (Yale 1973); S.D. (Harvard 1977) [1988]

JILL R. NELSON, Assistant in Medicine

B.S. (Tennessee 2002); M.S.N. (Vanderbilt 2007) [2007]

RONALD ANDREW NELSON, Assistant Clinical Professor of Medicine

B.S. (Stanford 1986); M.D. (Vanderbilt 1990); M.S. (Troy State 1998) [2002]

JONATHAN C. NESBITT, Associate Professor of Thoracic Surgery

B.A. (Virginia 1977); M.D. (Georgetown 1981) [2001]

THOMAS E. NESBITT, Assistant Clinical Professor of Urologic Surgery

M.D. (Texas, Dallas 1948); M.S. (Michigan 1954) [1957]

REID M. NESS, Assistant Professor of Medicine

M.D., M.P.H. (Indiana 1990, 1997) [2000]

MARTIN G. NETSKY, Professor of Pathology, Emeritus

B.A., M.S., M.D. (Pennsylvania 1938, 1940, 1943) [1975]

JAMES L. NETTERVILLE, Mark C. Smith Professor of Otolaryngology, Head and Neck Surgery

B.S. (David Lipscomb 1976); M.D. (Tennessee 1980) [1986]

ARIE L. NETTLES, Assistant Professor of Pediatrics

B.S., M.S. (Tennessee 1976, 1977); Ph.D. (Vanderbilt 1987) [2004]

MELINDA S. NEW, Assistant Professor of Obstetrics and Gynecology

B.S. (Villanova 1989); M.D. (Pennsylvania 1993) [2005]

JOHN H. NEWMAN, Elsa S. Hanigan Professor of Pulmonary Medicine; Professor of Medicine A.B. (Harvard 1967); M.D. (Columbia 1971) [1979]

CASSANDRA RUTLEDGE NEWSOM, Assistant Professor of Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Mississippi State 1995); Psy.D. (Virginia Consortium Program 2002) [2008]

H. CLAY NEWSOME III, Clinical Instructor in Obstetrics and Gynecology

A.B., M.D. (North Carolina 1969, 1973) [1983]

MARK W. NEWTON, Associate Professor of Clinical Anesthesiology

B.S. (Houston Baptist 1983); M.D. (Texas 1987) [2007]

FRANCES JOHNSON NIARHOS, Assistant Professor of Pediatrics

B.A. (Southern Methodist 1986); M.S., Ph.D. (Miami [Florida] 1991, 1994) [2005]

AMY NICHOLSON, Assistant in Psychiatry

B.A., M.A. (Western Kentucky 1993, 1995) [2007]

RICHARD A. NISBETT, Adjunct Professor of Pediatrics

B.F.S. (Texas Christian 1976); M.A. (San Diego State 1988); Ph.D. (Iowa 1993); M.S.P.H. (Alabama, Birmingham 2001) [2007]

COLLEEN M. NISWENDER, Research Associate Professor of Pharmacology

B.S. (Toledo 1991); Ph.D. (Vanderbilt 1996) [2004]

KEVIN DEAN NISWENDER, Assistant Professor of Medicine; Assistant Professor of Molecular Physiology and Biophysics

B.S. (Colorado College 1990); Ph.D., M.D. (Vanderbilt 1996, 1998) [2004]

DAVID S. NOEL, Assistant Professor of Medical Education and Administration; Vice Chair for Administration, Section of Surgical Sciences

B.S. (U.S. Military Academy 1976); M.B.A. (Hofstra 1986) [1999]

JULIA S. NOLAND, Research Assistant Professor of Psychology, Peabody College;

Research Assistant Professor of Pediatrics; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Earlham 1991); Ph.D. (Cornell 1998) [2003]

JEANETTE J. NORDEN, Professor of Cell and Developmental Biology; Professor of Neuroscience

B.A. (California, Los Angeles 1970); Ph.D. (Vanderbilt 1975) [1978]

ANDY M. NORMAN, Assistant Professor of Obstetrics and Gynecology B.S., M.D. (Georgia 1973, 1976) [2007]

SHARON A. NORMAN, Clinical Instructor in Obstetrics and Gynecology B.S. (Brenau College 1984); M.Ed., M.D. (Emory 1991, 2001) [2006]

JEREMY LYNN NORRIS, Adjunct Instructor in Biochemistry B.S. (Tennessee 1998); Ph.D. (Vanderbilt 2003) [2003]

PATRICK R. NORRIS, Assistant Professor of Surgery; Assistant Professor of Biomedical Engineering

B.S. (Johns Hopkins 1993); M.S., Ph.D. (Vanderbilt 1998, 2006) [2007]

JOHN MICHAEL NORVELL, Instructor in Clinical Medicine

B.S. (Texas, Arlington 1994); M.S. (North Texas Health Science Center 1996); M.D. (Texas, Houston 2000) [2009]

THOMAS MICHAEL NUMNUM, Clinical Instructor in Obstetrics and Gynecology B.S., M.D. (Alabama 1996, 2001) [2008]

PAULA S. NUNN, Assistant Clinical Professor of Psychiatry

B.A. (Trinity [Connecticut] 1977); M.D. (Vanderbilt 1981) [1986]

WILLIAM A. NYLANDER, JR., Associate Clinical Professor of Surgery; Adjunct Associate Professor of Surgery at Meharry Medical College

B.A. (Washington and Jefferson 1973); M.D. (Pittsburgh 1977); M.B.A. (Vanderbilt 1989) [1985]

JEFFRY S. NYMAN, Research Assistant Professor of Orthopaedics and Rehabilitation B.S., M.S. (Memphis 1996, 1998); Ph.D. (California, Davis 2003) [2006]

OLOF NYREN, Adjunct Professor of Medicine

M.D. (Karolinska Institutet [Sweden] 1973); Ph.D. (Uppsala [Sweden] 1985) [2003]

LEE ANNE O'BRIEN, Clinical Instructor in Pediatrics; Clinical Instructor in Nursing B.A. (Johns Hopkins 1983); M.D., Ph.D. (Vanderbilt 1991, 1991); F.A.A.P. [1995]

RICHARD M. O'BRIEN, Professor of Molecular Physiology and Biophysics

B.Sc. (Bristol 1984); Ph.D. (Cambridge 1988) [1988]

WILLIAM T. O'BYRNE III, Assistant Professor of Anesthesiology

B.A. (Alabama, Birmingham 1985); M.D. (South Alabama 1997) [2007]

DENIS M. O'DAY, Professor of Ophthalmology and Visual Sciences M.D. (Melbourne 1960) [1972]

ANNE ELIZABETH O'DUFFY, Assistant Professor of Neurology

B.A. (Brown 1983); M.D. (University College, Dublin 1989) [2001]

ELLEN B. O'KELLEY. Assistant in Pediatrics

B.S.N. (South Florida 1976); R.N., C.P.N.P. [1996]

JAMES A. O'NEILL, JR., Professor of Surgery, Emeritus

B.S. (Georgetown 1955); M.D. (Yale 1959) [1995]

JOHN A. OATES, Thomas F. Frist Professor of Medicine; Professor of Pharmacology B.A., M.D. (Wake Forest 1953, 1956) [1963]

JILL COLE OBREMSKEY, Instructor in Clinical Pediatrics; Instructor in Emergency Medicine B.A. (Duke 1986); M.D. (North Carolina 1990); M.P.H. (University of Washington 1991) [2002]

WILLIAM TODD OBREMSKEY, Associate Professor of Orthopaedics and Rehabilitation A.B., M.D. (Duke 1984, 1988); M.P.H. (North Carolina 1990) [2002]

JOSIAH OCHIENG, Professor of Biochemistry at Meharry Medical College; Professor of Cancer Biology at Vanderbilt

B.Sc. (Nairobi 1979); M.Sc., Ph.D. (Ohio State 1982, 1988) [1995]

THOMAS N. OELTMANN, Associate Professor of Medicine; Associate Professor of Biochemistry

B.S. (Georgia State 1963); Ph.D. (Georgia 1967) [1979]

RALPH N. OHDE, Professor of Hearing and Speech Sciences; Member, Vanderbilt Kennedy Center for Research on Human Development

A.B. (Carthage 1966); M.Ed. (Virginia 1968); Ph.D. (Michigan 1978) [1981]

MELANIE D. OHI, Assistant Professor of Cell and Developmental Biology; Assistant Professor of Structural Biology

B.S. (Pacific Lutheran 1996); Ph.D. (Vanderbilt 2002) [2007]

RYOMA OHI, Assistant Professor of Cell and Developmental Biology

B.S., Ph.D. (Vanderbilt 1993, 1998) [2007]

HENRY E. OKAFOR, Assistant Clinical Professor of Medicine

M.D. (Nigeria 1986) [2006]

TAISHA K. OKAFOR, Clinical Instructor in Pediatrics

B.S. (Tennessee State 1998); M.D. (Meharry Medical 2003) [2009]

SAMUEL O. OKPAKU, Clinical Professor of Psychiatry

M.B., Ch.B. (Edinburgh 1968); Ph.D. (Brandeis 1978) [1987]

MARTINA I. OKWUEZE, Clinical Instructor in Surgery

B.S. (Millsaps 1989); M.S., M.D. (Tulane 1992, 1999) [2009]

BJARKI J. OLAFSSON, Assistant Clinical Professor of Medicine

M.D. (Iceland 1979) [1989]

ELIZABETH L. OLDFIELD, Assistant Clinical Professor of Obstetrics and Gynecology

B.S. (Vanderbilt 1977); M.D. (Tennessee 1983) [1987]

RICHARD OLDHAM, Associate Clinical Professor of Pathology

B.S. (United States Naval Academy 1961); M.D. (Vanderbilt 1971) [1975]

JASON B. OLINGER, Instructor in Clinical Anesthesiology

B.A. (Augustana 2001); M.D. (South Dakota 2005) [2009]

DANYVID OLIVARES-VILLAGOMEZ, Research Assistant Professor of Microbiology and Immunology

B.S. (Universidad Nacional Autónoma de Mexico 1991); M.S. (Vanderbilt 1996); Ph.D. (New York 2000) [2009]

CHRISTOPHER MARK OLSEN, Research Instructor in Molecular Physiology and Biophysics B.A. (Baylor 1994); M.S. (Texas Tech 1998); Ph.D. (Texas 2004) [2008]

DOUGLAS O. OLSEN, Associate Clinical Professor of Surgery

B.S. (Loyola, Chicago 1975); M.D. (Rush 1978) [1990]

JORGEN HELGE OLSEN, Adjunct Professor of Medicine

M.D., D.M.Sc. (Copenhagen 1976, 1989) [2001]

BARBARA J. OLSON, Assistant Clinical Professor of Neurology; Assistant Clinical Professor of Pediatrics

B.S. (Wisconsin, Eau Claire 1971); M.D. (Wisconsin 1976) [1983]

GARY E. OLSON, Professor of Cell and Developmental Biology, Emeritus

B.S., M.S. (Oregon 1967, 1968); Ph.D. (Washington University 1974) [1977]

SANDRA J. OLSON, Research Instructor in Pathology

B.S. (Richmond 1967); M.S. (Virginia Polytechnic 1971) [1998]

OLAYINKA ONADEKO, Associate Professor of Pediatrics at Meharry Medical College; Assistant Clinical Professor of Pediatrics at Vanderbilt

B.S., M.S. (Portland State 1976, 1978); M.D. (Universidad Mundial [Santo Domingo] 1984) [1990]

DAVID E. ONG, Professor of Biochemistry, Emeritus

B.A. (Wabash 1965); Ph.D. (Yale 1970) [1970]

HENRY HEAN LEE OOI, Assistant Professor of Medicine

M.D. (Trinity College Medical [Ireland] 1990) [2006]

SUSAN RENEE OPALENIK, Research Assistant Professor of Pathology B.S. (Ohio State 1989); Ph.D. (Alabama, Birmingham 1996) [2001]

STEPHEN OPPENHEIMER, Adjunct Professor of Neurological Surgery

Ph.D. (London [Kings College] 1980); Ph.D. (Oxford [U.K.] 1993) [2007]

THOMAS W. ORCUTT, Associate Clinical Professor of Plastic Surgery

B.A. (DePauw 1964); M.D. (Vanderbilt 1968) [1980]

MARIE-CLAIRE ORGEBIN-CRIST, Professor of Obstetrics and Gynecology, Emerita; Professor of Cell and Developmental Biology, Emerita

Licence ès Lettres (Paris 1956); Ph.D. (Lyons 1961) [1963]

D. ELIZABETH ORSBURN, Assistant Professor of Orthopaedics and Rehabilitation B.S. (Kentucky 1994); M.D. (Louisville 1998) [2009]

DAVID N. ORTH, Professor of Medicine, Emeritus; Professor of Molecular Physiology and Biophysics, Emeritus

Sc.B. (Brown 1954); M.D. (Vanderbilt 1962) [1965]

CHANDRA Y. OSBORN, Assistant Professor of Medicine

B.A. (California State, San Marcos 2001); M.A., Ph.D. (Connecticut 2004, 2006); M.P.H. (Northwestern 2008) [2008]

DAVID OSBORN, Assistant Professor of Medical Education and Administration B.A. (Harding 1980); Ph.D. (Tennessee 1988) [2003]

NEIL OSHEROFF, John Coniglio Professor of Biochemistry; Professor of Medicine B.A. (Hobart 1974); Ph.D. (Northwestern 1979) [1983]

OLEG A. OSIPOVICH, Research Instructor in Microbiology and Immunology

M.S. (Moscow Institute of Physics and Technology 1986); Ph.D. (Latvian Academy of Sciences 1993) [2006]

ROBERT H. OSSOFF, Maness Professor of Laryngology and Voice; Professor of Hearing and Speech Sciences; Assistant Vice Chancellor for Compliance

A.B. (Bowdoin 1969); D.M.D, M.D. (Tufts 1973, 1975); M.S. (Northwestern 1981) [1986]

KEVIN G. OSTEEN, Professor of Obstetrics and Gynecology; Professor of Pathology; Director, Women's Reproductive Health Research Center

B.S. (South Carolina 1972); Ph.D. (Medical College of Georgia 1980) [1983]

MICKEY M. OTT, Instructor in Surgery

B.A., M.D. (Michigan State 1998, 2003) [2009]

MARY E. OVERTON, Clinical Professor of Pediatrics

B.A. (Southwestern 1974); M.D. (Tennessee 1977) [2006]

ROBERT C. OWEN, Clinical Instructor in Otolaryngology

B.S. (Tennessee Polytechnic Institute 1959); M.D. (Tennessee 1961) [1967]

DOROTHY M. OWENS, Assistant Clinical Professor of Psychiatry B.A., M.Div. (Emory 1966, 1991); M.A., Ph.D. (Vanderbilt 1994, 1996) [2000] RONALD W. OXENHANDLER, Associate Clinical Professor of Pathology A.B., M.D. (Missouri 1968, 1972) [1986] ASLI OZDAS, Assistant Professor of Biomedical Informatics B.S. (Anadolu [Turkey] 1994); M.S., Ph.D. (Vanderbilt 1996, 2001) [2004] DAVID BRUCE P'POOL, JR., Assistant Professor of Clinical Medicine B.A. (Vanderbilt 1955); M.D. (Tennessee, Memphis 1963) [2002] ANDREW J. PADGUG, Assistant Clinical Professor of Radiology and Radiological Sciences B.A. (SUNY, Buffalo 1974); M.D. (Medical College of Wisconsin 1978) [1984] PRIYA PADMANABHAN, Instructor in Urologic Surgery B.A. (Bryn Mawr 1994); M.P.H. (Michigan 1996); M.D. (New York 2002) [2008] DAVID L. PAGE, Professor of Pathology; Professor of Preventive Medicine B.A. (Yale 1962); M.D. (Johns Hopkins 1966) [1972] HARRY LEE PAGE, JR., Professor of Clinical Medicine B.A., M.D. (Vanderbilt 1956, 1959) [2004] ROBERT NORMAN PAGE, Assistant Clinical Professor of Pathology B.S. (Vanderbilt 1990); M.D. (Arkansas 1996) [2005] RAMACHANDER K. PAI, Associate Professor of Clinical Anesthesiology M.B.B.S. (Kakatiya [India] 1978); M.D. (Osmania [India] 1984) [1997] KEVIN T. PALKA, Assistant Professor of Medicine B.S. (Duke 1995); M.D. (Texas Southwestern 2001) [2009] PRADEEP S. PALLAN, Research Instructor in Biochemistry B.Sc., M.Sc. (Calicut [India] 1991, 1993); Ph.D. (Pune [India] 2002) [2008] KENNETH HUGO PALM, Assistant Professor of Emergency Medicine B.A., M.D. (Loma Linda 1982, 1988) [2003] PRATIK PARAG PANDHARIPANDE, Associate Professor of Anesthesiology B.Sc. (Pune [India] 1989); M.D. (Nagpur [India] 1993); M.S.C.I. (Vanderbilt 2005) [2001] DAN ARIE PANKOWSKY, Assistant Clinical Professor of Pathology B.S. (Washington University 1978); M.S. (Rice 1983); M.D. (Texas, Houston 1984) [1999] JACQUES PANTEL, Research Associate Professor of Molecular Physiology and Biophysics Pharm.D. (Dijon [France] 1991); M.D. (Paris-René Descartes [France] 1997) [2008] WILLIAM PAO, Associate Professor of Medicine; Associate Professor of Cancer Biology; Associate Professor of Pathology A.B. (Harvard 1990); M.D., Ph.D. (Yale 1998, 1998) [2009] JULIANN PAOLICCHI, Associate Professor of Neurology; Associate Professor of Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development B.A. (Harvard 1981); M.A., M.D. (Johns Hopkins 1988, 1988) [2008] YESHAWANT B. PARANJAPE, Clinical Instructor in Ophthalmology and Visual Sciences M.B., B.S. (Mysore 1963); M.S. (Bombay 1966) [1982] KENDRA PAPSON PAREKH, Assistant Professor of Emergency Medicine B.S. (College of New Jersey 2001); M.D. (Pittsburgh 2005) [2008] JOSEPH PARELLO, Visiting Professor of Pharmacology M.S., Eng. (Toulouse [France] 1959, 1960); Ph.D. (Chemistry Institute of Natural Compounds [France] 1996) [2005] BIBHASH C. PARIA, Associate Professor of Pediatrics B.Sc., M.Sc., Ph.D. (Calcutta [India] 1974, 1976, 1984) [2002] ALEXANDER A. PARIKH, Assistant Professor of Surgery B.A. (Johns Hopkins 1989); M.D. (Pennsylvania 1993) [2005]

CHARLES RAWLINSON PARK, Professor of Physiology, Emeritus A.B. (Harvard 1937); M.D. (Johns Hopkins 1941) [1952]

DON J. PARK, Assistant Professor of Medicine

M.D. (Chonnam [Korea] 1985); Ph.D. (Missouri 1992) [1998]

JANE H. PARK, Professor of Molecular Physiology and Biophysics

B.S., Ph.D. (Washington University 1946, 1952) [1954]

SOHEE PARK, Professor of Psychology, College of Arts and Science; Professor of Psychiatry; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Cambridge 1982); M.A. (Columbia 1985); Ph.D. (Harvard 1991) [2000]

SCOTT R. PARKER, Instructor in Clinical Family Medicine

B.S. (Alabama 1987); M.D. (South Alabama 1991) [1998]

LEON L. PARKS III, Assistant Professor of Medicine

B.A., M.D. (Mississippi 1987, 1991) [1998]

MITCHELL H. PARKS, Assistant Professor of Psychiatry at Meharry Medical College;

Assistant Professor of Psychiatry at Vanderbilt

B.S. (North Carolina 1986); M.D. (Wisconsin 1992) [2004]

FRITZ F. PARL, Professor of Pathology

M.D. (Georg-August-Universität Göttingen 1968); Ph.D. (New York Medical 1978) [1980]

C. LEE PARMLEY, Professor of Anesthesiology

B.S. (Pacific Union 1973); M.D. (Loma Linda 1976) [2004]

DAVID A. PARRA, Assistant Professor of Pediatrics

M.D. (Central University of Ecuador 1993) [2004]

EARL Q. PARROTT, Clinical Instructor in Psychiatry

B.A. (Tennessee Technological 1969); M.D. (Tennessee 1974) [1978]

BRAHM S. PARSH, Associate Professor of Pediatrics at Meharry Medical College; Assistant Clinical Professor of Pediatrics at Vanderbilt; Clinical Associate Professor of Nursing M.D. (Mysore [India] 1966) [1995]

PAUL D. PARSONS, Assistant Professor of Clinical Orthopaedics and Rehabilitation B.A. (Dartmouth 1975); M.D. (Tennessee 1978) [2009]

C. LEON PARTAIN, Professor of Radiology and Radiological Sciences; Professor of Biomedical Engineering

B.S.N.E. (Tennessee 1963); M.S.N.E., Ph.D. (Purdue 1965, 1967); M.D. (Washington University 1975) [1980]

CYNTHIA B. PASCHAL, Associate Professor of Biomedical Engineering; Associate Professor of Radiology and Radiological Sciences

S.B., S.M. (Massachusetts Institute of Technology 1986, 1986); Ph.D. (Case Western Reserve 1992) [1992]

NAOMI SUDEEN PASCHALL, Clinical Instructor in Obstetrics and Gynecology

B.A. (New Orleans 1987); B.S. (Xavier 1990); M.D. (Meharry Medical 1997) [2004]

RAY PASCHALL, JR., Associate Professor of Clinical Anesthesiology

B.A. (Arkansas 1982); M.S. (New Orleans 1986); M.D. (Arkansas 1990) [1994]

ALPHONSE T. PASIPANODYA, Associate Professor of Surgery at Meharry Medical College; Assistant Professor of Surgery at Vanderbilt

B.A. (Fisk 1967); M.D. (Meharry Medical 1974) [2000]

J. KIRBY PATE, Associate Clinical Professor of Psychiatry

B.E. (Vanderbilt 1971); M.D. (Tennessee 1978) [1983]

HARSHILA R. PATEL, Clinical Instructor in Pediatrics

B.Sc., M.D. (Madras 1977, 1983) [1994]

NEAL R. PATEL, Associate Professor of Pediatrics; Associate Professor of Anesthesiology; Associate Professor of Biomedical Informatics

B.S. (California Polytechnic 1987); M.D. (Southern California 1991); M.P.H. (Vanderbilt 2000) [1997]

NIMESH PATEL, Associate in Anesthesiology

B.E., B.S., M.S. (Vanderbilt 1990, 1990, 1994) [1994]

VIKRAM PATEL, Assistant Professor of Clinical Anesthesiology

M.D. (Gujarat [India] 1991) [2009]

REKHA R. PATTANAYEK, Research Assistant Professor of Biochemistry

B.Sc. (Midnapore [India] 1975); M.Sc. (Indian Institute of Technology 1977); Ph.D. (Saha Institute [India] 1986) [2003]

BARRON LEE PATTERSON, Assistant Professor of Pediatrics

B.E., M.D. (Vanderbilt 1996, 2000) [2006]

SARA JANE FLETCHER PATTERSON, Clinical Instructor in Pediatrics

B.S. (Calvin 1993); M.D. (Vanderbilt 1997) [2001]

WARREN R. PATTERSON, Assistant Clinical Professor of Otolaryngology

B.A. (Vanderbilt 1960); M.D. (Tennessee 1964) [1981]

CHRISTOPHER M. PATTON, Clinical Instructor in Pediatrics

M.D. (Tennessee, Memphis 1994) [1998]

JAMES A. PATTON, Professor of Radiology and Radiological Sciences; Professor of Physics B.S., Ph.D. (Western Kentucky 1966, 1972) [1973]

JAMES G. PATTON, Professor of Biological Sciences; Associate Professor of Biochemistry B.A. (College of Saint Thomas 1980); Ph.D. (Mayo Graduate 1988) [1993]

WILLIAM S. PAUL, Assistant Clinical Professor of Preventive Medicine

B.S. (Stanford 1981); M.P.H. (Illinois School of Public Health 1986); M.D. (Illinois 1986) [2008]

SIDDHARAMA PAWATE, Assistant Professor of Neurology

M.D. (Karnatak Medical College [India] 1990) [2009]

WACLAWA YVONNE PAWLOWSKI, Assistant Clinical Professor of Pediatrics

M.D. (Academy of Medicine, Lodz [Poland] 1973) [1992]

DEBORAH M. PAYNE, Assistant in Medicine

B.S.N., M.S.N. (Alabama, Birmingham 1992, 1996) [2008]

W. FAXON PAYNE, Professor of Radiology and Radiological Sciences, Emeritus

B.A., M.D. (Vanderbilt 1945, 1948) [1960]

JOHN P. PEACH, Assistant Professor of Clinical Medicine

B.S. (David Lipscomb 1990); M.D. (Louisville 1994) [1997]

MICHELLE FOOTE PEARCE, Associate in Psychiatry

B.S.N. (Fitchburg State 1980); M.S.N. (Yale 1984); D.Min. (Graduate Theological Foundation 2005) [2009]

A. SCOTT PEARSON, Associate Professor of Surgery

B.A. (Tennessee 1987); M.D. (Tennessee, Memphis 1991) [1999]

MATTHEW MARSHALL PEARSON, Assistant Professor of Neurological Surgery

B.S. (Trinity 1991); M.D. (Johns Hopkins 1995) [2003]

ROBIN S. PEARSON, Clinical Instructor in Pediatrics

B.A. (Southern Methodist 1987); M.D. (Tennessee, Memphis 1991) [1999]

TETYANA V. PEDCHENKO, Research Instructor in Medicine

M.S. (Kiev State 1984); Ph.D. (Institute of Pharmacology and Toxicology [Ukraine] 1992) [2004]

VADIM K. PEDCHENKO, Research Assistant Professor of Medicine

B.S., M.S (Kiev State 1983, 1985); Ph.D. (Institute of Biochemistry, Kiev 1993) [2002]

WILLIAM J. PEDIGO, JR., Associate Clinical Professor of Pediatrics

M.D. (Tennessee, Memphis 1974) [2005]

R. STOKES PEEBLES, Associate Professor of Medicine

B.S. (Davidson 1982); M.D. (Vanderbilt 1986) [1998]

BARBARA F. PEEK, Adjunct Assistant Professor of Hearing and Speech Sciences

B.A., M.A., M.A., Ph.D. (Northwestern 1965, 1966, 1968, 1982) [1985]

JULIE T. PEEK, Assistant Clinical Professor of Pediatrics

B.S. (Yale 1984); M.D. (North Carolina 1988) [1992]

RICHARD M. PEEK, JR., Mina Cobb Wallace Professor of Gastroenterology and Cancer Prevention; Professor of Medicine; Professor of Cancer Biology

B.S. (Davidson 1984); M.D. (North Carolina 1988) [1995]

AMANDA C. PELTIER, Assistant Professor of Neurology

B.A. (Denison 1994); M.D. (Ohio State 1998); M.S. (Michigan 2005) [2005]

JULIE M. PENA, Assistant Clinical Professor of Pathology

B.S. (Michigan 1988); M.D. (Northwestern 1993) [2007]

JO CARA PENDERGRASS, Assistant Professor of Psychiatry

B.A. (Vanderbilt 1996); Ph.D. (Rosalind Franklin University of Medicine and Science 2005) [2007]

XUYANG PENG, Research Assistant Professor of Medicine

M.S., M.D., Ph.D. (Xiangya School of Medicine [China] 1967, 1990, 2001) [2006]

JOHN S. PENN, Phyllis G. and William B. Snyder M.D. Professor of Ophthalmology and Visual Sciences; Professor of Cell and Developmental Biology; Assistant Dean for Faculty Development; Professor of Medical Education and Administration

B.A. (University of the South 1978); M.S. (West Florida 1981); Ph.D. (Florida State 1984) [1998]

DAVID F. PENSON, Assistant Professor of Urologic Surgery

B.A. (Pennsylvania 1987); M.D. (Boston University 1991); M.P.H. (Yale 2001) [2009]

EDWARD C. PERDUE, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.S. (Alabama 1988); D.D.S. (Tennessee 1992) [2006]

JASON KYLE PEREIRA, Assistant Professor of Medicine

B.S. (Tennessee 1997); M.D. (Tennessee, Memphis 2001) [2004]

BRET L. PERISHO, Assistant Professor of Medical Education and Administration; Director of Finance–Strategic Business Development and Corporate Planning

B.S., B.A. (Kansas State 1980); C.P.A. [2000]

ELIZABETH A. PERKETT, Professor of Pediatrics

B.S., M.D. (Michigan 1967, 1971) [2006]

MATTHEW L. PERKINS, Clinical Instructor in Pediatrics

B.S. (Western Kentucky 1990); M.D. (Louisville 1994) [1999]

DONNA J. PERLIN, Assistant Professor of Pediatrics; Assistant Professor of Emergency Medicine

B.S. (William and Mary 1985); M.D. (Medical College of Virginia 1989) [2007]

JONATHAN B. PERLIN, Clinical Professor of Medicine; Adjunct Professor of Biomedical Informatics

B.A. (Virginia 1984), Ph.D., M.D. (Virginia Commonwealth 1991, 1992) [2007]

STEWART NEAL PERLMAN, Associate Professor of Clinical Anesthesiology

B.S. (Florida 1976); M.D. (Alabama 1981) [2004]

MARTIN I. PERLMUTTER, Assistant Professor of Clinical Ophthalmology and Visual Sciences A.B. (Syracuse 1972); M.D. (Wake Forest 1977) [2005]

AIMEE P. PERRI, Clinical Instructor in Pediatrics

B.S. (Texas, Austin 1994); M.D. (Texas, San Antonio 1999) [2006]

ROMAN E. PERRI, Assistant Professor of Medicine

B.S., M.D. (Wisconsin, Madison 1995, 1999) [2006]

DANIEL S. PERRIEN, Research Instructor in Orthopaedics and Rehabilitation B.A. (Hendrix College 1998); Ph.D. (Arkansas 2006) [2009]

MARK T. PETERS, Assistant Professor of Pediatrics

B.S., M.D. (Ohio State 1983, 1987) [2001]

JOSH FAVROT PETERSON, Assistant Professor of Medicine; Assistant Professor of Biomedical Informatics

B.S. (Stanford 1992); M.D. (Vanderbilt 1997); M.P.H. (Harvard 2002) [2002]

MARSHA J. PETERSON, Associate Professor of Clinical Anesthesiology

B.S., M.D. (University of Washington 1979, 1992) [2007]

NEERAJA B. PETERSON, Assistant Professor of Medicine

B.S. (Duke 1993); M.D. (Vanderbilt 1997); M.S. (Boston University 2002) [2002]

TODD E. PETERSON, Assistant Professor of Radiology and Radiological Sciences;

Director of Nuclear Imaging; Assistant Professor of Physics

B.A. (Gustavus Adolphus 1991); B.A. (Oxford 1993); M.S., Ph.D. (Indiana 1994, 2000) [2003]

MICHAEL R. PETRACEK, Professor of Clinical Cardiac Surgery

B.S. (Baylor 1967); M.D. (Johns Hopkins 1971) [1983]

KIMBERLY A. PETRIE, Assistant Professor of Medical Education and Administration

B.A. (Lawrence 1996); Ph.D. (Vanderbilt 2004) [2008]

WILLIAM M. PETRIE, Clinical Professor of Psychiatry

B.A., M.D. (Vanderbilt 1968, 1972) [1977]

EMIL R. PETRUSA, Professor of Medical Education and Administration; Director, Office of Teaching and Learning in Medicine

B.S., M.S. (Western Illinois 1972, 1974); Ph.D. (Utah 1979) [2006]

CATHLEEN C. PETTEPHER, Professor of Cancer Biology; Professor of Cell and Developmental Biology; Member, Vanderbilt Kennedy Center for Research on Human Development B.S., B.S., Ph.D. (South Alabama 1985, 1987, 1990) [1990]

WILLIAM H. PETTUS, Clinical Instructor in Medicine

B.S. (David Lipscomb 1976); M.D. (Tennessee 1980) [1986]

CAMIRON PFENNIG, Assistant Professor of Emergency Medicine

B.A. (Marquette 2001); M.D. (Indiana 2005) [2008]

JEAN P. PFOTENHAUER, Associate in Pediatrics

B.A. (Reed 1976); M.S. (California, Irvine 1983) [1989]

WELLINGTON PHAM, Assistant Professor of Radiology and Radiological Sciences;

Assistant Professor of Biomedical Engineering

B.S., Ph.D. (Toledo 1996, 2000) [2006]

JASON PHAN, Research Assistant Professor of Biochemistry

B.S. (California, Irvine 1995); Ph.D. (South Carolina 2001) [2009]

FENNA T. PHIBBS, Assistant Professor of Neurology

B.S. (Colorado State 1996); M.D. (Colorado 2002) [2007]

JOHN PHILIPOSE, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.S. (Kerala [India] 1991); M.S., D.M.D., Ph.D. (Louisville 2002, 2002, 2009) [2009]

ERIN PHILLIPS, Assistant Clinical Professor of Neurology

B.S. (Baylor 1999); M.D. (Texas, San Antonio 2003) [2009]

HEATHER N. PHILLIPS, Clinical Instructor in Pediatrics

B.S. (Birmingham-Southern 1999); M.D. (Alabama, Birmingham 2003) [2008]

JOHN A. PHILLIPS III, David T. Karzon Professor of Pediatrics; Director, Division of Pediatric Genetics; Professor of Biochemistry; Professor of Medicine; Professor of Pathology;

Clinical Professor of Nursing; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.S. (North Carolina 1965); M.D. (Wake Forest 1969) [1984]

ROBERT N. PIANA, Associate Professor of Medicine

A.B. (Harvard 1980); M.D. (Pennsylvania 1987) [2000]

MARIA BLANCA PIAZUELO, Research Instructor in Medicine

M.D. (Universidad del Valle, Cali [Colombia] 1986) [2005]

JAMES W. PICHERT, Professor of Medical Education and Administration

B.S. (Bucknell 1974); M.D., Ph.D. (Illinois 1976, 1978) [1979]

DAVID R. PICKENS III, Associate Professor of Radiology and Radiological Sciences; Associate Professor of Biomedical Engineering

B.A. (University of the South 1969); B.E., M.S., Ph.D. (Vanderbilt 1971, 1977, 1981) [1981]

NATALIYA PIDKOVKA, Research Instructor in Medicine

M.S., Ph.D. (Lviv National [Ukraine] 1998, 2003) [2009]

SAMUEL J. L. PIEPER, JR., Assistant Clinical Professor of Psychiatry

M.D. (Baylor 1955) [1980]

ELIZABETH P. PIERCE, Associate Clinical Professor of Pediatrics

A.B. (William and Mary 1971); M.D. (Virginia Commonwealth 1978) [1981]

HOLLY R. PIERCE, Assistant in Medicine

B.S.N. (Tennessee 1997); M.S.N. (Vanderbilt 2007) [2008]

LISA M. PIERCEY, Assistant Professor of Clinical Pediatrics

B.S. (David Lipscomb 1998); M.D. (East Tennessee State 2002); M.B.A. (Bethel College 2009) [2007]

JENNIFER A. PIETENPOL, Director, Vanderbilt-Ingram Cancer Center; B. F. Byrd Jr. Professor of Oncology; Professor of Biochemistry; Professor of Cancer Biology; Professor of Otolaryngology

B.A. (Carleton 1986); Ph.D. (Vanderbilt 1990) [1994]

JOHN B. PIETSCH, Associate Professor of Pediatric Surgery; Associate Professor of Pediatrics

B.S. (Georgetown 1968); M.D. (Michigan 1972) [1986]

MICHAEL ANTHONY PILLA, Associate Professor of Clinical Anesthesiology

B.S., B.A. (Widener 1990); M.D. (Pennsylvania 1994) [2004]

AUREA FUGAZZOLA PIMENTA, Research Assistant Professor of Pharmacology; Member, Vanderbilt Kennedy Center for Research on Human Development

B.Sc., Ph.D. (Universidade de São Paulo [Brazil] 1970, 1979) [2002]

J. ERIC PINA-GARZA, Associate Professor of Neurology; Associate Professor of Pediatrics M.D. (Nuevo Leon 1984) [1995]

ALLISON PINGREE, Director, Center for Teaching; Lecturer in English; Assistant Professor of Medical Education and Administration

B.A. (Brigham Young 1985); M.A., Ph.D. (Harvard 1988, 1992) [2000]

BRAM I. PINKLEY, Clinical Instructor in Pediatrics

B.S. (Vanderbilt 1994); M.D. (East Tennessee State 2001) [2006]

J. RAYMOND PINKSTON, Assistant Clinical Professor of Emergency Medicine B.S. (Vanderbilt 1986); M.D. (Tennessee, Memphis 1991) [1997]

C. WRIGHT PINSON, H. William Scott Professor of Surgery; Deputy Vice Chancellor for Health Affairs; Chief Executive Officer, Hospitals and Clinics; Senior Associate Dean for Clinical Affairs, School of Medicine; Clinical Professor of Nursing

B.A., M.B.A. (Colorado 1974, 1976); M.D. (Vanderbilt 1980) [1990]

SHARON MARIE PIPER, Clinical Instructor in Obstetrics and Gynecology

B.A. (Toledo 1981); M.D. (Eastern Virginia 1987) [1991]

STEPHANIE S. PIRKLE, Clinical Instructor in Pediatrics

B.A. (Alabama 1999); M.D. (Alabama, Birmingham 2003) [2007]

DAVID W. PISTON, Professor of Molecular Physiology and Biophysics; Professor of Physics; Professor of Biomedical Engineering; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Grinnell 1984); M.S., Ph.D. (Illinois 1986, 1989) [1992]

ELIZABETH B. PITCHFORD, Clinical Instructor in Pediatrics

B.A. (Yale 1999); M.D. (Vanderbilt 2004) [2007]

GREGORY S. PLEMMONS, Assistant Professor of Pediatrics

B.A. (Wofford 1987); M.D. (Medical University of South Carolina 1992) [1998]

KATHERINE A. POEHLING, Adjunct Assistant Professor of Pediatrics

B.A. (Vanderbilt 1990); M.D. (Wake Forest 1995); M.P.H. (Vanderbilt 2001) [2007]

FERNANDO P. POLACK, Cesar Milstein Associate Professor of Pediatrics

B.S., M.D. (Buenos Aires 1985, 1990) [2009]

RODNEY A. POLING, Assistant Clinical Professor of Psychiatry

B.S. (Tulane 1979); M.D. (Kansas 1983) [1997]

DAVID BRENT POLK, William K. Warren Sr. Professor of Pediatric Gastroenterology;

Professor of Pediatrics; Professor of Cell and Developmental Biology; Director, Division of Pediatric Gastroenterology (On leave fall 2009)

B.S. (Ouachita Baptist 1980); M.D. (University of Arkansas for Medical Sciences 1984) [1990]

DANIEL B. POLLEY, Assistant Professor of Hearing and Speech Sciences; Assistant Professor of Psychology, College of Arts and Science; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Richmond 1996); M.S., Ph.D. (California, Irvine 1999, 2001) [2005]

PHILIP G. POLLOCK, Assistant Clinical Professor of Pathology

B.S., M.D. (Missouri 1968, 1972) [1989]

VASILIY V. POLOSUKHIN, Research Assistant Professor of Medicine

M.D. (Tomsk Medical Institute [Russia] 1984); Ph.D., Sc.D. (Institute of Clinical and Experimental Medicine [Russia] 1991, 1998) [2003]

JASON EDWARD POPE, Assistant Professor of Clinical Anesthesiology

B.S. (Purdue 2000); M.D. (Indiana 2004) [2008]

JOHN BURTON POPE, Instructor in Orthopaedics and Rehabilitation B.S. (South Florida 2000); M.D. (Indiana 2004) [2009]

JOHN C. POPE IV, Associate Professor of Urologic Surgery; Associate Professor of Pediatrics B.A. (Wake Forest 1985); M.D. (Tennessee, Memphis 1989) [1997]

MICHAEL KARL PORAYKO, Associate Professor of Medicine

B.S., M.D. (Illinois 1977, 1981) [2002]

PHILLIP P. PORCH, JR., Associate Clinical Professor of Urologic Surgery B.A., M.D. (Vanderbilt 1951, 1955) [1960]

NED ALLEN PORTER, Stevenson Professor of Chemistry; Professor of Biochemistry B.S.Ch.E. (Princeton 1965); Ph.D. (Harvard 1970) [1998]

ROBERT L. POST, Professor of Molecular Physiology and Biophysics, Emeritus A.B., M.D. (Harvard 1942, 1945) [1948]

FRANCK POTET, Research Assistant Professor of Anesthesiology

B.S., M.S. (Nantes 1997, 1998); Ph.D. (Paris XI-Orsay 2003) [2004]

AMY ELIZABETH POTTER, Assistant Professor of Pediatrics; Assistant Professor of Medicine B.S. (Houston 1993); M.D. (Texas, San Antonio 1997) [2005]

ELIZABETH POTTS, Associate in Orthopaedics and Rehabilitation

B.S. (Middle Tennessee State 2004); M.S.N. (Vanderbilt 2008); A.C.N.P., B.C. [2009]

BENJAMIN KUTTIKATT POULOSE, Assistant Professor of Surgery

B.S. (North Carolina, Chapel Hill 1994); M.D. (Johns Hopkins 1999); M.P.H. (Vanderbilt 2005) [2008]

JAMES E. POWELL, Instructor in Clinical Medicine; Instructor in Clinical Pediatrics; Assistant Chief Medical Officer for VMG Williamson County

B.S., M.D. (Alabama 1987, 1991) [1998]

DORRIS ELISE POWELL-TYSON, Assistant Professor of Emergency Medicine B.S., M.S. (Tuskegee 1987, 1989); M.D. (Wisconsin 1994) [2003]

ALVIN C. POWERS, Joe C. Davis Professor of Biomedical Sciences; Professor of Molecular Physiology and Biophysics; Professor of Medicine

B.A. (Virginia 1976); M.D. (Tennessee 1979) [1988]

JAMES S. POWERS, Associate Professor of Medicine; Clinical Associate Professor of Nursina

B.A. (Wesleyan 1973); M.D. (Rochester 1977) [1980]

THOMAS A. POWERS, Associate Professor of Radiology and Radiological Sciences B.S. (Duke 1969); M.D. (Vanderbilt 1973) [1980]

AMBRA POZZI, Associate Professor of Medicine; Associate Professor of Cancer Biology Ph.D. (Florence [Italy] 1996) [2000]

SATISH D. PRABHU, Assistant Clinical Professor of Pediatrics M.D. (Mangalore [India] 1986) [2005] RUDRA PRAKASH, Clinical Professor of Psychiatry M.B., B.S. (Kanpur 1972); Ph.D. (India 1973); M.D. (Lucknow 1976) [1988] HARISH C. PRASAD, Instructor in Pharmacology M.D., Ph.D. (Gauhati [India] 1982, 1989) [2005] SUBIR PRASAD, Assistant Clinical Professor of Neurology B.S.E.E. (Mississippi 1990); M.D. (Tennessee, Memphis 1995) [2004] ANITA M. PREININGER, Research Assistant Professor of Pharmacology B.S. (Lewis 1987); Ph.D. (Northwestern 2003) [2006] STEVEN G. PRESS, Assistant Professor of Oral and Maxillofacial Surgery B.S. (George Mason 1985); D.D.S. (Medical College of Virginia 1989) [2007] MIAS PRETORIUS, Assistant Professor of Anesthesiology; Assistant Professor of Medicine M.D. (Pretoria [South Africa] 1993); D.A. (College of Medicine [South Africa] 1995); M.S. (Vanderbilt 2002) [2001] ANN H. PRICE, Assistant Professor of Medical Education and Administration; Executive Director, Medical Alumni Affairs; Assistant Professor of Medicine B.A., M.D. (Vanderbilt 1971, 1978) [2004] CARA GARCIA PRICE, Clinical Instructor in Pediatrics B.A. (Anderson 1999); M.D. (Louisville 2004) [2009] JAMES S. PRICE, Clinical Professor of Pediatrics B.A. (University of the South 1964); M.D. (Vanderbilt 1968) [1971] JAN ELLEN PRICE, Assistant Professor of Clinical Medicine B.S. (Dickinson 1993); M.D. (Johns Hopkins 1997) [2001] MATTHEW R. PRICE, Instructor in Orthopaedics and Rehabilitation B.A. (Miami [Ohio] 1999); M.S., M.D. (Louisville 2004, 2004) [2009] RONALD R. PRICE, Godfrey Hounsfield Professor of Radiology and Radiological Sciences and Director of the Division of Radiological Sciences; Professor of Physics; Member, Vanderbilt Kennedy Center for Research on Human Development B.S. (Western Kentucky 1964); Ph.D. (Vanderbilt 1971) [1973] THOMAS H. PRICE, Associate Clinical Professor of Pediatrics B.A. (University of the South 1967); M.D. (Pennsylvania 1971) [2005] LAWRENCE S. PRINCE, Assistant Professor of Pediatrics; Assistant Professor of Cell and Developmental Biology B.S. (Mississippi 1989); Ph.D., M.D. (Alabama 1995, 1996) [2007] WILLIAM W. PRINE, JR., Clinical Professor of Pediatrics M.D. (Mississippi 1971) [2005] RICHARD LEE PRINTZ, Research Assistant Professor of Molecular Physiology and Biophysics B.S. (Pennsylvania State 1983); Ph.D. (Vanderbilt 1992) [1995] MICHAEL W. PROPPER, Assistant Clinical Professor of Psychiatry B.A. (Yale 1975); M.D. (Tulane 1979) [1996] TERRYL A. PROPPER, Assistant Clinical Professor of Oral and Maxillofacial Surgery (Endodontics) B.A. (Tulane 1977); D.D.S. (Tennessee 1982); M.S. (North Carolina 1990) [1991] ADAM JAMES PRUDOFF, Assistant Professor of Clinical Medicine B.S. (Pennsylvania State 1993); M.D. (Hahnemann 1998) [2006] RONALD E. PRUITT, Assistant Clinical Professor of Medicine B.A. (Alabama 1976); M.D. (North Carolina 1984) [2001] ANDREW JOHN PULLAN, Adjunct Associate Professor of Surgery B.Sc., Ph.D. (Auckland [New Zealand] 1985, 1988) [2002]

JILL M. PULLEY, Assistant Professor of Medical Education and Administration

B.S. (Yale 1991); M.B.A. (Pennsylvania 1996) [2007]

MITCHELL A. PULLIAS, Clinical Instructor in Pediatrics

B.A. (David Lipscomb 1994); M.D. (Tennessee, Memphis 1999) [2003]

LARA CARPIGIANI BEZAS PUPIM, Assistant Clinical Professor of Medicine

M.D. (Universidade de Taubaté [Brazil] 1984); M.S.C.I. (Vanderbilt 2003) [2003]

JOE B. PUTNAM, JR., Professor of Thoracic Surgery and Chair of the Department;

Professor of Biomedical Informatics; Ingram Professor of Cancer Research

A.B., M.D. (North Carolina 1975, 1979) [2004]

IGOR PUZANOV, Assistant Professor of Medicine

M.D. (Charles University [Prague] 1991) [2005]

HAN ZHU QIAN, Assistant Professor of Medicine

M.D. (Tongji Medical [China] 1989); M.P.H. (Shanghai Medical [China] 1995); Ph.D. (Alabama, Birmingham 2005) [2007]

JINGBO QIAO, Research Assistant Professor of Pediatric Surgery

B.S., M.S. (Harbin Normal [China] 1985, 1988); Ph.D. (Kyoto [Japan] 1997) [2009]

SHIMIAN QU, Research Assistant Professor of Medicine

B.S. (Beijing Agricultural 1984); Ph.D. (Vanderbilt 1993) [1997]

XIANGHU QU, Research Instructor in Pediatrics

B.S., M.S. (Huazhong Normal 1984, 1987); Ph.D. (Huazhong University of Science and Technology 1999) [2006]

VITO QUARANTA, Professor of Cancer Biology

M.D. (Bari [Italy] 1974) [2003]

CHRISTOPHER CHAD QUARLES, Assistant Professor of Radiology and Radiological

Sciences; Assistant Professor of Cancer Biology

B.S. (Centenary, Louisiana 1999); Ph.D. (Medical College of Wisconsin 2004) [2007]

SUSANNA QUASEM, Assistant Professor of Psychiatry

B.A. (Southern Adventist 1998); M.D. (Tennessee 2003) [2008]

ROBERT S. QUINN, Clinical Instructor in Medicine

B.A. (Yale 1971); M.D. (Vanderbilt 1975) [1980]

RAFAEL RADI, Adjunct Professor of Biochemistry

M.D., Ph.D. (Universidad de la Republica [Uruguay] 1988, 1991) [2009]

LISA E. RADIX, Assistant Clinical Professor of Medicine

M.D. (St. George University School of Medicine 1992) [2008]

STEPHEN PAUL RAFFANTI, Associate Professor of Medicine

A.B. (California, Berkeley 1975); M.D. (Genoa 1985) [1990]

PAUL W. RAGAN, Associate Professor of Psychiatry

B.A. (Dartmouth 1977); M.D. (Arizona 1981) [1997]

JENNIFER RAGSDALE, Clinical Instructor in Pediatrics

B.S. (Notre Dame 1992); M.D. (Tennessee, Memphis 1997) [2000]

AZIZUR RAHMAN, Assistant Clinical Professor of Ophthalmology and Visual Sciences B.S. (D. J. Science [Pakistan] 1971); M.D. (Dow Medical College [Pakistan] 1978) [2009]

S. M. JAMSHEDUR RAHMAN, Research Instructor in Medicine

B.Sc., M.Sc. (Dhaka [Bangladesh] 1980, 1981); Ph.D. (Nagoya [Japan] 1991) [2006]

DAVID S. RAIFORD, Professor of Medical Education and Administration; Professor of Medicine; Senior Associate Dean for Faculty Affairs, School of Medicine; Associate Vice Chancellor for Health Affairs

S.B. (Massachusetts Institute of Technology 1981); M.D. (Johns Hopkins 1985) [1991]

SATISH R. RAJ, Assistant Professor of Medicine; Assistant Professor of Pharmacology B.Sc. (Rensselaer Polytechnic Institute 1991); M.D. (Queen's [Canada] 1996); M.S.C.I. (Vanderbilt 2004) [2002]

VIDYA RAJ, Instructor in Clinical Psychiatry

B.Sc., M.B., Ch.B. (Victoria [U.K.] 1997, 2000) [2009]

DAYANIDHI RAMAN, Research Instructor in Cancer Biology

B.V.Sc. (Madras Veterinary College 1988) [2003]

JAMES A. RAMSEY, Assistant Professor of Clinical Anesthesiology

B.A. (North Carolina, Chapel Hill 1969); M.D. (Vanderbilt 1973) [2001]

LLOYD H. RAMSEY, Professor of Medicine, Emeritus

B.S. (Kentucky 1942); M.D. (Washington University 1950) [1953]

JOAN A. RANDALL, Assistant Professor of Medical Education and Administration

B.A. (Eastern Oregon State 1997); M.P.H. (Portland State 2001) [2008]

DEBRA S. RANKIN, Assistant Professor of Clinical Medicine

B.A. (Baylor 1987); M.D. (Temple 1992) [1996]

J. SCOTT RANKIN, Associate Clinical Professor of Cardiac Surgery

B.S. (Middle Tennessee State 1966); M.D. (Tennessee 1969) [1993]

TIMOTHY J. RANVAL, Assistant Clinical Professor of Surgery

B.S. (Michigan State 1974); M.S., M.D. (Louisville 1980, 1983) [1997]

GAUTAM G. RAO, Assistant Clinical Professor of Obstetrics and Gynecology

B.S., M.D. (Miami [Florida] 1995, 1997) [2005]

REENA RAO, Research Assistant Professor of Medicine

B.S. (Catholicate College [India] 1992); M.Sc. (Vector Control Research Center [India] 1994); M.Phil. (Kerala [India] 1996); Ph.D. (Central Food Technological Research Institute [India] 2001) [2005]

VIDYA RAO, Assistant Professor of Clinical Anesthesiology

M.D. (Bombay 1988) [2001]

STEPHANIE RASMUSSEN, Instructor in Clinical Anesthesiology

B.S. (Utah 2000); M.D. (St. George's 2005) [2009]

JUDITH RASSI, Associate Professor of Hearing and Speech Sciences, Emerita

B.S. (Illinois State 1961); M.S. (Northwestern 1963) [1990]

GILBERT W. RAULSTON, Assistant Clinical Professor of Psychiatry

B.S. (Southern Mississippi 1980); M.D. (Mississippi 1984) [1995]

LINDSAY M. RAUTH, Clinical Instructor in Pediatrics

B.A. (Virginia 1998); M.D. (Vanderbilt 2002) [2005]

MARY E. RAWN, Assistant Professor of Medical Education and Administration

B.A., M.A. (Arkansas 1983, 1985) [2006]

JENNIFER L. RAY, Clinical Instructor in Pediatrics

B.S. (Western Kentucky 1989); M.D. (Louisville 1994) [2005]

WAYNE A. RAY, Professor of Preventive Medicine; Director, Division of Pharmacoepidemiology B.S. (University of Washington 1971); M.S., Ph.D. (Vanderbilt 1974, 1981) [1974]

FRANCO MARIA RECCHIA, Associate Professor of Ophthalmology and Visual Sciences B.S. (Wayne State 1991); M.D. (Duke 1996) [2003]

CHURKU MOHAN REDDY, Clinical Professor of Pediatrics; Clinical Professor of Nursing M.B., B.S. (Osmania [India] 1966); P.P.C. [1995]

NISHITHA M. REDDY, Assistant Professor of Medicine

M.D. (Ambedkar Medical College [India] 1998) [2007]

RAHUL REDDY, Instructor in Ophthalmology and Visual Sciences

B.S. (Cincinnati 1996); M.D. (Medical University of Ohio 2003) [2009]

CHRISTINE L. REED, Clinical Instructor in Pediatrics

B.S. (Evangel 1999); M.D. (Eastern Virginia 2004) [2007]

PETER W. REED, Associate Professor of Pharmacology, Emeritus

B.A. (Syracuse 1961); Ph.D. (SUNY, Upstate Medical Center 1968) [1976]

JOHN JEFFREY REESE, Associate Professor of Pediatrics; Associate Professor of Cell and Developmental Biology

B.A., M.D. (Kansas 1982, 1987) [2002]

JUDITH J. REGAN, Associate Clinical Professor of Psychiatry B.S. (Western Kentucky 1975); M.D. (Louisville 1979); M.B.A. (Belmont 1998); J.D. (Nashville School of Law 2004) [1984] WILLIAM M. REGAN, Associate Clinical Professor of Psychiatry B.S., M.D. (Louisville 1978, 1982); J.D. (Nashville School of Law 2004) [2007] KRIS PARKS REHM, Assistant Professor of Pediatrics B.S. (Ohio 1994); M.D. (Northwestern 1998) [2002] TYLER REIMSCHISEL, Assistant Professor of Pediatrics; Assistant Professor of Neurology; Director, Division of Developmental Medicine; Member, Vanderbilt Kennedy Center for Research on Human Development B.A. (Chicago 1993); M.D. (Rush Medical College 1997) [2008] LOU REINISCH, Adjunct Associate Professor of Otolaryngology; Adjunct Associate Professor of Medicine B.S. (Missouri, Rolla 1976); M.S., Ph.D. (Illinois 1978, 1982) [2002] MICHAEL S. REMPLE, Research Assistant Professor of Neurological Surgery B.Sc. (Lethbridge [Canada] 2000); Ph.D. (Vanderbilt 2006) [2006] BRENT N. REXER, Instructor in Medicine B.S. (Baylor 1994); Ph.D., M.D. (Vanderbilt 2001, 2003) [2007] ALBERT B. REYNOLDS, Professor of Cancer Biology B.A. (Kenyon 1978); Ph.D. (Virginia 1985) [1996] MELISSA G. REYNOLDS, Clinical Instructor in Obstetrics and Gynecology B.S., M.D. (Indiana 1988, 1992) [1997] WHITNEY L. REYNOLDS, Assistant in Medicine B.S. (Tennessee, Martin 2003); M.S. (Bethel 2005) [2008] WILLIAM S. REYNOLDS, Instructor in Urologic Surgery A.B. (Princeton 1997); M.D. (Pennsylvania State 2003) [2009] MICHELLE L. REYZER, Research Assistant Professor of Biochemistry B.S. (William and Mary 1991); Ph.D. (Texas 2000) [2004] JULIE WANG REZK, Assistant Professor of Oral and Maxillofacial Surgery B.S. (Millsaps 1000); D.M.D. (Alabama, Birmingham 2006) [2008] KAREN H. RHEA, Assistant Clinical Professor of Psychiatry A.B. (King 1967); M.D. (North Carolina 1973) [1989] RACHEL M. RICAFORT, Clinical Instructor in Pediatrics B.S.N. (Vanderbilt 1988); M.D. (St. George's [Grenada] 1993) [2003] ELIZABETH ANN RICE, Assistant Professor of Medicine B.S. (Illinois 1990); M.D. (Indiana 1996) [2001] RON N. RICE, Clinical Instructor in Obstetrics and Gynecology B.S. (Austin Peav State 1968); M.D. (Vanderbilt 1972) [2003] TODD W. RICE, Assistant Professor of Medicine B.S. (Notre Dame 1993); M.D. (Indiana 1997); M.S.C.I. (Vanderbilt 2005) [2005] VALERIE MONTGOMERY RICE, Professor of Radiological Sciences at Meharry Medical College; Professor of Radiology and Radiological Sciences at Vanderbilt; Clinical Professor of Obstetrics and Gynecology B.S. (Georgia Institute of Technology 1983); M.D. (Harvard 1987) [2005] GLORIA RICHARD-DAVIS, Adjunct Professor of Obstetrics and Gynecology B.S. (Southern 1977); M.D. (Louisiana State 1982) [2008] BRUCE EARLE RICHARDS, Assistant Clinical Professor of Medicine B.S. (Rice 1978); M.D. (Vanderbilt 1982) [1992] SHERRIE A. RICHARDS, Clinical Instructor in Obstetrics and Gynecology B.S. (West Florida 1973); M.D. (Alabama, Birmingham 1982) [1987] WILLIAM O. RICHARDS, Adjunct Professor of Surgery

B.S. (Dickinson 1975); M.D. (Maryland 1979) [1987]

GREGORY P. RICHARDSON, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.S. (Western Kentucky 1985); D.M.D. (Louisville 1989) [1999]

MICHAEL G. RICHARDSON, Associate Professor of Anesthesiology; Director, Division of Multispecialty Anesthesiology

B.A. (Cornell 1985); M.D. (Chicago 1989) [2002]

THOMAS RAMSEY RICHARDSON, Assistant Professor of Medicine

B.S. (William and Mary 1991); M.D. (Virginia 1995) [2006]

ROBERT E. RICHIE, Professor of Surgery, Emeritus

B.S. (Kentucky 1955); M.D. (Vanderbilt 1959) [1971]

J. ANN RICHMOND, Ingram Professor of Cancer Research; Professor of Cancer Biology; Professor of Medicine; Professor of Cell and Developmental Biology; Assistant Dean for Biomedical Research, Education, and Training

B.S. (Northeast Louisiana 1966); M.N.S. (Louisiana State 1972); Ph.D. (Emory 1979) [1989]

TODD A. RICKETTS, Associate Professor of Hearing and Speech Sciences

B.A., M.A., Ph.D. (lowa 1989, 1991, 1995) [1999]

OTIS RICKMAN, Assistant Professor of Medicine; Assistant Professor of Thoracic Surgery B.S. (Oklahoma 1994); D.O. (Oklahoma State 1998) [2009]

DOUGLAS H. RIDDELL, Clinical Professor of Surgery, Emeritus

B.A. (Mississippi 1941); M.D. (Vanderbilt 1944) [1951]

WILLIAM R. RIDDLE, Research Assistant Professor of Radiology and Radiological Sciences; Member, Vanderbilt Kennedy Center for Research on Human Development

B.E. (Vanderbilt 1973); M.S. (Texas 1975); Ph.D. (Vanderbilt 1988) [1988]

DEREK A. RIEBAU, Assistant Professor of Neurology

B.S., M.D. (Wisconsin 1997, 2001) [2005]

BERNHARD RIEDEL, Professor of Anesthesiology

M.D. (Orange Free State [South Africa] 1987); Ph.D. (London 2006) [2008]

BRIAN D. RIEDEL, Associate Professor of Pediatrics

B.S. (Emory 1980); M.D. (Vanderbilt 1985); M.D. (Universidad Peruana 'Cayetano Heredia' [Peru] 2001) [1993]

MARK F. RIEDERER, Assistant Professor of Pediatrics

B.S., M.D. (Boston University 1997, 2001) [2008]

WILLIAM RUSSELL RIES, Professor of Otolaryngology; Carol and John S. Odess Professor of Facial, Plastic, and Reconstructive Surgery

B.S. (Southwestern at Memphis 1975); M.D. (Tennessee 1978) [1986]

HARRIS D. RILEY, JR., Professor of Pediatrics, Emeritus

B.A., M.D. (Vanderbilt 1945, 1948) [1991]

STEVEN T. RILEY, Assistant Professor of Clinical Pediatrics; Assistant Professor of Clinical Emergency Medicine

B.A. (Westminster 1987); M.D. (Missouri 1992) [1999]

WAYNE JOSEPH RILEY, Professor of Medicine at Vanderbilt; President, Meharry Medical College

B.A. (Yale 1981); M.P.H. (Tulane 1988); M.D. (Morehouse 1993); M.B.A. (Rice 2002) [2007]

SHERYL L. RIMRODT, Assistant Professor of Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Stanford 1986); M.D. (California, San Diego 1990) [2009]

WILLIAM P. RIORDAN, JR., Assistant Professor of Surgery

B.S. (Pennsylvania State 1990); M.S. (Pennsylvania 1993); M.D. (Kentucky 1999) [2005]

MARYLYN DERIGGI RITCHIE, Associate Professor of Molecular Physiology and Biophysics; Associate Professor of Biomedical Informatics

B.S. (Pittsburgh, Johnstown 1999); M.S., Ph.D. (Vanderbilt 2002, 2004) [2004]

CARMELO JOSEPH RIZZO, Professor of Chemistry; Professor of Biochemistry

B.S. (Temple 1984); Ph.D. (Pennsylvania 1990) [1992]

TIMOTHY R. ROADS, Associate Clinical Professor of Pediatrics

M.D. (Indiana 1978) [2005]

HOWARD B. ROBACK, Professor of Psychiatry (Clinical Psychology); Professor of Psychology, College of Arts and Science

B.A. (Case Western Reserve 1962); M.A. (Ohio 1964); Ph.D. (York [Canada] 1970) [1972]

CHRISTOPHER W. ROBB, Assistant Clinical Professor of Medicine

B.S. (Baylor 1994); Ph.D. (Texas 1999); M.D. (Texas Tech 2003) [2007]

AMY MCCONKEY ROBBINS, Adjunct Assistant Professor of Hearing and Speech Sciences B.S. (Hollins 1977); M.S. (Purdue 1979) [1999]

IVAN M. ROBBINS, Associate Professor of Medicine

B.A. (Brown 1981); M.D. (Case Western Reserve 1991) [1997]

JASON B. ROBBINS, Assistant Clinical Professor of Medicine

B.S., M.D. (Vanderbilt 1995, 1999) [2006]

MARK A. ROBBINS, Assistant Professor of Medicine

B.S. (Arkansas State 1987); M.D. (Mississippi 1993) [2006]

CLIFFORD F. ROBERSON, Assistant Clinical Professor of Psychiatry

A.B. (Columbia 1977); M.D. (Meharry Medical 1982) [1995]

L. JACKSON ROBERTS II, T. Edwin Rogers Professor of Pharmacology; Professor of Medicine; Investigator, Center for Molecular Neuroscience

B.A. (Cornell 1965); M.D. (Iowa 1969) [1977]

AMY C. ROBERTSON, Assistant Professor of Anesthesiology

B.S. (Marquette 1993); M.D. (Wisconsin 2002) [2006]

DAVID ROBERTSON, Elton Yates Professor of Autonomic Disorders; Professor of Medicine; Professor of Pharmacology; Professor of Neurology; Investigator, Center for Molecular Neuroscience

B.A., M.D. (Vanderbilt 1969, 1973) [1978]

ROSE M. ROBERTSON, Professor of Medicine; Professor of Obstetrics and Gynecology B.A. (Manhattanville 1966); M.D. (Harvard 1970) [1975]

DEBORAH W. ROBIN, Associate Professor of Medicine

B.A. (Pennsylvania 1976); M.D. (SUNY, Upstate Medical Center 1980) [1991]

PATRICIA F. ROBINSON, Associate Clinical Professor of Pediatrics

B.A. (Wake Forest 1975); M.D. (Pennsylvania 1979) [1982]

YVONNE D. ROBINSON, Assistant Clinical Professor of Pediatrics

B.S. (Kansas City 1994); M.D. (Kansas 1999) [2005]

LESLIE L. ROBISON, Adjunct Professor of Medicine

B.S. (California 1976); M.P.H., Ph.D. (Minnesota 1979, 1982) [2005]

VITO K. ROCCO, Assistant Clinical Professor of Medicine

B.S. (Saint John's University [New York] 1977); M.D. (Southern California 1981) [1988]

RICHARD E. ROCHESTER, Assistant Clinical Professor of Psychiatry

B.S. (Clemson 1980); M.D. (Vanderbilt 1984) [1994]

WILLIAM R. ROCHFORD, Director of Client and Community Relations, Medical Center; Associate in Medical Education and Administration

B.S. (Youngstown State 1969); M.P.H. (Pittsburgh 1975) [1992]

MICHAEL T. ROCK, Research Assistant Professor of Pediatrics

B.S., M.S. (East Tennessee State 1992, 1994); M.D. (Kentucky 1998) [2002]

STANLEY C. RODDY, JR., Assistant Clinical Professor of Oral and Maxillofacial Surgery D.M.D. (Kentucky 1970) [1975]

DAN M. RODEN, William Stokes Professor of Experimental Therapeutics; Professor of Medicine; Professor of Pharmacology; Director, Institute of Experimental Therapeutics; Investigator, Center for Molecular Neuroscience; Assistant Vice Chancellor for Personalized Medicine

B.Sc., M.D., C.M. (McGill 1970, 1974) [1981]

SCOTT M. RODGERS, Associate Dean for Medical Student Affairs; Associate Professor of Psychiatry; Associate Professor of Medical Education and Administration B.S. (Duke 1988); M.D. (Vanderbilt 1994) [2000]

JACQUELINE LEE RODIER, Clinical Instructor in Obstetrics and Gynecology A.B. (Cornell 1976); M.D. (Vanderbilt 1980) [1984]

ALICE L. RODRIGUEZ, Instructor in Pharmacology

B.S., Ph.D. (Illinois 1996, 2002) [2007]

ANNA WANG ROE, Associate Professor of Psychology, College of Arts and Science; Associate Professor of Radiology and Radiological Sciences; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Harvard 1984); Ph.D. (Massachusetts Institute of Technology 1991) [2003]

BAXTER P. ROGERS, Research Assistant Professor of Radiology and Radiological Sciences; Research Assistant Professor of Biomedical Engineering

B.Sci. (Furman 1998); M.S., Ph.D. (Wisconsin 2001, 2004) [2006]

JUDSON E. ROGERS, Associate Clinical Professor of Medicine

B.A., M.D. (Vanderbilt 1972, 1976) [1989]

KAREN S. ROGERS, Instructor in Emergency Medicine

B.S. (Nebraska, Lincoln 2001); M.D. (Vanderbilt 2006) [2009]

MEEJEON ROH, Research Instructor in Pathology

B.S., M.S. (Korea University 1991, 1993); Ph.D. (Alabama 2001) [2005]

JOHN PAUL ROHDE, Assistant Professor of Emergency Medicine B.A. (Hardin-Simmons 1994); M.D. (Texas 1999) [2004]

SARAH L. ROHDE, Instructor in Otolaryngology

B.A., M.D. (Virginia 2000, 2004) [2009] MARIO A. ROJAS, Associate Professor of Pediatrics

B.S. (Colegio Emmanuel d'Alzón [Colombia] 1973); M.D. (Bogotá [Colombia] 1980) [2003]

DANIEL ROKE, Assistant Professor of Anesthesiology

B.A. (St. Michael's 1988); M.D. (Vermont 1997) [2008]

JOSEPH T. E. ROLAND, Research Instructor in Surgery

B.S., Ph.D. (Illinois 1998, 2004) [2009]

LOUISE A. ROLLINS-SMITH, Associate Professor of Microbiology and Immunology; Assistant Professor of Pediatrics; Associate Professor of Biological Sciences B.A. (Hamline 1969); M.S., Ph.D. (Minnesota 1972, 1977) [1984]

MARY E. ROMANO, Assistant Professor of Pediatrics

B.A. (Dartmouth 1996), M.D. (St. George's 2001); M.P.H. (Florida International 2007)

KREIG D. ROOF, Adjunct Assistant Professor of Neurology

B.A. (Delaware 1981); M.S., Ph.D. (Pennsylvania State 1984, 1989) [2007]

FRANK J. ROSATO, Assistant Professor of Medical Education and Administration B.S. (Syracuse 1975) [1999]

JOHN DAVID ROSDEUTSCHER, Assistant Clinical Professor of Plastic Surgery; Assistant Clinical Professor of Otolaryngology

B.S., M.D. (Vanderbilt 1987, 1991) [2001]

KIMBERLY M. ROSDEUTSCHER, Clinical Instructor in Pediatrics

B.A. (Vanderbilt 1988); M.D. (Cincinnati 1994) [1998]

PAUL ALLEN ROSENBLATT, Adjunct Assistant Professor of Radiation Oncology B.A., M.D. (Vanderbilt 1973, 1977) [2005]

SAMUEL TRENT ROSENBLOOM, Assistant Professor of Biomedical Informatics; Assistant Professor of Medicine; Instructor in Clinical Nursing; Instructor in Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development B.A. (Northwestern 1992); M.D., M.P.H. (Vanderbilt 1996, 2001) [2001]

MARVIN J. ROSENBLUM, Associate Clinical Professor of Medicine

B.A. (Vanderbilt 1943); M.D. (Tennessee 1947) [1960]

MIA ALEXANDRA LEE ROSENFELD, Adjunct Assistant Professor of Hearing and Speech Sciences

B.A. (Georgia 1988); M.S. (Vanderbilt 1993); Ph.D. (Kentucky 2003) [2002]

SANDRA J. ROSENTHAL, Professor of Chemistry; Professor of Physics; Professor of

Pharmacology; Professor of Chemical and Biomolecular Engineering; Director,

Vanderbilt Institute for Nanoscale Science and Engineering

B.S. (Valparaiso 1987); Ph.D. (Chicago 1993) [1996]

JULIE ELIZABETH ROSOF-WILLIAMS, Assistant in Pediatrics

M.S.N. (Vanderbilt 1990); R.N. [1993]

JOHN DANFORTH ROSS, Assistant Professor of Radiology and Radiological Sciences

B.A. (Vanderbilt 1994); M.D. (Tennessee, Memphis 1999) [2005]

JOSEPH C. ROSS, Professor of Medicine, Emeritus; Associate Vice Chancellor for Health Affairs, Emeritus

B.S. (Kentucky 1950); M.D. (Vanderbilt 1954) [1979]

SUE ROSS, Associate in Pediatrics; Clinical Instructor in Nursing

B.S.N. (Tennessee, Memphis 1974); M.S.N. (Vanderbilt 1988); R.N. [1993]

TONY L. ROSS, Associate Professor of Clinical Family Medicine

B.S. (David Lipscomb 1977); M.D. (Louisville 1982) [2009]

ANNE TOMLINSON ROSSELL, Clinical Instructor in Obstetrics and Gynecology

B.S. (Vanderbilt 1999); M.D. (Georgetown 2005) [2009]

BRENT ROSSER, Assistant Clinical Professor of Pediatrics

B.S. (David Lipscomb 1996); M.D. (Tennessee 2000) [2008]

BRUCE J. ROTH, Paul V. Hamilton M.D. and Virginia E. Howd Professor of Urologic

Oncology; Professor of Medicine; Professor of Urologic Surgery

B.S. (Notre Dame 1976); M.D. (St. Louis 1980) [1999]

MACE L. ROTHENBERG, Clinical Professor of Medicine

B.A. (Pennsylvania 1978); M.D. (New York 1982) [1998]

ALICE M. ROTHMAN, Assistant Professor of Pediatrics

B.A. (Cornell 1992); M.P.H. (North Carolina 1996); M.D. (Duke 1997) [2002]

BRIAN S. ROTHMAN, Assistant Professor of Anesthesiology

B.B.A., M.D. (Cincinnati 1989, 2000) [2007]

RUSSELL LAWRENCE ROTHMAN, Assistant Professor of Medicine; Assistant Professor of Pediatrics

B.S., M.P.P., M.D. (Duke 1992, 1996, 1996) [2002]

JEFFREY N. ROTTMAN, Professor of Medicine

A.B. (Princeton 1976); M.A. (California, Berkeley 1977); M.D. (Columbia 1982) [1997]

CHRISTIANNE L. ROUMIE, Assistant Professor of Medicine; Assistant Professor of Pediatrics B.A. (Rutgers 1994); M.D. (New Jersey Medical School 1998); M.P.H. (Vanderbilt 2005) [2002]

BERNARD ROUSSEAU, Assistant Professor of Otolaryngology; Assistant Professor of Hearing and Speech Sciences

B.S., M.A. (Central Florida 1998, 2000); Ph.D. (Wisconsin 2004) [2005]

CAROL A. ROUZER, Research Professor of Biochemistry

B.A. (Western Maryland 1976); M.D. (Cornell 1983); Ph.D. (Rockefeller 1983) [2000]

BEN HARDIN ROWAN III, Assistant Professor of Clinical Medicine

B.E. (Vanderbilt 1989); M.D. (Tennessee, Memphis 2001) [2004]

GREGORY P. ROWBATHAM, Assistant Clinical Professor of Medicine

B.S., M.D. (Louisiana State 1991, 1995) [2002]

DEBORAH S. RUARK, Assistant Clinical Professor of Ophthalmology and Visual Sciences B.A., M.D. (Vanderbilt 1971, 1975) [1995]

DONALD H. RUBIN, Professor of Medicine; Professor of Microbiology and Immunology B.A. (SUNY, Stony Brook 1969); M.D. (Cornell 1974) [1992] ALICIA RUGGIERO, Research Instructor in Pharmacology B.S. (Quinnipiac 1996); M.A., Ph.D. (Johns Hopkins 1998, 2005) [2009] HENRY EARL RULEY, Professor of Microbiology and Immunology A.B. (Stanford 1974); Ph.D. (North Carolina 1980) [1992] PAUL J. RUMMO, Assistant Professor of Orthopaedics and Rehabilitation B.A. (St. Anselm 1990); D.O. (New England College of Osteopathy 1994) [2005] VICTORIA RAE RUNDUS, Instructor in Clinical Pediatrics B.S. (Houston 1991); M.D. (Texas, San Antonio 1999) [2003] MATTHEW PAUL RUPERT, Assistant Professor of Clinical Anesthesiology B.S., M.S. (Cincinnati 1995, 1998); M.D. (Texas Tech 2000) [2007] CHARLES B. RUSH, Assistant Professor of Obstetrics and Gynecology B.A. (Northwestern 1979); M.D. (Cincinnati 1984) [1988] MARGARET G. RUSH, Assistant Professor of Pediatrics; Chief of Staff, Monroe Carell Jr. Children's Hospital at Vanderbilt B.A. (DePauw 1980); M.D. (Cincinnati 1984) [1989] STEPHAN EDWARD RUSS, Assistant Professor of Emergency Medicine B.S. (Tennessee, Knoxville 1997); M.D. (Tennessee, Memphis 2003) [2006] HENRY P. RUSSELL, Assistant Professor of Clinical Surgery B.S. (U.S. Military Academy 1969); M.D. (Tennessee 1978) [2006] PAUL T. RUSSELL III, Assistant Professor of Otolaryngology; Assistant Professor of Neurological Surgery B.S. (Vanderbilt 1992); M.D. (Texas Tech 1997) [2004] SHIRLEY BRODY RUSSELL, Research Assistant Professor of Medicine B.A. (Rochester 1962); Ph.D. (Wisconsin, Madison 1969) [2006] WILLIAM EVANS RUSSELL, Professor of Pediatrics; Professor of Cell and Developmental Biology; Director, Division of Pediatric Endocrinology B.S. (Michigan 1972); M.D. (Harvard 1976) [1990] WILLIAM L. RUSSELL, Adjunct Professor of Surgery B.S. (Delta State 1964); M.D. (Arkansas 1969) [2006] CSABA RUSZNAK, Assistant Clinical Professor of Medicine M.D. (Medical University of Debrecen 1985); Ph.D., D.Sc. (Hungarian Academy of Science 1994, 2001) [2006] SEAN P. RYAN, Assistant Clinical Professor of Medicine B.S., M.D. (Emory 1990, 1994) [2001] SERGEY V. RYZHOV, Research Assistant Professor of Medicine M.D., Ph.D. (Siberian State Medical 1995, 1999) [2004] PABLO J. SAAVEDRA, Assistant Professor of Medicine B.S., M.D. (Case Western Reserve 1988, 1996) [2005] GLYNIS A. SACKS-SANDLER, Associate Professor of Clinical Radiology and Radiological Sciences; Associate Professor of Clinical Obstetrics and Gynecology M.D. (Witwatersrand [South Africa] 1978) [2003] SHANMUGA LAKSHMI SADAGOPAL, Research Instructor in Medicine B.Sc., M.Sc. (Madras [India] 1994, 1996); Ph.D. (Madurai Kamaraj [India] 2002) [2008] ASHOK SAHA, Adjunct Assistant Professor of Anesthesiology M.B.B.S. (Dhaka Medical College 1975); M.D. (Shiraz 1981) [2007] VIKRANT V. SAHASRABUDDHE, Assistant Professor of Pediatrics M.B.B.S. (Pune [India] 1999); M.P.H., Dr.P.H. (Alabama 2003, 2006) [2005] JIQING SAI, Research Assistant Professor of Cancer Biology

B.S. (Anhui Agricultural [China] 1984); M.S. (Beijing Agricultural 1990); Ph.D.

(Vanderbilt 2000) [2004]

NAHEL N. SAIED, Associate Professor of Clinical Anesthesiology

M.B.B.Ch. (Zagazig [Egypt] 1988) [2009]

KENNETH J. SALLENG, Assistant Professor of Pathology

B.A. (Berea 1987); D.V.M. (Missouri, Columbia 1992) [2006]

JOSEPH GEORGE SALLOUM, Assistant Professor of Medicine

B.S., M.D. (American University of Beirut 1992, 1996) [2005]

RONALD M. SALOMON, Associate Professor of Psychiatry; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Massachusetts Institute of Technology 1976); M.D. (Liège [Belgium] 1983) [1995]

SUSAN E. SAMARAS, Research Instructor in Pathology

B.S. (Illinois 1984); Ph.D. (Pennsylvania State 1994) [2005]

STEVEN W. SAMOYA, Assistant Professor of Anesthesiology

B.S. (Florida State 1996); M.D. (Toledo 2002) [2007]

UCHECHUKWU K. A. SAMPSON, Assistant Professor of Medicine at Meharry Medical College; Assistant Professor of Medicine at Vanderbilt

M.B.B.S. (Ibadan [Nigeria] 1994); M.P.H. (Robert Wood Johnson 1998); M.Sc. (Oxford [England] 2004) [2007]

DAVID CHARLES SAMUELS, Associate Professor of Molecular Physiology and Biophysics B.A. (University of Washington 1983); Ph.D. (Oregon 1990) [2009]

OTTO A. SANCHEZ, Instructor in Radiology and Radiological Sciences

M.D. (Universidad de Oriente [Venezuela] 1989); Ph.D. (Minnesota 2004) [2008]

CHARLES R. SANDERS II, Professor of Biochemistry; Investigator, Center for Molecular Neuroscience

B.S. (Milligan 1983); Ph.D. (Ohio State 1988) [2002]

DAN S. SANDERS III, Associate Clinical Professor of Pediatrics; Associate Clinical Professor of Medicine

B.S. (Kentucky 1974); M.D. (Vanderbilt 1978) [1983]

KEVIN SANDERS, Assistant Professor of Psychiatry; Assistant Professor of Pediatrics B.S., M.D. (Tennessee 1993, 1997) [2009]

MELINDA E. SANDERS, Assistant Professor of Pathology

B.S. (Duke 1989); M.D. (Jefferson Medical 1995) [2001]

NEAL W. SANDERS, Assistant in Anesthesiology

B.S. (Arkansas State 1989); M.S., Ph.D. (Vanderbilt 1994, 2000) [2002]

ROBERT S. SANDERS, Assistant Clinical Professor of Pediatrics; Assistant Clinical Professor of Preventive Medicine

B.A., M.D. (Vanderbilt 1952, 1955) [2006]

ELAINE SANDERS-BUSH, Professor of Pharmacology; Professor of Psychiatry; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience

B.S. (Western Kentucky 1962); Ph.D. (Vanderbilt 1967) [1968]

ROBIN ELIZABETH SANDIDGE, Clinical Instructor in Obstetrics and Gynecology B.S. in Ch.E., M.D. (Alabama 1983, 1987) [1991]

MARTIN P. SANDLER, Professor of Radiology and Radiological Sciences; Professor of Medicine

M.B., Ch.B. (Cape Town 1972) [1983]

E. GLENN SANFORD, Clinical Instructor in Ophthalmology and Visual Sciences B.S. (United States Military Academy 1987); M.D. (F. Edward Hébert School of Medicine 1996) [2007]

MAUREEN SHAGENA SANGER, Assistant Professor of Pediatrics

B.A. (Notre Dame 1982); M.S., Ph.D. (Vanderbilt 1985, 1988) [2007]

HIDETO SANO, Research Assistant Professor of Medicine

B.Sc., M.Sc. (Mie [Japan] 1994, 1996); Ph.D. (Kyoto Graduate School of Medicine [Japan] 2001) [2008]

SAMUEL ANDREW SANTORO, Dorothy B. and Theodore R. Austin Professor of Pathology and Chair of the Department; Professor of Biochemistry

B.S. (Emory 1972); M.D., Ph.D. (Vanderbilt 1979, 1979) [2003]

REBECCA M. SAPPINGTON, Assistant Professor of Ophthalmology and Visual Sciences; Assistant Professor of Pharmacology

B.S. (Washington College 2000); M.S., Ph.D. (Rochester 2003, 2004) [2009]

ROCHELL LEE SASSE, Assistant in Urologic Surgery

M.S. (Vanderbilt 2007) [2008]

ELIZABETH ANN SASTRE, Assistant Professor of Medicine

B.S., B.A. (Stetson 1996, 1996); M.D. (Florida 2001) [2005]

NILA A. SATHE, Librarian, Eskind Biomedical Library; Adjunct Instructor in Biomedical Informatics

B.A. (Furman 1993); M.A., M.L.I.S. (South Carolina 1997) [1997]

MOHANAKRISHNA SATHYAMOORTHY, Assistant Clinical Professor of Medicine

B.S., M.S.E. (Johns Hopkins 1993, 1995); M.D. (SUNY, Stony Brook 2001) [2007]

CHRISTINE SAUNDERS, Research Associate Professor of Pharmacology

B.A. (Franklin and Marshall 1988); Ph.D. (Philadelphia College of Pharmacy 1994) [2002]

KEVIN J. SAUNDERS, Assistant Professor of Clinical Anesthesiology

B.A. (Georgia State 1990); M.D. (American University of the Caribbean 1998) [2004]

BIPIN N. SAVANI, Assistant Professor of Medicine

M.D. (B. J. Medical College [India] 1987) [2007]

BENJAMIN R. SAVILLE, Assistant Professor of Biostatistics

B.S. (Brigham Young 2002); M.S., Ph.D. (North Carolina 2004, 2008) [2008]

DOUGLAS B. SAWYER, Lisa R. Jacobson Associate Professor of Medicine

B.S., Ph.D., M.D. (Cornell 1984, 1990, 1991) [2006]

JOHN L. SAWYERS, Professor of Surgery, Emeritus

B.A. (Rochester 1946); M.D. (Johns Hopkins 1949) [1960]

RISHI K. SAXENA, Assistant Clinical Professor of Medicine

M.D. (Post Graduate Medical Institute 1983) [2005]

ANDREW E. SCANGA, Assistant Professor of Medicine

B.S., M.D. (North Carolina 1997, 2002) [2009]

HARRIETTE MILES SCARPERO, Associate Professor of Urologic Surgery

B.A. (University of the South 1988); M.D. (Louisiana State 1995) [2002]

HEIDI MAREE SCHAEFER, Assistant Professor of Medicine

B.S., M.D. (Cincinnati 1994, 1998) [2004]

WILLIAM SCHAFFNER, Professor of Preventive Medicine and Chair of the Department; Professor of Medicine

B.S. (Yale 1957); M.D. (Cornell 1962) [1969]

STACEY A. SCHEIB, Assistant Professor of Obstetrics and Gynecology

B.S. (Vanderbilt 2000); M.D. (Drexel 2004) [2009]

TERIS K. SCHERY, Research Professor of Hearing and Speech Sciences

A.B., M.A. (Stanford 1965, 1966); Ph.D. (Claremont 1980) [1992]

LAWRENCE A. SCHEVING, Research Associate Professor of Pediatrics

A.B. (Brown 1976); M.D. (Arkansas 1984) [1991]

KEVIN L. SCHEY, Professor of Biochemistry; Professor of Ophthalmology and Visual Sciences B.S. (Muhlenberg 1984); Ph.D. (Purdue 1989) [2008]

MICHELLE SCHIERLING, Clinical Instructor in Emergency Medicine B.S., M.D. (Kansas 1996, 2004) [2008]

JONATHAN SCOTT SCHILDCROUT, Assistant Professor of Biostatistics; Assistant Professor of Anesthesiology

B.S. (Indiana 1994); M.S. (North Carolina 1996); Ph.D. (University of Washington 2004) [2004]

AMY E. SCHINDLER. Instructor in Medicine

B.A. (Rice 2002); M.D. (Texas Southwestern 2006) [2009]

NICOLE L. SCHLECHTER, Clinical Instructor in Obstetrics and Gynecology

A.B., Ph.D. (California, Berkeley 1983, 1987); M.D. (Vanderbilt 1990) [1994]

DAVID G. SCHLUNDT, Associate Professor of Psychology, College of Arts and Science; Assistant Professor of Medicine

A.B. (Indiana 1976); M.S. (Wisconsin 1979); Ph.D. (Indiana 1982) [1985]

BARBARA SCHNEIDER, Research Professor of Medicine

B.S. (Baylor 1971); M.A., Ph.D. (Texas, San Antonio 1975, 1989) [2005]

CLAUS SCHNEIDER, Assistant Professor of Pharmacology

B.A., Ph.D. (Würzburg [Germany] 1987, 1996) [2001]

RICHARD P. SCHNEIDER, Associate Professor of Medicine

B.A. (Emory 1963); M.D. (Columbia 1967) [1973]

SANDRA L. SCHNEIDER, Associate Professor of Hearing and Speech Sciences; Assistant Professor of Neurology

B.S. (Western Michigan 1974); M.S. (Vanderbilt 1976); Ph.D. (Northwestern 1996) [2006] JOHN F. SCHNELLE, Paul V. Hamilton M.D. Professor of Geriatrics; Professor of Medicine

B.A. (Hanover College 1966); Ph.D. (Tennessee, Knoxville 1970) [2006]

NATHALIE C. SCHNETZ-BOUTARD, Research Instructor in Molecular Physiology and Biophysics

B.Maitrise, D.E.A., Ph.D. (Louis Pasteur 1989, 1990, 1994) [2007]

JONATHAN G. SCHOENECKER, Assistant Professor of Orthopaedics and Rehabilitation;

Assistant Professor of Pediatrics; Assistant Professor of Pharmacology

B.A. (Middlebury College 1996); Ph.D., M.D. (Duke 2002, 2003) [2009]

HAL C. SCHOFIELD, Assistant Clinical Professor of Psychiatry

B.A. (Brigham Young 1986); M.D. (Texas, San Antonio 1994) [1998]

SETH J. SCHOLER, Associate Professor of Pediatrics

B.A., M.D., M.S. (Indiana 1985, 1989, 1994) [1995]

C. MELANIE SCHUELE, Assistant Professor of Hearing and Speech Sciences; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.S.Ed. (Miami 1981); M.A. (Texas 1985); Ph.D. (Kansas 1995) [2002]

FRIEDRICH G. SCHUENING, Professor of Medicine; Ingram Professor of Cancer Research B.S. (Mainz [Germany] 1968); M.D. (Hamburg 1976) [1999]

KATHARINE N. SCHULL, Clinical Instructor in Pediatrics

B.S., M.D. (Alabama 1981, 1985) [1997]

BRENDA A. SCHULMAN, Adjunct Associate Professor of Biochemistry

B.A. (Johns Hopkins 1989); Ph.D. (Massachusetts Institute of Technology 1996) [2007]

GERALD SCHULMAN, Professor of Medicine

B.A. (SUNY, Buffalo 1973); M.D. (New York 1977) [1988]

STEPHEN J. SCHULTENOVER, Associate Professor of Pathology

B.A. (Saint John's [Minnesota] 1968); M.D. (Minnesota 1972) [1984]

STEPHANIE L. SCHULTZ, Assistant Clinical Professor of Pediatrics

B.S. (Smith 1991); M.D. (Pennsylvania 1995) [2005]

MITCHELL K. SCHWABER, Clinical Associate in Otolaryngology at Monroe Carell Jr. Children's Hospital at Vanderbilt

B.S. (Mercer 1971); M.D. (Baylor 1975) [2004]

DAVID ALAN SCHWARTZ, Associate Clinical Professor of Pathology

B.A., M.S.H. (Pittsburgh 1974, 1977); M.D. (Far Eastern [Philippines] 1984) [2006]

DAVID ALLEN SCHWARTZ, Associate Professor of Medicine

B.A. (Pennsylvania 1990); M.D. (Meharry Medical 1995) [2002]

GARY R. SCHWARTZ, Assistant Professor of Emergency Medicine; Assistant Professor of Pediatrics

B.S. (Emory 1980); M.D. (Morehouse 1985) [1991]

HERBERT S. SCHWARTZ, Professor of Orthopaedics and Rehabilitation and Chair of the Department; Professor of Pathology; Director, Division of Musculoskeletal Oncology B.S. (Illinois, Chicago Circle 1977); M.D. (Chicago 1981) [1987]

CAROL R. SCOTT, Assistant in Medicine

B.S. (Tennessee 1992); M.S.N. (Vanderbilt 1996) [2007]

JOHN DOUGLAS SCOTT, Instructor in Clinical Medicine

B.A. (Harding 1988); M.D. (Tennessee, Memphis 1993) [2001]

SHALI RICKER SCOTT, Clinical Instructor in Obstetrics and Gynecology

B.A., M.D. (Tennessee 1989, 1993) [1997]

CLARK A. SCOVEL, Associate Professor of Clinical Anesthesiology

B.A. (Augustana 1989); M.D. (Minnesota 1993) [2000]

JENNIFER A. SCROGGIE, Assistant Professor of Psychiatry

B.A., Diploma in Nursing (Monash [Australia] 1977, 1981); B.S.N. (Belmont 1994);

M.S.N. (Vanderbilt 1997); R.N., C.S. [2000]

LINDA SEALY, Associate Professor of Molecular Physiology and Biophysics; Associate Professor of Cell and Developmental Biology; Associate Professor of Cancer Biology B.A. (Illinois Wesleyan 1976); Ph.D. (Iowa 1980) [1986]

CHARLES M. SEAMENS, Assistant Professor of Emergency Medicine

B.S., M.D. (Georgetown 1981, 1985) [1992]

JENNIFER B. SEAWELL, Clinical Instructor in Pediatrics

B.S., M.D. (Louisiana State 1998, 2002) [2005]

ERIC SEBZDA, Assistant Professor of Microbiology and Immunology

B.Sc., Ph.D. (Toronto 1992, 1998) [2007]

ADAM SEEGMILLER, Assistant Professor of Pathology

B.S. (Utah 1997); M.D., Ph.D. (Texas Southwestern 2004, 2004) [2009]

JAYNE M. SEEKINS, Instructor in Radiology and Radiological Sciences

B.A. (Union College 1997); D.O. (University of New England College of Osteopathic Medicine 2001) [2008]

ERIN H. SEELEY, Research Instructor in Biochemistry

B.S. (Pennsylvania State 1996); Ph.D. (Purdue 2005) [2006]

NEIL E. SEETHALER, Clinical Instructor in Pediatrics

B.A. (Pennsylvania 1992); M.D. (Vanderbilt 1996) [2003]

DONNA L. SEGER, Associate Professor of Clinical Medicine; Associate Professor of Emergency Medicine

B.S., M.D. (North Dakota 1975, 1977) [1988]

JOHN W. SEIBERT, Assistant Professor of Otolaryngology

B.S. (Vanderbilt 1994); M.A., M.D. (Arkansas 1997, 2001) [2009]

SANDRA S. SEIDEL, Assistant Professor of Psychiatry; Assistant Professor of Clinical Nursing B.S.N. (South Dakota State 1987); M.S.N. (Vanderbilt 1992); R.N., C.S. [1994]

DOUGLAS L. SEIDNER, Associate Professor of Medicine

B.S. (SUNY 1979); M.D. (SUNY, Upstate Medical Center 1983) [2008]

DEBRA S. SELBY, Adjunct Assistant Professor of Pediatrics

B.A., M.D. (West Virginia 1983, 1987) [2007]

JOHN H. SELBY, Professor of Clinical Anesthesiology; Professor of Clinical Surgery B.A. (Texas Tech 1969); M.D. (Texas Southwestern 1969); J.D. (Mississippi School of Law 2000) [2007]

WESLEY H. SELF, Assistant Professor of Emergency Medicine

B.S. (Davidson College 2001); M.D. (Virginia 2005) [2009]

SARAH H. SELL, Professor of Pediatrics, Emerita

B.A. (Berea 1934); M.S., M.D. (Vanderbilt 1938, 1948) [1954]

SAMUEL RILEY SELLS III, Assistant Professor of Psychiatry

B.S., M.D. (East Tennessee State 1978, 1986) [1990]

SALYKA SENGSAYADETH, Instructor in Clinical Medicine

B.A., M.D. (East Tennessee State 2002, 2006) [2009]

GREGORY C. SEPHEL, Associate Professor of Pathology

B.S. (California, Irvine 1973); Ph.D. (Utah 1986) [1988]

WILLIAM E. SERAFIN, Assistant Professor of Clinical Medicine

B.S. (Middle Tennessee State 1975); M.D. (Vanderbilt 1979) [1984]

JOHN S. SERGENT, Professor of Medicine and Vice Chair for Education, Department of Medicine

B.A., M.D. (Vanderbilt 1963, 1966) [1975]

SHANNON E. SERIE, Assistant Professor of Clinical Medicine

B.S. (Wake Forest 1997); M.D. (Tennessee 2001) [2007]

ROBERT A. SEWELL, Associate Clinical Professor of Urologic Surgery

B.S. (Duke 1964); M.D. (Vanderbilt 1968) [1977]

DAVID P. SEXTON, Assistant in Molecular Physioloy and Biophysics

B.S. (Arizona 1993); M.S. (Phoenix 2001) [2009]

R. BRUCE SHACK, Professor of Plastic Surgery and Chair of the Department; Clinical Professor of Nursing

B.S. (Midwestern 1969); M.D. (Texas, Galveston 1973) [1982]

CLAUDE E. SHACKELFORD, Assistant Professor of Clinical Family Medicine

B.A. (Harvard 1995); M.D. (Alabama 2000) [2008]

MAX ISRAEL SHAFF, Associate Professor of Radiology and Radiological Sciences M.D. (Witwatersrand 1961) [1980]

DAVID SHAFFER, Professor of Surgery; Director, Division of Kidney and Pancreas Transplantation

B.A. (Yale 1978); M.D. (Columbia 1982) [2001]

MALEE V. SHAH, Assistant Professor of Pediatrics; Assistant Professor of Emergency Medicine

M.D. (Medical University of Silesia [Poland] 2001) [2009]

TODD S. SHANKS, Instructor in Clinical Neurological Surgery

B.S. (Tennessee, Martin 1993); M.S., M.D. (Louisville 1998, 2002) [2009]

STEVEN S. SHARFSTEIN, Adjunct Professor of Psychiatry

B.A. (Dartmouth 1964); M.P.A. (Harvard 1973); M.D. (Albert Einstein 1988) [2008]

ADRIJA SHARMA, Research Instructor in Neurological Surgery

B.E. (Jadavpur [India] 1999); M.S., Ph.D. (Tennessee 2005, 2008) [2009]

KENNETH W. SHARP, Professor of Surgery; Director, Division of General Surgery B.S. (Florida 1973); M.D. (Johns Hopkins 1977) [1984]

DERON V. SHARPE, Assistant Clinical Professor of Neurology

B.S., M.D. (Missouri, Columbia 1994, 1998) [2007]

JOHN H. SHATZER, JR., Associate Professor of Medical Education and Administration; Director, Center for Experimental Learning and Assessment

B.A. (Evansville 1967); M.S. (Indiana University 1969); Ph.D. (Illinois 1991) [2005]

JOHN K. SHEA, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.S. (Bradley 1982); D.M.D. (Southern Illinois 1986) [2009]

JONATHAN SHEEHAN, Research Instructor in Biochemistry

A.B. (Harvard 1988); Ph.D. (Vanderbilt 2006) [2009]

JAMES R. SHELLER, Professor of Medicine

B.A. (University of the South 1967); M.D. (Vanderbilt 1973); M.A. (Oxford 1975) [1981]

RICHARD C. SHELTON, James G. Blakemore Research Professor of Psychiatry; Professor of Pharmacology; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience; Director, Division of Adult Psychiatry

B.S. (East Tennessee State 1975); M.D. (Louisville 1979) [1985]

ELLEN G. SHEMANCIK, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.A. (Illinois Weslevan 1985); D.M.D. (Southern Illinois 1989) [1999]

JIN-HUI SHEN, Research Assistant Professor of Ophthalmology and Visual Sciences B.Sc., M.Sc. (Tianjin 1984, 1987); Ph.D. (Shanghai Institute of Optics and Fine Mechanics 1991) [1995]

JAYANT P. SHENAI, Professor of Pediatrics

M.B., B.S., M.D. (Bombay 1968, 1972) [1978]

BRYAN E. SHEPHERD, Assistant Professor of Biostatistics

B.S. (Brigham Young 1999); M.D., Ph.D. (University of Washington 2001, 2005) [2005]

KIMBEL D. SHEPHERD, Clinical Instructor in Pediatrics

M.S. (Mississippi State 1992); M.D. (Mississippi 1996) [2004]

MARTHA ELLEN SHEPHERD, Instructor in Clinical Family Medicine

B.S. (Tennessee, Martin 1997); M.D. (Kansas City 2001) [2008]

VIRGINIA L. SHEPHERD, Professor of Pathology; Associate Professor of Biochemistry; Professor of Medicine

B.S., M.S., Ph.D. (lowa 1970, 1972, 1975) [1988]

DEBORAH D. SHERMAN, Assistant Clinical Professor of Ophthalmology and Visual Sciences B.S. (Baylor 1982); M.D. (East Tennessee State 1986) [1991]

MICHAEL HENRY SHERMAN, Assistant Professor of Psychiatry

B.S. (Colorado State 1972); M.D. (Colorado 1976) [1990]

SHASHIREKHA K. SHETTY, Clinical Instructor in Pediatrics

M.B.B.S. (Mysore [India] 1994) [2008]

BIH-HWA SHIEH, Associate Professor of Pharmacology and Vice Chair of the Department; Investigator, Center for Molecular Neuroscience

B.S., M.S. (National Taiwan 1979, 1981); Ph.D. (SUNY, Stony Brook 1986) [1991]

JOHN SHIELDS, Assistant in Anesthesiology

B.S. (Tennessee 1980); B.S.N. (Austin Peay State 1982); C.R.N.A. [2002]

KIMBERLY S. SHIMER, Assistant Professor of Clinical Pediatrics

B.S., M.D. (Marshall 1995, 2000) [2006]

ANDREW ALAN SHINAR, Assistant Professor of Orthopaedics and Rehabilitation B.A.S. (Stanford 1984); M.D. (Columbia 1988) [2001]

AYUMI KAMINA SHINTANI, Associate Professor of Biostatistics; Research Assistant Professor of Medicine

B.S. (Nara Women's [Japan] 1991); M.P.H., M.S., Ph.D. (Yale 1996, 1999, 2000) [2001]

MASAKAZU SHIOTA, Assistant Professor of Molecular Physiology and Biophysics B.Vet. (Rakuno Gakuen [Japan] 1976); D.V.M. (Ministry of Agriculture and Forestry of Japan 1976); M.Agr., Ph.D. (Osaka Prefecture 1978, 1987) [1996]

JASON L. SHIPMAN, Instructor in Clinical Emergency Medicine

B.S., M.S., M.D. (Oklahoma 1994, 1997, 2001) [2009]

IRA A. SHIVITZ, Assistant Clinical Professor of Ophthalmology and Visual Sciences B.A. (SUNY, Buffalo 1974); M.D. (Vanderbilt 1978) [1995]

MARTHA JANE SHRUBSOLE, Assistant Professor of Medicine

B.S. (Cedarville 1996); M.S. (Ohio State 1998); Ph.D. (South Carolina 2001) [2004] XIAO OU SHU, Professor of Medicine

M.D., M.P.H. (Shanghai Medical University 1984, 1987); Ph.D. (Columbia 1993) [2000]

HARRISON J. SHULL, JR., Associate Clinical Professor of Medicine

B.S. (Vanderbilt 1966); M.D. (Tennessee 1970) [1977]

EDWARD K. SHULTZ, Associate Professor of Biomedical Informatics; Associate Professor of Pathology

B.S. (Oregon 1975); M.D. (Yale 1979); M.S. (Minnesota 1984) [1997]

THOMAS F. SHULTZ, Assistant Professor of Clinical Anesthesiology

B.S., M.S.E. (Cornell 1971, 1972); M.D. (St. Louis 1977) [2004]

DEXTER W. SHURNEY, Assistant Professor of Clinical Medicine

B.S. (Loma Linda 1983); M.B.A. (Mercy College 1990); M.D. (Howard 1997); M.P.H. (Medical College of Wisconsin 1999) [2009]

YU SHYR, Professor of Biostatistics; Ingram Professor of Cancer Research

B.B. (Tamkang [Taiwan] 1985); M.S. (Michigan State 1989); Ph.D. (Michigan 1994) [1994] GHODRAT A. SIAMI, Professor of Medicine

B.S. (Tehran Military College 1952); M.D. (University of Tehran Medical School 1955); Ph.D. (Vanderbilt 1971) [1983]

LIVIU SICINSCHI, Research Assistant Professor of Medicine

M.D. (State Medical and Pharmacy [Moldova] 1981); D.M.Sc. (Sechenov Moscow Medical Academy 1984); Ph.D. (Institute of Microbiology of the Academy of Sciences [Moldova] 1997) [2005]

JANE M. SIEGEL, Adjunct Assistant Professor of Orthopaedics and Rehabilitation B.S. (SUNY, Binghamton 1984); M.D. (Vanderbilt 1988) [2003]

VIVIAN SIEGEL, Research Professor of Medicine; Research Professor of Cell and Developmental Biology

A.B. (Bowdoin 1981); Ph.D. (California, San Francisco 1987) [2006]

RIGOBERTO L. SIERRA-ANDERSON, Assistant Professor of Clinical Anesthesiology B.S. (Georgia State 2000); M.D. (Medical College of Georgia 2004) [2008]

NICHOLAS SIEVEKING, Associate Clinical Professor of Psychiatry

B.A. (Bellarmine 1962); M.A., Ph.D. (Illinois 1965, 1969) [1988]

EDWARD D. SIEW, Instructor in Medicine

B.A. (Johns Hopkins 1995); M.D. (Chicago 1999) [2005]

LISA BETH SIGNORELLO, Assistant Professor of Medicine

B.S. (Pennsylvania 1990); Sc.M., Sc.D. (Harvard 1996, 1998) [2000]

MOHAMMED SIKA, Research Associate Professor of Medicine

Licence (Institut National Agronomique et Vétérinaire Hassan II 1979); M.S. (Minnesota 1981); Ph.D. (Illinois 1991) [1992]

ALLEN K. SILLS, Associate Professor of Neurological Surgery

B.S. (Mississippi 1986); M.D. (Johns Hopkins 1990) [2009]

HEIDI J. SILVER, Research Assistant Professor of Medicine

B.S. (Massachusetts 1977); M.S., Ph.D. (Florida International 1991, 2001) [2003]

HENRY CLIFTON SIMMONS III, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.S. (Tennessee, Nashville 1971); D.D.S. (Tennessee 1977) [1993]

JILL H. SIMMONS, Assistant Professor of Pediatrics

B.A. (Tennessee, Knoxville 1995); M.D. (Tennessee, Memphis 2000) [2006]

SANDRA F. SIMMONS, Associate Professor of Medicine

B.A., M.A. (Middle Tennessee State 1989, 1991); Ph.D. (Pennsylvania State 1998) [2006]

JEAN F. SIMPSON, Professor of Pathology; Director, Division of Anatomic Pathology B.S. (Columbus 1979); M.D. (Medical College of Georgia 1983) [1990]

LUCIEN C. SIMPSON, Clinical Instructor in Medicine

B.A. (David Lipscomb 1969); M.D. (Washington University 1973) [1978]

ROBERT J. SINARD, Associate Professor of Otolaryngology

A.B. (Harvard 1985); M.D. (Michigan 1989) [2005]

ROBBIN B. SINATRA, Assistant Professor of Ophthalmology and Visual Sciences; Assistant Professor of Pediatrics (On leave)

B.A. (Allegheny 1984); M.D. (Vanderbilt 1988) [1994]

ROBERT J. SINGER, Assistant Professor of Neurological Surgery; Assistant Professor of Radiology and Radiological Sciences

B.S. (Iowa 1986); M.D. (Nebraska 1992) [2009]

AMAR B. SINGH, Assistant Professor of Surgery

B.S., M.S. (Gorakhpur [India] 1983, 1986); Ph.D. (Banaras Hindu [India] 1994) [2002]

KAVITA SINGH, Clinical Instructor in Pediatrics

B.A., M.D. (Brown 1998, 2002) [2007]

NARENDRA K. SINGH, Assistant Professor of Orthopaedics and Rehabilitation

B.S. (Central Collegiate Institute [Canada] 1976); M.P.H. (Regina [Canada] 1978); M.D. (Saskatchewan [Canada] 1983) [2007]

PRADUMNA PRATAP SINGH, Assistant Professor of Neurology at Meharry Medical College; Assistant Professor of Neurology at Vanderbilt

M.B.,B.S. (Sawai Man Singh Medical College [India] 1986) [2004]

SUDHA P. SINGH, Assistant Professor of Radiology and Radiological Sciences; Assistant Professor of Pediatrics

M.D. (Sawai Man Slngh Medical College [India] 1987) [2002]

CHASIDY DIONNE SINGLETON, Assistant Professor of Surgery at Meharry Medical College; Assistant Professor of Ophthalmology and Visual Sciences at Vanderbilt

B.S., M.D. (Vanderbilt 1995, 1999) [2003]

JENNIFER DELANE SINGLETON-ASHWORTH, Instructor in Clinical Pediatrics B.S. (Vanderbilt 1992); M.D. (Alabama 1997) [2000]

CATHERINE A. SIPE, Clinical Instructor in Pediatrics

B.S. (Duke 1997); M.D. (Wake Forest 2002) [2005]

MARCY ANN SIPES, Assistant Professor of Hearing and Speech Sciences B.A., M.S. (Western Kentucky 1985, 1987) [2008]

GIORGIO SIRUGO, Adjoint Professor of Molecular Physiology and Biophysics M.D. (Pavia [Italy] 1987); Ph.D. (Louis Pasteur [France] 1992) [2009]

SILVIO SITARICH, Assistant Professor of Clnical Anesthesiology

M.D. (Zagreb [Croatia] 1987) [2004]

ERIC PATRICK SKAAR, Associate Professor of Microbiology and Immunology B.S. (Wisconsin 1996); M.P.H., Ph.D. (Northwestern 2002, 2002) [2005]

JASON M. SLAGLE, Research Assistant Professor of Anesthesiology

B.S. (Texas Tech 1995); M.S. (California School of Professional Psychology, San Diego 1998); Ph.D. (Alliant International 2004) [2005]

ALEX JAMES SLANDZICKI, Assistant Professor of Clinical Family Medicine B.S. (Notre Dame 1989); M.D. (Onio State 1993) [2000]

STEPHEN ORMOND SLATTERY, Instructor in Clinical Anesthesiology

B.S., M.D. (South Dakota 2000, 2005) [2009]

JAMES C. SLAUGHTER, Assistant Professor of Biostatistics

B.S. (Tulane 1998); M.S. (University of Washington 2000); Ph.D. (North Carolina 2007) [2007]

ROBBERT JACOBUS C. SLEBOS, Research Associate Professor of Cancer Biology;

Research Assistant Professor of Otolaryngology

B.Sc., M.Sc. (Utrecht 1983, 1986); Ph.D. (Amsterdam 1991); M.H.S. (Duke 2003) [2003]

CHRISTOPHER SLOBOGIN, Professor of Law; Professor of Psychiatry

A.B. (Princeton 1973); J.D., LL.M. (Virginia 1977, 1979) [2008]

DAVID ALAN SLOSKY, Assistant Professor of Medicine

B.S. (Tulane 1972); M.D. (Colorado 1976) [2005]

BONNIE S. SLOVIS, Associate Professor of Medicine

A.B. (Wesleyan College 1966); M.Ed. (Georgia State 1975); M.S.H.S. (Georgia Institute of Technology 1981); M.D. (Emory 1990) [1996]

COREY M. SLOVIS, Professor of Emergency Medicine and Chair of the Department; Professor of Medicine

B.S. (Hobart 1971); M.D. (New Jersey Medical 1975) [1992]

Southeastern 2007) [2008]

WALTER E. SMALLEY, JR., Associate Professor of Medicine; Associate Professor of Preventive Medicine: Associate Professor of Surgery B.S. (Emory and Henry 1981); M.D. (Duke 1985); M.P.H. (Vanderbilt 1997) [1991] GEOFFREY H. SMALLWOOD, Clinical Instructor in Obstetrics and Gynecology B.A. (Vanderbilt 1980); M.D. (Tulane 1985) [1993] CHRISTOPHER P. SMELTZER, Clinical Instructor in Pediatrics B.A. (Baylor 1989); M.D. (Vanderbilt 1993) [1997] LEILANI M. SMIEJA, Assistant Professor of Obstetrics and Gynecology B.S. (Alverno College 1998); M.S.N. (Marquette 2001) [2009] ANTHONY L. SMITH, Clinical Professor of Pediatrics B.A., M.D. (Tennessee 1982, 1986) [2006] BRADLEY E. SMITH, Professor of Anesthesiology, Emeritus B.S. (Tulsa 1954); M.D. (Oklahoma 1957) [1969] CLAY B. SMITH, Assistant Professor of Emergency Medicine; Assistant Professor of Pediatrics; Assistant Professor of Medicine B.S. (Union 1995); M.D. (Tennessee, Memphis 1999) [2004] HEIDI A. BEVERLEY SMITH, Assistant Professor of Pediatrics; Assistant Professor of Anesthesiology B.S. (Nebraska 1995); M.D. (South Dakota 1999); M.S.C.I. (Vanderbilt 2005) [2005] JARROD A. SMITH, Research Associate Professor of Biochemistry B.Sc. (California, Berkeley 1992); Ph.D. (Scripps Research Institute 1999) [1999] JEFFREY ROSER SMITH, Associate Professor of Medicine; Associate Professor of Cancer Biology; Ingram Associate Professor of Cancer Research A.B. (Harvard 1985); M.D., Ph.D. (Texas Southwestern Medical School 1992) [1999] JOSEPH A. SMITH, JR., William L. Bray Professor of Urologic Surgery and Chair of the Department A.B., M.D. (Tennessee 1971, 1974) [1991] KURT A. SMITH, Assistant Professor of Emergency Medicine B.A. (Rice 2001); M.D. (Harvard 2005) [2009] MARTHA JANE SMITH, Assistant Professor of Anesthesiology B.S. (Tennessee Technological 1998); M.D. (Tennessee, Memphis 2002) [2006] MICHAEL KEVIN SMITH, Assistant Clinical Professor of Medicine B.S. (Mississippi 1986); Ph.D., M.D. (Vanderbilt 1991, 1993) [1997] MICHAEL LEE SMITH, Associate Professor of Medicine; Assistant Professor of Pediatrics B.S. (Davidson 1977); M.S., M.D. (East Carolina 1979, 1983) [1994] PAIGE J. SMITH, Assistant Professor of Pediatrics B.S. (Tennessee 1998); M.D. (Tennessee, Memphis 2002) [2005] RAPHAEL F. SMITH, Professor of Medicine, Emeritus B.A. (Vanderbilt 1955); M.D. (Harvard 1960) [1969] RICHARD P. SMITH, Clinical Instructor in Pediatrics B.S. (Samford 1998); M.D. (Mercer 2004) [2007] STEPHEN J. SMITH, Assistant Professor of Clinical Medicine B.S. (Louisiana State 1982); M.D. (Louisiana State, New Orleans 1986) [2009] TERRENCE A. SMITH, Assistant Professor of Medicine B.S. (Ohio State 1990); M.D. (Wright State 1997) [2003] KENNETH G. SMITHSON, Assistant Professor of Clinical Anesthesiology; Assistant Professor of Surgery: Assistant Professor of Neurological Surgery B.S., Ph.D., D.O. (Michigan State 1982, 1990, 1991) [1997] JAMES R. SNAPPER, Adjunct Professor of Medicine A.B. (Princeton 1970); B.M.S. (Dartmouth 1972); M.D. (Harvard 1974) [1979] WANDA L. M. SNEAD, Research Instructor in Medicine B.S. (Fort Valley State 1980); M.S. (Western Kentucky 1982); D.H.Sc. (Nova

JAMES D. SNELL, JR., Professor of Medicine, Emeritus

B.S. (Centenary 1954); M.D. (Vanderbilt 1958) [1963]

DAVID J. SNODGRASS, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.S. (East Tennessee State 1978); D.D.S. (Tennessee, Memphis 1984) [1995]

BARBARA M. SNOOK, Assistant Professor of Medicine

B.S. (Miami [Ohio] 1991); M.D. (Indiana 1997) [2004]

S. STEVE SNOW, Clinical Professor of Psychiatry

B.A. (Arkansas 1973); M.D. (University of Arkansas for Medical Sciences 1977) [1982]

PATRICIA SNYDER, Adjunct Professor of Pediatrics

B.S. (SUNY, Geneseo 1977); M.Ed. (Millersville 1981); Ph.D. (New Orleans 1992) [2005]

SHANNON B. SNYDER, Assistant Professor of Emergency Medicine

B.S., M.S. (Stanford 1994, 1994); M.D. (Vanderbilt 2000) [2004]

STANLEY O. SNYDER, JR., Associate Clinical Professor of Surgery at St. Thomas Medical Center

B.A. (Centre College 1968); M.D. (Louisville 1972) [1995]

SUZANNE R. SNYDER, Assistant Clinical Professor of Medicine; Assistant Clinical Professor of Pediatrics

B.S. (Milligan 1983); M.D. (Texas 1987) [2000]

SADIQ SOHANI, Adjunct Assistant Professor of Anesthesiology

M.D. (Sind Medical College [Pakistan] 1988) [2008]

LAURENCE M. SOLBERG, Assistant Professor of Medicine

B.S. (Rutgers 1995); M.D. (Jagiellonian [Poland] 2000) [2007]

LILIANNA SOLNICA-KREZEL, University Professor, Martha Rivers Ingram Professor of Developmental Genetics; Professor of Biological Sciences; Professor of Cell and Developmental Biology; Professor of Pediatrics; Investigator, Center for Molecular Neuroscience

Magister (Warsaw 1985); Ph.D. (Wisconsin 1991) [1996]

GARY S. SOLOMON, Assistant Clinical Professor of Psychiatry

B.A. (Georgia 1974); M.S. (Mississippi State 1975); Ph.D. (Texas Tech 1983) [2003]

JOSEPH F. SOLUS, Research Assistant Professor of Molecular Physiology and Biophysics B.S., M.S. (Villanova 1973, 1975); M.Phil., Ph.D. (Yale 1978, 1983) [2006]

CHISU SONG, Research Instructor in Medicine

B.S., M.S. (Korea 1991, 1994); Ph.D. (Alabama, Birmingham 2001) [2008]

PETER L. SONKIN, Assistant Clinical Professor of Ophthalmology and Visual Sciences B.A. (North Carolina 1988); M.D. (Duke 1992) [2004]

JEFFREY SONSINO, Assistant Professor of Ophthalmology and Visual Sciences

B.S. (James Madison 1997); O.D. (New England College of Optometry 2001) [2002]

KELLY L. SOPKO, Assistant Professor of Medicine

B.S. (Notre Dame 1997); M.D. (Kentucky 2001) [2007]

HENRIK TOFT SORENSEN, Adjunct Professor of Medicine

M.D., Ph.D. (Aarhus [Denmark] 1983, 1994) [2002]

JEFFREY A. SOSMAN, Professor of Medicine

B.S. (Brandeis 1976); M.D. (Albert Einstein 1981) [2001]

MARINOS C. SOTERIOU, Assistant Professor of Clinical Surgery

M.D. (Cologne [Germany] 1986) [2005]

TUNDE S. SOTUNDE, Clinical Instructor in Pediatrics

M.D. (Ibadan [Nigeria] 1988); M.B.A. (Memphis 2001) [2002]

E. MICHELLE SOUTHARD-SMITH, Associate Professor of Medicine; Associate Professor of Cell and Developmental Biology; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience Ph.D. (Texas Southwestern Medical Center 1992) [1999]

ANNA SPAGNOLI, Associate Clinical Professor of Pediatrics

M.D. (Tor Vergata [Rome] 1988) [2001]

JONATHAN M. SPANIER, Clinical Instructor in Pediatrics

B.S. (Duke 1999); M.D. (Vanderbilt 2003) [2006]

MARCIA E. SPEAR, Assistant in Plastic Surgery; Clinical Instructor in Nursing

B.S.N. (Tennessee State 1996); M.S.N. (Vanderbilt 1999); R.N., A.C.N.P. [2004]

C. NORMAN SPENCER, Associate Clinical Professor of Pediatrics

B.A., M.D. (Vanderbilt 1972, 1976) [1979]

KYLEE L. SPENCER, Research Instructor in Molecular Physiology and Biophysics

B.S. (Murray State 2003); M.S., Ph.D. (Vanderbilt 2007, 2007) [2008]

DAN M. SPENGLER, Professor of Orthopaedics and Rehabilitation

B.S. (Baldwin-Wallace 1962); M.D. (Michigan 1966) [1983]

THEODORE SPEROFF, Professor of Medicine; Research Associate Professor of Preventive Medicine; Professor of Biostatistics

Ph.D., M.S. (Akron 1979, 1984); Ph.D. (Case Western Reserve 1987) [1999]

BENNETT M. SPETALNICK, Assistant Professor of Obstetrics and Gynecology

B.S., M.A. (American 1979, 1985); M.D. (Vanderbilt 1991) [1995] JAMIE BRADFORD SPICER, Assistant in Medicine

B.S. (David Lipscomb 1983); M.S.N. (Vanderbilt 1996); R.N. [2007]

W. ANDERSON SPICKARD, JR., Professor of Medicine, Emeritus

B.A., M.D. (Vanderbilt 1953, 1957) [1963]

W. ANDERSON SPICKARD III, Associate Professor of Medicine; Associate Professor of Biomedical Informatics

B.A. (North Carolina 1985); M.D. (Vanderbilt 1989); M.S. (Virginia 1995) [1995]

BEN SPILLER, Assistant Professor of Pharmacology; Assistant Professor of Microbiology and Immunology

B.S. (California, Davis 1994); Ph.D. (California, Berkeley 1999) [2006]

KURT P. SPINDLER, Kenneth D. Schermerhorn Professor of Orthopaedics and Rehabilitation; Director, Division of Sports Medicine

A.B. (Rutgers 1981); M.D. (Pennsylvania 1985) [1991]

STEPHANIE E. SPOTTSWOOD, Associate Professor of Radiology and Radiological Sciences; Associate Professor of Pediatrics

B.A. (Michigan 1972); M.D. (North Carolina 1987) [2005]

MICHELE SPRING, Assistant Professor of Pediatrics

B.S. (Notre Dame 1988); M.A.T. (SUNY, Binghamton 1989); M.S.P.H. (Tulane 1992); M.D. (Vanderbilt 1999) [2005]

MANAKAN BETSY SRICHAI, Instructor in Medicine

B.S. (Massachusetts Institute of Technology 1994); M.D. (West Virginia 1998) [2003]

RAMPRASAD SRIPADA, Associate Professor of Clinical Anesthesiology

M.D. (Gandhi Medical [India] 1981) [2006]

SUBRAMANIAM SRIRAM, William C. Weaver III Professor of Experimental Neurology;

Professor of Neurology; Professor of Microbiology and Immunology; Investigator, Center for Molecular Neuroscience

M.B., B.S. (Madras 1973) [1993]

PAUL J. ST. JACQUES, Associate Professor of Anesthesiology; Associate Professor of Biomedical Informatics

B.A., M.A. (Clark 1988, 1988); M.D. (Johns Hopkins 1992) [1996]

MICHAEL J. STABILE, Adjunct Assistant Professor of Anesthesiology

B.A. (Rutgers 1975); M.D. (College of Medicine and Dentistry of New Jersey 1980); M.B.A. (Belmont 1999) [2008]

MICHAEL G. STABIN, Associate Professor of Radiology and Radiological Sciences

B.S., M.E. (Florida 1981, 1983); Ph.D. (Tennessee 1996) [2000]

LAWRENCE B. STACK, Associate Professor of Emergency Medicine

B.S. (South Dakota State 1983); M.D. (Oral Roberts 1987) [1995]

JOHN MICHAEL STAFFORD, Assistant Professor of Medicine; Assistant Professor of Molecular Physiology and Biophysics

B.A., Ph.D., M.D. (Vanderbilt 1995, 2001, 2003) [2006]

JULIE ANN STAGGERS, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.A., D.D.S., M.S. (West Virginia 1983, 1986, 1988) [2007]

STEPHEN M. STAGGS, Clinical Instructor in Obstetrics and Gynecology

B.S. (David Lipscomb 1975); M.D. (Tennessee 1978) [1983]

MILDRED T. STAHLMAN, Professor of Pediatrics; Professor of Pathology

B.A., M.D. (Vanderbilt 1943, 1946); M.D. (Göteborg 1973); M.D. (Nancy 1982) [1951]

TIMOTHY STAMBAUGH, Associate in Psychiatry

B.A. (Circleville Bible College 1991); M.A. (Asbury Theological Seminary 1994) [2008]

CARL WILLIAM STANBERRY, Assistant Professor of Clinical Anesthesiology

B.S. (United States Air Force Academy 1972); M.D. (University of Washington 1982) [1998]

BRADLEY B. STANCOMBE, Associate Professor of Clinical Pediatrics

B.S. (Vanderbilt 1980); M.D. (Baylor 1984) [1996]

JACKIE L. STANKIEWICZ, Assistant Clinical Professor of Psychiatry

B.A. (Toledo 1993); M.A. (Dayton 1996); Ph.D. (Toledo 2000) [2002]

ANA K. STANKOVIC, Associate Clinical Professor of Pathology

M.D., M.S., Ph.D. (Belgrade 1980, 1983, 1986); M.S.P.H. (Alabama, Birmingham 2001) [2009]

GREGG D. STANWOOD, Assistant Professor of Pharmacology; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Temple 1991); Ph.D. (Pennsylvania 1997) [2002]

CHRISTOPHER T. STARK, Assistant Professor of Clinical Orthopaedics and Rehabilitation B.S. (California, Davis 1985); M.D. (Medical College of Wisconsin 1989) [2009]

JOHN MALOTTE STARMER, Assistant Professor of Biomedical Informatics

B.S. (North Carolina State 1989); M.D. (Wake Forest 1995) [2004]

KAREN L. STARR, Assistant Professor of Psychiatry

B.A. (William Woods 1976); B.S.N. (Missouri 1976); M.S.N. (Vanderbilt 1983); R.N., C.S. [1995]

SARAH STARR, Assistant Professor of Clinical Anesthesiology

B.A. (Duke 1989); M.D. (Michigan State 1998) [2008]

THOMAS STASKO, Professor of Medicine (Dermatology)

B.A. (Rice 1973); M.D. (Texas Health Science Center, San Antonio 1977) [1992]

GEORGE STATHOPOULOS, Research Assistant Professor of Medicine

M.D., Ph.D. (National and Kapodistrian [Athens] 1995, 2007) [2009]

SHAUN R. STAUFFER, Research Assistant Professor of Pharmacology

B.S. (Southern Illinois 1992); Ph.D. (Illinois 1999) [2008]

WILLIAM W. STEAD, Associate Vice Chancellor for Health Affairs; Professor of Medicine; McKesson Foundation Professor of Biomedical Informatics; Director, Informatics Center A.B., M.D. (Duke 1970, 1973) [1991]

CHRISTINA W. STEGER, Clinical Instructor in Pediatrics

B.A., M.D. (Missouri, Kansas City 1979, 1979) [1995]

THILO STEHLE, Adjunct Professor of Pediatrics

M.S., Ph.D. (Freiburg [Germany] 1988, 1992) [2004]

JILL STEIER, Clinical Instructor in Obstetrics and Gynecology

B.S. (George Mason 1976); M.S. (Georgetown 1982); M.D. (Medical College of Virginia 1986) [2003]

ELI STEIGELFEST, Instructor in Clinical Medicine

M.D. (Albert Einstein 1995) [2001]

JILL E. STEIGELFEST, Assistant Professor of Pediatrics

B.A. (Cornell 1991); M.D. (Albert Einstein 1995) [2007]

C. MICHAEL STEIN, Dan May Professor of Medicine; Professor of Pharmacology

M.B., Ch.B. (Cape Town 1978); B.Sc. (Dublin 1986) [1993]

PRESTON M. STEIN, Assistant Clinical Professor of Pediatrics

M.A. (York [Canada] 1969); M.D. (Calgary 1975) [2000]

RICHARD S. STEIN, Professor of Medicine

A.B., M.D. (Harvard 1966, 1970) [1977]

ROLAND W. STEIN, Professor of Molecular Physiology and Biophysics; Professor of Cell and Developmental Biology

B.A. (California, Los Angeles 1975); M.A., Ph.D. (Albert Einstein 1980, 1981) [1986]

SHARON M. STEIN, Associate Professor of Radiology and Radiological Sciences;

Associate Professor of Pediatrics (On leave spring 2009)

M.B., Ch.B. (Cape Town 1974) [1990]

JULIE STERLING, Research Instructor in Cancer Biology

B.S. (Bowling Green State 1998); Ph.D. (Medical College of Ohio 2003) [2008]

TIMOTHY R. STERLING, Professor of Medicine

B.A. (Colgate 1985); M.D. (Columbia 1989) [2003]

PAUL STERNBERG, JR., George W. Hale Professor of Opthalmology and Visual Sciences and Chair of the Department; Director, Vanderbilt Eye Institute; Assistant Vice Chancellor for Adult Health Affairs; Associate Dean for Clinical Affairs, School of Medicine B.A. (Harvard 1975); M.D. (Chicago 1979) [2003]

PHOEBE L. STEWART, Associate Professor of Molecular Physiology and Biophysics

A.B. (Harvard 1984); Ph.D. (Pennsylvania 1987) [2002]

RUTH CARR STEWART, Instructor in Clinical Family Medicine

B.S. (Milligan 1985); M.D. (Tennessee, Memphis 1991) [2001]

PHYLEEN STEWART-RAMAGE, Assistant Clinical Professor of Psychiatry

B.A. (Harvard 1987); M.D. (Vanderbilt 1991) [1997]

ERIC FRANCIS STILES, Clinical Instructor in Pediatrics

B.A.S., M.A. (Stanford 1989, 1990); M.D. (Cornell 1995) [2002]

RENEE A. STILES, Research Assistant Professor of Medicine

B.S. (Ithaca 1983); M.S. (Cornell 1987); Ph.D. (Michigan 1997) [2001]

CHARLES A. STILWELL, JR., Associate Clinical Professor of Pediatrics

B.A., M.D. (Vanderbilt 1971, 1975) [1978]

CATHERINE V. STOBER, Assistant Professor of Clinical Medicine

B.S. (Florida 1995); M.D. (Johns Hopkins 1999) [2002]

LEANN SIMMONS STOKES, Assistant Professor of Radiology and Radiological Sciences B.S. (Davidson 1992); M.D. (Kentucky 1997) [2003]

MICHAEL P. STONE, Professor of Chemistry and Chair of the Department; Professor of Biochemistry

B.S. (California, Davis 1977); Ph.D. (California, Irvine 1981) [1984]

R. EDWARD STONE, JR., Associate Professor of Otolaryngology, Emeritus; Associate Professor of Hearing and Speech Sciences, Emeritus

B.S. (Whitworth 1960); M.Ed. (Oregon 1964); Ph.D. (Michigan 1971) [1987]

WENDY L. STONE, Professor of Pediatrics; Professor of Psychology, Peabody College; Investigator, Vanderbilt Kennedy Center for Research on Human Development B.A. (Williams 1975); M.S., Ph.D. (Miami [Florida] 1981, 1981) [1988]

WILLIAM J. STONE, Professor of Medicine; Associate Professor of Urologic Surgery B.S.E. (Princeton 1958); M.D. (Johns Hopkins 1962) [1969]

WILLIAM S. STONEY, JR., Professor of Cardiac and Thoracic Surgery, Emeritus

B.S. (University of the South 1950); M.D. (Vanderbilt 1954); D.Sc. (hon., University of the South 1977) [1964]

KRISTINA LYNN STORCK, Clinical Instructor in Obstetrics and Gynecology

B.S. (University of Washington 1997); M.D. (Vanderbilt 2001) [2006]

TRAVIS L. STORK, Instructor in Emergency Medicine

B.A. (Duke 1994); M.D. (Virginia 2003) [2008]

ALAN B. STORROW, Associate Professor of Emergency Medicine

B.A. (Transylvania 1985); M.D. (Cincinnati 1989) [2006]

JEFFREY G. STOVALL, Associate Professor of Psychiatry

B.A. (Carleton College 1979); M.D. (Tennessee 1987) [2008]

THOMAS GREGORY STOVALL, Clinical Professor of Obstetrics and Gynecology

B.S. (David Lipscomb 1979); M.D. (Tennessee, Memphis 1983); M.B.A. (Wake Forest 1997) [2004]

KEVIN STRANGE, John C. Parker Professor of Anesthesiology; Professor of Pharmacology; Professor of Molecular Physiology and Biophysics; Investigator, Center for Molecular Neuroscience

B.S., M.A. (California 1977, 1978); Ph.D. (British Columbia 1983) [1997]

CHARLES W. STRATTON, Associate Professor of Pathology; Associate Professor of Medicine B.S. (Bates 1967); M.D. (Vermont 1971) [1979]

DAVID F. STREET, Assistant Professor of Psychiatry

B.S. (Pennsylvania State 1982); M.D. (Medical College of Pennsylvania 1991) [2008]

STEPHEN A. STRICKLAND, Assistant Professor of Medicine

B.S., M.D. (Louisiana State 1995, 2002) [2008]

GEORGE P. STRICKLIN, Professor of Medicine; Director, Division of Dermatology B.A. (David Lipscomb 1971); M.D., Ph.D. (Washington University 1977, 1977) [1988]

JOHN CARLOS STRITIKUS, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.S. (Auburn 1993); D.D.S. (Tennessee, Memphis 1997) [2000]

S. ALLISON COX STRNAD, Clinical Instructor in Obstetrics and Gynecology B.S. (Emory 1996); M.D. (Tennessee, Memphis 2000) [2004]

BRADLY STROHLER, Assistant Professor of Pediatrics; Assistant Professor of Anesthesiology B.S. (North Carolina 1996); M.D. (Medicine and Dentistry of New Jersey 2000); M.S.C.I. (Vanderbilt 2006) [2006]

SEBASTIAN SUNE STROM, Assistant Professor of Medicine

M.D. (Copenhagen 2001); M.B.A. (Columbia 2008) [2006]

LISA STROMMER, Visiting Assistant Professor of Surgery

M.D. (Karolinska [Sweden] 1995) [2009]

MEGAN K. STROTHER, Assistant Professor of Radiology and Radiological Sciences

B.A. (Princeton 1993); M.D. (Arkansas 1998) [2004]

DINA MYERS STROUD, Research Instructor in Medicine

B.A. (Ohio Wesleyan 1996); Ph.D. (Vanderbilt 2001) [2008]

DENISE F. STUART, Instructor in Clinical Pediatrics

B.A., M.D. (St. Louis 1997, 2001) [2006]

YAN RU SU, Research Assistant Professor of Medicine

M.D. (Wannan Medical College [China] 1982); M.S. (Nanjing Medical University 1987) [2000]

YINGHAO SU, Research Instructor in Medicine

M.D. (Shanghai Medical 1984); M.S. (Anhui Medical 1990); Ph.D. (Shanghai Medical 2000) [2003]

YINGJUN SU, Research Assistant Professor of Cancer Biology

M.D. (Fourth Military Medical, China 1989); M.S. (Xijing Hospital 1994); Ph.D. (Fourth Military Medical, China 1999) [2007]

GARY ALLEN SULIKOWSKI, Stevenson Professor of Chemistry; Professor of Chemistry; Professor of Biochemistry

B.S. (Wayne State 1983); Ph.D. (Pennsylvania 1989) [2004]

JAMES N. SULLIVAN, Associate Clinical Professor of Medicine

B.A. (University of the South 1969); M.D. (Vanderbilt 1974) [1980]

FRIDOLIN SULSER, Professor of Psychiatry, Emeritus; Professor of Pharmacology, Emeritus M.D. (Basel 1955) [1965]

MARSHALL LYNN SUMMAR, Professor of Pediatrics; Professor of Molecular Physiology and Biophysics; Member, Vanderbilt Kennedy Center for Research on Human Development B.S. (Vanderbilt 1981); M.D. (Tennessee 1985) [1990]

JOHN BLAIR SUMMITT, Assistant Professor of Plastic Surgery

B.A. (Rhodes 1984); M.D. (Tennessee, Memphis 1995) [2004]

ROBERT LAYMAN SUMMITT, JR., Clinical Professor of Obstetrics and Gynecology

B.S. (Rhodes 1979); M.D. (Tennessee, Memphis 1983) [2004]

ERIC L. SUMNER, Assistant Professor of Medicine

B.S. (Georgia 1997); M.D. (Medical College of Georgia 2001) [2008]

ZU-WEN SUN, Assistant Professor of Biochemistry

B.S. (Tunghai 1983); M.A. (North Carolina State 1991); Ph.D. (Louisiana State 1996) [2003]

JOHN P. SUNDBERG, Adjunct Professor of Medicine

B.S. (Vermont 1973); D.V.M. (Purdue 1977); Ph.D. (Connecticut 1981) [1997]

HAKAN W. SUNDELL, Professor of Pediatrics

M.D. (Karolinska 1963) [1971]

CRAIG R. SUSSMAN, Associate Professor of Clinical Medicine

A.B. (Franklin and Marshall 1969); M.D. (Temple 1973) [1979]

JAMES S. SUTCLIFFE, Associate Professor of Molecular Physiology and Biophysics; Associate Professor of Psychiatry; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience B.S. (Auburn 1986); Ph.D. (Emory 1992) [1997]

MICHAEL CHARLES SWAN, Clinical Instructor in Obstetrics and Gynecology

B.S. (Pacific Lutheran 1986); M.D. (Medical College of Wisconsin 1990) [1997]

REBECCA R. SWAN, Assistant Professor of Pediatrics

B.S. (Randolph-Macon 1986); M.D. (Medical College of Virginia 1990) [1997]

PETER J. SWARR, Assistant Clinical Professor of Medicine

B.A. (Haverford 1994); M.D. (Vermont 1999) [2003]

BRIAN R. SWENSON, Assistant Clinical Professor of Psychiatry

B.S. (Gannon 1975); M.D. (Pittsburgh 1979) [1983]

LARRY L. SWIFT, Professor of Pathology; Director, Division of Investigative Pathology

B.S. (Indiana Central 1967); Ph.D. (Vanderbilt 1971) [1971]

MELANIE SWIFT, Assistant Professor of Clinical Medicine

B.A. (Rhodes 1987); M.D. (Tennessee 1992) [1995]

WILLIAM H. SWIGGART, Assistant in Medicine

B.S., M.S. (Tennessee 1980, 1986) [1998]

DAVID J. SWITTER, Assistant Clinical Professor of Pathology

B.S. (Mount Union 1970); M.D. (Vanderbilt 1974) [1981]

RHONDA SWITZER, Assistant Clinical Professor of Oral and Maxillofacial Surgery D.M.D. (Manitoba 1991) [2004]

JOLANTA SZCZARKOWSKA, Assistant Clinical Professor of Pediatrics

M.D. (Jagiellonian University of Krakow [Poland] 1982) [2007]

DAVID L. TABB, Assistant Professor of Biomedical Informatics; Assistant Professor of Biochemistry

B.S. (Arkansas 1996); Ph.D. (University of Washington 2003) [2005]

DAVID S. TABER, Assistant Professor of Radiology and Radiological Sciences; Assistant Professor of Emergency Medicine

B.S. (Vanderbilt 1973); M.D. (Indiana 1977) [2000]

TAKAMUNE TAKAHASHI, Assistant Professor of Medicine; Assistant Professor of Cancer Biology

M.D., Ph.D. (Jikei [Japan] 1988, 1994) [1999]

MEGHA H. TALATI, Research Instructor in Medicine

B.S. (Ramnarian Rule 1988); M.Sc. (Baroda 1990); Ph.D. (Bombay 1996) [2005]

DOUGLAS A. TALBERT, Adjunct Assistant Professor of Biomedical Informatics

B.S. (Tennessee Technological 1991); M.S., Ph.D. (Vanderbilt 1993, 2001) [2004]

HELEN KEIPP TALBOT, Assistant Professor of Medicine; Assistant Professor of Pediatrics B.S. (Illinois 1995); M.D. (Medical College of Georgia 1999); M.P.H. (Vanderbilt 2007) [2006]

THOMAS R. TALBOT III, Assistant Professor of Medicine; Assistant Professor of Preventive Medicine

B.S. (Duke 1992); M.D., M.P.H. (Vanderbilt 1996, 2003) [2003]

ROBYN A. TAMBOLI, Research Instructor in Surgery

B.S. (St. Norbert 1998); Ph.D. (Loyola 2004) [2006]

STACY T. TANAKA, Assistant Professor of Urologic Surgery; Assistant Professor of Pediatrics B.A. (Princeton 1990); M.S. (California, Berkeley 1993); M.D. (California, Davis 2001) [2009]

LUCIA M. TANASSI, Adjunct Assistant Professor of Medicine

B.A. (California, Berkeley 1995); Ph.D. (Cambridge [England] 2002) [2007]

TIANLAI TANG, Assistant Clinical Professor of Psychiatry

M.D. (Second Military Medical University [China] 1985); Ph.D. (Uniformed Services University of Health [China] 1995) [2002]

YI-WEI TANG, Associate Professor of Pathology; Associate Professor of Medicine M.Sc., M.D. (Shanghai 1985, 1982); Ph.D. (Vanderbilt 1995) [1998]

HARIKRISHNA TANJORE, Research Assistant Professor of Medicine

M.Sc. (Kasturba Medical College [India] 1997); Ph.D. (Hyderabad [India] 2004) [2008]

SIMPSON BOBO TANNER IV, Assistant Professor of Medicine

A.B. (Harvard 1977); M.D. (Wake Forest 1983) [1989]

WILLIAM P. TANSEY, Professor of Cell and Developmental Biology

B.Sc., Ph.D. (Sydney [Australia] 1988, 1991) [2009]

ROBERT E. TARONE, Professor of Medicine

B.S., M.A., Ph.D. (California, Davis 1968, 1969, 1974) [2003]

JOHN LEEMAN TARPLEY, Professor of Surgery; Professor of Anesthesiology

B.A., M.D. (Vanderbilt 1966, 1970) [1993]

MARGARET TARPLEY, Senior Associate in Surgery

B.A. (Vanderbilt 1965); M.L.S. (Peabody 1966) [2001]

GREGG T. TARQUINIO, Assistant Professor of Medicine and Vice Chair for Finance and Administration, Department of Medicine; Assistant Professor of the Practice of Management (Organizational Studies)

B.A. (Belmont Abbey 1985); M.B.A. (Notre Dame 1988); Ph.D. (Iowa 2001) [1998]

STEVEN M. TATE, Assistant Clinical Professor of Pediatrics

A.B., M.D. (Tennessee 1973, 1976) [1982]

FRANKLIN WILLIAM TAYLOR, Clinical Instructor in Oral and Maxillofacial Surgery (Pedodontics)

B.S. (Clemson 1976); D.D.S. (Emory 1981); M.S. (North Carolina 1983) [1984]

KELLY ANN TAYLOR, Associate in Molecular Physiology and Biophysics B.A. (Boston University 1992); M.S. (Michigan 1995) [2002]

MARY B. TAYLOR, Associate Professor of Pediatrics; Associate Professor of Anesthesiology B.A. (Southern Methodist 1986); M.D. (Mississippi 1991) [1999]

ELENA E. TCHEKNEVA, Research Assistant Professor of Medicine

M.D. (Moscow State Medical 1984) [2002]

MARY H. TELOH, Librarian, Eskind Biomedical Library

B.A., M.A. (Wisconsin 1968, 1969) [1973]

PATRICIA C. TEMPLE, Adjunct Professor of Pediatrics; Research Professor of Nursing;

Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Mills 1964); M.S., M.D. (Oregon 1969, 1969); M.P.H. (Harvard 1974) [2001]

TODD TENENHOLZ, Assistant Professor of Radiation Oncology

B.A. (Johns Hopkins 1987); M.D., Ph.D. (Maryland 1999, 1999) [2004]

FRANCESCA TENTORI, Adjunct Instructor in Medicine

M.D. (Università degli Studi di Milano [Italy] 1999) [2008]

RICHARD B. TERRY, Assistant Clinical Professor of Surgery

B.A. (University of the South 1967); M.D. (Tennessee 1970) [1978]

THOMAS A. TESAURO, Assistant Clinical Professor of Medicine

B.S. (Georgia Institute of Technology 1990); M.D. (Vanderbilt 1994) [2000]

PAUL E. TESCHAN, Professor of Medicine, Emeritus

B.S., M.B., M.D., M.S. (Minnesota 1946, 1947, 1948, 1948) [1969]

JAMES N. THACKER, Assistant Professor of Clinical Oral and Maxillofacial Surgery

B.S. (Ohio State 1978); D.D.S. (Case Western Reserve 1982) [2007]

ANNE MARIE THARPE, Professor of Hearing and Speech Sciences and Chair of the Department; Professor of Otolaryngology; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Arizona 1979); M.S., Ph.D. (Vanderbilt 1980, 1994) [1986]

WESLEY P. THAYER, Assistant Professor of Plastic Surgery

B.S. (Tennessee 1993); Ph.D., M.D. (Emory 1999, 2000) [2008]

JAMES WARD THOMAS II, Professor of Medicine; Professor of Microbiology and Immunology; Director, Division of Rheumatology

B.A. (Southwestern at Memphis 1970); M.D. (Tennessee 1973) [1990]

JOHN C. THOMAS, Assistant Professor of Urologic Surgery; Assistant Professor of Pediatrics B.S. (Xavier 1994); M.D. (Cincinnati 1998) [2006]

LORA D. THOMAS, Assistant Professor of Medicine

B.S. (Wright State 1995); M.D. (Medical College of Ohio 2000) [2006]

PAUL A. THOMAS, Associate Professor of Clinical Orthopaedics and Rehabilitation

B.S. (Middle Tennessee State 1977); M.D. (Tennessee 1983) [2009]

JOHN BROWN THOMISON, Clinical Professor of Pathology, Emeritus

B.A., M.D. (Vanderbilt 1942, 1944) [1951]

ANNEMARIE THOMPSON, Associate Professor of Clinical Anesthesiology; Associate Professor of Medicine

A.B., M.D. (Duke 1991, 1995) [2002]

BRIAN M. THOMPSON, Assistant Professor of Neurology

B.A. (South Dakota 1976); M.D. (Alabama 1978) [2007]

HAROLD D. THOMPSON, Professor of Clinical Radiology and Radiological Sciences B.S. (South Carolina State 1967); M.D. (Howard 1972) [2001]

JOHN G. THOMPSON, JR., Assistant Clinical Professor of Medicine

A.B. (Duke 1968); M.D. (Emory 1973) [1989]

JULIA THOMPSON, Associate Clinical Professor of Pediatrics

B.S. (Tulsa 1977); M.D. (Oklahoma, Tulsa 1981) [1984]

KEITH S. THOMPSON, Clinical Instructor in Pediatrics

B.A. (David Lipscomb 1990); M.D. (Tennessee, Memphis 1994) [1997]

REID CARLETON THOMPSON, Professor of Neurological Surgery; Associate Professor of Biomedical Engineering; Director, Section of Neurosurgical Oncology

B.A. (Maryland 1985); M.D. (Johns Hopkins 1989) [2002]

ROBERT G. THOMPSON, Clinical Professor of Pediatrics

B.A. (Vanderbilt 1969); M.D. (Tennessee 1972) [2006]

ANDREW BRIAN THOMSON, Assistant Professor of Orthopaedics and Rehabilitation B.S., M.D. (Kentucky 1995, 2000) [2006]

J. MICHAEL THOMSON, Assistant Professor of Cancer Biology

B.S., M.S. (Georgia 1993, 1996); Ph.D. (Florida, Gainesville 2003) [2008]

SUSANNE A. M. THOMSON, Research Instructor in Molecular Physiology and Biophysics B.S., M.S. (Georgia 1994, 1997); Ph.D. (Florida 2003) [2008]

CATHERINE M. THORNBURG, Clinical Instructor in Obstetrics and Gynecology

B.S. (Cornell 1973); M.S. (Vanderbilt 1975); M.D. (Tennessee, Memphis 1988) [1999]

R. JASON THURMAN, Assistant Professor of Emergency Medicine

B.A. (Vanderbilt 1994); M.D. (Alabama 1998) [2002]

OLEG YU TIKHOMIROV, Research Assistant Professor of Biochemistry

M.D. (Second Moscow State Medical [Russia] 1982) [2002]

WILLIAM P. TITUS III, Instructor in Clinical Family Medicine

B.A. (Austin Peay State 1968); M.D. (Tennessee, Memphis 1971) [2006]

NORMAN H. TOLK, Professor of Physics; Director, Center for Molecular and Atomic Studies at Surfaces; Professor of Radiology and Radiological Sciences

A.B. (Harvard 1960); Ph.D. (Columbia 1966) [1984]

JAMES J. TOLLE, Assistant Professor of Medicine

B.A. (Rice 1997); M.D. (Texas Southwestern 2001) [2009]

ANDREW J. TOMARKEN, Associate Professor of Psychology and Chair of the Department, College of Arts and Science; Associate Professor of Biostatistics; Member, Vanderbilt Kennedy Center for Research on Human Development

A.B. (Harvard 1977); M.S., Ph.D. (Wisconsin 1982, 1988) [1989]

LAURIE ARNOLD TOMPKINS, Assistant Professor of Obstetrics and Gynecology B.S.N., M.S.N. (Vanderbilt 1989, 1991); R.N. [1998]

OSCAR TOUSTER, Professor of Molecular Biology, Emeritus; Professor of Biochemistry, Emeritus

B.S. (City University of New York 1941); M.A. (Oberlin 1942); Ph.D. (Illinois 1947) [1947]

ALEXANDER S. TOWNES, Professor of Medicine, Emeritus

B.A., M.D. (Vanderbilt 1949, 1953) [1987]

PHYLLIS L. TOWNSEND, Clinical Instructor in Pediatrics

B.A. (Holy Cross 1984); M.D. (Cornell 1988) [1996]

MICHAEL G. TRAMONTANA, Associate Professor of Psychiatry; Associate Professor of Neurology; Associate Professor of Pediatrics

B.S. (Fordham 1971); M.A. (Columbia 1973); Ph.D. (Washington University 1977) [1989]

UYEN L. TRAN, Associate Professor of Clinical Ophthalmology and Visual Sciences

B.A. (Catholic 1992); M.D. (Medical College of Virginia 1997) [2001]

PATRICIA A. TRANGENSTEIN, Professor of Nursing; Assistant Professor of Biomedical Informatics

B.S.N. (Vanderbilt 1975); M.S.N. (Saint Louis 1979); Ph.D. (New York 1988); R.N. [2002]

C. RICHARD TREADWAY, Associate Clinical Professor of Psychiatry

B.A., M.D. (Vanderbilt 1960, 1964) [1970]

ROBERT N. TREECE, Clinical Professor of Pediatrics

B.S. (Auburn 1993); M.D. (South Alabama 1997) [2007]

DAVID B. TRENNER, Senior Associate in Orthopaedics and Rehabilitation

B.S. (Portland State 1986); D.P.M. (California School of Podiatric Medicine 1990) [2006]

MARC ALLEN TRESSLER, Assistant Professor of Orthopaedics and Rehabilitation

B.A. (Miami [Ohio] 1991); D.O. (Ohio 2000) [2005]

ELIZABETH GRIMES TRIGGS, Assistant Clinical Professor of Pediatrics

B.S. (North Carolina 1977); M.D. (Mississippi 1981) [1986]

SUSANNE TROPEZ-SIMS, Professor of Pediatrics at Meharry Medical College; Adjunct Professor of Pediatrics at Vanderbilt

B.S. (Bennett 1971); M.D., M.P.H. (North Carolina 1975, 1981) [1999]

FRED RYAN TRUESDALE, Assistant in Anesthesiology

B.A. (Mississippi 2003); M.S.N. (Vanderbilt 2005); R.N., A.C.N.P. [2009]

IOANNIS TSAMARDINOS, Adjunct Assistant Professor of Biomedical Informatics

B.Sc. (Crete [Greece] 1995); M.Sc., Ph.D. (Pittsburgh 1998, 2001) [2001]

DOROTHY DURHAM TUCKER, Assistant Clinical Professor of Psychiatry

B.A. (Peabody 1973); M.A., Ph.D. (Vanderbilt 1994, 1998) [2002]

NOEL B. TULIPAN, Professor of Neurological Surgery

B.A., M.D. (Johns Hopkins 1973, 1980) [1986]

DAULAT RAM P. TULSIANI, Professor of Obstetrics and Gynecology

B.S., M.S., Ph.D. (Allahabad [India] 1962, 1964, 1968) [1988]

ERNEST A. TURNER, Associate Clinical Professor of Pediatrics

A.B. (Alaska Methodist 1969); M.D. (Kansas 1975) [1996]

DALE A. TYLOR, Assistant Professor of Otolaryngology M.D. (McGill 2002) [2009]

MATTHEW JOHN TYSKA, Assistant Professor of Cell and Developmental Biology

B.S. (Notre Dame 1992); M.S. (Wyoming 1994); Ph.D. (Vermont 1999) [2004]

DARREN R. TYSON, Research Assistant Professor of Cancer Biology

B.S. (Illinois 1990); M.S., Ph.D. (St. Louis 1995, 2003) [2008]

DEBORAH TYSON, Assistant Professor of Clinical Hearing and Speech Sciences

B.A. (Oklahoma Baptist 1987); M.A., Ph.D. (Fuller Theological Seminary 1992, 1994) [2004]

MD. JASHIM UDDIN, Research Assistant Professor of Biochemistry

B.Sc., M.S. (Dhaka 1991, 1993); Ph.D. (Shinshu 2001) [2005]

YUKIKO UEDA, Research Assistant Professor of Surgery

B.S. (Osaka Kyoiku [Japan] 1980); Ph.D. (Meharry Medical 1999) [2006]

FLORA A. M. UKOLI, Associate Professor of Surgery at Meharry Medical College; Associate Professor of Medicine

M.D. (Ibadan [Nigeria] 1975); D.P.H. (Glasgow [Scotland] 1980); M.P.H. (Pittsburgh 1998) [2006]

MARY THERESA URBANO, Professor of Clinical Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Florida State 1966); M.P.H. (North Carolina 1975); Ph.D. (Florida State 1984) [2005]

RICHARD C. URBANO, Research Professor of Pediatrics; Member, Vanderbilt Kennedy Center for Research on Human Development

B.S. (Florida State 1965); M.A., Ph.D. (Illinois 1968, 1970) [2003]

DAVID R. USKAVITCH, Assistant Professor of Neurology

B.A., M.A.T., M.D. (Virginia 1980, 1981, 1987) [2007]

ANDREA L. UTZ, Assistant Professor of Medicine; Assistant Professor of Neurological Surgery

B.S.E. (Duke 1992); M.D., Ph.D. (Vanderbilt 2000, 2000) [2009]

MICHAEL VAEZI, Professor of Medicine

B.S. (Birmingham-Southern 1983); Ph.D., M.D. (Alabama 1988, 1992); M.S. (Case Western 2005) [2005]

PARVIN VAFAI, Clinical Instructor in Pediatrics

M.D. (Mashhad [Iran] 1973) [1992]

WILLIAM M. VALENTINE, Associate Professor of Pathology; Investigator, Center for Molecular Neuroscience

B.A. (Lakeland 1976); B.S. (Illinois 1983); Ph.D. (Illinois, Chicago 1983); D.V.M. (Illinois 1985) [1995]

MANUEL S. VALENZUELA, Adjunct Research Professor of Medicine

B.S. (Universidad Peruana 'Cayetano Heredia' [Peru] 1969); Ph.D. (Brandeis 1975) [1998] JAN VAN EYS. Clinical Professor of Pediatrics, Emeritus

Ph.D. (Vanderbilt 1955); M.D. (University of Washington 1966) [1994]

PATTI PARKISON VAN EYS, Assistant Professor of Psychiatry

B.A. (DePauw 1983); M.A., Ph.D. (Bowling Green State 1985, 1989) [1995]

LUC VAN KAER, Professor of Microbiology and Immunology

Ph.D. (Rijksuniversiteit Gent 1989) [1993]

DEBORAH ANNE VAN SLYKE, Assistant Professor of Pediatrics

B.A. (Franklin and Marshall 1985); M.A., Ph.D. (Vanderbilt 1991, 2001) [2003]

F. KARL VANDEVENDER, Assistant Clinical Professor of Medicine

B.A. (University of the South 1969); M.A. (Oxford 1972); M.D. (Mississippi 1979) [1982]

CARLOS G. VANOYE, Research Assistant Professor of Medicine

B.S. (Texas A & M 1986); Ph.D. (Texas, Medical Branch 1997) [2002]

VASUNDHARA VARTHAKAVI, Research Assistant Professor of Pediatrics

B.V.Sc., M.V.Sc. (Andhra Pradesh Agricultural [India] 1986, 1990); M.S. (Tuskegee 1992); Ph.D. (Kansas State 1996) [2003]

EDUARD E. VASILEVSKIS, Assistant Professor of Medicine

B.S. (California, San Diego 1997); M.D. (Oregon Health Sciences 2001) [2008]

DOUGLAS E. VAUGHAN, Professor of Medicine; Professor of Pharmacology; Director, Division of Cardiovascular Medicine

B.A. (Oklahoma 1976); M.D. (Texas Southwestern Medical School 1980) [1993]

RUTH ANN VEACH, Research Instructor in Microbiology and Immunology B.S. (Wake Forest 1977) [2002]

JEREMY M. VEENSTRA-VANDERWEELE, Assistant Professor of Psychiatry; Assistant Professor of Pediatrics; Assistant Professor of Pharmacology; Investigator, Vanderbilt Kennedy Center for Research on Human Development

A.B. (Harvard 1996); M.D. (Chicago 2001) [2006]

VANI V. VEERAMACHANENI, Clinical Instructor in Pediatrics

M.D. (Andhra Medical College [India] 1991) [2000]

LORENZO J. VEGA-MONTOTO, Research Instructor in Biomedical Informatics B.S. (Habana [Cuba] 1996); M.S., Ph.D. (Dalhousie 2001, 2005) [2009]

AMY E. VEHEC, Clinical Instructor in Pediatrics

B.S.N., M.D. (Indiana 1988, 2001); R.N. [2004]

KOHILAVANI VELAYUDAM, Assistant Professor of Neurology; Assistant Professor of Pediatrics

M.B.B.S. (Kilpauk [India] 1999) [2009]

DENNIS A. VELEZ, Instructor in Clinical Neurosurgery; Instructor in Clinical Radiology and Radiological Sciences

B.S. (Rensselaer Polytechnic Institute 1991); M.D. (Universidad Central de Caribe 1998) [2009]

RHONDA R. VENABLE, Adjunct Assistant Professor of Psychology, College of Arts and Science; Assistant Clinical Professor of Psychiatry; Director, Psychological and Counseling Center

B.A., B.S. (Louisiana State 1980, 1982); M.A., Ph.D. (Georgia State 1986, 1993) [1998]

CHRISTO DIMITRO VENKOV, Research Assistant Professor of Medicine

B.S. (St. Klement Ohridski [Bulgaria] 1967); M.Sc. (Saint Petersburg, Russia [Leningrad, USSR] 1969); Ph.D. (Bulgarian Academy of Sciences 1977) [1995]

ALFREDO E. VERGARA, Assistant Professor of Preventive Medicine

B.E., M.S., Ph.D. (lowa 1986, 1990, 1993) [2006]

INGRID M. A. VERHAMME, Research Assistant Professor of Pathology

B.S., M.S., Ph.D. (State University of Gent [Belgium] 1977, 1980, 1986) [1999]

STEN H. VERMUND, Amos Christie Professor of Global Health; Director, Institute for Global Health; Professor of Pediatrics; Professor of Preventive Medicine; Professor of Obstetrics and Gynecology; Professor of Medicine

B.A. (Stanford 1974); M.D. (Albert Einstein 1977); M.Sc. (London School of Hygiene and Tropical Medicine 1981); M.Phil., Ph.D. (Columbia 1987, 1990) [2005]

JENNIFER H. VICK, Senior Associate in Pediatrics

B.S. (Tennessee 1984); M.S. (Vanderbilt 1987) [2004]

VIANNEY EPINO VILLARUZ, Adjunct Instructor in Medicine

B.S., M.D. (Philippines 1983, 1987) [1996]

RAQUEL VILLEGAS, Assistant Professor of Medicine

B.Sc. (Autonomous University of Madrid [Spain] 1989); M.Sc., Ph.D. (National University of Ireland 1996, 2002) [2007]

KIMBERLY N. VINSON, Assistant Professor of Otolaryngology

B.S. (Birmingham-Southern 1999); M.D. (Vanderbilt 2003) [2008]

DAVIS P. VIPRAKASIT, Instructor in Urologic Surgery

B.S., M.D. (Northwestern 1999, 2003) [2009]

RENU VIRMANI, Clinical Professor of Pathology M.B.,B.S., M.D. (Delhi 1967, 1973) [1981]

SERGEY ALEKSANDROVI VISHNIVETSKIY, Research Instructor in Pharmacology

B.Sc., M.Sc. (Moscow State 1986, 1986); Ph.D. (Russian Academy of Sciences 1992) [2004]

SARASWATHI VISWANATHAN, Research Instructor in Molecular Physiology and Biophysics B.S. (Ethiraj 1988); M.Sc., Ph.D. (Madras 1993, 1999) [2006]

NANDAKUMAR B. VITTAL, Adjunct Assistant Professor of Neurology

M.D. (Bangalore Medical College [India] 1999) [2009]

CINDY L. VNENCAK-JONES, Professor of Pathology; Professor of Pediatrics

B.S. (South Carolina 1980); Ph.D. (Virginia Commonwealth 1985) [1988]

VAL YVETTE VOGT, Associate Clinical Professor of Obstetrics and Gynecology

B.A. (Washington University 1986); M.D. (Rush 1990) [2004]

MICHAEL W. VOLLMAN, Assistant Professor of Nursing; Research Assistant Professor of Medicine; Assistant Professor of Psychiatry

B.S. (Trevecca Nazarene 1981); M.S.N., Ph.D. (Vanderbilt 1994, 2003); R.N. [1996]

DIANE MARIE VOSBERG, Clinical Instructor in Pediatrics

B.S. (Notre Dame 1981); M.D. (Tennessee 1985) [1989]

PAUL A. VOZIYAN, Research Associate Professor of Medicine; Research Associate Professor of Biochemistry

M.S., Ph.D. (Kiev State [Ukraine] 1984, 1990) [2002]

KEVIN W. WADDELL, Research Assistant Professor of Radiology and Radiological Sciences B.A. (Kentucky 1997); M.S., Ph.D. (Louisville 2001, 2004) [2008]

BRIAN E. WADZINSKI, Associate Professor of Pharmacology; Investigator, Center for Molecular Neuroscience

B.S., Ph.D. (Wisconsin 1984, 1989) [1993]

DEBORAH J. WAGE, Assistant Professor of Obstetrics and Gynecology; Assistant Professor of Nursing

B.A. (Wisconsin 1987); M.S.N. (Vanderbilt 1991); R.N., F.N.P., C.N.M. [2007]

CHAD E. WAGNER, Assistant Professor of Clinical Anesthesiology

B.A. (Trinity 1993); M.D. (Texas, Houston 1998) [2009]

CONRAD WAGNER, Professor of Biochemistry

M.S., Ph.D. (Michigan 1952, 1956) [1961]

JULIANNE HAINES WAGNON, Assistant in Medicine

B.A. (Rhodes 1988); J.D. (Mississippi 1991); M.S.N. (Vanderbilt 2001); R.N. [2004]

ZIA U. WAHID, Associate Clinical Professor of Psychiatry

B.Sc. (Punjab [Pakistan] 1980); M.B.B.S. (King Edward Medical 1984); M.D. (Meharry Medical 1992) [2004]

ROBERT W. WAHL, Assistant Clinical Professor of Pathology

B.A., M.D. (Kansas 1964, 1968) [1977]

LEMUEL RUSSELL WAITMAN, Assistant Professor of Biomedical Informatics B.S. (Washington University 1990); M.S., Ph.D. (Vanderbilt 1998, 2001) [2002]

ANN WALIA, Professor of Clinical Anesthesiology; Director, Division of Anesthesiology, Veterans Administration Medical Center

M.B., B.S., M.D. (Rohtak [India] 1979, 1984) [1992]

JAMES S. WALKER, Assistant Professor of Psychiatry; Assistant Professor of Neurology; Assistant Professor of Psychology, College of Arts and Science B.A. (Asbury 1987); M.A., Ph.D. (Louisville 1989, 1993) [2001]

LYNN S. WALKER, Professor of Pediatrics; Director, Division of Adolescent Medicine; Professor of Psychology, Peabody College; Professor of Psychology, College of Arts and Science; Investigator, Vanderbilt Kennedy Center for Research on Human Development A.B. (Oberlin 1973); M.S., Ph.D. (Peabody 1978, 1981) [1982]

RONALD C. WALKER, Associate Professor of Clinical Radiology and Radiological Sciences B.S., M.D. (Baylor 1974, 1978) [2007]

JEANNE M. WALLACE, Associate Professor of Pathology; Associate Professor of Molecular Physiology and Biophysics; University Veterinarian; Director of Animal Care; Assistant Vice Chancellor for Research

B.S., D.V.M. (Kansas State 1984, 1986) [2006]

MARK THOMAS WALLACE, Professor of Hearing and Speech Sciences; Associate Professor of Psychology, College of Arts and Science; Professor of Psychiatry; Director, Vanderbilt Brain Institute; Member, Vanderbilt Kennedy Center for Research on Human Development B.A., M.A., Ph.D. (Temple 1986, 1987, 1990) [2005]

DONNA C. WALLS, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.S. (Ouachita Baptist 1992); D.D.S. (Oklahoma 1997) [2005]

ON M. WALLO Visition Brother at Francisco Madiaire

RON M. WALLS, Visiting Professor of Emergency Medicine

B.Sc., M.D. (British Columbia [Canada] 1975, 1979) [2006]

WILLIAM F. WALSH, Professor of Pediatrics; Adjunct Professor of Nursing B.S. (U.S. Air Force Academy 1972); M.D. (Texas, San Antonio 1976) [1992]

ARTHUR S. WALTERS, Professor of Neurology

B.A. (Kalamazoo College 1965); M.S. (Northwestern 1967); M.D. (Wayne State 1972) [2008]

TRAVIS T. WALTERS, Clinical Instructor in Pediatrics

B.S., M.D. (Vanderbilt 1995, 1999) [2002]

AMR AHMED WALY, Assistant Professor of Anesthesiology

M.D. (Ain Shams [Egypt] 1984) [2007]

DAO WU WANG, Research Assistant Professor of Medicine

M.S. (Tongji Medical [China] 1984); M.D. (Xianning Medical [China] 1987) [1996]

FENG WANG, Instructor in Radiology and Radiological Sciences

B.S., M.S. (Sichuan [China] 1991, 1994); Ph.D. (Vanderbilt 2002) [2007]

HUI-DONG WANG, Research Instructor in Psychiatry

B.S. (Jining Medical 1993); Ph.D. (Kagoshima [Japan] 2002) [2007]

LILY WANG, Assistant Professor of Biostatistics; Member, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Temple 1998); M.S., Ph.D. (North Carolina 2000, 2004) [2004]

ZHEN WANG, Research Instructor in Biochemistry

B.S., M.S. (Ocean [China] 1997, 2000); Ph.D. (Northern Illinois 2005) [2009]

RENEE M. WARD, Assistant Professor of Obstetrics and Gynecology

B.A. (Pomona College 1996); M.D. (California, San Francisco 2001) [2008]

LORRAINE B. WARE. Associate Professor of Medicine

B.A. (Claremont McKenna 1988); M.D. (Johns Hopkins 1992) [2002]

JOHN J. WARNER, Clinical Instructor in Urologic Surgery

B.S. (Cornell 1972); M.D. (Northwestern 1976) [1982]

JOHN SLOAN WARNER, Professor of Neurology, Emeritus

B.S. (University of the South 1952); M.D. (Vanderbilt 1956) [1966]

MICHAEL DALE WARREN, Assistant Professor of Pediatrics

B.A. (Wake Forest 1999); M.D. (East Carolina 2003) [2007]

ZACHARY E. WARREN, Assistant Professor of Clinical Pediatrics; Assistant Professor of Clinical Psychiatry; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.S. (William and Mary 1997); M.S., Ph.D. (Miami (Florida) 2002, 2005) [2006]

MARY KAY WASHINGTON, Professor of Pathology

B.S. (Mississippi State 1979); M.D. (North Carolina 1982) [1996]

DAVID H. WASSERMAN, Ronald E. Snato Professor of Diabetes Research; Professor of Molecular Physiology and Biophysics

B.S., M.S. (California, Los Angeles 1979, 1981); Ph.D. (Toronto 1985) [1985]

GEETA P. WASUDEV, Adjunct Assistant Professor of Anesthesiology

B.Sc., M.B., B.S. (Bombay 1957, 1961) [1972]

MICHAEL R. WATERMAN, Natalie Overall Warren Distinguished Professor of Biochemistry and Chair of the Department

B.A. (Willamette 1961); Ph.D. (Oregon 1969) [1992]

ALEX G. WATERSON, Research Assistant Professor of Pharmacology

B.S. (Mississippi State 1994); Ph.D. (Emory 1999) [2008]

MARK STEPHEN WATHEN, Associate Professor of Medicine

B.S. (Notre Dame 1980); M.D. (Louisville 1984) [1992]

SCOTT CHRISTOPHER WATKINS, Assistant Professor of Anesthesiology

B.S. (Georgia 1998); M.D. (Medical College of Georgia 2003) [2008]

HORACE E. WATSON, Assistant Professor of Orthopaedics and Rehabilitation B.S., M.D. (Alabama 1953, 1957) [1987]

JEFFRY T. WATSON, Assistant Professor of Orthopaedics and Rehabilitation

B.A. (Baylor 1990); M.D. (Texas, Southwestern Medical Center 1994) [2001]

PAULA L. WATSON, Assistant Professor of Medicine

B.S. (Northeast Louisiana 1986); M.D. (Arkansas 1990) [2000]

SALLY A. WATSON, Instructor in Pediatrics; Instructor in Anesthesiology

B.S. (Indiana 1990); M.D. (Vanderbilt 1994) [2004]

CAROLYN S. WATTS, Senior Associate in Surgery; Clinical Instructor in Nursing B.S.N. (Olivet Nazarene 1971); M.S.N. (Tennessee 1978); R.N., C.W.C.N. [2004]

LAURA L. WAYMAN, Assistant Professor of Ophthalmology and Visual Sciences

B.A. (National 1983); M.S. (Maryland 1985); M.D. (Mayo Medical School 1998) [2005]

ALISSA M. WEAVER, Associate Professor of Cancer Biology; Assistant Professor of Pathology B.S./B.A. (Stanford 1991); Ph.D., M.D. (Virginia 1997, 1998) [2003]

CHARLES DAVID WEAVER, Research Associate Professor of Pharmacology

B.S., Ph.D. (Tennessee 1989, 1994) [2004]

KYLE DEREK WEAVER, Assistant Professor of Neurological Surgery

B.S. (Duke 1988); M.D. (North Carolina 1996) [2004]

LIZA M. WEAVIND, Associate Professor of Anesthesiology; Associate Professor of Surgery M.D. (Witwatersrand 1990) [2007]

DONNA JANE WEBB, Assistant Professor of Biological Sciences; Assistant Professor of Cancer Biology; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience

B.S. (James Madison 1989); Ph.D. (Virginia 1995) [2005]

LYNN E. WEBB, Assistant Vice Chancellor for Health Affairs; Assistant Professor of Medical Education and Administration; Clinical Assistant Professor of Nursing

B.S., M.S. (Illinois State 1971, 1973); M.B.A. (Illinois 1983); Ph.D. (Southern Illinois 1997) [1997]

TRENIA LYN WEBB, Instructor in Clinical Obstetrics and Gynecology

B.S. (David Lipscomb 1994); M.D. (Tennessee 1999) [2009]

WANDA G. WEBB, Assistant Professor of Speech (Language Pathology)

B.S. (Middle Tennessee State 1970); M.S. (Eastern Illinois 1971); Ph.D. (Vanderbilt 1979) [1978]

WARREN W. WEBB, Professor of Psychiatry, Emeritus

B.A. (North Carolina 1947); Ph.D. (Duke 1952) [1956]

AMY GREGORY WEEKS, Assistant Professor of Obstetrics and Gynecology

B.A. (Vanderbilt 1981); M.D. (Tennessee, Memphis 1985) [2005]

DANIEL S. WEIKERT, Assistant Professor of Clinical Ophthalmology and Visual Sciences B.S. (Indiana 1987); M.D. (Vanderbilt 1991) [1995]

DOUGLAS R. WEIKERT, Associate Professor of Orthopaedics and Rehabilitation; Assistant Professor of Plastic Surgery; Director, Hand Division B.S., M.D. (Vanderbilt 1983, 1987) [1993]

P. ANTHONY WEIL, Professor of Molecular Physiology and Biophysics

B.S. (Northern Illinois 1972); Ph.D. (Texas Health Science Center, Houston 1976) [1986]

JANE R. WEINBERG, Assistant Clinical Professor of Psychiatry

B.S. (Polytech Institute of Brooklyn 1969); M.D. (Pennsylvania 1973) [2007]

STUART TOBE WEINBERG, Assistant Professor of Biomedical Informatics; Assistant Professor of Pediatrics

B.S. (Dartmouth 1981); M.D. (Cincinnati 1985) [2004]

ELIZABETH E. WEINER, Senior Associate Dean for Informatics, School of Nursing; Professor of Nursing; Professor of Biomedical Informatics

B.S.N. (Kentucky 1975); M.S.N. (Cincinnati 1978); Ph.D. (Kentucky 1982); R.N. [2000]

MATTHEW BRET WEINGER, Norman Ty Smith Professor of Patient Safety and Medical Simulation; Professor of Anesthesiology; Professor of Biomedical Informatics

B.S., M.S. (Stanford 1978, 1978); M.D. (California 1982) [2004]

DAVID D. WEINSTEIN, Assistant Professor of Psychiatry

B.S., M.D. (Loyola, Chicago 1979, 1982) [1998]

JORN-HENDRIK WEITKAMP, Assistant Professor of Pediatrics

B.S. (Ruhr-University of Bochum [Germany] 1990); M.D. (Ulm [Germany] 1995) [2006]

GLENN A. WEITZMAN, Assistant Clinical Professor of Obstetrics and Gynecology

B.S. (SUNY, Stony Brook 1978); M.D. (Johns Hopkins 1982) [1996]

EDWARD BRIAN WELCH, Visiting Assistant Professor of Radiology and Radiological

B.S. (Southern California 1998); Ph.D. (Mayo Clinical College of Medicine 2003) [2004] JACK N. WELLS, Professor of Pharmacology, Emeritus

B.S. (Park 1959); M.S., Ph.D. (Michigan 1962, 1963) [1973]

K. SAM WELLS, Research Professor of Molecular Physiology and Biophysics; Member, Vanderbilt Kennedy Center for Research on Human Development B.S. (Utah 1982); M.S., Ph.D. (New Mexico 1984, 1987) [2000]

ROBERT A. WELLS, Instructor in Clinical Anesthesiology

B.A. (Transylvania 2001); M.D. (Louisville 2005) [2009]

WANQING WEN, Research Associate Professor of Medicine

M.D., M.S. (Hunan Medical 1984, 1987) [2000]

J. JASON WENDEL, Assistant Professor of Plastic Surgery B.A. (Wabash 1992); M.D. (Indiana 1996) [2002]

SUSAN RAE WENTE, Professor of Cell and Developmental Biology and Chair of the Department; Associate Vice Chancellor for Research; Senior Associate Dean for Biomedical Sciences, School of Medicine

B.S. (Iowa 1984); Ph.D. (California, Berkeley 1988) [2002]

JAY A. WERKHAVEN, Associate Professor of Otolaryngology

B.A. (Wittenberg 1978); M.D. (Wake Forest 1982) [1992]

JOHN R. WERTHER, Associate Clinical Professor of Oral and Maxillofacial Surgery B.S. (New York 1981); D.M.D. (Harvard 1986); M.D. (Vanderbilt 1988) [2007]

ROBERT T. WERTZ, Professor of Hearing and Speech Sciences, Emeritus

A.B. (Long Beach State 1959); A.M., Ph.D. (Stanford 1964, 1967) [1992]

RALPH E. WESLEY, Clinical Professor of Ophthalmology and Visual Sciences

B.A. (Kentucky 1967); M.D. (Vanderbilt 1972) [1979]

DOUGLAS CASEY WEST, Assistant in Medicine

B.S.N., M.S.N. (Medical University of South Carolina 1989, 1990) [2009]

JAMES D. WEST, Assistant Professor of Medicine

B.S. (Missouri, Columbia 1989); Ph.D. (Georgia Institute of Technology 1996) [2007]

JULE J. WEST, Assistant Professor of Medicine

B.A. (Wheaton College 1989); M.S.N., M.D. (Vanderbilt 1991, 1997) [2008]

KEVIN D. WEST, Assistant Clinical Professor of Oral and Maxillofacial Surgery

B.S. (Western Kentucky 1999); M.S., D.M.D. (Louisville 2003, 2003) [2007]

W. SCOTT WEST, Assistant Clinical Professor of Psychiatry

A.B., M.D. (Tennessee 1976, 1982) [1986]

C. WILLIAM WESTER, Assistant Professor of Medicine

B.A. (Bowdoin 1987); M.D. (Dartmouth 1991) [2008]

J. DENISE WETZEL, Senior Associate in Pediatrics B.S. (Arkansas State 1982) [1993]

S. PATRICK WHALEN, Assistant Professor of Medicine

B.S., M.D. (Wake Forest 1996, 2000) [2008]

URSULA P. WHALEN, Assistant Professor of Medicine

B.A. (Boston College 1993); M.D. (Wake Forest 2000) [2008]

VALERIE N. WHATLEY, Assistant Professor of Emergency Medicine; Assistant Professor of Pediatrics

B.S. (Kentucky 1993); M.D. (South Alabama 1997) [2007]

ARTHUR P. WHEELER, Associate Professor of Medicine

B.A., M.D. (Maryland 1978, 1982) [1989]

PAUL W. WHEELER, Assistant Clinical Professor of Medicine

B.S. (Samford 1973); M.D. (Alabama 1977) [1983]

WILLIAM O. WHETSELL, JR., Professor of Pathology, Emeritus

B.S. (Wofford 1961); M.S., M.D. (Medical University of South Carolina 1964, 1966) [1983]

BOBBY J. WHITE, Instructor in Clinical Medicine

B.S. (Middle Tennessee State 1980); M.D. (Tennessee, Memphis 1985) [1995]

DAVID J. WHITE, Clinical Instructor in Pediatrics

B.S. (Texas A & M 1988); M.D. (Texas 1995) [1998]

JOAN W. WHITE, Assistant Clinical Professor of Pediatrics

B.S. (Virginia Polytechnic 1981); M.D. (Medical College of Virginia 1986) [1989]

RICHARD O. WHITE III, Clinical Instructor in Pediatrics

B.S. (Duke 1998); M.D. (Vanderbilt 2002) [2006]

STEVEN JOHN WHITE, Assistant Professor of Emergency Medicine; Assistant Professor of Pediatrics

A.B. (Franklin and Marshall 1978); M.D. (Pittsburgh 1983) [1992]

TERESA S. WHITE. Clinical Instructor in Pediatrics

B.A. (Goucher 1995); M.D. (Eastern Virginia 2001) [2006]

ROBERT H. WHITEHEAD, Research Professor of Medicine; Research Professor of Cell and Developmental Biology; Research Professor of Cancer Biology

B.Sc. (Queensland 1965); M.Sc. (Queensland [Australia] 1968); Ph.D. (Wales 1975) [1999]

RICHARD R. WHITESELL, Research Assistant Professor of Molecular Physiology and **Biophysics** 

B.A. (Indiana 1970); Ph.D. (Vanderbilt 1976) [1985]

JAMES ALAN WHITLOCK, Craig-Weaver Professor of Pediatrics

B.S. (Southwestern at Memphis 1980); M.D. (Vanderbilt 1984) [1991]

JONNA H. WHITMAN, Instructor in Clinical Family Medicine

B.A. (Williams 1990); M.D. (Virginia 1994) [2005]

DONNA C. WHITNEY, Assistant Professor of Clinical Pediatrics; Assistant Professor of Anesthesiology

B.S. (San Diego State 1988); M.D. (Uniformed Services 1992) [2006]

GINA M. WHITNEY, Instructor in Clinical Pediatrics B.A. (Brown 1994); M.D. (Tulane 1998) [2005]

JANICE E. WHITTY, Professor of Obstetrics and Gynecology at Meharry Medical College; Adjunct Professor of Obstetrics and Gynecology at Vanderbilt M.D. (SUNY, Brooklyn 1985); R.N. [2009]

CHRISTINE M. WHITWORTH, Clinical Instructor in Obstetrics and Gynecology

B.S. (Memphis State 1978); M.D. (Tennessee 1983) [1991]

PAT WINSTON WHITWORTH, JR., Associate Clinical Professor of Surgery B.A. (Tennessee 1979); M.D. (Tennessee, Memphis 1983) [2004]

CRAIG WIERUM, Assistant Clinical Professor of Medicine

B.S. (Duke 1984); M.D. (North Carolina 1990) [1995]

RYAN B. WIESEMANN, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.B.A. (Emory 1999); M.S. (Louisville 2004); D.M.D. (Louisville School of Dentistry 2004) [2008]

MARK A. WIGGER, Assistant Professor of Medicine

B.A. (Tennessee, Knoxville 1978); M.D. (East Tennessee State 1984) [2006]

JOHN P. WIKSWO, JR., Gordon A. Cain University Professor; A. B. Learned Professor of Living State Physics; Professor of Physics; Professor of Biomedical Engineering; Professor of Molecular Physiology and Biophysics

B.A. (Virginia 1970); M.S., Ph.D. (Stanford 1973, 1975) [1977]

GEOFFREY E. WILE, Assistant Professor of Radiology and Radiological Sciences B.S. (Belmont 1998); M.D. (Tennessee 2002) [2008]

RONALD G. WILEY, Professor of Neurology; Professor of Pharmacology; Investigator, Center for Molecular Neuroscience

B.S., M.D., Ph.D. (Northwestern 1972, 1975, 1975) [1982]

ELISABETH DONLEVY WILLERS, Assistant Professor of Medicine

B.S. (North Carolina, Chapel Hill 1995); M.D. (Bowman Gray 2000) [2004]

ANNETTE WILLIAMS, Librarian, Eskind Biomedical Library

B.A. (SUNY, Binghamton 1988); M.L.S. (SUNY, Buffalo 1991) [1993]

ARTHUR E. WILLIAMS, Instructor in Clinical Family Medicine

B.S. (Providence 1982); D.O. (New England College of Osteopathic Medicine 1982) [2004]

BRAD V. WILLIAMS, Psychiatrist, Student Health Service; Assistant Clinical Professor of Psychiatry

B.A., M.D. (Mississippi 1973, 1981) [1985]

CHRISTOPHER S. WILLIAMS, Assistant Professor of Clinical Medicine; Assistant Professor of Cancer Biology

B.Sc. (Brigham Young 1992); Ph.D., M.D. (Vanderbilt 1999, 2002) [2006]

DAVID BRANDON WILLIAMS, Assistant Professor of Surgery

B.S. (Stanford 1995); M.D. (Tennessee, Memphis 2000) [2007]

JENNIFER R. WILLIAMS, Assistant Professor of Radiology and Radiological Sciences B.S. (North Carolina, Chapel Hill 1994); M.D. (Texas, San Antonio 2001) [2007]

JOHN VANCE WILLIAMS, Assistant Professor of Pediatrics; Assistant Professor of Microbiology and Immunology

B.S. (Virginia 1990); M.D. (Medical College of Virginia 1994) [2003]

KENT C. WILLIAMS, Assistant Professor of Pediatrics

B.S. (Wheaton 1989); M.D. (Illinois 1998) [2004]

LAURA L. WILLIAMS, Assistant Clinical Professor of Obstetrics and Gynecology

B.A., M.D. (Wake Forest 1980, 1984) [1990]

MISTI D. WILLIAMS, Assistant in Pediatrics

B.A. (Bard 1997); M.S. (Cincinnati 2006) [2006]

PATRICIA STICCA WILLIAMS, Clinical Instructor in Pediatrics

B.A. (Rochester 1989); M.D. (SUNY, Buffalo 1993) [1999]

PHILLIP E. WILLIAMS, Research Associate Professor of Surgery

B.S. (Middle Tennessee State 1974) [1984]

SARALYN R. WILLIAMS, Associate Professor of Clinical Medicine; Associate Professor of Emergency Medicine

B.S. (Erskine 1986); M.D. (Duke 1990) [2006]

SCOTT MATTHEW WILLIAMS, Professor of Molecular Physiology and Biophysics;

Associate Professor of Pediatrics; Adjunct Research Associate Professor of Medicine, Meharry Medical College

A.B. (Chicago 1976); Ph.D. (Washington University 1981) [1999]

STACEY M. WILLIAMS, Clinical Instructor in Pediatrics

B.S., M.D. (Pittsburgh 1990, 1997) [2000]

W. CARTER WILLIAMS, JR., Assistant Clinical Professor of Medicine

B.A., M.D. (Vanderbilt 1953, 1956) [1963]

IDA MICHELE WILLIAMS-WILSON, Clinical Instructor in Pediatrics

B.S., M.D. (Vanderbilt 1989, 1993) [1996]

BRIAN D. WILLIAMSON, Assistant Clinical Professor of Medicine

B.A. (Case Western Reserve 1982); M.D. (Ohio State 1986) [2001]

MARCIA L. WILLS, Assistant Professor of Pathology

B.A. (Hastings 1984); M.D. (Dartmouth 1992) [2004]

MORGAN JACKSON WILLS, Assistant Clinical Professor of Medicine

B.A. (Princeton 1990); M.D. (Vanderbilt 1996) [2001]

AMANDA GRACE WILSON, Assistant Professor of Psychiatry; Assistant Professor of Emergency Medicine

B.S., M.D. (Alabama 1998, 2002) [2007]

ANDREW JAMES WILSON, Research Instructor in Obstetrics and Gynecology

B.S. (Melbourne 1994); Ph.D. (Royal Melbourne Hospital 1998) [2008]

GREGORY J. WILSON, Assistant Professor of Pediatrics

B.A., M.D. (Johns Hopkins 1982, 1987) [1992]

KEITH T. WILSON, Professor of Medicine; Professor of Cancer Biology

B.A. (Cornell 1982); M.D. (Harvard 1986) [2005]

KRISTINA WILSON, Instructor in Clinical Orthopaedics and Rehabilitation; Instructor in Clinical Pediatrics

B.S. (Whitman College 2001); M.D. (Nevada 2005) [2008]

RONALD BRUCE WILSON, Adjunct Assistant Professor of Pathology B.S., D.V.M. (Michigan State 1975, 1977) [1983] ANGELA WILSON-LIVERMAN, Assistant Professor of Obstetrics and Gynecology B.S. (North Carolina, Chapel Hill 1990); M.S.N. (Vanderbilt 1999) [2007] DANNY G. WINDER, Associate Professor of Molecular Physiology and Biophysics; Investigator, Vanderbilt Kennedy Center for Research on Human Development; Investigator, Center for Molecular Neuroscience B.S. (North Georgia College and State University 1990); Ph.D. (Emory 1995) [1999] DAVID WINEK, Clinical Instructor in Anesthesiology B.S. (Wisconsin 1979); M.D. (Washington University 1983) [2009] CARL E. WINGO, Clinical Instructor in Obstetrics and Gynecology M.D. (Miami [Florida] 1986) [1994] NAT T. WINSTON, Assistant Clinical Professor of Psychiatry B.A., M.D. (Vanderbilt 1950, 1953) [1964] LINDA WIRTH, Assistant Clinical Professor of Psychiatry B.A. (lowa 1967); M.S.S.W. (Tennessee 1978) [1987] ANNE COURTER WISE, Clinical Instructor in Obstetrics and Gynecology B.S. (William and Mary 1990); M.D. (Johns Hopkins 1996) [2000] PAUL E. WISE, Assistant Professor of Surgery B.S. (Georgetown 1992); M.D. (Johns Hopkins 1996) [2004] WENDY WISER, Clinical Instructor in Family Medicine D.O. (Kirksville College of Osteopathic Medicine 2000) [2006] SUSAN WODICKA, Assistant Professor of Medicine B.S., M.D. (Vanderbilt 1971, 1975) [1989] BRUCE L. WOLF, Assistant Clinical Professor of Medicine B.A. (Amherst 1977); M.D. (Louisville 1982) [1989] LAWRENCE K. WOLFE, Professor of Clinical Medicine B.A., M.D. (Vanderbilt 1957, 1960) [1968] BENJAMIN D. WOMACK, Assistant Professor of Clinical Medicine B.S. (Mississippi State 2000); M.D. (Washington University 2005) [2008] ALASTAIR J. J. WOOD, Professor of Medicine, Emeritus M.B., Ch.B. (Saint Andrews [Scotland] 1970) [1977] G. WAYNE WOOD, Assistant in Medical Education and Administration B.S. (Tennessee 1980); M.L.A.S. (Vanderbilt 2007) [1996] AUBAINE M. WOODS, Clinical Instructor in Pediatrics B.A. (Miami [Ohio] 1998); M.D., M.S.P.H. (Louisville 2004, 2004) [2007] GRAYSON NOEL WOODS, Clinical Instructor in Obstetrics and Gynecology B.S. (Colorado 1994); M.D. (East Tennessee State 1998) [2002] STEPHEN C. WOODWARD, Professor of Pathology, Emeritus M.D. (Emory 1959) [1985] ALISON L. WOODWORTH, Assistant Professor of Pathology B.S. (Vanderbilt 1996); Ph.D. (Washington University 2003) [2007] CHRISTOPHER T. WOOTTEN, Assistant Professor of Otolaryngology B.A. (Birmingham-Southern 1998); M.D. (Baylor 2002) [2009] ROBERT J. WORKMAN, Associate Professor of Clinical Medicine A.B. (Princeton 1964); M.D. (Harvard 1969) [1975] JOHN A. WORRELL, Professor of Radiology and Radiological Sciences B.S. (McNeese State 1968); M.D. (Vanderbilt 1971) [1989] BETTY WORRI, Assistant Professor of Clinical Anesthesiology M.D. (Ghana 1987) [2007] KEITH WRENN, Professor of Emergency Medicine; Associate Professor of Medicine

B.S. (Baylor 1972); M.D. (Emory 1976) [1992]

CHRISTOPHER V. E. WRIGHT, Professor of Cell and Developmental Biology

B.Sc. (Warwick 1980); D.Phil. (Oxford 1984) [1990]

DAVID W. WRIGHT, Associate Professor of Chemistry; Associate Professor of Pediatrics

B.A., B.S. (Tulane 1988); Ph.D. (Massachusetts Institute of Technology 1993) [2001]

JOHN KELLY WRIGHT, JR., Professor of Surgery

B.S. (Vanderbilt 1977); M.D. (Johns Hopkins 1981) [1990]

PATTY WALCHAK WRIGHT, Assistant Professor of Medicine

B.S. (Western Kentucky 1993); M.D. (Alabama 1997) [2002]

PETER F. WRIGHT, Adjunct Professor of Pediatrics

B.A. (Dartmouth 1964); M.D. (Harvard 1967) [1974]

SCOTT WRIGHT, Adjunct Assistant Professor of Hearing and Speech Sciences

B.A. (California, Davis 1991); M.Aud. (Auckland 1995) [2006]

SETH W. WRIGHT, Associate Professor of Emergency Medicine

B.S. (California, Davis 1981); M.D. (Michigan 1985) [1989]

GUANQING WU, Associate Professor of Medicine; Associate Professor of Cell and Developmental Biology

M.D. (Nanjing Railway Medical College 1982); Ph.D. (Peking Union Medical School 1991) [2001]

HUIYUN WU, Associate in Biostatistics

B.S. (Nanchang Health 1982); M.S. (Quindao Medical 1989); Ph.D. (Chinese Academy of Preventive Medicine 1996); M.S. (Southern California 2003) [2004]

JANE Y. WU. Adjunct Professor of Pediatrics

M.B., B.S. (Shanghai Medical 1986); Ph.D. (Stanford 1991) [2003]

LAN WU, Research Assistant Professor of Microbiology and Immunology

M.D. (Tongji Medical [China] 1982) [2001]

TODD R. WURTH, Assistant Professor of Clinical Orthopaedics and Rehabilitation B.S. (Murray State 1993); M.D. (Louisville 1998) [2009]

CURTIS A. WUSHENSKY, Assistant Professor of Radiology and Radiological Sciences B.A. (Pennsylvania 1975); M.D. (Pittsburgh 1979) [2000]

KENNETH N. WYATT, Instructor in Clinical Pediatrics; Clinical Instructor in Nursing B.A., M.D. (Michigan State 1968, 1979) [1984]

KIMBERLEE D. WYCHE-ETHERIDGE, Adjunct Instructor in Pediatrics

B.A. (Amherst 1987); M.D. (Massachusetts 1993); M.P.H. (Harvard 2000) [2004]

DAVID A. WYCKOFF, Assistant Clinical Professor of Pediatrics

B.A. (Princeton 1996); M.D. (Tennessee 2000) [2007]

KENNETH W. WYMAN, Assistant Professor of Medicine; Clinical Assistant Professor of Nursing

B.S. (Murray State 1986); M.D. (Louisville 1990) [2000]

FEN XIA, Assistant Professor of Radiation Oncology; Assistant Professor of Cancer Biology M.Sc., M.D. (Suzhou Medical [China] 1986, 1983); Ph.D. (Harvard 1996) [2002]

ZIXIU XIANG, Research Assistant Professor of Pharmacology

B.S., M.S. (Fudan [China] 1986, 1986); Ph.D. (Yale 1995) [2006]

BAOGANG JONATHAN XU, Assistant Professor of Neurological Surgery; Assistant Professor of Cancer Biology

B.S. (Lee 1999); Ph.D. (Vanderbilt 2005) [2005]

HUA XU, Assistant Professor of Biomedical Informatics

B.S. (Nanjing [China] 1998); M.S. (New Jersey Institute of Technology 2001); M.Phil., Ph.D. (Columbia 2007, 2008) [2008]

LEI XU, Research Assistant Professor of Biostatistics

M.S., Ph.D. (Michigan 2004, 2007) [2008]

XIAOCHUAN CAROL XU, Research Assistant Professor of Medicine

M.D. (Sun Yat-Sen Medical 1988); Ph.D. (Université des Sciences de Lille [France] 1997) [2001]

PATRICK S. YACHIMSKI, Assistant Professor of Medicine

A.B., M.D., M.P.H. (Harvard 1996, 2002, 2008) [2009]

FANG YAN, Research Associate Professor of Pediatrics

B.S. (Nankai [China] 1986); M.D. (Tianjin Medical 1991); Ph.D. (Louisville 1997) [2001]

HEPING YAN, Research Assistant Professor of Radiation Oncology

M.D. (West China University of Medical Sciences 1973) [2007]

PATRICIA GALE YANCEY, Research Assistant Professor of Medicine

B.S. (Averett 1986); Ph.D. (Wake Forest 1993) [2002]

ELIZABETH YANG, Associate Professor of Pediatrics; Associate Professor of Cell and Developmental Biology; Associate Professor of Cancer Biology

A.B., M.S. (Chicago 1980, 1980); M.D., Ph.D. (Stanford 1987, 1987) [1997]

GONG YANG, Research Assistant Professor of Medicine

M.D. (Zhejiang [China] 1984); M.P.H. (Shanghai Medical 1990) [2000]

JIN-LONG YANG, Research Instructor in Ophthalmology and Visual Sciences M.D. (Shanghai Medical 1969) [2007]

TAO YANG, Research Associate Professor of Medicine

B.S., M.S. (Hubei Medical [China] 1979, 1987); Ph.D. (Tromsø [Norway] 1992) [1995]

XIANGLI YANG, Assistant Professor of Medicine; Assistant Professor of Pharmacology B.S. (Guangxi Normal 1982); M.S. (Mississippi State 1994); Ph.D. (Alabama, Birmingham 1999) [2006]

THOMAS E. YANKEELOV, Assistant Professor of Radiology and Radiological Sciences; Assistant Professor of Biomedical Engineering; Assistant Professor of Cancer Biology B.A. (Louisville 1996); M.A., M.S. (Indiana University 1998, 2000); Ph.D. (SUNY, Stony Brook 2003) [2005]

BING YAO, Research Assistant Professor of Medicine

M.D. (Xuzhou Medical [China] 1985); Ph.D. (Nanjing Medical [China] 2001) [2007]

SONG-YI YAO, Research Assistant Professor of Neurology

M.D., M.S. (Shanghai 1977, 1979) [2000]

JOSHUA L. YARBROUGH, Assistant in Anesthesiology

B.S. (Memphis 1993); M.S. (Vanderbilt 1995) [2002]

MARY I. YARBROUGH, Associate Professor of Clinical Medicine; Medical Director, Center for Occupational and Environmental Medicine; Assistant Professor of Preventive Medicine B.S., M.D. (Vanderbilt 1976, 1981); M.P.H. (Johns Hopkins 1990) [1994]

WENDELL GRAY YARBROUGH, Associate Professor of Otolaryngology; Associate Professor of Cancer Biology

A.B., M.D. (North Carolina 1985, 1989) [2003]

AIDA YARED, Assistant Professor of Pediatrics

B.S., M.D. (American University of Beirut 1976, 1980) [1986]

H. KENDLE YATES, Clinical Instructor in Anesthesiology

B.S. (Freed-Hardeman 1989); M.D. (Vanderbilt 1993) [2009]

EUGENIA M. YAZLOVITSKAYA, Research Assistant Professor of Radiation Oncology M.S. (Kiev State 1984); Ph.D. (Palladin Institute [Ukraine] 1997) [2002]

CHUANZHONG YE, Research Instructor in Medicine

M.D., M.S. (Fujian Medical [China] 1991, 1999); Ph.D. (Fudan, Shanghai [China] 2002) [2009]

FEI YE, Instructor in Biostatistics

B.S. (Southeast University for Nationalities [China] 2001); M.P.H. (South Carolina 2004); Ph.D. (South Carolina School of Public Health 2007) [2007]

MADHU S. YELAMELI, Adjunct Assistant Professor of Anesthesiology

B.S. (Mahajans Junir 1984); M.D. (Government Medical College [Mysore] 1989) [2007]

ASHWINI K. YENAMANDRA, Assistant Professor of Pathology

M.S., Ph.D. (Andhra [India] 1976, 1982) [2009]

JOHN E. YEZERSKI, Assistant Clinical Professor of Oral and Maxillofacial Surgery B.S. (Samford 2002); D.M.D. (Kentucky 2006) [2009]

U.N. VI. Danagrah Assistant Durfassay of Madicina

YAJUN YI, Research Assistant Professor of Medicine

M.D. (Hengyang Medical 1986); Ph.D. (Manitoba 1997); M.S. (Loyola, Chicago 2000) [2001]

DENGPING YIN, Assistant Professor of Surgery

M.D. (Three Gorges Medical [China] 1983); M.S., Ph.D. (Tongji Medical [China] 1987, 1992) [2006]

HUIYONG YIN, Research Assistant Professor of Medicine; Research Associate Professor of Pharmacology

B.S. (Tongi 1992); M.S. (Shanghai Institute of Organic Chemistry 1995); Ph.D. (Vanderbilt 2002) [2003]

CHRISTINA YNARES, Assistant Clinical Professor of Medicine

B.S., M.D. (Philippines 1968, 1972) [1981]

YORDANOS YOHANNES, Assistant Professor of Clinical Anesthesiology

B.A. (California, Berkeley 1995); M.D. (Indiana 2000) [2006]

TADAYUKI YONEYAMA, Clinical Instructor in Pediatrics

B.S. (Duke 1990); M.D. (Medical College of Virginia 1994) [1998]

TOSHITAKA YOSHII, Research Assistant Professor of Orthopaedics and Rehabilitation M.D. (Toko Medical and Dental [Japan] 1999) [2007]

GEORGE YOUNG, Associate Professor of Clinical Radiology and Radiological Sciences B.S. (Columbia 1971); M.D. (George Washington 1975) [2009]

PAMPEE PAUL YOUNG, Assistant Professor of Pathology; Assistant Professor of Medicine B.A. (Rice 1990); Ph.D. (Texas, Southwestern Medical Center 1996); M.D. (Texas, Southwestern 1998) [2003]

RUTH T. YOUNG, Assistant Professor of Clinical Medicine

B.A. (Duke 1972); M.A. (Minnesota 1974); M.D. (Tennessee, Memphis 1977) [1995]

CHANG YU, Assistant Professor of Biostatistics

B.S. (University of Science and Technology [China] 1990); M.S. (Southern Maine 1993); M.S. (Minnesota 1995); Ph.D. (Yale 1998) [2004]

ERIN N. Z. YU, Instructor in Pathology

B.S. (West Virginia 2002); D.V.M. (Ohio State 2006) [2008]

XIUPING YU, Research Assistant Professor of Urologic Surgery

B.Sc. (Nankai [China] 1991); M.Sc., Ph.D. (Dalian Medical [China] 1994, 2000) [2008]

JOHN MATTHEW YUILL, Clinical Instructor in Pediatrics

B.S., M.D. (Kentucky 1995, 2000) [2004]

FIONA ELIZABETH YULL, Assistant Professor of Cancer Biology

B.Sc. (Saint Andrews [Scotland] 1985); D.Phil. (Oxford [England] 1989) [1998]

MICHAIL ZABOIKIN, Research Assistant Professor of Medicine

M.S. (Moscow Physical Engineering Institute 1973); Ph.D. (All-Union Cancer Research Center 1983) [1999]

ALEXANDER ZAIKA, Assistant Professor of Surgery; Assistant Professor of Cancer Biology B.S., M.S. (Petersburg State 1983, 1986); Ph.D. (University of Chemical Technology 1995) [2005]

DAVID H. ZALD, Associate Professor of Psychology, College of Arts and Science; Associate Professor of Psychiatry; Investigator, Vanderbilt Kennedy Center for Research on Human Development

B.A. (Michigan 1989); Ph.D. (Minnesota 1997) [2000]

RICHARD M. ZANER, Ann Geddes Stahlman Professor of Medicine, Emeritus

B.S. (Houston 1957); M.A., Ph.D. (New School for Social Research 1959, 1961) [1981]

MICHAEL D. ZANOLLI, Associate Clinical Professor of Medicine

B.S. (Memphis State 1977); M.D. (Tennessee 1981) [1992]

EDWARD Y. ZAVALA, Research Assistant Professor of Surgery

B.S. (San Diego State 1978); M.B.A. (Phoenix 1992) [2003]

DAVID L. ZEALEAR, Professor of Otolaryngology

B.S. (California, Davis 1970); Ph.D. (California, San Francisco 1979) [1986]

LAURA NICOLE ZEIGLER, Assistant Professor of Clinical Anesthesiology

B.S. (Youngstown State 2000); M.D. (Northeastern Ohio 2004) [2009]

FENGHUA ZENG, Research Assistant Professor of Medicine

B.S., M.D., Ph.D. (Shandong [China] 1987, 1996, 2000) [2006]

HUAIREN ZENG, Instructor in Radiology and Radiological Sciences

B.S. (Xiantan 1987); M.S. (Beijing 1990); Ph.D. (Kent State 1999) [2005]

ROY ZENT, Associate Professor of Medicine; Associate Professor of Cancer Biology;

Associate Professor of Cell and Developmental Biology

M.B., B.Ch. (Witwatersrand [South Africa] 1984); Ph.D. (Toronto 1997) [2000]

BING ZHANG, Assistant Professor of Biomedical Informatics

B.S., M.S. (Nanjing 1993, 1996); Ph.D. (Chinese Academy of Sciences 1999) [2006]

MING-ZHI ZHANG, Assistant Professor of Medicine; Assistant Professor of Cancer Biology

M.D., M.S. (Xuzhou Medical [China] 1985, 1990) [2007] XIANGLAN ZHANG, Assistant Professor of Medicine

M.D. (Zhejiang 1989); M.P.H. (Vanderbilt 2003) [2005]

YAHUA ZHANG, Research Assistant Professor of Medicine

M.D. (Nantong Medical School 1986) [2003]

ZHONGHUA ZHANG, Research Assistant Professor of Pathology

M.D., M.S. (Shanghai Medical 1992, 1995) [2004]

BIN ZHAO, Research Assistant Professor of Biochemistry

B.S. (Beijing University of Chinese Medicine 1993); Ph.D. (Shanghai Institute of Materia Medica 2002) [2005]

DAVID XIAO-MING ZHAO, Harry and Shelley Page Associate Professor of Interventional Cardiology; Associate Professor of Medicine

M.D. (Shanghai Medical 1985); Ph.D. (Queensland [Australia] 1992) [2001]

ZHONGMING ZHAO, Assistant Professor of Biomedical Informatics; Assistant Professor of Psychiatry; Assistant Professor of Cancer Biology

B.S. (Zhejiang [China] 1991); M.S. (Peking [China] 1996); M.D. (Texas, Houston 2000); M.S. (Houston 2002) [2009]

WEI ZHENG, Professor of Medicine; Ingram Professor of Cancer Research

M.D., M.P.H. (Shanghai Medical University 1983, 1986); Ph.D. (Johns Hopkins 1992) [2000]

TAO PETER ZHONG, Assistant Professor of Medicine; Assistant Professor of Cell and Developmental Biology; Assistant Professor of Pharmacology

B.S. (Shanghai Medical 1987); Ph.D. (SUNY, Stony Brook 1995) [2001]

JING ZHOU, Research Instructor in Microbiology and Immunology

B.S., M.S. (Ocean University of Qingdao [China] 1978, 1982); Ph.D. (Chinese Academy of Science 1986) [2003]

SHAN-REN ZHOU, Assistant Clinical Professor of Neurology

M.D. (Hsu Chou Medical College 1978) [1999]

WEISONG ZHOU, Research Assistant Professor of Medicine

B.S., M.S. (Yangzhou [China] 1983, 1989); Ph.D. (Kentucky 2001) [2003]

CHONGBIN ZHU, Research Assistant Professor of Pharmacology

M.D., M.S. (Anhui College of Traditional Chinese Medicine 1986, 1989); Ph.D. (Shanghai Medical 1995) [2005]

YUWEI ZHU, Associate in Biostatistics

M.D. (Shanghai Medical 1993); M.S. (Texas 1998) [2004]

JOHN A. ZIC, Associate Professor of Medicine; Associate Dean for Admissions, School of Medicine

B.S. (Notre Dame 1987); M.D. (Vanderbilt 1991) [1995]

JOZEF ZIENKIEWICZ, Research Instructor in Microbiology and Immunology

M.S., Ph.D. (Wroclaw [Poland] 1994, 2000) [2008]

ANDRIES ZIJLSTRA, Assistant Professor of Pathology; Assistant Professor of Cancer Biology B.S., Ph.D. (Washington State 1993, 1998) [2006]

CARL W. ZIMMERMAN, Professor of Obstetrics and Gynecology

B.S. (Peabody 1969); M.D. (Tennessee 1972) [2004]

LISA J. ZIMMERMAN, Research Assistant Professor of Biochemistry

B.A. (Wilkes 1993); M.S., Ph.D. (Vanderbilt 1995, 1998) [2003]

SANDRA S. ZINKEL, Assistant Professor of Medicine; Assistant Professor of Cancer Biology; Assistant Professor of Cell and Developmental Biology

B.S. (Indiana University 1982); Ph.D. (Yale 1989); M.D. (Chicago 1995) [2005]

ROGER J. ZOOROB, Professor and Chair, Family and Community Medicine at Meharry Medical College; Professor and Program Director for Family Medicine at Vanderbilt B.S., M.D., M.P.H. (American University of Beirut 1981, 1985, 1988) [2004]

MARY M. ZUTTER, Professor of Pathology; Professor of Cancer Biology; Director, Division of Hematopathology; Ingram Professor of Cancer Research

B.S., M.D. (Tulane 1976, 1981) [2003]

LAURENCE J. ZWIEBEL, Professor of Biological Sciences; Professor of Pharmacology; Investigator, Center for Molecular Neuroscience

B.S. (SUNY, Stony Brook 1980); M.S. (Michigan 1982); Ph.D. (Brandeis 1992) [1997]

TERESA ZYGLEWASKA, Assistant Clinical Professor of Neurology

M.S., M.D., Ph.D. (Academy of Medicine, Bialystok [Poland] 1983, 1986, 1990) [2008]

## Register of Students

## First-Year Class

Kristie Aamodt (B.S., Brigham Young University) Harrisonburg, VA Katherine L Allen (B.A., Kalamazoo College) Nashville, TN Andrew Ryan Alsentzer (B.S., Vanderbilt University) Nashville, TN Darling Jill Aragon (B.A., Samford University) Managua, Nicaragua Tyler Jay Armstrong (B.A., Vanderbilt University) Edina, MN Ravi Viswanathan Atreya (B.S., University of Arizona) Phoenix & Tucson, AZ Natalie Laura Ausborn (B.S., Birmingham Southern College) Gadsden, AL Neil K Bansal (B.S., Creighton University) Grand Forks, ND Sandeep Ramesh Bhave (B.S., Duke University) Cranberry Township, PA Arter Biggs (B.S., Grambling State University) Birmingham, AL Joshua Britton Bilsborrow (B.A., B.S., Michigan State University) East Lansing, MI Richard Brandon Boyer (B.S., Johns Hopkins University) Cooper City, FL Stefan Michael Bumol (B.A., Vanderbilt University) Indianapolis, IN Katharine M Burns (B.S., University of Illinois [Urbana-Champaign]) River Forest, IL Kevin Ricardo Carr (B.S., Morehouse College) St Thomas, Jamaica Michael Ryan Casner (B.S., Georgia Institute of Technology) Anthem, AZ Jason Hsin-chih Chen (B.A., University of California [Berkeley]) San Mateo, CA Tyffany Ping Yu Chen (B.S., University of California [Los Angeles]) Los Angeles, CA April Renee Christensen (B.S., University of Nebraska [Lincoln]) Parker, SD Kathleen Patricia Collins (B.A., Vanderbilt University) Gallatin, TN Jessica Irene Cornett (B.S., University of Miami) Palm Harbor, FL Stephanie Allison Couch (B.S., Massachusetts Institute of Technology) Brentwood, TN Jennifer Hannah Dang (B.S., University of Notre Dame) Houston, TX Laura Nicole D'Aoust (B.S., Massachusetts Institute of Technology) Rochester, NY Benjamin William Deschner (B.S., Purdue University) Fort Wayne, IN Stacey Lynn Doran (B.S., University of Kentucky) Burlington, KY Carol Jia-Rou Duh (B.S., Yale University) Flemington, NJ Ryan Christopher Durk (B.S., University of Missouri) Hallsville, MO Brent Lee Evans (B.S., Vanderbilt University) Nicholasville, KY Jeffrey Morrison Ewers (B.A., Vanderbilt University) Nashville, TN Anna Laura Fahy (B.S., University of Arizona) Phoenix, AZ Daniel Owen Fishman (B.A., Washington University in St. Louis) Irvine, CA Suzanne Elizabeth Fox (B.A., University of Notre Dame) Leawood, KS Erin Campbell Fulchiero (B.A., Bryn Mawr College) Cambridge, OH Silmon Ghebreyesus (B.S., Louisiana State University) Ruston, LA Nicholas J Giacalone (B.S., University of Cincinnati) Upper Sandusky, OH Everett Honaan Gu (B.S., University of Michigan) Rochester Hills, MI Scott Lawrence Hagan (B.S., University of Notre Dame) Nashville, TN Amanda Erica Harris (B.S., B.A., Michigan State University) Wildwood, MO Laila Hassam-Malani (B.A., Vanderbilt University) Johns Creek, GA Jaycelyn Raye Holland (B.S., Furman University) Athens, TN Stephanie Hsu (B.S., B.A., University of Texas [Austin]) Coppell, TX Troy John Hutchens (B.S., Southwestern University) Stillwater, OK Vanessa Jamie Bennett Hux (B.S., Yale University) Springboro, OH Laurence Oliver James (B.A., CUNY Hunter College) Brooklyn, NY Olufemi Femi Kassim (B.S.&Sc, McGill University) Toronto, ON, Canada

Elliott Jiwoo Kim (B.A., B.S., Vanderbilt University) Columbus, GA

Simeon Floyd King (B.S., Morehouse College) South Atlanta, GA

Mary Ellen Irene Koran (B.S., Duke University) Annapolis, MD

Katrina Esther Korhonen (B.A., Vanderbilt University) Houston, TX

Katherine Alisa Kudyba (B.S., University of Michigan) Northville, MI

Kevin Krishan Kumar (B.S., Cornell University) Seaford, NY

Ryan Devon Lang (B.S., Oakwood University) Huntsville, AL

Neal Weston Langdon (B.S., Lipscomb University) Nashville, TN

William John Lee (B.S., Duke University) Sunrise, FL

Alana Anne Lewis (B.S., Andrews University) Buffalo, NY

Opal Lin-Tsai (B.A., Johns Hopkins University) Palos Verdes Estates, CA

Dennis Timothy Lockney (B.S., University of North Carolina [Chapel Hill]) Concord, NC

Neil David Manus (B.E., Vanderbilt University) Cherry Hill, NJ

Daniel Jacob McClure (B.S., University of Alabama [Birmingham]) Chattanooga, TN

Matthew Russell McDonald (B.S., Auburn University) Huntsville, AL

Jason Andrew Metcalf (B.A., Washington University in St. Louis) Albion, IL

Lauren Michelle Mioton (B.S., Purdue University) New Orleans, LA

Puneet Mishra (B.S., Vanderbilt University) Nashville, TN

David Christopher Moore (B.A., Depauw University) Evansville, IN

Melissa Ann Mueller (B.A., Harvard University) Ranchos Palos Verdes, CA

Rishi Dilipkumar Naik (B.S., University of Tennessee [Chattanooga]) Chattanooga, TN

Caroline Amalia Nebhan (B.S., Vanderbilt University) Dallas, TX

Kathleen Marie Nemer (B.S., B.A., Ohio State University) Upper Arlington, OH

Natalie Anne Nesmith (B.S., University of Georgia) Atlanta, GA

Vanessa Emily Newton (B.A., Vanderbilt University) Melbourne, FL

Van Thomas Nguyen (B.A., University of California [Berkeley]) Huntington Beach, CA

Kathy Lei Niu (B.A.&S., University of South Carolina) Columbia, SC

Baldeep Singh Pabla (B.S., Duke University) Greer, SC

Bobak Parang (B.S., University of Pennsylvania) Knoxville, TN

Devin Kirit Patel (B.S., University of Illinois [Urbana-Champaign]) Winfield, IL

Ravi Kamlesh Patel (B.A., Vanderbilt University) Lakeland, FL

Jon Klinton Peebles (B.A., Vanderbilt University) Philadelphia, MS

Michael Warren Pelster (B.A., Vanderbilt University) Nashville/Brentwood, TN

Laura Susan Peterson (B.S., Brown University) Gypsum, CO

Natalia Evgenievna Plotnikova (B.S., New England College) Kerch, Ukraine

Michael Kwame Poku (B.S., Vanderbilt University) Austin, TX

Sarah Elizabeth Proffitt (B.S., Vanderbilt University) Athens, TN

Maria Catherine Prom (B.A., Carleton College) Rochester, MN

Meera Venkatapuram Reddy (B.S., Northwestern University) Haleyville, AL

Vishruth Keesara Reddy (B.A., Vanderbilt University) Chattanooga, TN

Gretchen Marie Roth (B.S., University of Miami) Newton, IA

Kaitlyn Elizabeth Ryan (B.A., Grinnell College) Caledonia, MI

April Lindsay Seay (B.S., Oakwood University) Nashville, TN

Meredith Harrison Sellers (B.A., Vanderbilt University) Cleveland, TN

Lara Marie Seltz (B.S., University of Virginia) Pittsburgh, PA

Tina Shah (B.S., University of South Carolina) Columbia, SC

Craig Anthony Sheedy (B.S., University of Arizona) Tempe, AZ

Nakul Shekhawat (B.A., Vanderbilt University) Evans, GA

Ashley Elizabeth Simmons (B.S., Spelman College) New Albany, MS

Lakshmi Sivarajan (B.A., University of Pennsylvania) Willowbrook, IL

Enoch Tsu Lok Sizto (B.S., University of California [San Diego]) Fremont, CA

Michael Alexander Spinner (B.A., Emory University) Dacula, GA

Michael David Stockin (B.S., University of California [San Diego]) Chula Vista, CA

Michael Andrew Stoker (B.A., Brigham Young University) Mesa, AZ Abby Gail Stufflebam (B.A., Vanderbilt University) Saint Charles, MO Maria Elizabeth Tamborski (B.A., Vanderbilt University) Cincinnati, OH Brittany Marie Taylor (B.S., University of Maryland [College Park]) Columbia, MD Pedro Luis Teixeira (B.A., Harvard University) East Providence, RI Laura Emilia Tortora (B.A., Tufts University) Palo Alto, CA Colby Charles Uptegraft (B.S., Davidson College) Hickory, NC Francys Carolina Verdial Argueta (B.S., University of Notre Dame) San Pedro Sula, Honduras Dana Elizabeth Warren (B.S., Vanderbilt University) Tulsa, OK Sherry Cai Wen (B.A., University of Pennsylvania) Toronto, ON, Canada Aelwen Dutton Wetherby (B.A., Yale University) Anchorage, AK Margaret Montgomery White (B.A., University of Virginia) Atlanta, GA Walter Tyler Winders (B.S., Truman State University) Vandalia, MO Jesse Peyton Wright (B.S., Washington And Lee University) Nashville, TN Musi Ye (B.A., Washington University in St. Louis) St. Charles, MO Zachary Yoneda (B.A., Harvard University) Lexington, KY Li Zhou (B.S., Vanderbilt University) Belle Mead, NJ

## Second-Year Class

Carmen Michelle Adams (B.S., University of Notre Dame) Brentwood, TN Amil Hari Corinne Allen (B.A., Johns Hopkins University) Nassau, Bahamas Gabriela Maria Andrade (B.A., University of North Carolina [Chapel Hill]) Brentwood, TN Jennifer Michelle Andresen (B.A., Princeton University) Champaign, IL Rachel Kathryn Price Apple (B.A., Princeton University) Nashville, TN Jacob Ark (B.S., Wittenberg University) Springfield, OH Katie Ilene Ayers (B.A., Ohio Wesleyan University) Ostrander, OH Brian Scott Barnett (B.A., University of Pennsylvania) Salyersville, KY Kelly Louise Bingham (B.S., Murray State University) Aurora, IN Edem Binka (B.A., Vassar College) Accra, Ghana Marissa Christine Blanco (B.S., Yale University) Earlysville, VA Sarah Kathleen Bourne (B.A., Harvard University) Nepean, ON, Canada Carrie Colleen Buchanan (B.S., Massachusetts Institute of Technology) Carthage, TX Nicholas Edward Burjek (B.E., Vanderbilt University) Downers Grove, IL Michael Charles Burns (B.S., University of Notre Dame) Eugene, OR Rachael Rae Chase (B.A., Indiana State University) Freelandville, IN Michael Heng-Jah Chi (B.E., Vanderbilt University) Johnson City, TN Chukwudi Obiora Chiaghana (B.S., Morehouse College) Anambra, Nigeria Ankeet Amrish Choxi (B.E., Vanderbilt University) Lawrenceville, GA Jacqueline Alexandra Clauss (B.A., Johns Hopkins University) Medford, NJ Emily Rachel Cooperstein (B.A., University of Notre Dame) Pittsburgh, PA Megan Ruth Culler (B.S., University of Kentucky) Lexington, KY Benjamin Jurrien Dean (B.S., Stanford University) Bethesda, MD Sarah Elizabeth Deery (B.S., Vanderbilt University) Lexington, KY Sravan Choudary Dhulipala (B.S., Emory University) Atlanta, GA Alia Durrani (B.E., Vanderbilt University) Cincinnati, OH Kristen Laurel Eckstrand (B.A., Beloit College) Rockville, MD Kimberly Ann Edwards (B.S., University of California [San Diego]) San Jose, CA Daniel Eshaghian (B.A., University of California [Los Angeles]) Encino, CA David Bein Eskind (B.A., New York University) Nashville, TN Stephanie Anne Flavin (B.S., Massachusetts Institute of Technology) Sudbury, MA David Fallon Friedlander (B.A., Bowdoin College) Del Mar, CA

Ryan Andrew Fritz (B.S., University of Virginia) Suffern, NY Christian Jan Fuchs (B.S., University of Pennsylvania) Nashville, TN Adrian Arthur Furman (B.S., Stanford University) Wasilla, AK Matthew Grady Gartland (B.A., Harvard University) Morristown, NJ Eryka Ann Felecia Gayle (B.S., University of Florida) Sunrise, FL Justin Robert Gregg (B.S., Vanderbilt University) Fairfield, CT Lucile Parker Gregg (B.A., Rice University) Fort Worth, TX Nicole Angele Hames (B.S., Vanderbilt University) Alpharetta, GA Rimal Hanif (B.A., B.S., University of Florida) North Lauderdale, FL Catherine Renee Hawley (B.S., Duke University) Lewisville, NC Dustin Michael Hipp (B.S., Georgia Institute of Technology) Fayetteville, GA William Blake Hooper (B.S., Vanderbilt University) Springfield, TN Emory Lutan Hsu (B.A., Harvard University) Winter Springs, FL Tendeukai Ratidzo Hungwe (B.S., Michigan Technological University) Houghton, MI Walter John Jermakowicz (B.S., University of Southern Indiana) Nashville, TN Christine Lorraine Kirlew (B.S., University of Florida) Coconut Creek, FL Joseph James Knadler (B.S., Vanderbilt University) Crestview Hills, KY Byron Clarence Knowles (B.S., Dillard University) Nassau, Bahamas Peter B. Knowlton (B.S., Duke University) Reidsville, NC Daniel Mark Koehler (B.S., University of Notre Dame) Pickerington, OH James Bradford Lewallen (B.A., Samford University) Nashville, TN Elizabeth Susan Lio (B.S., Vanderbilt University) McAllen, TX Carol Rozear Logan (B.A., College of William And Mary) Arlington, VA Zurabi Lominadze (B.A., Vanderbilt University) Louisville, KY Rajshri Mainthia (B.S., Virginia Commonwealth University) Fullerton, CA David Eli Marcovitz (B.A., Princeton University) Ambler, PA Allison Neal Martin (B.S., University of Louisville) Greenville, KY Emily Elizabeth Maston (B.A., University of Pennsylvania) West Hollywood, CA Shannon Marie McConnaughey (B.S., Vanderbilt University) Huntsville, AL Akshitkumar Maheshbhai Mistry (B.S., University of Virginia) Collinsville, VA Ryan Davis Moore (B.S., Georgia Institute of Technology) Knoxville, TN Melissa Anne Musser (B.S., B.M., University of Oklahoma) Amarillo, TX Conrad Spencer Myler (B.S., Michigan State University) Potsdam, NY Niraj Rama Nathan (B.A., Harvard University) Hernando, FL Nathan Michael O'Brien (B.S., University of Florida) Orlando, FL Rejoice Ngozi Bless Opara (B.A., Harvard University) Westwood, MA Fernando Ovalle (B.A., Rice University) Birmingham, AL Anita Kochikar Pai (B.S., Duke University) Nashville, TN Ravi Sudhir Parikh (B.A., CUNY Brooklyn College) Brooklyn, NY Samit Atul Patrawala (B.S., University of South Alabama) Farmington Hills, MI Sabrina Josephine Poon (B.A., Yale University) Calgary, AB, Canada Francis Joseph Real (B.S., University of Notre Dame) Drexel Hill, PA Jamie Rene' Robinson (B.S., University of Georgia) Hartwell, GA Rachel Mariko Ruiz (B.A., Dartmouth College) Gilroy, CA Mazeyar Saboori (B.S., Louisiana State University) Baton Rouge, LA Carla Leigh Sandler (B.A., Vanderbilt University) Nashville, TN Asmitha Kathleen Sathiyakumar (B.S., Vanderbilt University) Atlanta, GA Alexandra Christine Lunt Schmidt (B.S., Johns Hopkins University) Norwich, VT Grace Chia-Huei Shih (B.S., Duke University) Rockville, MD Adam Arnold Shpigel (B.A., Yale University) Closter, NJ Jason G. Smith (B.S., Vanderbilt University) Chattanooga, TN Rafal Sebastian Sobota (B.S., University of Chicago) Chicago, IL

Jenna Michelle Sopfe (B.S., University of California [Los Angeles]) Alpine, CA Shannon Lorraine Stallings (B.A., Washington University) Atlanta, GA Jonathan Samuel Steer (B.S., Washington University) Deerfield, IL William Michael Sullivan (B.S., University of Notre Dame) Massapegua, NY Erin Elizabeth Toaz (B.A., Ohio State University) Walton Hills, OH Artour Torossian (B.S., University of California [San Diego]) Burbank, CA Stephen Mankata Tourjee (B.A., Washington University) Ballwin, MO Aaron Wayne Tustin (B.S., Massachusetts Institute of Technology) Salisbury, MD Obinna C Umunakwe (B.S., Howard University) Powder Springs, GA Jacob Paul VanHouten (B.A., Baylor University) Georgetown, TX Megan Vucovich (B.A., Dartmouth College) Birmingham, AL Morgan Breon Walls (B.S., Hampton University) Durham, NC Adam Michael Wegner (B.A., College of Wooster) Wales, WI Ashley Aston Weiner (B.S., Duke University) Greenville, SC Clayton Ross Wilburn (B.S., Warren Wilson College) Huntsville, AL Michael Seth Wolf (B.A., University of California [Berkeley]) San Diego, CA Danielle Christin Wright (B.S., Rutgers University) Browns Mills, NJ Victoria Margaret Wurster (B.S., College of William And Mary) Woodbridge, VA Matthew William Zackoff (B.S., Washington University) Summit, NJ Scott Lawrence Zuckerman (B.S., Cornell University) Mamaroneck, NY

## **Third-Year Class**

Davood Joseph Abdollahian (B.S., Duke University) Lakewood, OH Jessica Rose Adams (B.S., Vanderbilt University) Madison, AL Owoicho Adogwa (B.S., Duke University) Nashville, TN Nneamaka Barbara Agochukwu (B.S., Louisiana State University) New Orleans, LA Christina Ahn (B.A., Harvard University) Toronto, ON, Canada Meredith Grey Albin (B.A., Washington University) Atlanta, GA Katie Elizabeth Atnip (B.A., Harvard University) Greenfield, TN Scott Miller Bolton (B.S., Brown University) Coral Gables, FL Andre Joseph Boustani (B.S., University of Tulsa) Tulsa, OK Zachary Edgar Brewer (B.S., Massachusetts Institute of Technology) Durham, NC Kara Michelle Brown (B.S., University of Miami) Tampa, FL Suzanne Nellie Bryce (B.S., Vanderbilt University) Louisville, KY Daniela Lemos Buscariollo (B.S., Vanderbilt University) St. Louis, MO Karen Chen (B.S., Yale University) Cedarburg, WI Yash Amit Choksi (B.A., Duke University) Columbia, TN Rebecca Elaine Cook (B.S., Wake Forest University) North Port, NC Calvin Michael Cooper (B.S., Colorado State University) Greeley, CO Lane Chu Crawford (B.A., Vanderbilt University) Paducah, KY Brian Richert Cruz (B.S., University of Notre Dame) New York, NY Christopher Stephen Cselenyi (B.A., University of Miami) Nashville, TN Richard Ryan Durham Darby (B.A., Princeton University) Nashville, TN Albert Augustus Davis (B.S, Emory University) Nashville, TN Aaron Jay Dawes (B.A., Princeton University) Atherton, CA Stamatios George Manolakas Dentino (B.A., University of California [Berkeley]) Sacramento, CA Aditi Desai (B.A., University of Pennsylvania) Elizabethtown, KY Anjali Deshmukh (B.A., Dartmouth College) East Lyme, CT Amy Kathryn Dickey (B.S., University of Oklahoma) Weatherford, OK Brett Tyler Donegan (B.E., Vanderbilt University) Shelbyville, TN Christopher Thomas Eakins (B.S., University of Notre Dame) Bloomington, MN John James Eicken (B.S., Emory University) Bradenton, FL

Christopher Blake Estopinal (B.S., University of Virginia) Nashville, TN Mark Andrew Fritz (B.H., Vanderbilt University) Nashville, TN Kassatihun Gebre-Amlak (B.S., Florida A&M University) Nashville, TN Nikita Gupta (B.S., Johns Hopkins University) Prospect, KY Shobhana Satyendra Gupta (B.S., Vanderbilt University) Nashville, TN Dana Brooke Harrar (B.A., Johns Hopkins University) Boston, MA Lara Lea Hershcovitch (B.S., Massachusetts Institute of Technology) Mt. Sinai, NY John Bradford Hill (B.S., University of Florida) Jacksonville, FL Luis Enrique Huerta (B.S., Vanderbilt University) Memphis, TN Pimkwan Jaru-ampornpan (B.A., Harvard University) Washington, DC David Paul Johnson (B.S., Rhodes College) Knoxville, TN Marlon Francis Joseph (B.S., University of Miami) Lake Worth, FL Elyne Nelson Kahn (B.S., Brown University) Portland, ME Michael Edward Kallen (B.S., University of California [Berkeley]) West Hills, CA Stephen Frederick Kappa (B.A., Yale University) Kingsport, TN Ioannis Karageorgiou (B.S., Vanderbilt University) Hicksville, NY Mehnaz Khan (B.S., Johns Hopkins University) Fairfax, VA Saira Khan (B.S., Vanderbilt University) Memphis, TN Disha Kumar (B.A., Vanderbilt University) Cincinnati, OH Siri Kunchakarra (B.A., University of California [Berkeley]) Fremont, CA James Matthew Kynes (B.S., University of Florida) Annandale, VA Luke Joseph Laffin (B.S., University of Calgary) Calgary, AB, Canada Lindsey Gray Lawrence (B.S., Emory University) Virginia Beach, VA Chih-Yi Liao (B.A., University of California [Berkeley]) Taipei, Taiwan Robert Bradley Lindell (B.S., University of Georgia) Jackson, MS Annie Yee-lynn Liu (B.A., Princeton University) Scottsdale, AZ Shane Michael Magee (B.H., Vanderbilt University) Brentwood, TN Melissa Sania Makar (B.S., Stanford University) Pueblo, CO Brent Stephen McNew (B.S., Furman University) Loudon, TN William Howard McSwain (B.S., Stetson University) Bradenton, FL Audrey Elaine Herrin Metz (B.S., Vanderbilt University) Knoxville, TN Lauren Rhea Mitchell (B.S., Tulane University) Miramar, FL Caitlyn Christine Mooney (B.S., University of Notre Dame) Pittsburgh, PA Philipose Getachew Mulugeta (B.S., Vassar College) Addis Ababa, Ethiopia Daniel Lawrence Murphy (B.E., Vanderbilt University) Shaker Heights, OH Amulya Nagarur (B.S., University of Georgia) Duluth, GA Ravneet Kaur Nagi (B.S., Ramapo College of New Jersey) Gaithersburg, MD William Paul Nobis (B.S., Michigan State University) Nashville, TN Imani Orgill (B.S., Princeton University) Laurelton, NY Jae Yoon Park (B.A., University of Chicago) Seoul, South Korea Alon Peltz (B.S., Ohio State University) Beachwood, OH Kevin Daniel Phelps (B.S., Centre College) Leitchfield, KY Charles Allen Phillips (B.S., University of Tennessee [Chattanooga]) Germantown, TN Piotr Pawel Pilarski (B.A., Harvard University) Northbrook, IL Yamini Bhongir Rao (B.A., Dartmouth College) Huntsville, AL Eric James Rellinger (B.S., Wittenberg University) Upper Sandusky, OH Jennifer Margaret Rosenbluth (B.A., Princeton University) Yorktown, NY Nedim Ruhotina (B.S., Cornell University) Burlington, MA Daniel Sacks (B.S., University of Florida) Nashville, TN

Maher Salahi (B.S., Duke University) Newhall, CA

Jacob Elliott Schaff (B.A., Vanderbilt University) Memphis, TN Cameron Schlegel (B.S., Emory University) Salt Lake City, UT

Stephen Matthew Schleicher (B.S., Washington University at Saint Louis) Nashville, TN Britni Hisae Schoonover (B.S., West Virginia University) Procious, WV Artyom Sedykh (B.S., University of California [Davis]) Sacramento, CA Akshay Shah (B.S., Yale University) Wallingford, CT Kunal Madhav Sharma (B.S., Emory University) Martinez, GA Katherine Clair Shaw (B.S., Georgia Institute of Technology) Macon, GA Michelle Elise Shepard (B.A., Stanford University) Irvine, CA Angela Delight Shields (B.S., Cornell University) Gulf Breeze, FL David Matthew Silvestri (B.A., Harvard University) Natick, MA Kaartiga Sivanesan (B.A., Harvard University) Winter Springs, FL Maja Skikic (B.S., Tulane University) Nashville, TN Christina Koo Speirs (B.S., Chaminade University) Nashville, TN Michelle Sullivan (B.S., Barry University) Aventura, FL Kyle Robert Sweeney (B.S., Michigan State University) Portage, IN James Anchen Teng (B.A., University of Southern California) Fresno, CA Merina Thomas (B.A., Northwestern University) Freeport, IL Sarah Marie Tiggelaar (B.S., Vanderbilt University) Lexington, KY Chinenyenwa Okechi Usoh (B.S., University of Tennessee [Knoxville]) Nashville, TN Kalya Vardi (B.S., University of California [Los Angeles]) San Diego, CA Vinod Mathew Varki (B.S., Vanderbilt University) Miami, FL Robert Jewell Wilson (B.A., University of Chicago) Sugarloaf Key, FL Eric Stephen Wise (M.A., Washington University) Akron, OH Kevin Brantley Wise (B.S., Emory University) St. Marys, GA Carmen Christine Wolfe (B.A., Vanderbilt University) Brandon, MS Sheri-Ann Melecia Wynter (B.A., Harvard University) Queens, NY Irving Ye (B.A., Yale University) Hoover, AL Mi Jin Yoo (B.A., University of California [Berkeley]) Concord, CA Sean M. Young (B.S., University of Utah) Nashville, TN

#### **Fourth-Year Class**

Amir Michael Abtahi (B.A., Miami University - Oxford) Nashville, TN Monty Arta Aghazadeh (B.S., Louisiana State University) Baton Rouge, LA Annukka Aida Rose Antar (A.B., Harvard University) Winchester, TN Yindalon Aphinyanaphongs (B.S., M.S., Rensselaer Polytechnic Institute) Nashville, TN Tiffany Nicole Suzanne Ballard (B.A., Depauw University) Decatur, IN James Clifford Balvich (B.S., University of Southern California) Indianapolis, IN Roy Barco (B.S., University of Miami) Nashville, TN James Russell Bekeny (B.S., Northwestern University) Westlake, OH Michael Charles Bennett (B.A., Princeton University) Brookline, MO Karl Benedict Bezak (B.S., George Washington University) Clifton Heights, MD Krupa Mahendra Bhojani (B.A., Harvard University) Cambridge, MA Richard Earl Blalock (B.S., Murray State University) Murray, KY Emmanuel John Botzolakis (B.A., Johns Hopkins University) Nashville, TN Rhea Whitney Boyd (B.A., University of Notre Dame) Akron, OH Lara Frances Bratcher (B.A., University of South Carolina) McMinnville, TN Beth Ilene Brenner (B.A., University of Virginia) Richmond, VA James Jiradecha Brittin (B.A., Williams College) Brentwood, TN Yuriy Semenovich Bronshteyn (B.A., University of Kentucky) Louisville, KY Michelle Fullard Brown (B.S., Vanderbilt University) Birmingham, AL Mark Joseph Burish (A.B., Princeton University) Nashville, TN Erin Elizabeth Burke (B.S., University of Notre Dame) Vestal, NY Jared Burlison (B.S., University of Illinois) Benton, IL

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Atuhani Seth Burnett (B.S., Andrews University) Toronto, ON, Canada
Brian Thomas Cabaniss (B.S., University of Alabama [Birmingham]) Florence, AL
Maria Eugenia Carlo (B.A., Harvard University) Birmingham, AL
Andrew Joseph Chambers (B.A., University of Virginia) Richmond, VA
Sy-Yeu Sue Chern (B.A., Princeton University) East Hanover, NJ
Derrick Andrew Christopher (B.S, University of South Alabama) Mobile, AL
Christopher Stuart Clingan (B.A., University of California [Berkeley]) Federal Way, WA
Daniel Noland Cohen (B.S., University of Washington) Wayzata, MN
Jillian Peres Copeland (B.A., Harvard University) New York, NY
Jashodeep Datta (B.A., Colgate University) Calcutta, India
Latif M. Dharamsi (B.S., Vanderbilt University) Conyers, GA
Fiona Fang (B.S., Emory University) Marietta, GA
Amy Kay Fenoglio (B.S., Indiana University) Indianapolis, IN
Patricia Lynn Fick (B.S., Michigan State University) Lowell, MI
Allison Marie Floyd (B.S., Union College) Acton, MA
Paige Marnie Fortinsky (B.A., Barnard College) Coral Springs, FL
Michael Francis Gensheimer (B.A., Harvard University) Mission Hills, KS
Elizabeth Anne Gordon (B.S., University of Wisconsin [Madison]) Newberg, OR
Andrew William Gore (B.A., Duke University) LaGrange, GA
Kate Elizabeth Groh (B.S., University of Michigan [Ann Arbor]) Muskegon, MI
Emma Catherine Hamilton (B.S., Vanderbilt University) Jacksonville, FL
Courtney Hayes Harrison (B.S., Washington and Lee University) Richmond, VA
Bryan Irby Hartley (B.S., University of Georgia) Chattanooga, TN
Eve Ariel Henry (B.A., Princeton University) Amawalk, NY
Brittany Joy Holmes (B.A., University of Colorado) Littleton, CO
Xinran Hu (B.S., Fudan University) Nashville, TN
Ryan Craig Hutchinson (B.S., University of California [Los Angeles]) Ben Lomond, CA
Misun Hwang (B.S., Stanford University) Los Angeles, CA
Erik Bradford Hysinger (B.S., Vanderbilt University) Nashville, TN
Natalie Louise Jacobowski (B.A., Vanderbilt University) Orland Park, IL
Ernestine Nonye Jideama (B.A., Vanderbilt University) Mableton, GA
Kim Jiramongkolchai (B.A., Harvard University) Woodland Hills, CA
Melissa Camille Johnson (B.S., California State [Sacramento]) Vallejo, CA
Emily Ann Kendall (B.A., Harvard University) Evansville, IN
Ilya Khaytin (B.A., Harvard University) Moskva, Russia
Roy Kagumba Kiberenge (B.A., Florida Atlantic University) Miami, FL
Joseph Yun Kim (B.S., University of Tennessee [Knoxville]) Goodlettsville, TN
Sungjune Kim (B.S., Seoul National University) Seoul, South Korea
Kristy Lynn Kummerow (B.S., Rhodes College) Paris, TN
Asher Isaac Kupperman (B.S., Yale University) Santa Barbara, CA
Jacqueline S Landess (B.A., Indiana University Purdue) Daleville, IN
Andrew John Lautz (B.S., Purdue University) Munster, IN
Andrea Ho-Wan Li (B.A., Harvard University) Chelmsford, MA
Michelle Andrea Lightfoot (B.S., Georgia Institute of Technology) Alpharetta, GA
Brandon Richard Litzner (B.S., Wichita State University) Valley Center, KS
Ashley Gale Long (B.A., Vanderbilt University) Chapmansboro, TN
Maria Angela Maguire (B.A., Princeton University) Nashville, TN
Mohan Krishna Mallipeddi (B.S., Stanford University) San Jose, CA
Daniel Townsend Matthews (B.S., Rice University) Jackson, TN
Amanda Ackermann Misfeldt (B.S., Southwestern University) San Antonio, TX
Andrew Michael Misfeldt (B.S., University of Iowa) Columbia, MO
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Sunita N Misra (B.S., Emory University) Nashville, TN

Daniel Adam Mordes (B.S., Duke University) Stuart, FL Mai P Nguyen (B.A., Illinois Wesleyan University) Houston, TX Michael Bryan Nichols (B.E., Vanderbilt University) Columbus, OH Frederick Otieno Ochieng' (B.A., Dartmouth College) Rongo, Kenya Jared Martin O'Leary (B.S., Case Western Reserve University) Galion, OH Austin Ballard Osborn (B.M., Vanderbilt University) Germantown, TN Jao Jih Ou (B.S., Duke University) Huntsville, AL LaKedra SheVonn Pam (B.S., Emory University) Baton Rouge, LA Alanna Marie Patsiokas (B.E., Vanderbilt University) Coral Springs, FL Ira Edward Phillips (B.S., Massachusetts Institute of Technology) Gadsden, AL John Gary Phillips (B.S., University of Alabama [Tuscaloosa]) Decatur, AL Justin Scott Poling (B.S., Vanderbilt University) Alvaton, KY Alan James Powers (B.A., University of Pennesylvania) Pleasant View, TN Martha Katherine Presley (B.S., Vanderbilt University) Nashville, TN Miranda Danelle Raines (B.S., Lee University) Morristown, TN Ravi Rajaram (B.A., Washington University) Windermere, FL Michael Seth Reich (B.A., Washington University) Rockville, MD Johanna Nathania Riesel (B.A., Middlebury College) New York, NY Matthew John Rioth (B.A., Harvard University) Colorado Springs, CO Meghan Jennings Rioth (B.A., Vanderbilt University) Independence, MO Joshua Elliot Rubin (B.S., Vanderbilt University) Nashville, TN Alex B. Ryder (B.A., Princeton University) Salem, OR Christopher Patrick Scally (B.A., University of Notre Dame) Norcross, GA Jonathan William Scott (B.A., Harvard University) Seneca, SC Anjali Satish Shah (B.A., Vanderbilt University) Owensboro, KY Evan Silverstein (B.A., University of Pennsylvania) Great Falls, VA Lori Michele Singleton (B.S., Hampton University) Savannah, GA Veronica Slootsky (B.S., University of Maryland [Baltimore County]) Ashton, MD Nathaniel Evan Smith (B.S., Clemson University) Camden, SC Thomas Kenneth Spain (B.S., University of Alabama [Huntsville]) Huntsville, AL Daniel Spratt (B.S., Georgia State University) Marietta, GA Cary Wayne Stimson (B.S., College of William and Mary) Crystal Beach, FL Ashley Nicole Tauriac (B.A., Vanderbilt University) Alamogordo, NM Demetrios E Tavoulareas (B.A., University of Virginia) McLean, VA Sara Katharine Tedeschi (B.A., Brown University) Livingston, NJ Laura Elizabeth Tharpe (B.A., Dartmouth College) Birmingham, AL Caitlin Elizabeth Toomey (B.S., Cornell University) Syracuse, NY Bronwyn Uber (B.S., Brown University) Pittsburgh, PA Walter Chike Wakwe (B.S., Vanderbilt University) Little Rock, AR David Wallace (B.A., Harvard University) Paducah, KY James Matthew Wantuck (B.S., University of Pittsburgh) Brockport, NY Jodi Jay Weinstein (B.A., Yale University) Boca Raton, CA Kam Wong (B.A., University of Virginia) Lexington, KY Elizabeth Gordon Zellner (B.S., Massachusetts Institute of Technology) Fayetteville, NC Amy W Zhai (B.A., Harvard University) Kinnelon, NJ Frank Zheng Zhao (B.E., Vanderbilt University) Columbia, SC

Eli Ephraim Zimmerman (B.A., Washington University) Lexington, KY

# Class of 2009 Residency Assignments

Morgantown, W. Va. Neena Agarwal Vanderbilt University Medical Center, Nashville, Tenn. (Internal Medicine) Riverside, Calif. Vivek Agarwal Cedars-Sinai Medical Center, Los Angeles, Calif. (Internal Medicine) José Eduardo Alvarado Salisbury, Md. Vanderbilt University Medical Center, Nashville, Tenn. (Pediatrics) Douglas James Anderson Franklin, Tenn. Emory University School of Medicine, Atlanta, Ga. (General Surgery) Kyle Owen Arneson Fairdale, N. Dak. Vanderbilt University Medical Center, Nashville, Tenn. (Medicine-Preliminary) Vanderbilt University Medical Center, Nashville, Tenn. (Radiation Oncology) Brigham Kanakanuiokekai Au Layton, Utah University of Texas SW Medical School, Dallas, Texas (Orthopaedic Surgery) Ntango Desire Banani Kinshasa, Dem. Rep. of Congo Ohio State University Medical Center, Columbus, Ohio (Anesthesiology) Lee Cole Barfield Nashville, Tenn. Vanderbilt University Medical Center, Nashville, Tenn. (Internal Medicine) Ellika Caitlin Bartlett Northampton, Mass. University of Washington Affilliated Hospitals, Seattle, Wash. (Pediatrics) Jo Ellen Bennett Nashville, Tenn. Vanderbilt University Medical Center, Nashville, Tenn. (Psychiatry) Daniel Frederick Boyer Iowa City, Iowa Massachusetts General Hospital, Boston, Mass. (Pathology) Charlotte Morrigan Brown Long Valley, N.J. Vanderbilt University Medical Center, Nashville, Tenn. (Pediatrics) James Glenn Carlucci II Los Banos, Calif. Vanderbilt University Medical Center, Nashville, Tenn. (Medicine-Pediatrics) Megan Kathryn Carr Highland Mills, N.Y. New York University School of Medicine, New York, N.Y. (Psychiatry) Emily Louise Hon Castellanos Huntsville, Ala. Vanderbilt University Medical Center, Nashville, Tenn. (Internal Medicine) Jason Alfred Castellanos Monterey Park, Calif. Vanderbilt University Medical Center, Nashville, Tenn. (General Surgery) Chun-Chena Chen Nashville, Tenn. Barnes-Jewish Hospital, St. Louis, Mo. (General Surgery) Sameer Chopra Boston, Mass. Brigham & Women's Hospital, Boston, Mass. (Internal Medicine) Elmont, N.Y. Jonathan Chrispin Johns Hopkins Hospital, Baltimore, Md. (Internal Medicine) Robert Ross Coleman Grand Rapids, Mich. University of Michigan Hospitals, Ann Arbor, Mich. (Neurology) Andrew Baither Conrad Nashville, Tenn. Vanderbilt University Medical Center, Nashville, Tenn. (Surgery-Preliminary) Medical University of South Carolina, Charleston, S.C. (Radiology-Diagnostic) Stephen Lewis Cook West Chester, Pa. University of Virginia Medical Center, Charlottesville, Va. (Pathology) Bradley Robert Corr Chappaqua, N.Y. Hospital of the University of Pennsylvania, Philadelphia, Pa. (Obstetrics/Gynecology)

Sara Michelle Horvitz Corr Miami, Fla. Hospital of the University of Pennsylvania, Philadelphia, Pa. (Internal Medicine) Amy Evelyn Rich Costa N. Palm Beach, Fla. Vanderbilt University Medical Center, Nashville, Tenn. (Research in Pathology) Samuel Neil Crosby Fairhope, Ala. Vanderbilt University Medical Center, Nashville, Tenn. (Orthopaedic Surgery) Catherine Elizabeth Dale Melbourne, Australia Vanderbilt University Medical Center, Nashville, Tenn. (General Surgery) Rebecca Hope Dezube Vienna, Va. Johns Hopkins Hospital, Baltimore, Md. (Internal Medicine) Brian Christopher Drolet Nashua, N.H. Rhode Island Hospital/Brown University, Providence, R.I. (Plastic Surgery) Sarah Ruth Dunn Hillsdale, N.J. Vanderbilt University Medical Center, Nashville, Tenn. (Surgery-Preliminary) Elizabeth Ann Eby San Carlos, Calif. Wake Forest University Baptist Medical Center, Winston-Salem, N.C. (Pediatrics) Matthew Ezra Emanuel Los Angeles, Calif. Arrowhead Regional Medical Center, Colton, Calif. (Transitional) Emory University School of Medicine, Atlanta, Ga. (Ophthalmology) Olajumoke Olanrewaju Fadugba Ipetu-Ijesha, Oshun State, Nigeria Barnes-Jewish Hospital, St. Louis, Mo. (Internal Medicine) Satellite Beach, Fla. Connie Aileen Fauntleroy Vanderbilt University Medical Center, Nashville, Tenn. (Pediatrics) David Brian Frank Gregory, S. Dak. Children's Hospital-University of Pennsylvania, Philadelphia, Pa. (Pediatrics) Marc Christian Gauthier Wheaton, III. University of Pittsburgh Medical Center, Pittsburgh, Pa. (Internal Medicine) Sweta Laxmikant Ghodasara Nashville, Tenn. University of Washington Affilliated Hospitals, Seattle, Wash. (Medicine-Preliminary) Dina Hany Ghoneim Rochester, N.Y. Vanderbilt University Medical Center, Nashville, Tenn. (Psychiatry) Abigail Lewis Gilbert Washington, D.C. Maine Medical Center, Portland, Maine (Medicine-Pediatrics) Nina Elizabeth Glass Atlanta, Ga. New York University School of Medicine, New York, N.Y. (General Surgery) Holly Bee Hale Chico, Calif. Harvard University School of Public Health, Cambridge, Mass. (Master of Public Health) Hendersonville, Tenn. Bryan David Harris Vanderbilt University Medical Center, Nashville, Tenn. (Internal Medicine) Josh Marshall Heck Kingwood, Texas Vanderbilt University Medical Center, Nashville, Tenn. (Surgery-Preliminary) Vanderbilt University Medical Center, Nashville, Tenn. (Radiology-Diagnostic) Rochester, N.Y. Megan Elizabeth Herceg Vanderbilt University Medical Center, Nashville, Tenn. (Orthopaedic Surgery) Amelia Judith Hessheimer Albuquerque, N.M. Barnes-Jewish Hospital, St. Louis, Mo. (General Surgery) Nathan Rollins Hoot Fort Worth, Texas Vanderbilt University Medical Center, Nashville, Tenn. (Emergency Medicine) Los Gatos, Calif. John Edward Humphrey Lahey Clinic Medical Center, Burlington, Mass. (Surgery-Preliminary/Urology) Gerard Pierre Jenkins Southfield, Mich. Food and Drug Administration, Washington, D.C.

Atia Keiata Jordan Collierville, Tenn. Cincinnati Children's Hospital, Cincinnati, Ohio (Pediatrics) Sadia Sadaf Khan Ontario, Calif. Loma Linda University, Loma Linda, Calif. (Internal Medicine) Christopher Michael Kidd Greeneville, Tenn. University of Southern California, Los Angeles, Calif. (Orthopaedic Surgery) Caroline Kim Cleveland, Texas Vanderbilt University Medical Center, Nashville, Tenn. (Surgery-Preliminary) Caroline Kelsey Knox Montclair, N.J. St. Mary's Hospital, Grand Junction, Colo. (Family Medicine) Franklin, Tenn. Clayton David Knox Massachusetts General Hospital, Boston, Mass. (Internal Medicine) Rebecca Ann Lawniczak Milwaukee, Wis. Beth Israel Deaconess Medical Center, Boston, Mass. (Emergency Medicine) Frank Hanchong Lee Boyds, Md. Harbor Hospital Center, Baltimore, Md. (Medicine-Preliminary) Johns Hopkins Hospital, Baltimore, Md. (Anesthesiology) David Asher Leiman Bethesda, Md. Hospital of the University of Pennsylvania, Philadelphia, Pa. (Internal Medicine) Kevin Liaw Knoxville, Tenn. University of Tennessee Graduate School of Medicine, Knoxville, Tenn. (Transitional/ Radiology-Preliminary) University of Tennessee Graduate School of Medicine, Knoxville, Tenn. (Radiology-Diagnostic) Brenessa Michelle Lindeman Phelps, Ky. Johns Hopkins Hospital, Baltimore, Md. (General Surgery) Ronald Francis Loch, Jr. Garland, Texas Scripps Mercy Hospital, San Diego, Calif. (Transitional) Barnes-Jewish Hospital, St. Louis, Mo. (Radiology-Diagnostic) Daniel Jerad Long Chevenne, Wyo. Vanderbilt University Medical Center, Nashville, Tenn. (Medicine-Preliminary) Johnny Chen Lu Lousiville, Ky. Vanderbilt University Medical Center, Nashville, Tenn. (Pediatrics) Mark Erich Magill Topeka, Kans. Emory University School of Medicine, Atlanta, Ga. (Orthopaedic Surgery) Amy Ruth Martin Nashville, Tenn. University of Tennessee College of Medicine, Chattanooga, Tenn. (Emergency Medicine) Philip Benjamin McWhorter Macon, Ga. Vanderbilt University Medical Center, Nashville, Tenn. (Surgery-Preliminary) University of Connecticut, Farmington, Conn. (Anesthesiology) Bloomington, III. Laura Meints Barnes-Jewish Hospital, St. Louis, Mo. (Obstetrics/Gynecology) Alexandra Eleanore Conte Mieczkowski Cincinnati, Ohio University of Pittsburgh Medical Center, Pittsburgh, Pa. (Medicine-Pediatrics) Shamaal Mauri Miller Savannah, Ga. New York Presbyterian-Weill Cornell Medical Center, New York, N.Y. (Anesthesiology) Samuel Arthur Moore Greeneville, Tenn. Mayo School of Graduate Medical Education, Rochester, Minn. (Neurology) Snellville, Ga. Sofie Rahman Morgan Washington Hospital Center, Washington, D.C. (Emergency Medicine) Nizar Abdelrahman Mukhtar Khartoum, Sudan University of California (San Francisco), San Francisco, Calif. (Internal Medicine)

Mark Richard Newton White Bear Lake, Minn. University of Iowa Hospitals and Clinics, Iowa City, Iowa (Surgery-Preliminary/Urology) Megan Kathleen O'Neill Charlotte, N.C. Vanderbilt University Medical Center, Nashville, Tenn. (Medicine-Preliminary) Vanderbilt University Medical Center, Nashville, Tenn. (Dermatology) Rina P. Patel Somerset, Ky. University of Chicago Medical Center, Chicago, III. (Radiology-Diagnostic) Michael Keath Paxten Roswell, Ga. Baylor College of Medicine, Houston, Texas (Orthopaedic Surgery) Carmen Ana Perez Mayaguez, P.R. Memorial Sloan-Kettering Cancer Center, New York, N.Y. (Transitional) Memorial Sloan-Kettering Cancer Center, New York, N.Y. (Radiation-Oncology) James David Phillips Knoxville, Tenn. University of Alabama Medical Center, Birmingham, Ala. (Otolaryngology) John Aaron Pitts Chicago, III. Emory University School of Medicine, Atlanta, Ga. (Medicine-Preliminary) Emory University School of Medicine, Atlanta, Ga. (Physical Medicine & Rehabilitation) Vernon Alvarez Rayford Holly Springs, Miss. Massachusetts General Hospital, Boston, Mass. (Medicine-Pediatrics) Jill Catherine Richman Issaguah, Wash. McGaw Medical Center of Northwestern University, Chicago, III. (General Surgery) Elizabeth Bramel Mann Rinker Lexington, Ky. Vanderbilt University Medical Center, Nashville, Tenn. (Pathology) Sara Joy Risner-Adler Tucson, Ariz. University of Texas Medical School, Houston, Texas (Transitional) Baylor College of Medicine, Houston, Texas (Dermatology) Kim Lori Sandler Nashville, Tenn. Vanderbilt University Medical Center, Nashville, Tenn. (Medicine-Preliminary) Vanderbilt University Medical Center, Nashville, Tenn. (Radiology-Diagnostic) Brent Vernon Savoie Vienna, Va. Vanderbilt University Medical Center, Nashville, Tenn. (Medicine-Preliminary) Johns Hopkins Hospital, Baltimore, Md. (Radiology-Diagnostic/Research) Jesse Hart Shaver Hays, Kans. Vanderbilt University Medical Center, Nashville, Tenn. (Post-doctoral research in Biophysics) Myrick Clements Shinall, Jr. Atlanta, Ga. Vanderbilt University Medical Center, Nashville, Tenn. (Surgery-Preliminary) Monica Erin Shukla Buffalo, N.Y. Cleveland Clinic Foundation, Cleveland, Ohio (Radiation-Oncology) Stephen George Stahr Cape Girardeau, Mo. University of North Dakota, Fargo, N.D. (Medicine-Preliminary) University of North Carolina Hospitals, Chapel Hill, N.C. (Dermatology) **Brent Robert Taylor** Edisto Island, S.C. Medical University of South Carolina, Charleston, S.C. (Medicine-Preliminary) Medical University of South Carolina, Charleston, S.C. (Dermatology) Chiaojung Jillian Tsai Taipei, Taiwan University of Texas Medical School, Houston, Texas (Medicine-Preliminary) University of Texas M. D. Anderson Cancer Center, Houston, Texas (Radiation-Oncology) Josie Marie Vitale Saint Louis, Mo. St. Louis Children's Hospital, St. Louis, Mo. (Pediatrics) Courtney Ann Walkowski Buffalo, N.Y. Vanderbilt University Medical Center, Nashville, Tenn. (Anesthesiology)

Michael Nguyen Young

Elizabethtown, Ky.

Michelle Marie Walther Youngsville, La. Vanderbilt University Medical Center, Nashville, Tenn. (Emergency Medicine) Brian Scott Wasserman Queensbury, N.Y. Vanderbilt University Medical Center, Nashville, Tenn. (Internal Medicine) Kenneth Durham Weeks III Charlotte, N.C. Hospital for Special Surgery, New York, N.Y. (Orthopaedic Surgery) Jill Christine Wilmoth Oak Creek, Wis. Ohio State University Hospital Program, Columbus, Ohio (Orthopaedic Surgery) John William Wood Baton Rouge, La. Jackson Memorial Hospital, Miami, Fla. (Otolaryngology) Shormeh Odofoley Yeboah Gaborone, Botswana Hospital of the University of Pennsylvania, Philadelphia, Pa. (Family Medicine) William Sang Yi Los Angeles, Calif. Washington Hospital Center, Washington, D.C. (General Surgery) Jordan Edward Yokley Greeneville, Tenn. Tripler Army Medical Center, Tripler AMC, Hawaii (Transitional) Chantilly, Va. Naomi Sujung Yoo Yale-New Haven Hospital, New Haven, Conn. (Pathology) David Nathan Young Lakeland, Fla. Vanderbilt University Medical Center, Nashville, Tenn. (Psychiatry) Archived 2000

Vanderbilt University Medical Center, Nashville, Tenn. (Internal Medicine)



# Vanderbilt University Hospital

# The Vanderbilt Clinic

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# Vanderbilt University Hospital The Vanderbilt Clinic



## Vanderbilt University Hospital

#### Administration

LARRY M. GOLDBERG, M.H.A., Executive Director and Chief Executive Officer, Vanderbilt University Hospital

C. WRIGHT PINSON, M.D., M.B.A., Associate Vice Chancellor for Clinical Affairs; Chief Medical Officer, Vanderbilt Medical Group

MARTIN P. SANDLER, M.B., Ch.B., Associate Vice Chancellor for Hospital Affairs

DAVID R. POSCH, M.S., Chief Executive Officer; Executive Director, Vanderbilt Medical Group

ALLEN B. KAISER, M.D., Chief of Staff, Vanderbilt University Hospital; Associate Chief Medical Officer, Vanderbilt University Medical Center; Vice Chairman, Clinical Affairs, Department of Medicine

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JACK W. BOONE, Director, Vanderbilt Corporate Health Services

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WARREN E. BECK, M.B.A., Director of Finance, Vanderbilt University Hospital

MARK E. HUBBARD, Director of Revenue, Vanderbilt Medical Group

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John Byrne, M.D., Chairman, Department of Cardiac Surgery

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Michael Vaezi, M.D., Clinical Director

### General Medicine (Inpatient)

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#### Ophthalmology

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Primary Care Center for Health Promotion and Disease Management, Eskind Diabetes Center

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Thoracic Surgery

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Trauma, Burn, LifeFlight

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Chief Executive Officer/Executive Director, Monroe Carell Jr. Children's Hospital at Vanderbilt Kevin B. Churchwell, M.D.

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Cardiac-Robert J. Deegan, M.D., Ph.D.

Critical Care—C. Lee Parmley, M.D.

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VA—Ann Walia, M.D.

Cardiac Surgery

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Emergency Medicine

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Pediatrics—Thomas Abramo, M.D.

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# Monroe Carell Jr. Children's Hospital at Vanderbilt

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JOHN W. BROCK III, M.D., Pediatric Surgeon in Chief

BARBARA WALCZYK JOERS, M.H.S.A., C.H.E., Chief Operating Officer

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JAYANT K. DESHPANDE, M.D., Executive Physician, Patient Quality and Safety

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DONNA WILLIAMS, M.S.N., R.N., C.N.O.R., C.N.A.A., B.C., Interiim Chief Nursing Officer

JAMES R. KASNICK, M.B.A., C.F.A., Director, Financial Services

CHRISTOPHER W. LEE, M.S.H.A., M.B.A., Associate Director, Children's Ambulatory Services

MARY KATE MOUSER, Associate Hospital Director, Advocacy, Government Relations and Communications

HOLLY WALSH, Executive Director, Development

MAUREEN CASSIDY, Associate Hospital Director, Medical Affairs and Physician Relations

GEORGE DELONG, Associate Hospital Director/Supply Chain Officer

NANCY PROCTOR, Chief Information Officer

#### **Divisions**

Adolescent Medicine-Lynn S. Walker, Ph.D.

Allergy, Immunology, and Pulmonary Medicine—Paul E. Moore, M.D.

Anesthesia—Ira S. Landsman, M.D.

Cardiology—H. Scott Baldwin, M.D.

Cardiovascular Surgery—David P. Bichell, M.D.

Clinical Pharmacology and Toxicology—Michael Aschner, Ph.D.

Critical Care Medicine—Rick E. Barr, M.D., M.S.C.I.

Developmental Medicine—Tyler Reimschisel, M.D.

Emergency Medicine—Thomas J. Abramo, M.D.

Endocrinology and Diabetes-William E. Russell, M.D.

Gastroenterology, Hepatology, and Nutrition—D. Brent Polk, M.D.

General Pediatrics—Shari Barkin, M.D.

General Surgery—Wallace W. Neblett III, M.D.

Hematology and Oncology—Debra L. Friedman, M.D.

Hospital Medicine—Kris P. Rehm, M.D.

Infectious Diseases—Terence Dermody, M.D.

Neonatology—Judy L. Aschner, M.D.

Nephrology—Kathy Jabs, M.D.

Neurology—Juliann M. Paolicchi, M.D.

Ophthalmology—Sean P. Donahue, M.D., Ph.D.

Orthopaedics—Gregory A. Mencio, M.D.

Pathology—Hernan Correa, M.D.

Radiology—Marta Hernanz-Schulman, M.D.

Rheumatology—T. Brent Graham, M.D.

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DENIS GALLAGHER, Chief Administrative Officer, VMG/Williamson County
MARGARET HEAD, R.N., M.S.N., M.B.A., Chief Operating Officer, Vanderbilt Medical Group
JANICE M. SMITH, R.N., M.Ed., Chief Administrator, 100 Oaks Administration

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## Center for Clinical Improvement

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- INFECTION CONTROL. Chair: Tom Talbot, M.D. Deputy Chair: None. Responsible for Minutes: Peggy Connolly. Anna Ambrose, Ban Allos, Karen Bloch, Vicki Brinski, Charlotte Chaney, Titus Daniels, Tracy Hann, Carey Hwang (House Staff), Lorrie Ingram, Barbara Joers, Susan Johnson, Jenny Knight (House Staff), Lewis Lefkowitz, Addison May, Narinder Midha, Sharon Mullins, Audrey Kuntz, Clovis Pitchford (House Staff), William Schaffner, Jena Skinner, Charles Stratton, Hakan Sundell, Melanie Swift, Jan Szychowski, Amy Tatsas (House Staff), Valerie Thayer, Lora Thomas, Rosemary Verrall, Kathie Wilkerson, Greg Wilson, Johnny Woodard.
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- MEDICAL ETHICS. Chair: Margaret Rush, M.D. Deputy Chair: Elizabeth Heitman. Responsible for Minutes: Denise Lillard. Julie Anderson (House Staff), Josette Bianchi (House Staff), Jeffery Bishop, Mark Bliton, Brian Carter, Larry Churchill, Ellen Clayton, Nancye Feistritzer, Rita Fie, Susan Hannasch, William Hinds, Derenda Hodge, Susie Leming-Lee, Kimberly Lomis, Kelly Melvin (House Staff), Richard Miller, Dan Moreschi, Julia Morris, Janie Parmley, Dan Ramage, Charles Stratton, John Tarpley, Mary Taylor, Marcy Thomas, Cindy Vnencak-Jones, Brian Wolfe, Keith Wrenn, Jan Zolkower.

- MEDICAL RECORDS. Chair: Jim Jirjis, M.D. Deputy Chair: Mary Reeves. Responsible for Minutes: Valerie Napier. Rashid Ahmad, Tiffaney Badgett, Anthony Kilroy, Bruce Beyer, Lenys Biga, Jennifer Blackford, Sandy Bledsoe, Lynn Butler-Bailey, Ravi Chari, Kevin Churchwell, Susan Conner, Anne Dixon, John Doulis, Mary Lou Farinaro, Drew Gaffney, James Gay, Dario Giuse, Ralf Habermann, Susan Hannasch, David Hansen, Angela Harris, Terri Hartman, Stephanie Hays, Stephanie Hays, Alan Herline, Rich Hock, Karen Hughart, Mark Johnson, Lynda Klane, Chris Kuzniak (House Staff), Brent Lemonds, Linda Martin, Vicki McCarthy, George McCulloch, Linda McNeil, Doug Milam, Laura Montgomery, Julia Morris, Joyce Mosier, Neal Patel, Racy Peters, Nancy Proctor, Trent Rosenbloom, Nancy Rudge, Freda Scott, Gaye Smith, James Snell, Joel Steelman, Lisa Taylor, Karen Toles, Grace Upleger, Brad VanSickle (House Staff), Kelly Wright.
- OPERATING ROOM. Chair: Kelly Wright. Deputy Chair: Colleen Cassidy. Responsible for Minutes: Abby Axelrod. George Allen, Kevin C. Allen, John Barwise, James W. Berry, Vicki Brinsko, Debbi Cannon, Colleen A. Cassidy, Terri D. Castleman, Maxine Cunningham, Jose Diaz, Tracy E. Diffenderfer, Jeffrey Guy, Martina Hailey, Marie Hasselblad, Alan Herline, Michael S. Higgins, Scott Hoffman, Susan R. Howe, Michael J. Hughes, Missi S. Jarboe, Sally Kaplan, Philip J. Kregor, Audrey H. Kuntz, Eric S. Lambright, Susan Laux, Susie Leming-Lee, Jama J. Maenza, Mary A. Meredith, Betty Minton, John Morris, Thomas Naslund, Anne Neff, Penny Northcutt, Robert Ossoff, Julie A. Poulsen, Stephanie Randa, Rachel Serrato, Bruce Shack, Joseph A. Smith, Dan M. Spengler, Judith C. Stabin, Reid Thompson, Anne Ussery, Michael Webb, Kelly Wright, Wendell G. Yarbrough.
- PHARMACY AND THERAPEUTICS. Chair: Gordon Bernard, M.D. Deputy Chair: Art Wheeler, M.D. Responsible for Minutes: Beverly Phillips and Jim Koestner. Todd Bauer (House Staff), Curtis Baysinger, Jeff Clanton, Christine Coleman (House Staff), Denise Dean, Steve Deppen, John Flatt, Kenneth Hande, Fred Hargrove, James Johns, Jim Knight, Jim Koestner, Wendy Leutgens, Addison May, Michael O'Neal, Hayley Rector, John Schoenhard, Harold Willingham, Keith Wrenn, Patty Wright, Charles Stratton.
- FACULTY AND PHYSICIAN WELLNESS. Chair: Anderson Spickard, Jr., M.D. Deputy Chair: None. Responsible for Minutes: Diana Phillips. Sandra Bledsoe, Chad Boomershine, Kelly Boudreaux (House Staff), Larry Churchill, Roy Elam, A. J. Reid Finlayson, Francis A. Gaffney, Gerald Hickson, Allen Kaiser, Jeremy Kaye, Fred Kirchner, Jr., Peter Martin, Jeanette Norden, James O'Neill, Jr., Paul Ragan, Charles Samenow, Donna Seger, Debbie Smith, Ryan Tarantola (House Staff), Mary Yarbrough.
- SAFETY. Chair: Ken Browning. Deputy Chair: Susan Johnson. Responsible for Minutes: Gail England. Anna Ambrose, Betsy Bond, Amanda Bright, Vicki Brinsko, Nola A. Brown, Ken Browning, Cheryl Burney-Jones, Rick Clark, Tamara J. Cooley, Jan Cotton, Mandy Creech, Jeff Davis, Fred DeWeese, Freddie L. Easley, Maralie Exton, Mary Lou Farinaro, Terri L. Hartman, Laura L. Hayes, Patricia Hofstetter, Carol Hutchinson, Lorrie G. Ingram, Susan N. Johnson, Mike Jolley, Bonnie L. Kress, Mark A. Miller, Lee Ann Parker, Robert A. Pasinger, Dawn Pamberton, Racy Peters, Andrea D. Regg, Cathy C. Ryan, Madeleine Smith, Dennis Spann, Melanie Swift, Jim Tenpenny, Valerie Thayer, Vickie Thompson, Kevin Warren, Robert F. Wheaton.
- CANCER. Chair: Mark Kelley, M.D. Deputy Chair: None. Responsible for Minutes: Judith Roberts. Melinda Bailes, John Bingham, Julia Cartwright, Bapsi Chak, Michael Cookson, Donna Copeland, Carol Eck, John Greer, Robin Guinn, Ginger Holt, Howard Jones, John Kuttesch, Patty Lee, Cynthia Manley, Nipun Merchant, Judith Roberts, Alan Sandler, Rebecca Taylor (American Cancer Society), Anne Washburn, Kay Washington, Wendell Yarbrough.

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TERESA DAIL, Administrative Director, Medical Center Support Services

GEORGE DELONG, Assistant Hospital Director, Medical Center Support Services

BETH KAMMER, M.B.A., J.D., Diagnostic Labs, Anatomic Pathology

MARILYN "BUFFY" KEY, Diagnostic Labs—Clinical Pathology

JOYCE MOSIER, R.N., C.P.H.Q., Utilization Management

MARSHA J. KEDIGH, M.S.M., Admitting

ROSANNA PIERCE, R.N., R.V.T., Vascular Diagnostic Lab

MARY REEVES, B.S., R.H.R.T., Medical Information Services

FRANK ASHE, Copy Center, Postal Services, Satellite Delivery

MIKE JOLLEY, Environmental Services

RHONDA TULLY, M.B.A., R.T., Radiology

# Directors of Programs in Allied Health Professions

CYNTHIA FACEMIRE, M.S., R.H.D., Dietetic Internship MARALIE GAFFRON EXTON, A.B., Medical Technology JAMES A. PATTON, Ph.D., Nuclear Medical Technology JAMES RAMSEY, B.A., C.C.P., J.D., Cardiovascular Technology

# Vanderbilt University Hospital and The Vanderbilt Clinic: Leading the Way in Medicine

Tanderbilt University Medical Center has built a strong reputation as a leader in medical education, research, and patient care throughout the Southeast and the nation over the course of its 135-year history. At its heart, the Vanderbilt Medical Center is driven by discovery and the immediate incorporation of new knowledge into innovation in patient care and physician and nurse education.

# Medical Education

The School of Medicine, originally having shared faculty with the University of Nashville, awarded its first Vanderbilt medical degrees in 1875. Since the early days, a Vanderbilt medical education has been held in high esteem among its peer institutions, and that legacy continues.

The School of Medicine attracts the most accomplished and talented students in the country. They are drawn by the quality of the training, the excellence of the faculty, the collegial atmosphere between faculty and students, and the close personal attention that students receive. The diverse first-year class of 2012, selected from a pool of 5,032 applicants, represents twenty-four states and undergraduate degrees from fifty-one colleges and universities. The School of Medicine placed 16th among 125 medical schools in *U.S. News & World Report*'s 2008 survey, "America's Best Graduate Schools."

# **Nursing Education**

The School of Nursing, founded in 1908, was one of the nation's first nursing programs to incorporate its curriculum into a liberal arts degree. It enters its centenary decade as one of the country's premier nursing schools, listed among the top twenty by *U.S. News & World Report*. The school offers a master's program with an accredited baccalaureate equivalent or "bridge" (pre-licensure) curriculum component. This approach enables students from diverse backgrounds, who are not nurses or do not have a B.S.N., to enter master's level study and prepare for careers in advanced

practice nursing. The innovative bridge program has served as a model for many other such programs across the country. The Ph.D. program established in 1993 was enhanced in 2006 by the addition of the Health Services Research Track—the first in the country in a school of nursing. The doctorate of nursing practice (D.N.P.) degree was launched in fall 2008. All of our doctoral programs (and many of the majors in our M.S.N.) have a significant distance-learning component.

## Research

Biomedical research at Vanderbilt has long been recognized for its contributions to the advancement of medicine. The School of Medicine claims two Nobel Laureates, Earl W. Sutherland, Jr., in 1971, for his discovery of the metabolic regulating compound cyclic AMP, and Stanley Cohen, in 1986, for his discovery (with a colleague) of epidermal growth factor. The Medical School's reputation for outstanding research is reflected in the amount of federal and private support it receives. Because of the creativity of the faculty, the School of Medicine ranked No. 10 among U.S. medical schools for NIH funding for federal fiscal year 2007. VUMC research funding from all sources has doubled since 2001. Support for competitive research grants from all external sources has grown continually to more than \$417 million for fiscal year 2008. In addition, five School of Medicine departments ranked in the top ten nationwide in scholarly output in 2006/07, calculated in terms of faculty publications, citations, awards, and grants. Major translational research initiatives at Vanderbilt are moving discoveries from the bench to the bedside and will transform health care and health care delivery.

At the School of Nursing, faculty engage in research aimed at improving the lives of individuals, families, and communities. Faculty researchers collaborate with investigators from across the medical center, the university, and the world. School of Nursing researchers accomplish their mission through studies that emphasize clinical and health services intervention.

Examples of the challenges include those related to the health workforce, quality and safety across the health care system, prevention and treatment of lymphedema, congestive heart failure symptom management, premature births, child health, death and dying, and acute and chronic pain. The school prepares future researchers primarily through its Ph.D. and post-doctoral education programs.

## Patient Care

In 2008, the Vanderbilt clinics had more 1,179,000 patient visits, and more than 51,800 patients were admitted to the Vanderbilt hospitals. A principal referral center for physicians and patients throughout the region, Vanderbilt University Hospital and the Vanderbilt clinics consistently rank among the premier health-care facilities in the United States. Vanderbilt University Hospital and the Monroe Carell Jr. Children's Hospital at Vanderbilt are two of only three Tennessee hospitals included on the list of "America's Best Hospitals" compiled by *U.S. News & World Report* magazine. VUH is the only hospital in Tennessee to be named to the *U.S. News* Best Hospitals "Honor Roll" of the nation's top nineteen hospitals. Vanderbilt is the only Tennessee health care provider ranking eight of its adult medical specialties among the nation's top fifty by *U.S. News*. VUH was named among the nation's top 100 hospitals by Thomas Reuters.

U.S. News & World Report named Vanderbilt's specialty programs in heart and heart surgery; gynecology; cancer; kidney disease; ear, nose, and throat; endocrinology; respiratory disorders; and urology as among the best programs nationally. In 2006, Vanderbilt achieved designation as Nashville's first Magnet hospital by the American Nursing Credentialing Center.

Among Vanderbilt's specialty programs is the Vanderbilt-Ingram Cancer Center, the only Comprehensive Cancer Center designated by the National Cancer Institute in Tennessee that conducts research and provides care for adult and pediatric cancers. The Cancer Center provides innovative, multi-disciplinary care for patients and families along with a comprehensive program in basic, translational, clinical, and population-based research in cancer care, prevention, and early detection. In 2007, the Cancer Center was invited to join the prestigious National Comprehensive Cancer Network, a non-profit alliance of the world's twenty-one elite cancer centers collaborating on improving the quality and effectiveness of cancer care for patients everywhere.

Additionally, VUMC's Level I trauma center, comprehensive burn center, and LifeFlight air emergency transport program offer critical trauma care to a three-state region.

The Monroe Carell Jr. Children's Hospital at Vanderbilt is the most comprehensive children's hospital in the state and is dedicated to meeting the unique health care needs of children, from newborns to young adults, by providing primary and sub-specialty services. Children's Hospital serves as a regional referral center and has been recognized by *U.S. News & World Report* as one of the nation's premier children's hospitals. *U.S. News* ranked Children's Hospital twenty-third on its listing of "America's Best Children's Hospitals." The pediatric specialty programs in neonatology and neurology and neurosurgery were ranked among the nation's top twenty by *U.S. News*.

The Vanderbilt Heart and Vascular Institute has become one of the nation's foremost cardiac research programs. *U.S. News & World Report* recently

ranked Vanderbilt Heart and Vascular Institute twenty-third on its list of "Best Hospitals" in Heart and Heart Surgery category.

Vanderbilt Transplant Center is one of the largest and most respected in the Southeast with more than 400 solid organ and bone marrow transplants performed each year. A new pediatric liver transplant program was begun October 1, 2007 at the Monroe Carell Jr. Children's Hospital at Vanderbilt.

The Nurse Faculty Practice network includes five primary care centers, three school health clinics, a women's health center, and five employer-based care centers. During fiscal year 2008, these clinics treated more than 30,000 patients. The Faculty Nurse Midwifery Service delivered over 600 babies at Vanderbilt Hospital and area general hospitals. All clinics are staffed by faculty nurse practitioners and nurse midwives. VUSN nurse practitioners/nurse midwifery students rotate through these sites as a part of their education.

# Community Impact

Vanderbilt University and Medical Center, the largest private employer in Middle Tennessee and second largest in the state, employs more than 22,300 and has an annual regional economic impact of approximately \$6.0 billion, of which the Medical Center's impact totals about \$4.3 billion. Vanderbilt will provide more than \$245 million in uncompensated and charity care to members of the community unable to pay for their own care. It is the largest provider in the region under TennCare, the state's Medicaid program for the poor and uninsured.

Vanderbilt consistently leads all private universities in the country in support of the United Way and Combined Charities. The medical center leads one of the country's largest fundraising efforts for the American Heart Association. Vanderbilt gives to its community, but it also receives support from it. In FY08, the entities that compose the Medical Center received more than \$72 million in philanthropic gifts.

As an integral part of the Nashville community, VUMC provides such community services as the Adolescent Substance Abuse Program, nurse-managed primary care to an underserved urban neighborhood, the maternal-infant health care outreach workers' program in Appalachia, and the Tennessee Poison Center, an independent agency based at Vanderbilt and partially funded by VUMC.

# Monroe Carell Jr. Children's Hospital at Vanderbilt

The Monroe Carell Jr. Children's Hospital at Vanderbilt is a place of hope and healing for patients and their families. Recognized as one of the premier children's hospitals in the nation by *U.S. News & World Report* in 2008, Children's Hospital cares for the sickest patients in the region and beyond.

Children's Hospital is the most comprehensive children's hospital in the state, providing pediatric services from neurosurgery, cancer treatments, and organ and bone marrow transplants to repairing broken legs and everything in between. All children regardless of ability to pay are welcomed. Children's Hospital has the only pediatric emergency department in Middle Tennessee with more than 41,000 visits in FY08. More than 161,000 patients were seen in outpatient clinics the same fiscal year.

Constructed in 2004, the new freestanding children's hospital is filled with state-of-the-art equipment and information systems to provide the best treatments for patients and offers a variety of family accommodations to help fulfill its mission of family-centered care. Children's Hospital is a non-profit teaching and research hospital and relies on the support of individuals and others to help children get well on their way.

# Meharry-Vanderbilt Alliance

Established over ten years ago, this nationally recognized historic collaboration between two uniquely diverse medical education institutions and traditions has become a tremendous success. Created to foster a diverse educational and scientific environment, this partnership has focused on clinical science training, academic support, biomedical research and training, and health services initiatives with emphasis on those that affect the disparities between the majority and minority populations. More than fifty students per year from both campuses have shared cross-campus experiences through clerkships, residencies, and fellowships benefiting student curricula and enhancing the academic support infrastructure of both institutions. The initiatives focus on four specific areas: undergraduate medical education, graduate medical education, student affairs, and information management and libraries. Collaborative efforts in research and training yielded over \$40 million in grants in FY07. Joint projects have resulted in 219 publications of which 197 were published post-creation of the alliance. The alliance has created translational and participatory community health initiatives which are benefiting the underserved community. The alliance has also formed a Meharry-Vanderbilt Student Alliance (MVSA) which involves more than 200 students from both campuses in educational, clinical, and community service programs. MVSA is a student-run organization and develops programs suggested by students. MVSA publishes a newsletter three times a year to highlight student activities and interests.

#### Center for Health Services

Enhancing health in disadvantaged communities in six states, CHS programs focus on youth, adult, and senior health, environmental issues, and

medical education. The Maternal Infant Health Outreach Worker (MIHOW) program trains more than 100 paraprofessional outreach workers each year and has served more than 15,000 families since 1982. The Student Community Health Coalition helped launch more than 100 community clinics in Appalachia and provides health and fitness services for seniors in thirteen Tennessee counties. The Service Training in Environmental Progress (STEP) program assists communities dealing with toxic issues. The Community Health Emphasis program trains medical students to implement public health projects.

#### Adult Clinical Centers

#### **Addiction Center**

Housed within the Psychiatric Hospital at Vanderbilt, the Vanderbilt Addiction Center provides a comprehensive approach to the treatment of alcohol/drug dependence and associated psychiatric problems for patients 18 and older. The program consists of a complete psychiatric and medical assessment and inpatient detoxification, with follow-on treatment available as required.

## **AIDS Project**

The Vanderbilt AIDS Project provides support in the areas of community service, education, training, and research. The project also offers a wide range of support services to AIDS patients including individual and family counseling, along with assistance for discharged patients.

## Asthma/Sinus/Allergy Program (ASAP)

Opened in 1997, ASAP was the first clinic in the nation to offer comprehensive treatment of all airway diseases and disorders in a centralized location.

# Vanderbilt Bill Wilkerson Center for Otolaryngology and Communication Sciences

Balance and Hearing Center Southeast Nashville Hearing Center St. Thomas Audiology

The Hearing Centers offer state-of-the-art diagnostic and rehabilitative services to persons with hearing loss and vestibular disorders.

The Scottish Rite Masons Research Institute for Communication Disorders

The Scottish Rite Institute conducts research and provides intervention in the field of child language disorders and other communication delays.

The Pi Beta Phi Rehabilitation Institute

The Pi Beta Phi Rehabilitation Institute provides comprehensive rehabilitation and community reintegration services to individuals who are recovering from a traumatic brain injury.

#### **Breast Center**

The Vanderbilt Breast Center is a unique clinical setting in which women can obtain comprehensive breast health care in a single location. Services include mammography, breast ultrasound, MRI for diagnosis and screening of high risk patients, clinical breast examination, stereotactic biopsy, surgical evaluation, and special multidisciplinary clinics for women at high risk of developing breast cancer and newly diagnosed patients. More information at *www.thevbc.org*.

#### **Burn Center**

Vanderbilt's twenty-bed comprehensive Burn Center is staffed by physicians, nurses, therapists, and support personnel, including psychiatrists, social workers, and a chaplain, who work as a team to provide the most advanced technology and treatment methods to burned adult and pediatric patients.

## **Center for Human Nutrition**

Adult Practice

The Center for Human Nutrition specializes in providing evaluation and treatment for malnourished patients requiring nutritional support interventions

#### Clinical and Research Ethics Center

The center's objectives are to promote ethically sensitive patient care and an informed patient population; to assist in developing an educated citizenry within the medical center, the university, and the surrounding community; and to encourage thoughtful deliberation concerning the moral and ethical issues pertaining to the health care system.

#### Clinical Improvement Center

The aim of the Center for Clinical Improvement is to systematically and continuously improve care based on Institute of Medicine (IOM) dimensions of care (Safe, Timely, Effective, Efficient, Patient-Centered, and Equitable); to collaboratively assess and communicate measures of quality; to develop new knowledge, tools, and resources to advance the science of improvement; and to disseminate improvement science knowledge to current and future health care professionals.

## Community Mental Health Center (CMHC)

The CMHC provides a broad range of mental health care to children, adolescents, and adults. Special emphasis is placed on serving individuals with serious and persistent mental illness.

### Comprehensive Care Center

The Comprehensive Care Center, a collaborative enterprise between Vanderbilt Medical Center and a community hospital, is an outpatient medical facility that provides medical care for HIV/AIDS patients. The center also offers screening and enrollment in AIDS clinical studies.

## **Craniofacial Surgery Center**

The Vanderbilt Center for Craniofacial Surgery is a multidisciplinary group that treats both acquired and congenital deformities of the soft tissues and bone of the head and neck region. The team consists of craniofacial surgeons, neurosurgeons, otolaryngologists, orthodontists, oral surgeons, psychiatrists, dentists, ophthalmologists, pediatricians, geneticists, speech pathologists, and social workers. The Center is recognized by the American Cleft Palate/Craniofacial Surgery Association and is one of the few centers in the country that performs this type of surgery.

## **Dental and Orthodontic Center**

The Vanderbilt dentistry practice provides comprehensive dental and orthodontic care for children and adults. The program also offers special expertise in orthodontic therapy to patients requiring orthogonathic surgery.

#### Dermatology/MOHS Practice

Dermatology/MOHS Practice specializes in the treatment of various types of dermatologic issues including dermatologic surgery, dermatopathology, photochemotherapy, atypical moles and melanoma, and cutaneous cancers, including lymphomas.

#### **Epilepsy Program**

The Vanderbilt Epilepsy Program offers advanced services for the diagnosis and treatment of epilepsy and related paroxysmal disorders.

#### Vanderbilt-Eskind Diabetes Clinic

The Vanderbilt Eskind Diabetes Clinic provides a venue for excellence in diabetes care spanning the entire age spectrum. A multidisciplinary approach is one of the advantages that our patients receive when they place their diabetes care with us. Because diabetes can impact several aspects of patients' health, patients have access to several specialists in our clinic such as endocrinologists, nurse practitioners, dietitians, exercise specialists, cardiologists, ophthalmologists, neurologists, lipidologists, high risk obstetricians, social workers, and child life specialists.

#### **Emergency/Critical Care Air and Ground Patient Transport Services**

LifeFlight is a comprehensive, hospital-based, air medical transport program that provides advanced level critical care during patient transport using helicopters, airplanes, and ambulances. Four helicopters provide overlapping coverage to all of Middle Tennessee, Southern Kentucky, and Northern Alabama. The fixed-wing component of LifeFlight is available for regional, national, and international patient transports. LifeFlight ambulance support provides close proximity patient transport, fixed wing support, and back-up to the rotor wing fleet. All modes of transport can be initiated by calling 1-800-288-8111.

## **Eye Centers**

Vanderbilt Eye Institute

The Vanderbilt Eye Institute is a state-of-the-art facility that specializes in all aspects of eye care, including cataracts, glaucoma, retinal diseases, corneal transplantation, ocular plastics, and neuro-ophthalmology, as well as optical and contact lens.

Laser Sight Center

The Vanderbilt Laser Sight Center offers state-of-the-art laser vision correction procedures to treat nearsightedness, farsightedness, and astigmatism.

Contact Lens Center

The Vanderbilt Contact Lens Center is located in the Vanderbilt Eye Center in Medical Center East. An optometrist is in clinic daily and available to meet contact lens needs. Payroll deduction is available for Vanderbilt employees. The center specializes in the evaluation of patients who have had previous contact lens failures.

Optical Center

The Vanderbilt Optical Center is located in the Vanderbilt Eye Center in Medical Center East. Designer frames, thin and light lenses, and safety and sport eyewear are among the many items available. Faculty, staff, and students receive a 15 percent discount. Payroll deduction is available for Vanderbilt employees.

Tennessee Lions Eye Center at Vanderbilt Children's Hospital

The Tennessee Lions Eye Center offers subspecialty eye care for children from birth through 18 years. Inpatient consults are done at the request of other pediatric specialists who attend patients in the Children's Hospital. Outpatient services include vision evaluation for newborns with a family history of eye disease, evaluation of surgical and non-surgical treatment for eye muscle disorders and double vision, orthoptic evaluation and treatment, pediatric contact lens fitting, and annual and preschool eye exams.

#### **GI Clinic**

The GI Clinic provides adult gastroenterology and hepatology outpatient services using a multidisciplinary health care team.

#### Vanderbilt Heart and Vascular Institute

The Vanderbilt Heart and Vascular Institute is a comprehensive and integrated heart and vascular program offering diagnosis, medical treatment, minimally invasive therapies, surgical intervention, and disease management, state-of-the-art techniques, and personalized treatment programs for each individual's unique needs.

### Henry-Joyce Cancer Clinic and Clinical Research Center

The Henry-Joyce Cancer Clinic, the clinical arm of the Vanderbilt-Ingram Cancer Center, provides patients and their physicians with access to some of the nation's foremost experts in cancer care delivered with a multidisciplinary approach. Each patient's treatment plan is developed by a team of specialists and carried out by a dedicated staff with years of experience in oncology and hematology. Services offered on the first and second floors of the Vanderbilt Clinic include medical, surgical, gynecologic, and neurological oncology; chemotherapy infusional; benign and malignant hematology; blood and marrow transplant evaluation and care and an outpatient transplant unit; and a patient and family resource center. The clinic is undergoing a major expansion to double its square footage and the available chemotherapy infusion rooms, examination rooms, and consultation rooms, and to expand the offerings of the resource center, in a warm and healing environment. The expansion is set for completion by the end of 2008.

## Hillsboro Medical Group

In existence for over forty years, this practice provides primary care and specialty care in the areas of endocrinology, hypertension, and pulmonary disease, serving adult and geriatric patients (ages 15 through senior years). A pulmonary function test lab, radiology services, and a laboratory are conveniently located in Medical Center East.

#### Vanderbilt Home Care Services, Inc.

Vanderbilt Home Care offers a variety of home care services catering to the individual needs of the patients. The quality and level of care comply with standards of care ensuring safe and effective treatment with all the benefits of home. As an affiliate of Vanderbilt University Medical Center, we offer family-centered care with a team approach to those individuals and families who require specialized services.

Vanderbilt Home Care Services, Inc., provides home care to patients in Davidson, Cheatham, Robertson, Rutherford, Sumner, Williamson, and Wilson counties. The staff comprises registered nurses, physical therapists, occupational therapists, speech pathologists, social workers, certified nurse technicians, and sitters. Intermittent and private duty services are available.

## **Hypertension Practice**

The Hypertension Practice focuses on comprehensive management of patients with hypertension, including lifestyle modification and pharmacologic interventions.

#### **Imaging Centers**

Cool Springs Imaging Hillsboro Imaging

MRI, CT, CT screening\*, CT cardiac scoring\*, ultrasound, mammography, bone density, x-ray, and pain management services are provided with state-of-the-art technology.

\*available at Cool Springs only 3T MRI available at Hillsboro only.

Immediate call-back to the physician on abnormal studies, with consultation to the doctor always available. Reports are faxed to the physician on all studies in four to six hours. As procedures are performed, referring physicians can view images over the Web on all modalities except mammography. Copies of films are provided either with film or CD copies upon request, and a copy is kept permanently in digital archives.

### Vanderbilt Center for Women's Imaging

The Vanderbilt Center for Women's Imaging is dedicated to providing women's ultrasound in a comfortable setting, offering a wide range of non-obstetric women's ultrasounds including pelvic, renal, abdominal, and thyroid ultrasound, as well as ultrasound of veins of the lower extremities. Obstetric ultrasound services include first trimester ultrasound screening, fetal well-being, fetal anatomy screening, amniocentesis guidance, and screenings for genetic abnormalities. Vanderbilt Center for Women's Imaging provides same day scheduling, same day reports, 3D/4D images and patient pictures, and videotapes or CD's. A radiologist is always on site.

#### Vanderbilt Center for Integrative Health

The new Vanderbilt Center for Integrative Health focuses on healing the whole person by combining traditional medicine with complementary therapies that are proven safe and effective. Services include massage therapy, physical therapy, nutrition counseling, acupuncture, health coaching, integrative physician consult, integrative psychological counseling and classes for mindfulness, yoga, Tai Chi, and Qigong.

#### Vanderbilt Internal Medicine and Pediatrics Practice

This center provides comprehensive adult, senior, and pediatric primary care services. Housed in facilities dedicated in 1996, the center's adjacent lab, diagnostic, and pharmacy services afford prompt and convenient care for patients of all ages.

## **Kidney/Pancreas Transplant Practice**

The Kidney/Pancreas Transplant Practice specializes in the evaluation of patients with renal disease that have been referred for possible kidney transplant. These patients are followed pre- and post-transplant.

## **Lipid Clinic**

The Vanderbilt Lipid Clinic, a branch of Vascular Surgery, provides stateof-the-art diagnosis and treatment for patients with lipid disorders. A multidisciplinary approach unites physicians, nurses, and dietitians to offer preventive care to patients with high cholesterol, both those who are at risk of developing coronary heart disease (CHD) and those with pre-existing coronary heart disease.

#### Multiple Sclerosis Clinic and Research Center

The MS Clinic and Research Center, located in the Vanderbilt Stallworth Rehabilitation Hospital, is a comprehensive program of patient care and education. Services include physical therapy, occupational therapy, neuropsychological counseling, and treatment.

#### **Nephrology Practice**

The Nephrology Practice specializes in patients with kidney disease and other related conditions that cause kidney failure or need for dialysis. Additionally, the Chronic Disease Management Clinic provides seamless management of the disease and its medical management through a qualified health care team approach.

#### George M. O'Brien Renal Center

The objective of this center is to contribute to the understanding of pathogenic mechanisms leading to progressive nephron destruction in the kidney. Investigators from the Departments of Medicine, Surgery, Pediatrics, Cell and Developmental Biology, Pharmacology, and Pathology employ a multidisciplinary approach in the study of kidney dysfunction.

#### Occupational and Environmental Medicine

The Vanderbilt Center for Occupational and Environmental Medicine (VCOEM) provides consultation on environmental and work-related medical issues for healthcare professionals, assessment of the medical and scientific strengths and weaknesses of injury and disease claims for case managers, insurance companies, and attorneys, and advice regarding the development and oversight of preventive programs for industry and employers. VCOEM also provides medical input and support to Vanderbilt Corporate Health Services for the integration of the delivery of health care services for workers' compensation patients throughout the medical center.

# The Vanderbilt Oral and Maxillofacial Surgery (OMS) Clinic

The Vanderbilt Oral and Maxillofacial Surgery (OMS) Clinic provides the full scope of oral surgery including maxillofacial trauma, orthognathic surgery, oral and maxillofacial pathology, and dentoalveolar surgery.

## Orthopaedics Practice, Adult

Vanderbilt Orthopaedics combines some of the region's best physicians and rehabilitation professionals. Patients benefit from a staff of fellowship-trained physicians who offer subspecialized orthopaedic care. Specialties include hands, joint replacement, knees, oncology, shoulders, spine, sports medicine, and trauma.

#### John S. Odess Otolaryngology Head and Neck Surgery Clinic

The Odess Clinic opened in 1998 on the second floor of the Vanderbilt Clinic as a result of a substantial financial gift from its benefactor, the late Dr. John S. Odess, an alumnus of the Vanderbilt University Medical School. This gift continues to play a major role in the success of the Department of Otolaryngology. In 2005, the clinic moved to its new space in the Bill Wilkerson Center for Otolaryngology and Communication Sciences, increasing patient-care rooms with state-of-the-art care. Thousands of patients seek specialized treatment in head and neck, ear, nose, and throat disorders and diseases in the Odess Clinic. The clinic is ranked continuously among the top twenty otolaryngology departments by *U.S. News and World Report*, and its faculty is recognized both nationally and internationally. Its fellowship programs in head and neck surgery, otology, and rhinology continue to train high-quality otolaryngologists in its specialized sub-specialties.

#### **Palliative Care**

The Palliative Care Consultation Service offers an integrative approach to patients with a terminal diagnosis, specifically assisting in the treatment of distressing symptoms and the development of patient-centered goals of care, and facilitates referrals to hospice. The team is available to assist families and patients with difficult decisions including, but not limited to, decisions regarding chemotherapy, dialysis, code status, and advanced-care directives. In addition, the team assists with communicating difficult information to family members of our patients, including children of all ages.

## Phototherapy and Skin Treatment Center

The Vanderbilt Phototherapy and Skin Treatment Center is an outpatient facility fully equipped and staffed for treatment of skin conditions responsive to ultraviolet light therapy.

## **Pituitary Center**

This center provides comprehensive, multi-disciplinary care to patients with all types of hypothalamic and pituitary diseases. It offers the services of specialists in neuro-ophthalmology, radiation oncology, neuroradiology, otolaryngology, reproductive endocrinology, urology, neurology, psychiatry, and physical therapy.

## VPEC—Vanderbilt Preoperative Evaluation Clinic

VPEC was established as a free service for Vanderbilt patients scheduled for surgery to ensure their safety and prevent surgical delays and cancellations. Patients are evaluated by a nurse practitioner and anesthesiologist using a medical history and physical, and essential diagnostic tests are performed within thirty days of the patient's scheduled surgery.

#### **Pulmonary Medicine Practice**

The Pulmonary Practice is a multidisciplinary practice which provides diagnosis and treatment of lung-related disorders, including COPD, asthma, interstitial lung disease, primary pulmonary hypertension, and lung cancer.

### **Radiation Oncology Clinic**

Satellite Locations: Gateway-Vanderbilt Cancer Treatment Center, Clarksville Vanderbilt-Ingram Cancer Center, Franklin

The Radiation Oncology Clinic provides radiation therapy treatment to adult and pediatric patients. Specialty services include stereotactic photon knife for treatment of brain tumors; brachytherapy; prostate seed implants; IMRT treatment; body radiosurgery and IGRT for certain types of cancer; and total body irradiation for bone marrow transplant patients. The radiation oncology physicians work closely with surgical oncology, medical oncology, nursing, dieticians, and social work to care for the whole patient.

### **Rheumatology Practice**

This center delivers comprehensive care for those experiencing the special problems of arthritis and other rheumatic diseases. Services include patient education, occupational and physical therapy, radiology, new drug therapies, and joint prosthesis designs.

### **Senior Care Program**

The Senior Care Program evaluates frail elderly patients, age 65 and older, focusing on their level of medical, cognitive, and psychological function. Caregiver support and community health promotion care are emphasized.

### Vanderbilt Sleep Disorders Center

The Vanderbilt Sleep Disorders Center, accredited by the American Academy of Sleep Medicine, provides diagnosis and treatment of a comprehensive range of sleep disorders, including obstructive sleep apnea, narcolepsy, insomnia, restless leg syndrome, and parasomnias.

#### **Sports Medicine Center**

Vanderbilt Sports Medicine is the most comprehensive sports medicine service in the region. This state-of-the-art facility cares for all athletic injuries and specializes in knee and shoulder injuries to all recreational and competitive athletes. Sports Medicine specializes in the close integration of physician care and therapy.

### Vanderbilt Stallworth Rehabilitation Hospital

Vanderbilt Stallworth provides comprehensive inpatient and outpatient rehabilitation services for adult and pediatric (age 6+) patients with neurological, orthopaedic, and other injuries as well as chronic conditions and disabilities. Using state-of-the-art treatment technology, the hospital specializes in the treatment of stroke, brain and spinal cord injury, multiple traumas, amputee, hip fracture, and other diagnoses. A designated Stroke Center of Excellence within its ninety-four-hospital rehabilitation network, Stallworth repeatedly exceeds the national benchmarks for patient satisfaction and functional outcomes. It is also home to the Vanderbilt Center for Multiple Sclerosis. This hospital is a joint venture with HealthSouth Corporation.

#### Stroke Center

The Vanderbilt Stroke Center is designed to ensure optimal and uniform care of patients with stroke and related cerebrovascular disorders, and to provide leadership in research to improve treatments for stroke.

#### **Subacute Unit**

The Vanderbilt Subacute Unit is a 27-bed, Medicare-certified skilled nursing facility. The unit provides care to patients who are in need of transitional care (usually for two to three weeks) after discharge from the hospital.

### **General Surgery Center**

The General Surgery Center provides specialty care to adult patients requesting treatment for gastrointestinal problems—GERD, para esophageal hernia, achalasia, esophageal cancer, esophageal ulcer, ulcer diseases, GI bleeds, inflammatory bowel disease, fistulas, ileoanal pouch reservoir creation, ileostomies, colostomies, diverticular disease, colon resection, diverting colostomies, abdominoperineal resection, pelvic exenteration, incision and drainage of abscess, cancer, rectal prolapse, rectal fissures, hemorrhoids, hepatic disorder, skin disorders, laparoscopic procedures, adrenalectomy, appendectomy, cholecystectomy, Heller myotomy, and Nissen fundoplication. The average number of patient visits per year is 15,500. The clinic has a total of fifteen rooms—thirteen exam rooms and two procedure rooms.

### **Center for Surgical Weight Loss**

The Vanderbilt Center for Surgical Weight Loss is an interdisciplinary team comprising surgeons, bariatric nurses, a dedicated nutritionist, a behavior health specialist, and an internal medicine specialist who have the goal of helping morbidly obese people lose weight and live a healthier, more productive life. The center has grown in the past three years and has been

named as a Center of Excellence for Bariatric Surgery through the American Society of Bariatric Surgery and by many insurance companies throughout the state. Our surgeons perform the laparoscopic gastric bypass as well as the adjustable gastric banding, and they have a special interest and experience in revisional surgeries.

#### **Tennessee Poison Center**

Poison information specialists and clinical toxicologists provide an information and advisory service for all residents and for health care professionals in Tennessee on a 24-hour, 7-day-a-week basis.

### **Transplant Center**

The Vanderbilt Transplant Center is a multidisciplinary alliance of transplant specialists. Each transplant program within the center represents a collaboration of medical and surgical professionals working together in the best interests of the transplant patient. Clinical transplant services offered include kidney, pancreas, combined kidney/pancreas, heart, lung, combined heart/lung, liver, bone marrow, and stem cell transplantation.

### **Trauma Patient Care Center**

The Vanderbilt Trauma Center provides comprehensive care to trauma victims from pre-hospital care through hospitalization and rehabilitation. Patients may be referred through the Vanderbilt Trauma Line, which provides 24-hour access to a Vanderbilt physician. Rapid transport from a referring hospital can be arranged through the Vanderbilt LifeFlight Program. The Trauma Care Center consists of thirty-one beds on the tenth floor of Vanderbilt University Hospital.

### **Travel Clinic**

A complete source for health-related pre-travel and post-travel assistance, the Travel Clinic provides immunizations and certificates, prescriptions, recommended lists of first aid supplies, advice on preventive health habits, and instructions on recognizing symptoms of common travel-related illnesses. Appointments are available for individuals, tour groups, corporations, and institutions.

#### **Voice Center**

Opened in 1991, the Vanderbilt Voice Center is a major component of the Bill Wilkerson Center for Otolaryngology and Communication Sciences. The Voice Center's mission is "taking care of patients who use their voices

professionally," and it is dedicated to treating any patient with a voice-related issue. The Center is a unique resource for those who use their voices professionally or during the course of everyday life. Its advanced medical capabilities include equipment and techniques for the diagnosis and treatment of voice problems, voice training, and intervention to prevent voice problems. The center also treats the entire medical and surgical spectrum of upper aerodigestive tract related problems. Services include laryngology, bronchoesophagology, endoscopic laser surgery, laryngeal and tracheal reconstructive surgery, and phonosurgery. The Voice Center staff includes otolaryngologists, speech pathologists/voice scientists, and a singing specialist. As a training facility for otolaryngologists who want to specialize in laryngology and the care and treatment of the voice, it had one of the first laryngology fellowship programs in the world. Approximately 85 percent of its fellows are in academic medical centers.

# Pediatric Clinics, Programs, and Services

#### **Access Center**

The Monroe Carell Jr. Children's Hospital at Vanderbilt handles all pediatric admissions initiated by an outside physician or hospital through the Children's Access Center. For quality assurance, the center maintains recorded lines and may be reached 24 hours a day, seven days a week.

#### **Acute Care Clinic**

The Pediatric Acute Care Clinic (PACC) is open six days a week, providing acute medical care for the patients of Vanderbilt's Primary Care Practice. The clinic is staffed by attending physicians, residents, and nurse practitioners. In addition, PACC serves as a valuable educational environment for the house staff and medical students.

#### **Adolescent Consultation/Referral Services**

Consultation and referral services are available to assist primary care physicians and other health service providers in the care of their adolescent and young adult patients. Diagnostic and management opinions are offered to assist referring professionals in patient care.

### **Adolescent Primary Care Clinic**

Physicians serve as primary care providers for adolescents from twelve to eighteen years of age. Primary care services include acute illness and injury, annual/school physical exams, immunizations, pre-participation exams for sports, routine gynecological care, evaluation of problems of emotional adjustment and stress, and coordination of services for children with special needs.

### Allergy and Immunology Clinic

The Pediatric Allergy and Immunology Clinic provides diagnostic services and care for children who are suspected to have allergy-related and immunodeficiency diseases. The specialists provide evaluation and diagnostic testing for infants and children with suspected humoral and cellular immunodeficiency diseases and specialty care for patients with genetic immunodeficiency diseases.

### **Asthma Diagnosis and Treatment Center**

The center provides a multidisciplinary approach to the evaluation and treatment of children and adolescents with pediatric asthma, and the education of the patients and their families. The goal for asthma care is to educate the child and family to use the least amount of proven medications to allow the child to engage in all age-appropriate activities.

### **Behavioral Medicine Clinic**

The Behavioral Medicine Clinic provides outpatient behavioral health and counseling services to help patients and families cope with illness and symptoms that interfere with their lives. Patients who are dealing with recurrent abdominal pain, chronic fatigue syndrome, stress-related symptoms, anxiety, eating disorders, and management of chronic diseases, such as diabetes, are treated here. The goal is to help children and adolescents overcome or cope with symptoms so that they can live life to the fullest.

### **Brain Tumor Program**

The acute care and chronic care of brain tumor patients are addressed through a multidisciplinary program that permits a comprehensive care approach. Treatment programs and research in novel approaches are based on collaboration within the comprehensive multidisciplinary environment at Vanderbilt, collaboration with the Brain Tumor Program of the Vanderbilt-Ingram Cancer Center, and collaboration with other institutions regionally and nationally.

### **Bronchopulmonary Dysplasia Treatment Center**

As the survival of very-low-birth-weight babies increases, the number of babies with a form of chronic lung disease also increases. This usually temporary form of chronic lung disease is called bronchopulmonary dysplasia or BPD. Our BPD Follow-Up program has been in place for sixteen years, and patients are seen weekly until their BPD resolves.

#### **Center for Advanced Maternal Fetal Care**

The Center for Advanced Maternal Fetal Care is a comprehensive fetal diagnosis and therapy center at Vanderbilt. The center has incorporated a clinical program in fetal diagnosis and therapy as well as clinical and basic research programs. Consultations by appropriate specialists are coordinated at a single site with Maternal Fetal Medicine, Pediatric Surgery, Neonatology, Pediatric Neurosurgery, Pediatric Cardiology, Pediatric Urology, Genetics, and Diagnostic Imaging to decide what is best. Vanderbilt is at the forefront of fetal research and surgery as one of only three sites in the country to study *in-utero* surgery for spina bifida. The advancement of fetal diagnosis and therapy has improved the plan of care and outcome for the fetus at risk.

### **Center for Child Development**

The Center for Child Development provides interdisciplinary screening, evaluation, and intervention services for children from birth to 21 years who either have or are suspected of having developmental problems. The center has a range of specialized programs that address the needs of children, especially those under age 6, with different disabilities.

### **Child Life Services**

Child life specialists work with patients and families to reduce the stress and anxiety that may be associated with the health care experience. They work to meet the developmental, psychosocial, educational, and emotional needs of patients and families by promoting normal growth and development through play and activity rooms; providing opportunities to help children enhance their self-esteem and retain appropriate independence; advocating for non-medical needs of patients and families; and increasing patients' and families' understanding of hospital experiences.

#### **Consultation Clinic**

The Pediatric Consultation Clinic is a service provided by Vanderbilt Children's Hospital to the patients and medical providers in Middle Tennessee and surrounding areas. Any physician or provider in need of assistance with diagnosis, treatment, or a second opinion may refer a patient.

#### **Critical Care Unit**

The Pediatric Critical Care Unit is a 36-bed unit that provides highly specialized care for critically ill children. The patient population includes children with various conditions including neurological, respiratory, cardiovascular, gastrointestinal, renal/genitourinary, and orthopedic, complex congenital anomalies, burns, traumatic and accidental injuries, and/or multi-system involvement.

### **Cystic Fibrosis Diagnosis and Treatment Center**

The Vanderbilt Cystic Fibrosis Diagnosis and Treatment Center is one of the Cystic Fibrosis Foundation's approved centers providing the expert care needed by those with cystic fibrosis. It is one of 110 centers in the network and is committed to top-notch, aggressive treatment. The center involves health care providers from many disciplines, including pulmonary medicine, nursing, psychology, social work, nutrition, pharmacy, and physical therapy. There are also very close alliances with surgeons and gastroenterologists.

### **Dermatology Clinic**

The pediatric dermatology service at Children's Hospital consists of both outpatient and inpatient consultations and ongoing care. Comprehensive evaluation and treatment of all types of skin diseases in children are offered, with physician referrals and self referrals accepted.

#### **Down Syndrome Clinic**

The Down Syndrome Clinic offers a multidisciplinary team that evaluates children (i.e., birth through 21 years of age). Referrals and recommendations are provided to families after the clinic has evaluated patients, both medically and developmentally.

#### Early Childhood Anger Management Clinic

Persistent aggression during the early years is a risk factor for violence later in life. The American Academy of Pediatrics recommends that all young children be screened for aggression and counseling be provided as indicated. The clinic is available to provide consultation for families of young children less than seven years of age with aggression and anger management problems. Contributing factors will be reviewed, and treatment will be individualized. In general, pharmacologic therapy will not be used, and there will be a strong emphasis on teaching behavior modification strategies.

### **Eating Disorders Program**

The Eating Disorders Program is designed specifically for children, adolescents, and young adults. Services include evaluation and management of patients' conditions, providing medical, psychological, and nutritional treatment. Health care professionals are committed to a family-based, multi-disciplinary team approach, carefully orchestrated to include primary care physicians, psychologists, psychotherapists, nutritionists, psychiatrists, and other pediatric specialists as needed.

### **ECMO Program**

Extracorporeal Membrane Oxygenation (ECMO) is a form of long-term heart-lung bypass used to treat infants, children, and adults in cardiac and/or respiratory failure despite maximal medical therapy. The ECMO program at Children's Hospital has the capacity to run four ECMO patients at one time. The team includes doctors, registered nurses, and registered respiratory therapists.

### **Emergency Medicine**

The Vanderbilt Children's Emergency Department provides 24-hour access to experts in pediatric care to more than 40,000 patients seen annually. The Pediatric Emergency Department has twenty-five patient-care areas and three triage and ten observation beds. The department is staffed by attending physicians, residents, social workers, and child life specialists.

### **Epilepsy Monitoring Unit**

The two-bed unit is equipped with electroencephalogram (EEG) monitoring equipment and a video camera, so that patients suspected of having a seizure disorder can get an accurate diagnosis and a refined treatment plan.

#### Gastroenterology, Hepatology, and Nutrition Clinics

The Gastroenterology, Hepatology, and Nutrition Clinics provide comprehensive care, diagnostic evaluations/testing, management and treatment for a wide array of infants, children, and young adults with nutritional, gastrointestinal, or liver disorders.

### **General Surgery (Pediatric)**

Pediatric surgeons are specially trained in the surgical care of infants and children, to treat fetal patients, newborns, infants, toddlers, children, and young adults, and to perform a broad range of general surgical procedures including minor office procedures, inpatient, and outpatient procedures.

### **Heart Surgery and Services**

A team of experienced pediatric cardiac surgeons, cardiac anesthesiologists, pediatric cardiologists, and pediatric cardiac intensivists work closely together to care for infants, children, and young adults undergoing cardiac surgery. Nurses, respiratory therapists, child life specialists, and social workers dedicated to the care of critically ill children attend to every need of the child undergoing heart surgery, as well as the needs of the family. More than 500 children undergo heart surgery annually at Vanderbilt. Operations range from fairly straightforward closures of atrial or ventricular septal defects (ASDs or VSDs) to very complex operations including Norwood operation, Fontan operation, and cardiac transplantation.

#### Infectious Disease Clinic

The Pediatric Infectious Disease Clinic is devoted to helping children who suffer from diseases such as HIV or tuberculosis. Except in rare cases, the clinic sees patients by referral only. Urgent visits are also available by contacting the Division; it is the clinic's goal to provide a prompt consultative service for urgent visits.

### **International Adoption Clinic**

The International Adoption Clinic provides consultation services for families and practitioners involved in the adoption of foreign-born children. Preadoption services include counseling, review of medical records, videos, travel information, and vaccines. Post-adoption services include facilitating needed subspecialty consults and serving as a resource for the practitioners providing primary care for the adoptees.

#### Junior League Family Resource Center

The Junior League Family Resource Center offers health information and support to children, adolescents, and their families. The center assists families in obtaining information about their child's condition and other concerns. The center also provides information on community services and links families to local and national support and advocacy groups. The Flying Pig library within the Family Resource Center has health education books, DVDs, and videos designed especially for children and teens.

#### **Liver Transplant**

Pediatric solid organ transplantation is provided by an experienced team dedicated to the delivery of highly specialized pediatric transplant care. The transplant team includes pediatric liver transplant surgeons, hepatologists, anesthesiologists, intensivists, transplant coordinators, and pediatric nurses.

### **Lung Center**

The Lung Center has experts in the diagnosis and management of acute and chronic lung problems in infants, children, and adolescents. The Lung Center is also the home of the Cystic Fibrosis Diagnosis and Treatment Center, the Asthma Diagnosis and Treatment Center, the Bronchopulmonary Dysplasia Treatment Center, the Pediatric Sleep Disorders Program, the Flexible Bronchoscopy Service, and special services to technology-dependent children. The faculty and staff of the Lung Center strive to provide the highest-quality, family-focused care to the children and families in our region.

#### **Neonatal Intensive Care Unit**

More than 1,200 infants are treated in the Neonatal Intensive Care Units at Vanderbilt each year. There are two NICUs at Vanderbilt—a 60-bed NICU on the fourth floor of Vanderbilt Children's Hospital and the 18-bed Stahlman NICU at Vanderbilt University Hospital for critically ill infants born at Vanderbilt. The NICU is classified by AAP as level 3-C and provides care to complex, often premature, infants.

### **Neurology Clinics**

The pediatric neurology faculty offer consultation services by evaluating and working with patients and families who are dealing with illnesses, disorders, and conditions that involve the nervous system (brain, spinal cord, nerves, and muscles).

### **Neuromuscular Clinic**

The Neuromuscular Clinic, sponsored by the Muscular Dystrophy Association (MDA), offers an interdisciplinary team approach toward initial diagnosis and follow-up care. Children and adults with neuromuscular disorders included in MDA's program have access to a clinic staffed by neuromuscular disease specialists.

### Neurosurgery

The Pediatric Neurosurgical Service treats patients with the following neurosurgical conditions: brain tumors, congenital malformations of the brain and spinal cord, epilepsy, head trauma, hydrocephalus, myelodysplasia (spina bifida), spasticity and cerebral palsy, and vascular malformations, including AVMs, aneurysms, Vein of Galen, cavernous malformations, and moyamoya syndrome.

### Orthopaedics (Pediatric)

The Pediatric Orthopaedic Service provides extensive outpatient and inpatient experience in the diagnosis and treatment of all musculoskeletal diseases of children, including simple and complex fractures, pediatric and adolescent sports injuries, spine deformities and the treatment of scoliosis, congenital bone deformities, hip disorders, congenital foot disorders, and osteomyelitis.

### Otolaryngology

Pediatric Otolaryngology treats children with chronic ear infections, tonsil and adenoid infections, asthma and allergy/sinus problems, congenital airway problems, and other birth defects of the head and neck.

# Pediatric and Neonatal Transport Services: Critical Care and Back Transport

The Neonatal Transport Program provides critical care and back transport services to infants from birth to thirty days of age. A neonatal specialty team provides transport via neonatal-specialty ground ambulances, helicopter, or fixed wing aircraft from hospitals in Tennessee, Kentucky, and Alabama. Equipment and supplies are available to assess and treat critically ill and recovering newborn infants during transport to and from Vanderbilt Children's Hospital.

#### **Plastic Surgery**

The Plastic and Reconstructive Center at Vanderbilt Children's Hospital offers diagnosis and treatment for cosmetic and reconstructive problems in children and adolescents who require major and minor alterations of their physical appearance.

#### **Primary Care Practice**

The Vanderbilt Pediatric Primary Care Practice provides comprehensive well-child care to the infants and children of Middle Tennessee. The clinic offers physical examinations, immunizations, vision/hearing screening, and counseling/guidance for parents and children, and also provides EPSDT (Early Periodic Screening, Diagnosis, and Treatment) services.

### Rheumatology Clinic

The Rheumatology Clinic provides outpatient consultation and subspecialty care for children and adolescents with rheumatologic and inflammatory diseases.

### **Sleep Disorders Program**

The Division of Pediatric Pulmonary Medicine has developed a Pediatric Sleep Disorders Program in partnership with the Department of Neurology and the Department of Internal Medicine. The Pediatric Sleep Clinic evaluates pediatric patients with possible obstructive sleep apnea, altered sleep patterns, and difficulty falling asleep and staying asleep.

### Spina Bifida Program

Spina bifida is one of the most complicated and prevalent of congenital conditions. This clinic is organized to respond to the many diverse medical needs of people with spina bifida in one convenient setting.

### **Tennessee Lions Eye Center**

The Tennessee Lions Eye Center offers subspecialty eye care for children from birth through 18 years. Inpatient consults are done at the request of other pediatric specialists who attend patients in the Children's Hospital. Outpatient services include vision evaluation for newborns with a family history of eye disease, evaluation of surgical and nonsurgical treatment for eye muscle disorders and double vision, orthoptic evaluation and treatment, pediatric contact lens fitting, and annual and preschool eye exams.

### **Trauma Program**

The Vanderbilt Trauma Service at the Children's Hospital provides comprehensive care to pediatric trauma victims of all ages. Timely access to specialized care is often a matter of life and death in trauma situations, particularly when they involve children. Teams of experts in pediatric trauma care, including pediatric surgeons, emergency medicine physicians, intensivists, nurses, and child and family life specialists, mobilize rapidly once alerted that a child victim of trauma is enroute to the emergency department. In most cases, the team is in place and waiting in the trauma bay prior to the child's arrival and is able to relay instructions to the emergency response team or to the referring physician.

### Treatment and Research Institute for Autism Spectrum Disorders

The Treatment and Research Institute for Autism Spectrum Disorders is dedicated to improving assessment and treatment services for children with autism spectrum disorders and their families while advancing knowledge and training.

### **University Pediatrics: General Pediatrics**

### Urology

Pediatric urologists care for children with any problems associated with the urinary tract and/or genitalia. Managing a diversity of problems ranging from complex genital and urinary tract disorders to socially debilitating voiding abnormalities requires the technical skill of a micro-surgeon with the reassuring touch of a friend and confidant.

### Vanderbilt Childhood Cancer Program

The Vanderbilt Childhood Cancer Program sees patients at the Monroe Carell Jr. Children's Hospital at Vanderbilt. It is part of the Vanderbilt-Ingram Cancer Center, the only National Cancer Institute-designated Comprehensive Cancer Center in Tennessee and one of only thirty-nine centers in the nation to hold this distinction. The program includes dedicated faculty and staff who work together as a team in the diagnosis and treatment of children with cancer or blood diseases.

### Vanderbilt Children's Health Improvement and Prevention (VCHIP)

The VCHIP program is designed to focus on children's health through community partnerships with a multi-disciplinary approach. Its goal is to give all children the very best chance at developing into healthy and productive adults and develop meaningful programs with measurable results showing that behaviors can be changed for the better. Teams of physicians, nurses, epidemiologists, nonprofits, business leaders, statisticians, and community volunteers meet regularly to help identify those needs that can be addressed most effectively within the three primary advocacy and outreach areas: Healthy Children, Safe Children, and Strong Families.

### Vanderbilt Eskind Pediatric Diabetes Clinic

The program provides comprehensive diabetes management, diabetes education, and self-management training for children and teens with diabetes and their families. On-going care and education are available for families new to the area or new to this program. The staff works closely with the family's primary care physician to provide expert guidance in diabetes treatment through adolescence.

### Weight Management Clinic

The Weight Management Clinic provides evaluation and treatment of childhood obesity. The vast majority of children become obese from unhealthy lifestyle and behavioral choices. The treatment approach includes lifestyle changes, since there is no approved medical therapy for treating obesity in children. The Weight Management Clinic provides a multidisciplinary team approach to treatment.

### **Special Programs**

In addition to the special services listed throughout this catalog, Vanderbilt University Medical Center supports many programs in which medical students can receive invaluable experience, including:

- Airway Stenosis Service
- Biliary Disease Consultation and Treatment Center
- Center for Facial Nerve Disorders
- Photon Stereotactic Radiosurgery

# Programs in Allied Health

Vanderbilt University Hospital conducts training programs in five technical areas of allied health professions.

# **Diagnostic Sonography**

The VUMC School of Diagnostic Medical Sonography (DMS) has been reestablished to foster the education of sonographers and to promote the quality of patient care in the search for a diagnosis. The school offers an 18-month certificate curriculum in general sonography. The curriculum plan includes six (6) rotations of didactic and clinical courses which will require an average attendance of 33 hours per week. Upon completion of the didactic and clinical course requirements, graduates of the School of DMS are eligible to apply for certification exams in ultrasound physics and instrumentation, abdomen and obstetrics/gynecology administered by the American Registry of Diagnostic Medical Sonography.

### **Dietetic Internship Program**

The Dietetic Internship at Vanderbilt University Medical Center (VUMC) has been an educational program since 1929. It is designed for the generalist practitioner, providing experience in clinical dietetics, food service systems management, and community nutrition with emphasis areas in nutrition therapy and food service systems management.

The internship is sponsored by the Department of Nutrition Services of VUMC. The program is currently granted accreditation status by the Commission on Accreditation for Dietetics Education of the American Dietetic Association (120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995, 312-899-4876), a specialized accrediting body recognized by the Council on Post-Secondary Accreditation and the United States Department of Education.

The Nutrition Services Department serves approximately 1,500 patient meals per day, and more than 4,000 customers (employees and guests) are served daily in the cafeterias. The department employs about 250 persons, including thirty registered dietitians

### **Program in Medical Technology**

The Program in Medical Technology is an NAACLS-accredited program designed to provide extensive didactic and practical training in laboratory medicine. The program runs from June to June each year and is composed of a six-month "student laboratory" in a classroom setting and a six-month clinical practicum in the Vanderbilt clinical laboratories. Students receive theoretical and technical training in immunohematology (blood banking), hematology, clinical chemistry, immunology, microbiology, and laboratory supervisory and management skills. Emphasis is on a thorough understanding of theoretical concepts and problem solving. Upon completion of the program, students receive a certificate of training and are eligible for all state and national licensure or certification examinations.

Students from affiliated colleges and universities may enter the program after completion of the junior year and the prerequisite courses. These students will receive the baccalaureate degree from their college or university upon successful completion of the program. Students from non-affiliated institutions may apply, with affiliation agreements completed upon acceptance. Students who have baccalaureate degrees and have met the prerequisite requirements may also apply. Applicants holding foreign degrees are required to have transcript evaluations and to pass the TOEFL exam.

Applications should be submitted several months in advance of the application deadline, 1 January, to assure sufficient time for processing information and scheduling interviews.

### **Program in Nuclear Medicine Technology**

The twelve-month training program in clinical nuclear medicine methodology is designed primarily for students who have completed a minimum of three years of pre–radiologic technology work in an accredited college or university. The program prepares graduates for certification as nuclear medicine technologists. Students receive training in atomic and nuclear physics, radiochemistry, patient care and nursing, radiation safety, radiobiology, instrumentation, and computer applications, as well as clinical nuclear medicine (both imaging and in vitro). Students must

successfully complete the lecture series and clinical laboratory rotations that are integral parts of the program. Students are also expected to develop certain educational and administrative skills to prepare them for future supervisory positions.

The program is approved as the fourth year externship in a baccalaureate degree program at Austin Peay State University in Clarksville, Tennessee, Belmont University in Nashville, and Middle Tennessee State University in Murfreesboro. In addition, on completion of the program, a certificate will be awarded from the Division of Allied Health at Vanderbilt.

The nuclear medicine program is accredited by the Joint Review Committee for Nuclear Medicine Technologists (JRCNMT), and graduates are eligible for national certification examination.

### Admission requirements:

Satisfactory completion of three years of college credit at an accredited college or university, including the following:

Chemistry. A minimum of 8 semester hours or equivalent of general chemistry

Physics. A minimum of 12 semester hours or equivalent of general physics

Mathematics. A minimum of 6 semester hours or equivalent of college algebra and statistics. Calculus and analytic geometry are also recommended

*Biology.* Approximately 24 semester hours or equivalent, including human anatomy and physiology, hematology, medical microbiology, immunology and serology, and bacteriology

Computer Science. A minimum of 6 semester hours or equivalent of introduction to computer science and FORTRAN IV programming

- A minimum overall grade point average of 3.0 (4.0 scale) is recommended. Averages above 2.5 will be considered
- A baccalaureate degree or eligibility for that degree at the completion of clinical training
- Good moral character, pleasant personality, ability to relate to patients

Qualified applicants from any accredited college or university are eligible for admission. Complete applications must be received by 15 March preceding the expected date of admission. Student selections will be completed by 15 April. Selection is based on scholastic background, references, personal interview, and motivation.

### Radiation Therapy Training Program

The Radiation Therapy Program is a 12-month, hospital-based, certificate-granting program. Students are selected based on objective criteria and educated using lectures by program faculty and guest lecturers and related

workshops in the medical center that will allow students to complete the required coursework and graduate within the scheduled time, pass the ARRT exam in radiation therapy, and begin careers as radiation therapists.

# Other Health Profession Programs

### Vanderbilt Experience: Summer Nurse Internship Program (VESNIP)

Vanderbilt Nursing has partnered with our community nursing schools to provide Summer Internship opportunities for nursing students who are between their junior and senior years. Our partnerships are expanding, but we are currently working with Vanderbilt School of Nursing's Lipscomb and Fisk affiliate students, Belmont University, Western Kentucky University, and Cumberland University.

For earned credit, nursing students from these schools have the opportunity to experience eight weeks of focused-care clinical rotations throughout Vanderbilt Medical Center. According to the literature, nurses who participate in summer internship programs as students begin their nursing careers with increased confidence earned from hands-on experience.

Specialty care choices are Adult/ICU, Women's Health/Newborn, Oncology, Adult Acute Med/Surg, Pediatrics, Cardiovascular, and Perioperative Services with the following clinical rotations for each area:

#### ADULT/ICU:

- Emergency Department
- Neuro Intensive Care
- MICU
- SICU
- Trauma
- Burn Unit
- Surgery Stepdown

#### WOMEN'S HEALTH/NEWBORN:

- Labor and Delivery
- Gynecologic Surgery
- Orthopedics/Urology
- OB Clinic
- Women's Health
- Newborn Nursery

#### **ONCOLOGY**

- Oncology
- Myelosuppression
- Infusion Room

- BMT/Stem Cell
- Cancer Clinic
- Hematology

#### ADULT ACUTE MED/SURG

- General Medicine
- Oncology
- Colo-Rectal
- Orthopedics
- Urology
- Surgical Unit
- Renal Transplant
- Neurology Stepdown
- Med Specialty Clinics
- Surgery Clinics
- Diabetes Clinic
- Plastics
- GI Lab
- Wound Ostomy Care

**PEDIATRICS** 

- Hem/Onc

- Cardiology

Pediatric ICUNeonatal ICU

- Emergency Department

Operating RoomMed/Surg

- Peds Well-Child Clinic

CARDIOVASCULAR

- Testing Lab

- Ambulatory Clinic

- Medical Stepdown

- Surgical Stepdown

Operating Room

- Intensive Care

PERIOPERATIVE SERVICES

- Pre-Admission Testing

- Holding

- Operating Room

- PACU

- Surgical Floor

### **Program in Hearing and Speech Sciences**

The Au.D. (Doctor of Audiology) and Master of Education of the Deaf degrees are given by the School of Medicine. The M.A., M.S., and Ph.D. degrees in Hearing and Speech Sciences are offered by the Vanderbilt University Graduate School. See the *Graduate School Catalog* for current program information and course listings.

The program of studies leading to the master's degree requires five semesters of academic and clinical preparation, including a ten-week clinical or research externship. The program is both ESB and PSB certified by the American Speech-Language-Hearing Association, with degree requirements meeting or exceeding those required for ASHA certification. Practicum sites include the Bill Wilkerson Center, Vanderbilt University Medical Center, Vanderbilt-Kennedy Center, VA Medical Center, and several other hospitals in the Nashville metropolitan area.

Preparation for the doctoral degree includes a minimum of two years of academic course work, research competency demonstrated through two projects, and the dissertation. Research interests of the faculty include basic and applied psychoacoustics, speech perception and production, child language acquisition and disability, and audiological management. The division supports a number of research laboratories, including an anechoic chamber, and maintains a MicroVAX II computer and three PDP-11 computers





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