

**THE UNIVERSITY OF TEXAS HEALTH
SCIENCE CENTER AT HOUSTON**

MCGOVERN MEDICAL SCHOOL

2016-18 CATALOG ADDENDUM

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CURRENT:

Mission

The mission of McGovern Medical School is to provide the highest quality of education and training of future physicians for the state of Texas, in harmony with the state's diverse population; to conduct the highest caliber of research in the biomedical and health sciences; and, to provide exemplary clinical services in relationship to our educational and discovery activities.

In pursuit of this mission, McGovern Medical School:

- endeavors to select a group of caring, well-prepared, highly motivated, intellectually able and socially aware students from diverse cultural, ethnic, social, and economic backgrounds.
- offers them educational experiences: in the basic human biological and behavioral sciences that underlie modern medicine, in the cultural and social forces that shape its practice, and in the ethical responsibilities of physicians.
- provides training in cognitive, technical, and interpersonal skills necessary for practicing patient-centered medicine
- emphasizes problem-solving and creates educational opportunities that involve the use of modern information resources and technology.
- encourages students, faculty, and staff to participate in outreach activities that benefit the wider community.

CHANGE TO:

Mission

The mission of the McGovern Medical School is to educate a diverse body of future physicians and biomedical scientists for a career dedicated to the highest ideals of their profession; to provide outstanding patient-centered care; and to conduct innovative research that benefits the health and well-being of the population of Texas and beyond.

Core Values

- Deliver compassionate patient care focusing on effectiveness, quality, safety, and service
- Provide a competency-based curriculum emphasizing integrity and professionalism
- Embrace a culture of lifelong learning, evidence-based practice, open inquiry, and scholarship
- Cultivate professional and respectful communication

- Foster a diverse and inclusive learning community
- Support the health and well-being of students, faculty and staff
- Promote interprofessional collaboration
- Support leadership and innovation in teaching, research, and service
- Advocate for excellent care for the underserved and for the reduction of health care disparities

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Fees and Charges

Computer Fee	\$200	
Pager Fee – Year 3 & 4 (Annual)	120	
Graduation Fee*	75	
Information Technology Fee	99	
Health Insurance***	2185	
Installment Use Fee	20	
Laboratory Fee Year 1 & 2 (Annual)	35	
Library Resource Fee	100	
Malpractice Insurance (Annual)	25	
Technology Fee	700	900 (Academic Year 2017-2018)
Anatomy Course Fee (year 1)	500	
Student Services Fee (Annual)**	532.65	543.35 (Academic Year 2017-2018)
Standardized Patient Fee	1,000	
Student Records Fee	15	

*A graduation fee of \$75 payable at registration for the final academic term is required of all students. This fee does not include regalia rental.

**The Student Services Fee, required of all students, provides for student activities, outpatient care by UTHealth Health Services, student counseling, student government, a shuttle service, and recreational

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Curriculum

The basic four-year program outlined below is required for the MD degree.

Variations and adjustments may be made as the Curriculum Committee deems necessary.

First Academic Year

Required Courses:

Fall Semester/20 weeks

Foundations of Medical Science
Doctoring 1: History and Physical Examination
Spring Semester/20 weeks

Hematology, Immune System and Pathogens
Cardiovascular System
Pulmonary System
Renal System
Doctoring 2: Longitudinal Clinical Experience

Second Academic Year

Required Courses:

Fall Semester/20 weeks

Gastrointestinal System
Nervous System and Behavior
Musculoskeletal and Integumentary Systems
Doctoring 3: Longitudinal Clinical Experience

Spring Semester/10 weeks

Endocrine and Reproductive Systems
Life Stages

Required Clinical Experiences

Students will begin the required clinical experiences in the spring of year two. The required clinical experiences will begin with a one-week Intersession (Transition to Clerkships) and will be followed by six eight-week blocks as defined below. There will be another one-week Intersession after the second eight-week block. Students will have four weeks of vacation during this time period.

Required Clinical Experiences	Number of Weeks
Internal Medicine	8

Obstetrics & Gynecology	6
Neuropsychiatry	8
Pediatrics	8
Surgery	8
Family Practice	4
Geriatrics (Pass/Fail)	1
Third-Year Elective (Pass/Fail)	3

Students will take the Comprehensive Clinical Competency Examination (CCCE) in the spring of year three.

Career Focus Tracks

Students will begin their Career Focus Tracks in the spring of year three. There will be four required clinical experiences and seven electives, all will be four-weeks in length. There will be one one-week Intersession at the beginning of the Career Focus Tracks. Students will have three four-week periods for vacation or additional electives during this time period.

Required Clinical Experiences

Critical Care Selective
 Advanced Patient Care Selective
 Ambulatory Medicine Selective
 Transition to Residency Month
 Medical Jurisprudence (during the Transition to Residency course)
 Advanced Cardiovascular Life Skills (during the Critical Care Selective)

Required Elective Program:

Students take a minimum of seven four-week electives 7

Fourth year vacation periods may be used in the third year in special circumstances and with prior approval of the Office of Student Affairs.

The Medical School's fourth-year elective programs permit students to seek clinical opportunities away from Houston, at their own expense, ranging from family practice in rural communities to experiences in the most sophisticated settings requiring advanced technology. International clinical and research electives also are available. The School is fortunate regarding the wealth of clinical opportunities available to its students.

The fourth-year elective catalog is available online at <https://med.uth.edu/admissions/current-students/ms4/>

CHANGE TO

First Academic Year

Required Courses:

Fall Semester/20 weeks

Foundations of Medical Science (Pass/Fail – Effective 2018-2019 AY)

Doctoring 1: History and Physical Examination (Pass/Fail – Effective 2018-2019 AY)

Spring Semester/20 weeks

Hematology, Immune System and Pathology
Cardiovascular System
Pulmonary System
Renal System
Doctoring 2: Longitudinal Clinical Experience

Second Academic Year

Required Courses:

Fall Semester/20weeks

Gastrointestinal System
Nervous System and Behavior
Endocrine and Reproductive Systems- Part 1
Doctoring 3: Longitudinal Clinical Experience

Spring Semester/10 weeks

Endocrine and Reproductive Systems – Part 2
Musculoskeletal and Integumentary Systems

Required Clinical Clerkships (Students matriculating Fall 2016)

Students will begin the required clinical clerkships in the spring of year two. The required clerkships will begin with a two-month Intercession (Transition to Clerkships) and will be followed by three seven-week blocks and four five-week blocks as defined below. Students will have four weeks of vacation during this time period.

Required Clerkships	Number of Weeks
Internal Medicine	7
Obstetrics & Gynecology	5
Psychiatry	5
Neurology	5
Pediatrics	6
Surgery	7
Family Medicine	5

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Required Advanced Clinical Experiences

Critical Care Selective
Advanced Patient Care
Selective Ambulatory
Medicine Selective Transition
to Residency Month
Medical Jurisprudence (during the Transition to Residency course)
Advanced Cardiovascular Life Skills (during the Critical Care Selective)

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Pre-Entry Program

The Pre-Entry Program is an intensive four-week program offered to a subset of students prior to the matriculation of the first year. The program includes courses content in anatomy, biochemistry, histology, and physiology/neuroscience taught by McGovern Medical School faculty members. Students are also introduced to study skills. The noncredit program is designed to assist students prepare for the academic rigors of the medical school curriculum. Invitations to the program are sent to students who might benefit. Students may also request consideration for participation in this program.

A Peer Tutoring Service is available to all students at no charge.

For information about the Medical School's academic program, call 713- 500-5140, e-mail:

r.andrew.harper@uth.tmc.edu,
or write:

R. Andrew Harper, MD
Assistant Dean for Educational Programs
The University of Texas McGovern Medical School at Houston
6431 Fannin, JIL 304
Houston, Texas 77030

Visit our Web site:
<https://med.uth.edu/oep/medical-education/student-programs/pre-entry-program/>

CHANGE TO:

Pre-Entry Program

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Patricia Butler, MD
Vice Dean for Educational Programs
McGovern Medical School, a part of UTHealth
6431 Fannin, JIL 304
Houston, Texas 77030

Visit our Web site:

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THE UNIVERSITY OF TEXAS MEDICAL SCHOOL AT HOUSTON

2016-2018 CATALOG



McGovern
Medical School

The University of Texas
Health Science Center at Houston



LEADERSHIP FOR THE HEALTH CHALLENGES OF TOMORROW

Cover Page

This catalog is a general information publication only. It is not intended to nor does it contain all regulations that relate to students. Applicants, students, and faculty are referred to The University of Texas Health Science Center at Houston General Catalog. The provisions of this catalog and/or the General Catalog do not constitute a contract, express or implied, between any applicant, student or faculty member and McGovern Medical School or The University of Texas System. The McGovern Medical School reserves the right to withdraw courses at any time, to change fees or tuition, calendar, curriculum, degree requirements, graduation procedures, and any other requirements affecting students. Changes will become effective whenever the proper authorities so determine and will apply to both prospective students and those already enrolled.

Accreditation

The University of Texas Health Science Center at Houston is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award certificate, baccalaureate, masters, doctorate and special professional 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 The University of Texas Health Science Center at Houston.

The McGovern Medical School is accredited by the Liaison Committee on Medical Education located at: 655 K Street, NW, Suite 100, Washington, DC 20001. Telephone: 202.828.0596.

To the extent provided by applicable law, no person shall be excluded from participation in, denied the benefits of, or be subject to discrimination under any program or activity sponsored or conducted by UTHealth on the basis of race, color, national origin, religion, sex, sexual orientation, gender expression or gender identity, age, veteran status or disability.

A Message from the Dean of McGovern Medical School

Hello,

McGovern Medical School is proud to offer an excellent curriculum to educate and mentor compassionate physicians and biomedical scientists instilled with a passion for lifelong learning. Our outcomes-based curriculum is founded within a context of medical humanities and innovative technology.

Within the expanse of The University of Texas Health Science Center at Houston (UTHealth) and the Texas Medical Center, McGovern Medical School is poised to offer a collaborative and supportive environment.

Our school fosters a culturally diverse and inclusive community and promotes professionalism and leadership. With our hospital affiliates, including Memorial Hermann Hospital-Texas Medical Center, LBJ General Hospital, and UT Harris County Psychiatric Center, we offer an exemplary clinical environment for learners, providing outstanding care and working to eliminate health care disparities.

I invite you to learn more about our degree programs and curriculum.

Warm regards,

Barbara J. Stoll, MD

Dean and H. Wayne Hightower Distinguished Professor

McGovern Medical School at University of Texas Health Science Center at Houston

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Dean and H. Wayne Hightower Distinguished Professor

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Associate Dean for Admissions and Student Affairs

LaTanya Love, MD

Associate Dean for Admissions and Student Affairs and Diversity and Inclusion

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Assistant Dean for Admissions and Student Affairs and Diversity and Inclusion

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Associate Dean for Educational Programs

Allison Ownby, PhD

Assistant Dean for Educational Programs

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Associate Dean for Healthcare Quality

Pamela Promecene-Cook, MD

Assistant Dean for Graduate Medical Education

Gary C. Rosenfeld, PhD

Associate Dean for Educational Programs

Julia Shelburne, MD

Assistant Dean for Graduate Medical Education

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Biochemistry and Molecular Biology

Rodney E. Kellems, PhD

Cardiothoracic and Vascular Surgery

Hazim J. Safi, MD

Dermatology

Ronald P. Rapini, MD

Diagnostic and Interventional Imaging

Susan D. John, MD

Emergency Medicine

James McCarthy, MD

Family Practice and Community Medicine

Carlos A. Moreno, MD

Integrative Biology and Pharmacology

John F. Hancock, PhD

Internal Medicine

David McPherson, MD

Microbiology and Molecular Genetics

Theresa Koehler, PhD

NanoMedicine and Biomedical Engineering

David G. Gorenstein, PhD

Neurobiology and Anatomy

John H. Byrne, PhD

Neurology

Louise McCullough, MD, PhD

Neurosurgery

Dong H. Kim, MD

Obstetrics, Gynecology and Reproductive Sciences

Sean Blackwell, MD

Ophthalmology and Visual Science

Robert M. Feldman, MD

Orthopaedic Surgery

Walter Lowe, MD

Otolaryngology, Head and Neck Surgery

Martin J. Citardi, MD

Pathology and Laboratory Medicine

Robert L. Hunter, Jr., MD, PhD

Pediatric Surgery

Kevin P. Lally, MD

Pediatrics

Eric Eichenwald, MD

Physical Medicine and Rehabilitation

Gerard Francisco, MD

Psychiatry and Behavioral Sciences

Jair Soares, MD

Surgery

Richard J. Andrassy, MD

Introduction

On Nov. 11, 1968, the Coordinating Board of the Texas College and University System approved the establishment of a new four-year public school of medicine in the Texas Medical Center in Houston. On June 13, 1969, McGovern Medical School at the University of Texas Health Science Center at Houston was created by act of the Legislature, and an appropriation for its initial cost became effective Sept. 1, 1969. Three considerations led to the organization of the school: local, regional, and national shortages of physicians; the extraordinary, but until then underutilized, resources for medical education in Houston and in the Texas Medical Center; and the large number of well-qualified candidates seeking entry to medical school.

A dean and supporting staff were appointed in the spring of 1970. Two years were then devoted to assembling faculty, resources, and equipment; designing a curriculum; and organizing these various parts into an effective medical education team. During this period, McGovern Medical School was accredited by the Association of American Medical Colleges (AAMC) Liaison Committee on Medical Education. The faculty grew rapidly, and effective instruction began, in both the basic sciences and clinical disciplines. New facilities were opened, major construction programs were initiated, and the renovation of Memorial Hermann Hospital was completed. In 1972, McGovern Medical School, along with five other UTHealth programs, was incorporated into The University of Texas Health Science Center at Houston.

Now, more than 40 years later, McGovern Medical School has achieved a position of excellence among the other fine institutions in the Texas Medical Center. It has remained fully accredited throughout this time and was re-accredited in 2012 for eight years.

Academic Calendar

Please see the Office of the Registrar's website for the most up-to-date calendar:

<https://www.uth.edu/registrar/current-students/student-information/academic-calendar.htm>

Mission

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- provides training in cognitive, technical, and interpersonal skills necessary for practicing patient-centered medicine
- emphasizes problem-solving and creates educational opportunities that involve the use of modern information resources and technology.
- encourages students, faculty, and staff to participate in outreach activities that benefit the wider community.

Principles of Education

- The curriculum will provide students a general medical education with a breadth and depth of core knowledge, skills, and attributes necessary for residency training in any discipline or specialty, and for the life-long practice of medicine.

- The curriculum will be coordinated so that, when appropriate, courses and clerkships are seamlessly integrated.
- The curriculum and the faculty will establish an environment that fosters professionalism, humanism, altruism, ethical behavior, empathy, and compassion.
- The curriculum will explicitly define the core knowledge, skills, and attributes expected of medical students upon graduation.
- The curriculum will be informed by recognized educational research and theory, and by measured outcomes.

Facilities

The nine-story McGovern Medical School building is connected to Memorial Hermann Hospital – Texas Medical Center (TMC). The building bridges Ross Sterling Avenue to form one continuous structure with Memorial Hermann Hospital – TMC’s Cullen, Jones, Robertson, and Hermann pavilions. A sky bridge across Fannin Street provides a link with the UT Professional Building, a major UT Physicians location. UT Physicians is the affiliated clinical practice of McGovern Medical School, and its clinics are located throughout the Greater Houston area.

The McGovern Medical School building contains offices, teaching and research laboratories, classrooms, lecture halls, study areas, animal facilities, educational and communications support areas, student lounges, and administrative suites. In early 2005, the John Freeman Building (the original Medical School building), was demolished to make room for a new six-story 208,500 gross square-foot research building. This new Medical School Expansion building is connected to the McGovern Medical School building at several levels and opened during the winter of 2007.

The Fayez S. Sarofim Fayez Research Building houses The Brown Foundation Institute for Molecular Medicine for the Prevention of Human Diseases (IMM), which opened in 2006. In January, 2011, the IMM became part of the McGovern Medical School and provides state of the art research facilities and offices for six academic research centers.

In 2010, a new Behavioral and Biomedical Sciences Building opened on the south campus of UTHealth, which houses the McGovern Medical School’s Department of Psychiatry and Behavioral Sciences and their clinic facility, along with other UTHealth research groups.

Affiliated Hospitals

Memorial Hermann Hospital – TMC, a partner in the Memorial Hermann Healthcare System, is the primary teaching hospital of McGovern Medical School in the TMC. Founded in 1925, this large metropolitan hospital, licensed for 984 beds, has a long-standing record of distinction in postgraduate teaching. It offers a broad range of inpatient services with special units for coronary and intensive care, newborn intensive care, neurological intensive care, treatment of burns, kidney disease and transplantation, advanced diagnostic facilities, a clinical research center, and emergency services. The hospital serves as the center of inpatient clinical activity for McGovern Medical School’s full-time faculty who work closely with part-time faculty and volunteer physicians. The hospital, which has been completely renovated, includes Children’s Memorial Hermann Hospital, the Texas Kidney Institute, the Texas Liver Center, the Ironman Sports Medicine Institute, the Mischer Neuroscience Institute, the Memorial Hermann Heart & Vascular Institute – TMC, and TIRR Memorial Hermann. Medical students develop much of their inpatient clinical experience in this outstanding facility.

Children’s Memorial Hermann Hospital was founded in 1986 and is the primary teaching hospital for the pediatric and obstetrics/gynecology programs at McGovern Medical School. A recent facility expansion increased capacity to 240 beds, making it one of the country’s largest pediatric hospitals; the Women’s Center operates an additional 68 beds. Children’s Memorial Hermann Hospital offers care in more than thirty pediatric and women’s related specialties including the latest advances in maternal-fetal medicine and neonatal critical care services, and renowned programs in pediatric trauma, neurosciences, pulmonology and cardiac care. More than 37,000 children come to Children’s Memorial Hermann Hospital each year.

TIRR Memorial Hermann, which at its inception in the early 1950s was one of the first polio treatment centers in the nation, is a 119-bed rehabilitation and research facility located in the TMC and is a nationally ranked hospital by U.S. News and World Report. Students have the opportunity to participate in rotations across a spectrum of subspecialties which includes brain injury, spinal cord injury, and general rehabilitation. Further, TIRR is a premier research institution where faculty and students from UTHealth are engaged in collaborative and cutting-edge research leading to improved outcomes and enriching the lives of their patients.

In 1997, Hermann Hospital merged with the Memorial Healthcare System to become the Memorial Hermann Healthcare System, the largest not-for-profit hospital system in Texas. The Memorial Hermann Healthcare System has 3,772 licensed beds in nine acute care hospitals, three long-term acute hospitals, and a retirement/nursing center.

The Lyndon B. Johnson (LBJ) General Hospital, owned and operated by the Harris County Hospital District, is the second primary teaching facility for the Medical School. This 330-bed hospital opened in 1989 and is a full-service general hospital with easy access for the indigent patients it serves. Health-care services for the hospital district are provided by Affiliated Medical Services (a nonprofit organization composed of UTHealth faculty), which staffs LBJ, and Baylor College of Medicine, which staffs Ben Taub General Hospital. February, 2011 marked the Ribbon Cutting Ceremony for the grand opening of the 36,000 square foot extension to the LBJ Emergency Center (EC), a level III trauma center. EC volumes increased 25% within the first month of operation. The Westlands, an ambulatory care facility is approximately 122,000 square feet and increased LBJ's bed capacity for numerous clinics.

The University of Texas MD Anderson Cancer Center, located in the TMC, is widely regarded as one of the world's foremost centers for cancer care, research, education, and prevention. Since its opening in 1944, MD Anderson has treated approximately 1,000,000 patients with cancer and allied diseases in its inpatient and outpatient services. The institution also houses a large clinical and basic science research program devoted to the investigation of the biology of cancer and includes active units in biochemistry, biological response modifiers, biophysics, molecular biology, pathology, pharmacology, cell biology, and cancer prevention. MD Anderson Cancer Center participates in a wide range of training programs involving 6,500 students annually in the sciences and health professions. In addition, inpatient facilities were completed in 1976 and an expanded ambulatory care center was dedicated in 1987. Several new buildings have recently opened: the Cancer Prevention Building, the Ambulatory Clinic Building, the Basic Sciences Research Building, and the Mid Campus 1 Building which is a state of the art administrative facility. The MD Anderson Cancer Center had more than 1,363,000 outpatient clinic visits, treatments, procedures in Fiscal Year 2013-14.

The UT Harris County Psychiatric Center (HCPC), which opened in 1986, is a 222-bed public acute care psychiatric hospital that delivers a comprehensive program of psychiatric and clinical social services to more than 9,000 patients annually. The center plays an important role as a teaching facility for medical and nursing schools across Texas and Louisiana. Operated by The University of Texas Health Science Center at Houston, the facility is jointly supported by the State of Texas and Harris County under the auspices of the Texas Department of State Health Services and the Mental Health and Mental Retardation Authority of Harris County, respectively. McGovern Medical School's Department of Psychiatry and Behavioral Sciences provides administrative leadership and medical services for the center.

St. Joseph Medical Center is a 792-bed general hospital four miles north of McGovern Medical School in downtown Houston. This hospital is the site of several programs for student rotations overseen by UTHealth faculty, including neurology, and obstetrics and gynecology.

St. Luke's Episcopal Hospital is a 946-bed community teaching hospital and tertiary referral center located nearby in the TMC. Student rotations from McGovern Medical School take place in neurology and internal medicine. St. Luke's is also home to the Texas Heart Institute, with which UTHealth has several ongoing research and educational collaborations.

Outpatient Clinical Facilities

Ambulatory care is provided at the UT Physicians clinics, located primarily in The University of Texas Health Science Center Professional Building across the street from McGovern Medical School, as well as at satellite locations outside of the TMC including facilities in Bellaire, in Missouri City, on the campuses of several Memorial Hermann Healthcare System hospitals, and on the campus of St. Joseph Medical Center; six community health centers operated by the Harris County Hospital District; seven WIC (Women, Infants and Children) clinics; and several other clinical outreach programs located throughout the greater Houston community.

MD Admissions

The Admissions Committee has the responsibility of selecting individuals from an increasing number of applicants who have the intellectual ability and motivation for service, making them most suitable for the study and practice of medicine. Particular interest is taken in candidates with a broad educational background. The committee emphasizes attempting to fill the needs of Texas for primary and rural care practitioners as well as those who will practice in other shortage areas or among needy populations.

UTHealth endeavors to foster an educational and working environment that provides equal opportunity to all members of the university community. To the extent provided by applicable law, no person shall be excluded from participation in, denied the benefits of, or be subject to discrimination under, any program, or activity sponsored or conducted by The University of Texas System or any of its institutions on the basis of race, color, national origin, religion, sex, sexual orientation, age, veteran status, or disability.

Any student or potential student who has a complaint regarding equal opportunity under this policy should contact the respective school's associate dean for student affairs, or the Equal Opportunity Advisor in the Office of Human Resources.

The full policy can be found online in HOOP Policy 183, [Equal Opportunity, Discrimination and Harassment](http://www.uthouston.edu/hoop/policy.htm?id=1448214) (<http://www.uthouston.edu/hoop/policy.htm?id=1448214>).

Admission Requirements

Students should plan college course work with an emphasis on obtaining a broad education. It is important that evidence of scholarly interest and achievement in some branch of academic endeavor be demonstrated. The study of medicine is based upon science, so the medical student must be a capable student of science. While science majors are very appropriate, a liberal arts education is also an excellent basis for a medical career.

Accordingly, applicants may have majored in such areas as classics, languages, history, English literature, music, or philosophy, provided specific scientific requirements are fulfilled. All applicants are expected to be well educated and able to demonstrate the intellectual interests associated with entry into a learned profession.

Students must complete at least 90 undergraduate credit hours and the specific pre-medical credits listed below at a United States or Canadian university. Although the minimum requirement for admission is 90 undergraduate semester hours at a United States or Canadian university, preference is given to students who obtain a baccalaureate degree prior to admission to medical school. Graduate courses do not satisfy premedical requirements.

Requirements for Medical School Applicants for TMDSAS Schools:
English 6 semester hours. These courses should be taken in the English department.

Biology 14 (12 lecture plus 2 laboratory) semester hours. One year may be completed by advanced placement. The other year must be completed in residence at a college and must include formal laboratory work. Biology courses must be as required for science majors.

Physics 8 (6 lecture plus 2 laboratory) semester hours. Physics courses must be as required for science majors and must include laboratory experience.

Inorganic chemistry 8 semester hours (6 lecture plus 2 laboratory). The courses should be for science majors, including the corresponding laboratory experience.

Organic chemistry 8 (6 lecture plus 2 laboratory)

The Medical and Dental Schools of The University of Texas System are authorized by the Texas Legislature to accept up to 10 percent non-residents for enrollment in an entering class. Non-resident students should have outstanding qualifications.

The Medical College Admissions Test is required and is an important part of the application. The MCAT is administered several times each year, and details of the dates and places of administration can be found on the AAMC Web site (www.aamc.org/mcat). September 30 is the latest the exam can be taken for admission to the following year's entering class.

Admissions Criteria

McGovern Medical School, in conformity with the purpose assigned it by the Texas Legislature and its mission statement, selects the best qualified students for its entering class who demonstrate a potential to become competent and caring physicians and who will serve the identified needs of the State of Texas. The Admissions Committee considers the totality of each application and gives importance to the factors enumerated below.

1. Intellectual capacity: Each student who is accepted must have the intellectual ability to successfully complete medical school and master the essentials of the practice of medicine.

- undergraduate and graduate record
- standardized test scores
- academic awards and honors (e.g. Phi Beta Kappa, National Merit, etc.)
- research accomplishments
- degree of difficulty of undergraduate program
- pre-professional evaluations, personal interview

2. Interpersonal and Communication Skills

The practice of medicine demands a high level of interpersonal skills and a compassionate attitude. The ability to communicate well is essential for these qualities.

- community or charitable service
- recognition for humanitarian service
- extracurricular activities and organizations
- leadership positions
- employment history
- cultural competency
- articulate and organized communication, both oral and written
- standardized test scores in verbal abilities
- statements made on the application or in the personal interview

3. Breadth and Depth of Pre-medical Educational Experience

The modern practice of medicine requires a strong scientific background and also an ability to understand the complex non-scientific problems facing physicians and patients, e.g. ethical or socioeconomic problems. The bare completion of the pre-medical requirements is a base on which to build further knowledge and prepare physicians for a lifetime of study so that they will remain the best possible practitioners of medicine.

- undergraduate core curriculum or course selection
- participation in the intellectual life of the university
- involvement in discipline organizations and clubs
- extent and variety of reading
- papers written or published
- knowledge displayed at the interview
- enrollment in an honors program in college
- pre-professional evaluations

4. Potential for Service to the State of Texas

A state medical school must, as a primary concern, produce practitioners who will serve the people of that state.

- the applicant's goals for the future
- size and location of hometown
- residency in a Health Professions Shortage Area in Texas
- potential for future provision of health services to underserved areas
- potential for future provision of medical specialties in short supply
- language skills appropriate to the Health Profession Shortage Areas in Texas

5. Motivation

A physician must be prepared for a lifetime of intense service to her or his patients. This requires a high level of selfless motivation and commitment.

- success in overcoming adverse economic or educational conditions
- employment history occurring simultaneously with undergraduate academic preparation
- participation in activities requiring time management skills
- varsity athletics, campus symphony, and other time-intensive accomplishments
- improvement in the undergraduate record
- veteran status and military experience
- experience in health-related activities

6. Integrity

Because of the public trust given to members of the medical profession, a physician must have qualities of integrity beyond reproach.

- pre-professional evaluations
- any academic integrity violation
- commission of any crime
- any other relevant background relating either positively or negatively to applicant's standard of integrity
- honorable discharge or discharge under honorable conditions

7. Ethical Standards

A candidate must demonstrate professional demeanor and behavior and must perform in an ethical manner in all dealings with peers, faculty, staff, and patients.

8. Technical Standards

All individuals, without exception, who apply for admission to McGovern Medical School must be able to perform specific essential functions. Essential functions are the basic activities that a student must be able to perform to

complete the general medical school curriculum. An applicant who cannot perform the medical school's essential functions will not be considered for admission. A candidate for the MD degree at McGovern Medical School must be able to perform these essential functions:

OBSERVATION

- accurately observe demonstrations
- accurately observe patients close up and at a distance
- observe to gather patient data (affect, gait, appearance, posture, etc.)
- use visual, auditory, olfactory and somatic senses to gather information

COMMUNICATION

- communicate orally and in writing with patients and members of the health-care team
- read and comprehend written material

PSYCHOMOTOR SKILLS

- sufficient motor function to obtain data from patients
- use tactile, auditory, and visual maneuvers
- execute motor movements to provide general care and emergency treatment

INTELLECTUAL AND COGNITIVE ABILITIES

- measure, calculate, reason, analyze, synthesize, integrate and apply information
- comprehend three-dimensional relationships
- understand the spatial relationships of structures

BEHAVIORAL AND SOCIAL ATTRIBUTES

- emotional health to fully use intellectual abilities
- exercise good judgment
- promptly complete all responsibilities attendant to the diagnosis and care of patients
- developing mature, sensitive, and effective relationships with patients
- tolerate physically taxing workloads
- function effectively under stress
- adapt to changing environments
- display flexibility
- learn to function in the face of many patients
- show compassion, integrity, concern for others, interpersonal skills, interest, and motivation

CHRONIC CONDITIONS

A candidate must not possess any chronic or recurrent illnesses, including but not limited to, infectious, psychiatric or substance abuse problems that can interfere with patient care or safety and are not compatible with medical practice or training.

Application Procedure

Application for admission to McGovern Medical School is made through the Texas Medical and Dental Schools Application Service (TMDSAS). Applications for entry are typically accepted between May 1 and Oct. 1 of the preceding year. Early application is encouraged due to the large number of applicants. Applicants should contact the Texas Medical and Dental Schools Application Service for the most current information. Application information is available from The Texas Medical and Dental Schools Application Service's Web site: www.utsystem.edu/tmdsas

Mailing address:

Texas Medical and Dental Schools
Application Service

702 Colorado, #6.400
Austin, Texas 78701
Telephone 512-499-4785

Fees and other application requirements, guidelines and details can be found on the TMDSAS Web site.

After applications have been processed by the application service, they are forwarded to McGovern Medical School, where they are reviewed and evaluated.

Applicants who give evidence of being well-qualified candidates for admission may be invited for interviews on a specified date. Applicants are welcome to visit McGovern Medical School at any time before they apply, but formal interviews must, of necessity, be arranged by and are at the initiative of the Office of Admissions.

Applicants rank their medical school preferences via the Texas Medical and Dental Schools Application Service's Web site. Final preference decisions must be made prior to Jan. 15, and updates are always found on the TMDSAS Web site). The Admissions Committee evaluates each applicant and sends applicants to the application service for matching with the applicant's medical school preferences. The schools may make early offers of acceptance beginning October 15 for out of state residents, and MD/PhD candidates, and November 15 for Texas residents.

After any acceptance, applicants are required to indicate their acceptance decision in writing within two weeks of notification. An applicant who later decides to accept a position in another institution should give prompt notice of withdrawal from McGovern Medical School.

McGovern Medical School recognizes the procedures and deadlines recommended by the Association of American Medical Colleges and the American Medical Colleges Application Services.

Entering medical students are required to consent to and pay for a criminal background check by an entity designated by McGovern Medical School. Admission is expressly contingent upon successful completion, review, and approval of the content of the criminal background check. The criminal background process will be repeated before the student enters the clinical rotations.

MD Student Development

Evaluation and Promotion

The evaluation of student performance helps students achieve their maximum potential and provides information on how well institutional educational goals are being met.

The official policies for evaluation of academic performance, promotion, grade grievance, and academic dismissal are contained in the McGovern Medical School Policy and Guidelines for Evaluation and Promotions of Medical Students on the McGovern Medical School student handbook Web site at <https://med.uth.edu/admissions/current-students/policies/>. Paper copies are available in the Office of Admissions and Student Affairs.

Examinations serve to inform faculty of a student's grasp of course material and provide an indication of when academic help or remedial work is appropriate. Medical students are awarded the following grades on the basis of their academic performance: Honors, High Pass, Pass, Below pass, or Fail. Grades and other information relative to a student's academic performance are transmitted to the Student Evaluation and Promotions Committee which, based upon an overall consideration of the student's grades, demonstrated knowledge, clinical performance, and suitability to practice medicine, decides whether a student should be promoted, continued with remedial work assigned, or dismissed. Any student whose active record indicates that he/she is not suitable to continue the study of medicine will be dismissed.

Students can be referred for evaluation and counseling for academic or personal concerns through the Office of Admissions and Student Affairs.

Conduct and Discipline

Students are responsible for knowledge of and compliance with University policies concerning student conduct and discipline as set forth in the UTHHealth Handbook of Operating Procedures (HOOP) Policy 186, [Student Conduct and Discipline](#), and the McGovern Medical School's Policy and Guidelines for the Evaluation and Promotions of Medical Students. Students may access the HOOP online at <https://www.uth.edu/hoop/index.htm>.

For information regarding student academic and behavioral issues, contact:

Margaret C. McNeese, MD
Vice Dean for Admissions and Student Affairs
The University of Texas Medical School at Houston
6431 Fannin, Suite G400
Houston, Texas 77030

Basic and Clinical Science Research Program for Medical Students

Basic science and clinical research are essential components of the overall mission of McGovern Medical School. McGovern Medical School offers a Summer Research Program, which provides an intensive, hands-on, 10-week research experience for medical students during the summer after their first year. The program fosters development of scientific reasoning and other research skills.

Students work closely with faculty mentors of their choice in ongoing research projects organized individually for each student. At the end of the research project, students write an abstract on which they are first author. These abstracts are published and posted on the program's Web site. In addition, the students develop a research poster which is presented at the annual Medical School Research Forum and Webber Prize Competition held in the fall.

Students also may continue their research until graduation including enrollment in a 3rd year research elective, either independently with their mentor or as a participant in one of 11 "Scholarly Concentrations." All concentrations are thematic, interdisciplinary, longitudinal, and experiential, with guided faculty mentoring and structured group seminars/courses/journal clubs, etc. Additionally, all students in concentrations are expected to conduct an independent scholarly project.

A limited number of short-term NIH training stipends, and other sources of financial support are available for medical students.

Contact: Gary Rosenfeld, PhD
Program Director, 713-500-7435
e-mail: Gary.C.Rosenfeld@uth.tmc.edu

MD Expenses

Tuition

Effective with the 2016-2017 academic year, in-state resident tuition is \$15,525 annually; out-of-state (non-resident) tuition is \$26,125 annually. In the 2017-2018 academic year, in-state resident tuition will be \$16,025 annually; out-of-state (non-resident) tuition will be \$26,125 annually.

Additional fees, including course and lab fees, are subject to be charged. Please see the Registrar's website for tuition and fees (<http://www.uth.edu/registrar/current-students/registration/tuition--fee-schedule.htm>).

For additional specific information, refer to the General Information Section of the Catalog, and/or contact:

Office of the Registrar

The University of Texas Health Science Center at Houston

7000 Fannin, Suite 2250

P.O. Box 20036

Houston, Texas 77225

Or call 713-500-3388

Or email registrar@uth.tmc.edu

Scholarships

McGovern Medical School awards a number of scholarships every year for which all students are invited to apply. A generic scholarship application form may be downloaded from the Student Financial Services website during the spring semester. A designated competitive scholarship recognizes several outstanding entering students annually and enables non-resident recipients to be eligible for in-state tuition for their four years of enrollment, providing guidelines for satisfactory academic progress are met.

Scholarship awards are made by the Scholarship Committee, which consists of the Associate and Assistant Deans for Admissions and Student Affairs.

Fees and Charges

Computer Fee	\$200	
Pager Fee – Year 3 & 4 (Annual)	120	
Graduation Fee*	75	
Information Technology Fee (Annual)	99	
Health Insurance***	2185	
Installment Use Fee	20	
Late Payment Fee	25	
Laboratory Fee Year 1 & 2 (Annual)	35	
Library Resource Fee	100	
Malpractice Insurance (Annual)	25	
Technology Fee (Annual)	700	900 (Academic Year 2017-2018)
Anatomy Course Fee (year 1)	500	
Student Services Fee (Annual)**	532.65	543.35 (Academic Year 2017-2018)
Standardized Patient Fee (Annual)	1000	
Student Records Fee (Annual)	15	

*A graduation fee of \$75 payable at registration for the final academic term is required of all students. This fee does not include regalia rental.

**The Student Services Fee, required of all students, provides for student activities, outpatient care by Student Health and Counseling Services, student counseling, student government, a shuttle service, and recreational

facilities. Optional family coverage is available. The fee varies depending on the student's academic year of medical school.

***Health insurance is required of all health science center students. If students have a health insurance policy, they may provide proof of comparable insurance to Auxiliary Enterprises no later than the 12th class to have this charge waived. Details on the insurance plan are available through the Auxiliary Enterprise Office. Fee subject to change in Academic Year (AY) 2017-2018.

Through reciprocal agreements, students at other components of The University of Texas System, as well as graduate students from Rice University, Baylor College of Medicine, Texas Woman's University, and the University of Houston, may take some graduate courses for credit at McGovern Medical School, subject to the approval of the instructor. In addition, McGovern Medical School graduate students may take some courses for credit at any of the above institutions. Mechanism for payment of tuition or registration fees vary according to the individual institution. Consult with that Registrar's Office for specific details.

Books and Supplies

During the first year, the cost of required textbooks and supplies averages \$1252 (excluding cost of computer). The cost of recommended textbooks and supplies averages \$1927. In the second, third and fourth years of the curriculum, the cost of books and supplies ranges from \$817 to \$2777 each year. Information regarding specific textbook requirements and costs may be found here: <https://med.uth.edu/oep/medical-education/information-resources/>

Laptop Requirement

Information technology and informatics are integral parts of medical education and practice. In order to fully utilize information resources required by the faculty during your education, the school requires that all incoming medical students have laptop computers that meet specific minimal requirements.

The requirements for the current entering class are provided at the following URL:

<http://med.uth.tmc.edu/msit/policy/students.html>

Disability Insurance

McGovern Medical School encourages students to consider whether or not they wish to purchase disability insurance. The Office of Admissions and Student Affairs has information regarding available plans.

Malpractice Insurance

Students may be required to show evidence of student liability insurance when enrolled in extramural electives. Basic coverage is included for \$25 a year as one of the required fees.

Ethics

McGovern Medical School recognizes that in addition to intellectual capability and expert technical skills and knowledge, a good physician must have a solid and unassailable foundation and commitment to ethical behavior and principles. Patients and society at large expect and deserve no less. These principles are embedded in the life of the Medical School and its faculty.

Because these principles are so important to McGovern Medical School, students are asked to make the same explicit commitment to them.

Ethical Pledge (Code of Professional Conduct)

Incoming students are asked to agree to and sign the following ethical pledge following their acceptance to McGovern Medical School.

- I acknowledge and accept the privileges and responsibilities given to me as a physician-in-training and dedicate myself to provide care to those in need.
- I will approach all aspects of my education with honesty and integrity, embracing opportunities to learn from patients, teachers, and colleagues.
- I will always maintain the highest standards of professional conduct.
- I will certify only that which I have personally verified, and I will neither receive nor give unauthorized assistance on examinations.
- I will value the knowledge of wisdom of the physicians who have preceded me.
- I will recognize my weaknesses and strengths and strive to develop those qualities that will earn the respect of my patients, my colleagues, my family, and myself.
- I will respect the humanity, rights, and decisions of all patients and will attend to them with compassion and without bias.
- I will maintain patient confidentiality and be tactful in my words and actions.
- I will value the diversity of patients' experiences, cultures, and beliefs because it enhances my ability to care for them and enriches my education.
- I will not forget that there is an art to medicine as well as a science and that warmth, sympathy, and understanding are integral to patient care.
- I will strive to earn the trust my patients place in me and the respect that society places upon my profession.
- I recognize the privileges afforded to me as a physician-in-training and promise not to abuse them.
- Even as a student I have a responsibility to improve the standard of health in my community, to increase access to care for the underserved, and to advance medical knowledge.
- As I accept these new responsibilities, I will not forget the importance of my own health and well-being. I will continue to value my relations with those who have supported me in the past and those who will share in my future.
- Knowing my own limitations and those of medicine, I commit myself to a lifelong journey of learning how to cure, relieve pain, and comfort with humility and compassion.
- I make these promises solemnly, freely, and upon my honor.

White Coat Ceremony

Shortly after matriculation, first-year students participate in a White Coat Ceremony, where they don white coats for the first time, recite the Hippocratic Oath and re-affirm the Ethical Pledge by signing their names in a book which is kept in the Office of Admissions and Student Affairs.

The Hippocratic Oath is sworn once more at Commencement.

MD Academic Organization

During medical school, the student is required to take two of the three examinations necessary for medical licensure: USMLE Step 1 is taken after completion of the basic science courses and prior to the start of the third year clerkships. The student is required to take USMLE Step 2 CK and CS prior to graduation.

The Curriculum Committee is the committee charged with the overall design, management, integration, evaluation, and enhancement of a coherent and coordinated medical curriculum.

Curriculum

The basic four-year program outlined below is required for the MD degree.

Variations and adjustments may be made as the Curriculum Committee deems necessary.

First Academic Year

Required Courses:

Fall Semester/20 weeks

Foundations of Medical Science
 Doctoring 1: History and Physical Examination

Spring Semester/20 weeks

Hematology, Immune System and Pathogens
 Cardiovascular System
 Pulmonary System
 Renal System
 Doctoring 2: Longitudinal Clinical Experience

Second Academic Year

Required Courses:

Fall Semester/20 weeks

Gastrointestinal System
 Nervous System and Behavior
 Musculoskeletal and Integumentary Systems
 Doctoring 3: Longitudinal Clinical Experience

Spring Semester/10 weeks

Endocrine and Reproductive Systems
 Life Stages

Required Clinical Experiences

Students will begin the required clinical experiences in the spring of year two. The required clinical experiences will begin with a one-week Intersession (Transition to Clerkships) and will be followed by six, eight-week blocks as defined below. There will be another one-week Intersession after the second, eight-week block. Students will have four weeks of vacation during this time period.

Required Clinical Experiences	Number of Weeks
Internal Medicine	8
Obstetrics & Gynecology	6
Neuropsychiatry	8
Pediatrics	8
Surgery	8

Family Practice	4
Geriatrics (Pass/Fail)	1
Third-Year Elective (Pass/Fail)	3

Students will take the Comprehensive Clinical Competency Examination (CCCE) in the spring of year three.

Career Focus Tracks

Students will begin their Career Focus Tracks in the spring of year three. There will be four required clinical experiences and seven electives, all will be four-weeks in length. There will be one one-week Intersession at the beginning of the Career Focus Tracks. Students will have three four-week periods for vacation or additional electives during this time period.

Required Clinical Experiences

Critical Care Selective
 Advanced Patient Care Selective
 Ambulatory Medicine Selective
 Transition to Residency
 Medical Jurisprudence (during the Transition to Residency Course)
 Advanced Cardiovascular Life Skills (during the Critical Care Selective)

Required Elective Program:

Students take a minimum of seven, four-week electives 7

Three, four-week periods are available for vacation or additional electives
 (Fourth year vacation periods may be used in the third year in special circumstances and with prior approval of the Office of Admissions and Student Affairs)

McGovern Medical School's fourth-year elective programs permit students to seek clinical opportunities away from Houston, at their own expense, ranging from family practice in rural communities to experiences in the most sophisticated settings requiring advanced technology. International clinical and research electives also are available. The School is fortunate regarding the wealth of clinical opportunities available to its students.

The fourth-year elective catalog is available online at <https://med.uth.edu/admissions/current-students/ms4/>

MD Curriculum Goals and Objectives

Educational Goals and Objectives for McGovern Medical School

- (a) Students should acquire a KNOWLEDGE AND UNDERSTANDING of health and its promotion; of disease and its prevention and management; and, of psychosocial factors that influence a patient's well-being, in order to provide competent and humane medical care to individuals, families, and the larger society. Furthermore, students should be able to use their knowledge and understanding appropriately in the care of patients. Students should have an opportunity to participate in scholarly activities including research.
- (b) Students should acquire and become proficient in basic clinical SKILLS, such as the ability to obtain a patient's history, to perform a comprehensive physical and mental status examination, to interpret the findings, and to demonstrate competence in the performance of basic technical procedures. Students should appreciate the appropriate use of technologies in assisting in diagnosis and management.
- (c) Students should acquire and demonstrate ATTITUDES that foster patient-centered care and support the highest standards of the medical profession.

Educational Competencies and Objectives

Patient Care and Clinical Skills

Graduates must be able to provide patient-centered care that is compassionate, appropriate and effective for the treatment of disease and the promotion of health.

Specific Objectives:

The graduating student will be able to:

- Form an effective therapeutic relationship with patients and their families when appropriate
- Obtain and record an accurate, comprehensive history from the patient and/or caregiver
- Accurately perform and record a comprehensive physical examination and mental status examination
- Accurately document and interpret the findings from the history and physical examination
- Develop an initial differential diagnosis based on the patient history and physical examination, and formulate an initial plan for investigation and management
- Order appropriate studies (with awareness of sensitivity, specificity and cost) and interpret diagnostic tests in order to confirm or exclude a clinical diagnosis.
- Competently perform routine clinical procedures, including at a minimum, basic CPR, bag-mask ventilation, venipuncture, inserting an intravenous catheter, arterial puncture, inserting a nasogastric tube, inserting a bladder catheter, sterile technique, and suturing lacerations.
- Identify, initiate and explain treatment plans that are safe, effective, and efficient
- Recommend age-specific, preventive and health maintenance practices appropriate for the patient based on the best available evidence.
- Plan and execute appropriate management plans for patient care, referral and follow-up.
- Discuss with patients their prognosis and possible adverse effects of diagnostic tests and treatment
- Apply the scientific method (including evidence-based medicine principles) to patient care whenever applicable and feasible.
- Care for patients mindful of salient legal, ethical, spiritual, cultural, and psychosocial constructs.
- Apply the principles of pain management to reduce patient suffering.
- Demonstrate effective transitions of patient care.

- Function collaboratively on health care teams that include health professionals from other disciplines to provide coordinated services to patients.

Medical Knowledge

Graduates must be able to demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, and social-behavioral sciences, as well as the application of this knowledge to patient care.

Specific Objectives:

The graduating student will be able to:

- Identify the most appropriate sources for obtaining medical knowledge and how to retrieve them.
- Describe the normal structure and function of the human body at molecular, cellular, tissue, and anatomic levels.
- Describe the pathogenesis of disease.
- Describe the scientific principles (including genetic, molecular, and physiologic mechanisms) basic to the practice of clinical medicine, and be able to apply these principles to patient care.
- Describe pharmacological and other therapeutic interventions and apply to patient care.
- Describe the environmental, social, and behavioral determinants of health and disease states.
- Interpret common laboratory and diagnostic tests and describe the indications, complications, limitations and cost-effectiveness of each study.
- Describe the principles of disease prevention and health maintenance in individuals and populations, and apply to individual patient care.
- Explain the organization, financing, and delivery of health care in the U.S., both in the hospital and in the community, and the role of the physician as an advocate for patients.
- Demonstrate knowledge of common clinical emergencies, acute and chronic problems/diseases, and their basic management.
- Use critical appraisal of the medical literature as the foundation for an evidence-based practice of medicine.
- Describe principles of quality improvement, its use in patient care, and use of common patient safety/quality tools.

Interpretation of Medical Data/Practice-Based Learning and Improvement

Graduates must be able to demonstrate the ability to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care based on constant self-evaluation and life-long learning.

Specific Objectives:

The graduating student will be able to:

- Use technology to access medical information resources to expand personal knowledge and make effective decisions in patient care.
- Critically assess the validity of published medical studies by describing strengths, weaknesses, limitations and applications to clinical practice.
-
- Use evidence-based approaches as tools to decide whether to accept new findings, therapies and technologies for incorporation into clinical practice.

- Elicit feedback about performance and develop and implement a plan for self-directed and life-long learning and improvement.

Interpersonal and Communication Skills

Graduates must be able to demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, families, and other health professionals.

Specific Objectives:

The graduating student will be able to:

- Make case presentations that are accurate and well organized; accurately record information in the patient's chart to appropriately address the patient's problem/condition.
- Convey diagnostic and management plans effectively both orally and in writing.
- Demonstrate interpersonal skills that establish rapport and empathic communication with patients and their families, and other health care professionals.
- Demonstrate respect for patients and colleagues that encompasses diversity of background, belief systems, language and culture.
- Demonstrate professionalism and compassion in addressing issues of a sensitive nature with patients and families.
- Help patients make and anticipate end-of-life decisions; obtain consent for treatments and be able to communicate bad news.
- Participate in the education of patients and their families, peers, and other healthcare professionals.
- Work with other healthcare professionals to establish and maintain a climate of mutual respect, dignity, diversity, ethical integrity and trust.

Professionalism

Graduates must be able to demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Specific Objectives:

The graduating student will be able to:

- Demonstrate honesty, trustworthiness and integrity in interactions with patients, families, colleagues and other health care professionals.
- Demonstrate personal qualities of self-discipline, open-mindedness, and intellectual curiosity.
- Develop a collaborative relationship with patients by valuing the patient and his/her input, and by maintaining continuing personal responsibility for the patient's health care.
- Display commitment to excellence in patient care; place the patient's welfare above self-interest.
- Demonstrate respect and compassion towards patients and their families, including sensitivity to patients' culture, race, age, disabilities, sexual orientation, gender, and religion.
- Apply ethical principles to the study and practice of medicine, including compliance with relevant laws, policies, and regulations.
- Demonstrate respect for patient privacy and autonomy.
- Maintain an appropriate balance between personal and professional commitments.
- Recognize and accept limitations in knowledge and skills with a commitment to continuously improve knowledge and ability.

- Demonstrate commitment to life-long learning in order to maintain familiarity with scientific advances to ensure integration with patient care.
- Project a professional image in interactions with patients, peers, family, residents and co-workers.
- Compare and contrast the roles of health care team members and how each member contributes to patient care.

Systems-Based Practice

Graduates must be able to demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Specific Objectives:

The graduating student will be able to:

- Identify persons at risk for inadequate medical services, and develop plans to engage resources to ensure appropriate care.
- Describe policies, organization, finances, and delivery of health care in the United States, both in the hospital and the community, and compare with other health care systems.
- Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care.
- Advocate for quality patient care and optimal patient care systems.
- Participate in identifying system errors and implementing potential system solutions.

Pre-Entry Program

The Pre-Entry Program is an intensive four-week program offered to a subset of students prior to the matriculation of the first year. The program includes courses content in anatomy, biochemistry, histology, and physiology/neuroscience taught by McGovern Medical School faculty members. Students are also introduced to study skills. The noncredit program is designed to assist students prepare for the academic rigors of the medical school curriculum. Invitations to the program are sent to students who might benefit. Students may also request consideration for participation in this program.

A Peer Tutoring Service is available to all students at no charge.

For information about the Medical School's academic program, call 713-500-5140, e-mail: r.andrew.harper@uth.tmc.edu, or write:

R. Andrew Harper, MD
Assistant Dean for Educational Programs
The University of Texas McGovern Medical School at Houston
6431 Fannin, JIL 304
Houston, Texas 77030

Visit our Web site:

http://med.uth.tmc.edu/administration/edu_programs/medical-education/pre-entry.html

Learning Resource Center (LRC)

The LRC supports the teaching and learning functions of McGovern Medical School. It works closely with the faculty and students to identify and promote the utilization of innovative teaching resources and learning strategies in support of the McGovern Medical School's curricular offerings. Housed in a state-of-the-art facility, the LRC occupies over 10,000 square feet of dedicated space in the McGovern Medical School building with seating for more than 250. There are 170 individualized study carrels, each of which is equipped with a networked computer station, and 11 group study rooms, which are also used for small group instruction as part of the McGovern Medical School's Problem Based Learning curriculum. Also included in the LRC are 2 fully equipped physical diagnosis practice rooms. With wireless and ethernet connectivity throughout the facility, the LRC also houses various audiovisual devices, a collection of over 3,500 instructional media, required and recommended texts, reserve and reference materials, multimedia devices, simulators, and web-based instructional resources. The LRC's circulation desk is open 7 a.m. to 6 p.m., while the study areas are accessible 24 hours, seven days a week.

Dual Programs

MD/PhD Program

McGovern Medical School, Graduate School of Biomedical Sciences, and the UT MD Anderson Cancer Center participate in a combined program leading to both MD and PhD degrees. This program is sponsored and supported by UTHealth and UT MD Anderson Cancer Center and provides a stipend, tuition and fees, and health insurance support during MD and PhD training. Extensive basic and translational research opportunities and participation of more than 500 faculty members from both institutions provide a unique environment and resources for training combined degree students. The MD/PhD program training structure is also unique and is organized to train physician scientists. Students complete the first three years of medical school training prior to starting their dissertation research. Thus, the students enter the graduate school with a comprehensive understanding of human disease that can inform and direct their dissertation research. Requirements of both degrees are typically completed in seven years. The program is administered by an MD/PhD Committee, which consists of faculty at both institutions.

Students must meet the admissions requirements of McGovern Medical School to qualify for admission to the MD/PhD program. The program is restricted in size and provides stipend support for exceptional MD/PhD candidates. For information, visit our Web site at <https://gsbs.uth.edu/mdphd/>

Those interested in the MD/PhD Program should inquire through the Office of Admissions and Student Affairs at McGovern Medical School. Application for admission to the MD/PhD Program may be made by submitting an application online through the American Medical College Application Service (AMCAS) and a mandatory secondary application online at <https://gsbs.uth.edu/mdphd/apply-here.htm>. Three (3) letters of recommendation (two (2) general letters and an additional letter from a research mentor) are also required and should be submitted through AMCAS. The deadline is November 1st. You may also contact the MD/PhD Program Manager, Jo Cheatwood at 713-500-6607 or by e-mail at: jo.cheatwood@uth.tmc.edu.

MD/MPH Program

McGovern Medical School and the UTHealth School of Public Health offer a dual degree program leading to an MD degree and a Master of Public Health (MPH). The requirements established for the program meet the general requirements of both degrees. The curricula are integrated along a four- or five-year path to support student career objectives.

Examples of suggested degree plans for either the four or five-year option can be found online at:

<http://med.uth.tmc.edu/administration/admissions/MDMPH.html>

Students must meet the admission requirements of both schools to qualify for the dual MD/MPH program. Acceptance to the SPH is accomplished by applying during the regular application cycles – deadlines are March 1 (for Summer/Fall admission) and August 1 (for Spring admission). Those interested in the program can find information online at:

<https://sph.uth.tmc.edu/academics/dual-degree/mdmph-ut-houston/>

<https://sph.uth.tmc.edu/admissions/how-to-apply/dual-degree-programs/>

Doctorate of Medicine/Oral and Maxillofacial Surgery Residency (MD/OMS)

Both a four-year and six-year Advanced Education Program in Oral and Maxillofacial Surgery are offered by UTHealth. The six-year program is offered jointly through the UTHealth School of Dentistry and McGovern Medical School. Each program prepares practitioners to treat diseases, injuries, and defects involving both the functional and aesthetic aspects of the hard and soft tissues of the oral and maxillofacial region. The basic prerequisites for both the four- and six-year programs are a DDS or DMD degree from an ADA accredited dental school.

The six-year program adopts a similar schedule to the four-year program, with the primary difference consisting of requirements for obtaining the MD degree. The first year is spent with the oral and maxillofacial surgery department. In the second, third, and fourth years, residents are enrolled in medical school, completing years two, three, and four of the medical school curriculum. During the fourth year of medical school, eight months are provided for the fulfillment of requirements related to the oral and maxillofacial surgery residency, such as rotations on neurosurgery, anesthesia, and general surgery services. The remaining fifth and sixth years of the program are focused on completing the requirements for medical licensure in the State of Texas and oral and maxillofacial training. The OMS training includes rotations to six different hospitals as a senior surgical resident. Upon satisfactory completion of the six-year program, residents receive a certificate in oral and maxillofacial surgery and a MD degree.

MD/MBA Program

McGovern Medical School and the University of Houston Clear Lake School of Business (UHCL) offer a dual degree program leading to an MD degree and a Master of Business Administration (MBA). The requirements established for the program meet the general requirements of both degrees. The curricula are integrated along a five-year path to support student career objectives.

Students must meet the admission requirements of both schools to qualify for the dual MD/MBA program. Acceptance to the UHCL is accomplished by applying through the www.applytexas.org link. Students who have applied should email Leticia Sanchez-Retamozo (sanchezretamozo@uhcl.edu) with their name and application number to facilitate the process at UHCL.

Graduate Medical Education

The learning process encompasses more than a student's four years in medical school. All graduates may continue to expand their knowledge and refine their skills by seeking further supervised medical training.

Graduate Medical Education programs provide physicians the opportunity to prepare for practice in a medical specialty. Residency and fellowship programs focus on the development of clinical skills and professional competencies.

McGovern Medical School conducts its residency and fellowship training programs at hospitals and clinics affiliated with The University of Texas Health Science Center at Houston. The GME program offers carefully organized and evaluated instruction in the various disciplines of medicine. These accredited programs are recognized toward

fulfillment of the requirements of the respective specialty boards. McGovern Medical School programs participate in the National Residency Matching Program. Information and applications for residency or fellowship programs are available from the program directors listed in the American Medical Association (AMA) Directory of Residency Training Programs and the Fellowship and Residency Electronic Interactive Database (FREIDA).

Sub-specialty residency programs are open to application by physicians who have completed their general residency training and meet the requirements of the sub-specialty program.

McGovern Medical School sponsors accredited residency programs in the following disciplines: Anesthesiology, Dermatology, Emergency Medicine, Family Medicine, Internal Medicine, Medical Genetics, Neurological Surgery, Neurology, Obstetrics and Gynecology, Occupational Medicine, Ophthalmology, Otolaryngology, Orthopaedic Surgery, Pathology, Pediatrics, Plastic Surgery, Psychiatry, Child Psychiatry, Diagnostic Radiology, General Surgery, Colon and Rectal Surgery, Urology, Internal Medicine/Pediatrics, and Physical Medicine and Rehabilitation. McGovern Medical School also offers a variety of unaccredited sub-specialty programs approved through the Texas Medical Board.

For information on residency and fellowship programs at McGovern Medical School, contact:

The Office of Graduate Medical Education

McGovern Medical School

6431 Fannin, Suite JLL 310

Houston, Texas 77030

Web site: <http://bit.ly/uthoustongme>

Continuing Medical Education

Through a collaborative partnership with The University of Texas Medical Branch at Galveston, the Office of Continuing Medical Education (CME) offers CME conferences, seminars, regularly scheduled series, enduring materials such as webinars and internet-based formats, and other learning opportunities for physicians in Texas, and throughout the United States.

CME programs are available on various subjects, range in length from one hour to several days, and are offered throughout the year. The programs are sponsored by various McGovern Medical School departments and divisions.

The joint UTMB/McGovern Medical School CME program is fully accredited by the Accreditation Council for Continuing Medical Education. For further information, call 713-500-5249, or visit www.UTcme.net.

Office of Continuing Medical Education

McGovern Medical School

6431 Fannin, Suite JLL300 A & B

Houston, Texas 77030

Master of Science in Clinical Research Degree Program

The Master of Science in Clinical Research Degree Program has been offered at McGovern Medical School since the fall of 2002. This MS degree program was designed as a focused, flexible, and affordable program to train clinical investigators in designing and conducting patient-oriented research of exemplary quality. The curriculum accommodates clinicians' busy schedules; the courses are concentrated on Wednesdays after noon. The degree can

be completed in three to four years, depending on the amount of time a student devotes to the program. For updated information about this program, see:

<https://med.uth.edu/pediatrics/crebm/clinical-research-education/ms-in-clinical-research/>

MS Admission Requirements

This program is expected to appeal primarily to MDs at the fellow and faculty levels, as well as other clinicians who have not had previous formal training in clinical research. The rapid pace of the curriculum assumes a working knowledge of clinical medicine and excellent scholastic aptitude.

All applicants are required to be engaged in or preparing to conduct clinical research and to meet one of the following two types (a or b) of academic criteria:

- a) Advanced degree in health-related field:
 - (1) MD or DO
 - (2) PhD in a related field
 - (3) DDS or DMD
 - (4) RPh or PharmD
- b) Bachelor's or master's degree with a G.P.A. of greater than 3.0 and previous work experience in a health-related field, such as nursing, psychology, dietetics, etc.

Application and Admission Procedures

Completed applications, including letters of reference and transcripts, must be received by:

June 15 for fall semester

Oct. 15 for spring semester (non-degree status only)

Applications should be submitted online to the Office of the Registrar (<http://www.uth.edu/registrar/>). The following are required:

- a) A completed application form with a curriculum vitae. Each applicant will be required to summarize his/her career goals, describe how the Master's Program will support these goals, and propose a timeline for completion of the program.
- b) Letters of reference from at least two individuals who are qualified to evaluate the applicant's academic or professional performance, as well as ability and motivation to complete the program. If an applicant will be employed or in a training program while enrolled in the program, a letter of support/recommendation will be required from the applicant's supervisor to verify the supervisor's commitment to provide the applicant with adequate "protected" time to complete the program. Letters should be on official letterhead.
- c) Official transcripts covering all periods of post-secondary enrollment in accredited institutions of higher education. Applicants should request the institution to send official (original) transcripts directly to the Office of the Registrar. Graduates of Texas colleges and universities should request that transcripts be sent in electronic format. Copies of official transcripts sent by the applicant are not considered. Transcripts must include both grades and credit hours.
- d) Applicants who are nationals of countries where English is not the parent language are required to submit scores from the Test of English as Foreign Language (TOEFL). See application form for current requirements and exceptions.
- e) A \$60 non-refundable application fee.

Direct telephone inquiries about the program to:
Center for Clinical Research and Evidence-Based Medicine
McGovern Medical School
713-500-6708

Address application inquiries to:
Office of the Registrar
The University of Texas Health Science Center at Houston
P.O. Box 20036
Houston, Texas 77225-0036
713-500-3388

Once an application has been submitted, the applicant will receive a PIN number from the Office of the Registrar. Once the PIN number is received, the status of the application, transcripts, and letters of reference can be checked online at MyUTH (<https://my.uth.tmc.edu>)

Factors Considered in Admissions Decisions

The Admissions Committee of the MS in Clinical Research Degree Program will review all completed applications. The committee considers the following factors in evaluating applicants for admission:

- Previous research experience, accomplishments and publications, enrollment in research-related courses, and current involvement in research projects;
- Expressed commitment to a career involving biomedical research;
- Grade point average;
- Career goals;
- Previous graduate-level study;
- Work experience in a health-related field;
- Honors and awards for academic achievement;

Other factors that may be considered by the Admissions Committee include:

- Success in overcoming socio-economic and educational disadvantages;
- Multilingual proficiency;
- Non-academic responsibilities, such as employment and child-rearing;
- Involvement in community activities; and
- Race and ethnicity

Except in rare circumstances, applicants will only be considered for acceptance into the degree program after one year of participation in the Clinical Research Curriculum. Preference will be given to candidates who have an established committed departmental mentor. Plans for departmental mentoring must be established prior to enrollment in the program. Candidates from institutions outside of UTHealth will be considered for admission if arrangements can be made for appropriate departmental and methodological mentorship from the applicant's own clinical/academic institution.

Enrollment Status

A student is considered officially enrolled if tuition and fees are paid by the due date listed on the schedule of classes.

- Degree Student: a student admitted to an academic program who is following a set curriculum and pursuing a degree without an interruption of more than one year in enrollment.
- Non-degree Student: a student who is admitted to the school for one or more courses but not admitted to a degree program.

Enrollment as a non-degree student does not entitle a student to admission to a degree program. A non-degree student is allowed to register only with the permission of the course instructor.

Degree Requirements

- a) Satisfactory completion of the Clinical Research Curriculum courses (a two-year curriculum composed of a weekly lecture series and homework exercises). In addition to the 9-12 credit hours for the Clinical Research Curriculum (see below), each student will be required to complete an additional 24-27 credit hours (including practica and a thesis) for a total of 36 credit hours.
- b) Satisfactory completion of at least three of these practica:
 - Institutional Review Board
 - Scientific Presentation
 - Scientific Writing
- c) Satisfactory completion of a research thesis project or projects that collectively demonstrate competence in each of these areas:
 - To critically review clinical research literature
 - To design a clinical research study to address a focused research question using the most unbiased feasible design
 - To properly analyze and interpret clinical research findings
- d) A GPA of 3.0 (B) must be achieved in the graded courses offered at McGovern Medical School for the MS in Clinical Research Degree Program (or courses deemed to be equivalent by the student's advisers). (For students enrolled in the program before fall 2004, the B average requirement will apply only to courses completed after the change took effect.)
- e) Students must be enrolled for at least one credit hour during the semester in which they complete the degree requirements.
- f) Students admitted to the program will need a minimum of three thesis credit hours. (A maximum of six thesis credit hours can be applied to the 36 credit hour requirement for the degree.)

Clinical Research Curriculum Topics

Introduction to Epidemiology Research
 Clinical Trial Design
 Health Services Research
 Use of Computers in Clinical Research
 Scientific Writing
 Informatics for Clinicians and Clinical Investigators

Biostatistics for Clinical Investigators
 Literature Appraisal
 Ethical Aspects of Clinical Research
 Introduction to Translational Research
 Clinical Research Design Workshop

Additional Coursework for Master's Degree

The curriculum for the Master's Program consists of two tracks — the Patient-Based Clinical Research Track and the Translational Research Track. In either track, the specific courses (usually four to five) chosen by an individual student will depend on his/her previous training and course work and current career goals. Most students in the Translational Research Track will take advanced courses in molecular biology and/or genetics; most students in the Patient-Based Clinical Research Track will take advanced courses in health care policy and practice.

Advanced Courses for Master's Program

Advanced Biostatistics for Clinical Investigators
 Using Research to Inform Health Care Policy and Practice
 Advanced Clinical Research Design

Social and Economic Influences on Population Health and Health Policy
 Developmental Biology
 Molecular and Cellular Approaches to Human Genetics
 Genetics and Human Disease
 Eukaryotic Gene Expression
 Cancer Biology

Transfer Students

A student may be given up to 18 hours of credit for formal coursework completed previously in a comparable program. Students who transfer into the program must meet the same overall degree requirements as students who undergo all of their training at UTHealth.

Petitioning for Course Equivalency

A student who wishes to receive credit for courses taken outside the MS in Clinical Research Degree Program at UTHealth may submit a Petition for Equivalency form (available in MSB 2.106). This includes the Clinical Research Curriculum courses as well as courses taken at other institutions that are similar in content to courses offered for the MS in Clinical Research Program. The student must complete the form and obtain the approval of his/her program adviser. For courses taken outside McGovern Medical School, the student must supply the required documentation about course goals and requirements for approval of credit hours by the Curriculum Committee.

Advisory Committee

Each student in the program will work jointly with two different advisors—a program advisor/mentor who provides methodological expertise and a departmental advisor/mentor from his/her own basic or clinical science department or institution who provides expertise in the participant's specific area of clinical research. For fellows and other trainees, the training program director will also serve as a member of the advisory committee. At the end of each semester, the student will be scheduled to meet with his/her advisory committee to review academic progress, course selection, and thesis development.

MS Tuition and Fees

Tuition

The resident tuition is \$96 per semester credit hour. The non-resident tuition will be \$486 per semester credit hour, with the non-resident statutory fee of \$440. Tuition and fees are subject to change according to the actions of the Texas Legislature or the Board of Regents and are effective when enacted.

Texas Residence Requirements

Please see the Office of the Registrar's Web site: <http://www.uth.edu/registrar/>

Enrollment in Affiliated Institutions

Through reciprocal agreements, graduate students at other components of The University of Texas Health Science Center at Houston, as well as graduate students from Rice University, Baylor College of Medicine, Texas Woman's University, and the University of Houston, may take some graduate courses for credit through the MS in Clinical Research Program at McGovern Medical School, subject to approval of the instructor. In addition, full-time students (taking at least nine credit hours) at McGovern Medical School may take some courses for credit at any of the above institutions. The mechanism for payment of the tuition or registration fees varies according to the individual institution. Consult with the Registrar's Office for specific details.

Student Services Fees

The student services fees, required of all students, are assessed per semester credit hour with a maximum charge of \$205.75 per fall/spring. The fee provides for student governance, student health services, recreational facilities, counseling services, and shuttle bus services. A graduation fee of \$75, payable at registration for the final academic semester, is required of all students. The information technology access fee is \$33 per semester.

MS Grading, Conduct, and Satisfactory Progress Policies

Grades

Core courses in the MS in Clinical Research Degree Program will be graded A, B, C, or F. An 'F' in a required course requires repetition of that course (or a course deemed equivalent by the student's advisers). Practica and thesis credit hours are graded pass (P) or fail (F). An incomplete (I) grade may be assigned at the discretion of the instructor when the course requirements have not been satisfied by the end of the semester. An incomplete grade will remain on the transcript until a final grade is assigned by the instructor. If an incomplete is not changed by the end of the following semester, it will be converted to an 'F.'

Criteria upon which grades are based are provided at the beginning of each course. Students may withdraw from a course through the last class day of the term. When a student withdraws from a course, a Withdrawn Passing (WP) or Withdrawn Failing (WF) grade will be recorded depending on the student's standing at the time of withdrawal. This WP or WF grade will remain on the transcript even if the course is repeated and passed.

Academic Conflict Resolution

Individual faculty members retain primary responsibility for grading and evaluations. The faculty member's judgment is final unless compelling evidence suggests differential treatment, or mistake. In attempting to resolve any student grievance regarding academic matters, it is the obligation of the student first to make a serious effort to resolve the matter with the faculty member with whom the grievance originated. If the student and faculty member cannot resolve the matter, the student should consult the academic grievance procedure described on the school's website under Academic Guidelines (Grade Grievance Policy).

Satisfactory Academic Progress

The faculty of McGovern Medical School is responsible for identifying students who are having academic difficulty and determining whether the deficiency can be remediated. Satisfactory academic progress is defined for each student by following the degree plan for that student. Each student's Advisory Committee will review the student's course work to assist him/her in achieving the maximum potential and in assessing progress toward academic goals. Satisfactory progress will be evaluated on an individual basis but will generally require successful completion of at least 5-8 credit hours per year or one thesis component. Students are expected to complete the program within six years, unless extraordinary circumstances warrant an extension. Overall consideration of performance will be used by the Advisory Committee to determine which students have progressed satisfactorily and which students should be placed on academic probation.

Academic Probation and Dismissal

A student will be placed on academic probation by the program director following the completion of the semester in which any of the following occur:

- 1) a second grade of F or WF is earned,
- 2) the student fails to meet with his or her Advisory Committee within a 12-month period, or
- 3) the student fails to make satisfactory progress toward the degree (see above).

Once on probation, the student will be re-evaluated at least once each semester by his/her Advisory Committee. A student placed on probation for failing grades will be taken off probation when he/she has passed at least two courses and has passed the same or an equivalent course for any required courses that were failed. The student will be given one year to satisfy these requirements or up to two years if the failed required course is offered only every other year. A student placed on probation for failing to make satisfactory progress and/or meet with his or her Advisory Committee will be taken off probation when he/she successfully completes at least four credit hours over the next year. If the academic probation is not removed within the stated remediation time period, the student will be dismissed by the program director.

If the student wishes to request a reconsideration of the dismissal, a written request to the Advisory Committee, with a copy sent to the Dean, must be submitted within seven calendar days of receipt of the dismissal letter. The Student Evaluations and Promotions Committee will review the request and render its recommendation in writing to the Dean. The student will be notified in writing of the Dean's decision within five working days of the committee's recommendation. The determination of the Dean is final. Students can be referred for evaluation and counseling for academic or personal concerns through the Office of Student Affairs.

Long-Term Absences

Students who are unable to maintain active status (at least 5-8 credit hours per year) may request a long-term absence of up to one year. If the absence lasts for more than one year, reinstatement will be considered at the discretion of the Admissions Committee. Any degree student who has not been granted a leave of absence and who

fails to complete at least one degree requirement (course, practicum, or thesis component) within a one-year period will be considered to have withdrawn from the program. Once having been withdrawn, a student who wishes to resume participation in the program must apply to be readmitted to the program. Degree students may request a change in enrollment status to non-degree student. Reinstatement in the degree program will be considered at the discretion of the Admissions Committee. Non-degree status will expire after a two-year period of no activity in the program.

Courses for Clinical Research Curriculum

The following courses are offered as part of a two-year curriculum that is open to all clinical researchers in the Texas Medical Center. Students in the MS in Clinical Research Degree program receive 9-12 hours of formal credit for these courses using the Petition for Course Equivalency described above. Call 713-500-6708 to register for these courses.

Course Name: Intro to Epidemiology Research

Instructor: Samuels

Course Description: This course provides a basis for an understanding of the concepts and methodological skills necessary for designing and interpreting observational studies. These include validity (random error, bias and confounding), measures of disease occurrence and impact, measures of association, reliability and generalizability, causal inference, and critically reviewing evidence.

Prerequisite: None (above admission requirements for MS in Clinical Research Program)
(1.0 credit hours).

Course Name: Clinical Trial Design

Instructor: Tyson

Course Description: This course prepares the student to design and analyze randomized trials of medical interventions. Covered topics include basic study design, recruitment, randomization, masking, data collection and quality control, participant adherence, sample size considerations, data monitoring and analysis, and meta-analysis.

Prerequisite: None (above admission requirements for MS in Clinical Research Program)
(1.0 credit hours).

Course Name: Health Services

Research

Instructor: Thomas

Course Description: This course begins with an overview of health services research (hsr). Subsequent classes will focus on either important topics within HSR or methods used in HSR: conceptualization of healthcare quality and safety; quality of care measurements; improvement science; and introductions to survey research and qualitative research.

Prerequisite: None (above admission requirements for MS in Clinical Research Program)
(1.0 credit hours).

Course Number: CLRS 5006

Course Name: Clinical Research

Design Workshop

Instructor: Kennedy, Tyson

Course Description: In this problem-based course, each student is expected to build a clinical research proposal in his/her field of interest. Each week, students are asked to present the appropriate parts of their protocols to facilitate the discussion of successive stages in study design. This course is run in small group sessions (6-14 students per group) to facilitate active participation and interaction.

Prerequisite: Consent of instructor
(1 credit hour).

Course Number: CLRS 5007

Course Name: Use of Computers in Clinical Research

Instructor: Kennedy

Course Description: This is a hands-on laboratory course. Each student is expected to complete computer-based projects that demonstrate skills, managing data, and analyzing data sets. Software packages used in the course include PC-based spreadsheet, database, and statistics software packages.

Prerequisite: None (above admission requirements for MS in Clinical Research Program)
(1-3 credit hours).

Course Number: CLRS 5008

Course Name: Scientific Writing

Instructor: Faculty

Course Description: This course covers the essential goals of scientific writing and presentation: clarity, succinctness, and consistency as they apply to specific areas of scientific writing. Detailed specific recommendations will be given for abstract, manuscript, and grant preparation.

Prerequisite: None (above admission requirements for MS in Clinical Research Program)
(0.5 credit hour).

Course Name: Bioinformatics

Instructor: Sittig

Course Description: The goal of this course is to train the next generation of clinical researchers in the basic principles of clinical information systems so that they can use the data and understand the issues regarding design, development, implementation, and evaluation of interventions based on these information systems.

Prerequisite: None (above admission requirements for MS in Clinical Research Program)
(1.0 credit hour).

Course Number: CLRS 5009

**Course Name: Biostatistics for
Clinical Investigators**

Instructor: Kennedy, Pedroza

Course Description: This course begins with an overview of descriptive statistics and provides students with the tools to perform univariate analyses using parametric and non-parametric methods for paired and unpaired designs. Emphasis is placed on choosing appropriate tests, evaluating assumptions for the tests, understanding the limitations of statistical tests, and appropriate interpretation of test results. Survival analysis and multiple regression techniques are introduced to familiarize the student with the availability and limitations of these tests.

Prerequisite: None (above admission requirements for MS in Clinical Research Program)
(1.5 credit hours).

Course Number: CLRS 5011

Course Name: Literature Appraisal

Instructor: Kennedy

Course Description: In this course, the students will be expected to learn rules of evidence and demonstrate critical evaluation of the medical literature. Students will have an opportunity to demonstrate these concepts and skills by appraising the evidence in various areas of clinical research. This critical appraisal of existing evidence will be used to determine fruitful areas for new investigation. This course is run in small group sessions (6-12 students per group) to facilitate active participation and interaction.

Prerequisite: None (above admission requirements for MS in Clinical Research Program)
(1 credit hour).

Course Number: CLRS 5012

**Course Name: Ethical Aspects of
Clinical Research**

Instructor: Tyson

Course Description: This course introduces the fundamental ethical principles of autonomy, beneficence, nonmaleficence, and justice and applies these principles to clinical research involving human subjects. The use of unproven therapies, the use of placebos, the consent process, institutional review board submission and review processes, conflict of interests, and the costs of clinical research are covered.

Prerequisite: None (above admission requirements for MS in Clinical Research Program) (0.5 credit hour).

Course Number: CLRS 5013

Course Name: Introduction to Translational Research

Instructor: Assassi

Course Description: This course is an overview of the clinical research that bridges basic science and patient-based research. Topics include pharmaceutical research, genetic research, gene therapy, and genomics.

Prerequisite: None (above admission requirements for MS in Clinical Research Program) (0.5 credit hour).

Courses for MS in Clinical Research Degree Program

The following advanced courses are offered as part of the MS in Clinical Research Degree Program.

Course Number: CLRS 5019

Course Name: Clinical Safety and Effectiveness

Instructor: Thomas

Course Description: The goals are to: develop physician leaders in quality and safety who are recognized nationally; advance expertise in the science of improvement to enhance patient care and safety; and assure medical staff involvement in defining and attaining quality and safety goals. The course includes didactic training and completion of a clinical quality improvement project. The curriculum focuses on teaching the principles and techniques of quality improvement, with a focus on the Six Sigma approach. Students also learn about healthcare policy and financing, leading and working in teams, data analysis, and presentation skills.

Prerequisite: Consent of instructor

Course Number: CLRS 5015

Course Name: Using Research to Inform Health Care Policy and Practice

Instructor: Kennedy, Wootton

Course Description: In this course, the students apply rules of evidence and health services research to clinical practice, practice guidelines, and health care policy. Decision analysis and methods for quantifying benefit, risk, and cost will be used to evaluate health care interventions at the individual patient and population levels. This critical appraisal will be used to launch discussions of mechanisms to bridge the gap between clinical research evidence and health services delivery and health policy.

Prerequisite: Literature Appraisal or consent of instructor (4 credit hours).

Course Number: CLRS

Course Name: Social and Economic Influences on Population Health and Health Care

Instructors: Greeley, Avritscher, Stotts

Course Description: The health and well-being of individual patients and of society as a whole may be more related to social, behavioral, and economic factors than to purely medical factors. This course will promote understanding of the design, implementation, analysis and interpretation of studies of social, behavioral, and economic determinants of disease, interactions between these determinants and medical treatment, or interventions to improve health problems. A working knowledge of the principles of epidemiology, literature appraisal, and study design and an interest in social sciences is required.

Prerequisite: Intro to Epidemiology Research or consent of instructor
(4 credit hours)

Course Number: CLRS 5017

Course Name: Advanced Clinical Research Study Design

Instructor: Tyson, Kao

Course Description: This course will build on design concepts for observational and interventional studies that were introduced in the prerequisite courses. Topics will include the use of matching and restriction to minimize bias in observational studies, consideration of analytic strategies (eg. correlated samples, use of propensity scores) in study design, survey research methods, the relationship between quality improvement and clinical research, adaptive randomization, alternatives for consent for research, factorial designs, cluster randomization, using patient values to select important study outcomes, weighing benefits and harms, approaches to stopping rules, and enhancing feasibility of clinical trials.

Prerequisite: Introduction to Epidemiology Research, Clinical Trial Design, Advanced Biostatistics (or permission of instructor)
(4 credit hours)

Course Number: CLRS 5010

Course Name: Advanced Biostatistics for Clinical Investigators

Instructor: Pedroza, Green

Course Description: This course will focus on the mechanics of applying biostatistical techniques in a research setting. Emphasis will be placed on assumption testing and techniques of model fitting. Students will be expected to critically evaluate, develop, and execute analysis plans using descriptive analysis and regression techniques.

Prerequisite: Biostatistics for Clinical Investigators or consent of instructor
(4 credit hours)

Departments

Department of Anesthesiology

The department offers a broad-based educational experience in the practice of anesthesiology and related disciplines. In addition to the traditional area of intraoperative care, emphasis is placed on preoperative patient evaluation and preparation and on comprehensive postoperative management with acute and chronic pain management, implementation of the surgical home model of care, and critical care medicine. Intensive experience is offered in both the outpatient and inpatient areas. The department accentuates management of multidisciplinary intensive care unit patients and trauma care and transplant anesthesia. Emphasis is also placed on regional anesthesia, perioperative echocardiography, and advanced difficult airway management. Through clinical, classroom, high fidelity simulation, and laboratory teaching, the program is designed to provide the student with the opportunity to combine a broad background in the basic sciences with the skills and judgment of clinical anesthesia. The student is exposed to research conferences, visiting professor lectures and journal clubs, and an innovative didactic program that provides a varied and rich learning environment.

Professor and Chair

Hagberg, Carin A., MD

Department of Biochemistry and Molecular Biology

As a basic science department in a research intensive medical school, the major mission of the Department of Biochemistry and Molecular Biology (BMB) is to conduct innovative and important biomedical research. To this end, BMB is host to a diverse array of multidisciplinary research programs ranging from basic biomedical research in the fields of cell biology, structural biology, genetics, immunology, microbiology, neurobiology and circadian biology, to preclinical and translational research carried out in the areas of pulmonary disease, cardiovascular disease, hypertension, visual disorders, sickle cell disease, and cancer. BMB faculty members are involved in productive collaborations with many faculty members from other departments at McGovern Medical School, and in this way enhance the overall research environment of McGovern Medical School. The interdisciplinary approaches taken by our faculty provide meaning to the term “molecular medicine.” BMB is home to three research centers that represent areas of research strength within the department: [The Center for Membrane Biology](#), the [Structural Biology Imaging Center](#), and the [Pulmonary Center of Excellence](#). Faculty members associated with the Structural Biology Center investigate the structural basis for function in biological molecules using X-ray diffraction, nuclear magnetic resonance spectroscopy, and cryo-electron microscopy. These methods allow for the determination of three-dimensional structures of proteins and macromolecular assemblies. Faculty members associated with the Center for Membrane Biology utilize multidisciplinary approaches to elucidate the molecular structure and function of membrane proteins in normal and diseased conditions. Faculty members affiliated with the Pulmonary Center of Excellence conduct preclinical and translational research regarding chronic lung diseases including asthma, chronic obstructive pulmonary disease, pulmonary fibrosis, and pulmonary hypertension.

The research activities of the BMB faculty provide an atmosphere of discovery and learning that enriches medical and graduate school educational activities. BMB faculty members are effective and important contributors to numerous McGovern Medical School and other graduate school course offerings. BMB faculty members are important contributors to a first-year medical school course that strongly emphasizes the relevance of biochemistry and molecular biology to various topics of human health and disease. Departmental faculty members provide assistance to the students during small group conferences throughout the medical curriculum. Entering medical school students may enroll in the summer pre-entry course designed to prepare them for the biochemistry topics they will encounter during medical school. Departmental faculty members facilitate a problem-based learning course that is taken by second-year medical students. BMB faculty members invest heavily in the education and research aspects of graduate students. Members of the BMB faculty teach several well-attended courses designed specifically for graduate students. A weekly seminar series provides students the opportunity to listen to, learn from, and meet with internationally prominent visiting scientists. Weekly research workshops provide important training

opportunities for program students and postdoctoral fellows to communicate their research findings and receive critical feedback, which helps guide their research activities.

Chair

Kellems, Rodney E., PhD

Vice-Chair

Blackburn, Michael R., PhD

Department of Cardiothoracic and Vascular Surgery

The Department of Cardiothoracic and Vascular Surgery consists of full-time clinical and volunteer faculty. The activities of the department center on the care of patients with diseases of the cardiovascular system, including heart, aorta, and major vessels as well as lungs and other thoracic structures. These activities are focused at Memorial Hermann – Texas Medical Center, Memorial Hermann Southeast, Memorial Hermann Northeast, Memorial Hermann Memorial City, St. Joseph's Hospital, Bellaire Clinic and the Lyndon B. Johnson Hospital. Relationships also exist with the UT MD Anderson Cancer Center.

The faculty of the department participates in the third-year surgery clerkship. Fourth-year medical students may choose electives in clinical or research areas. Research in the McGovern Medical School laboratories comprises both basic and applied science investigations on the pathophysiology of major vascular and cardiac disorders. The research programs in the Department of Cardiothoracic and Vascular Surgery are focused on development of new knowledge in the origins and prevention of surgical complications, and on continuous innovation and improvement in quality of care. Patients benefit directly from the department's focus on innovation, and the department prioritizes the dissemination of discoveries through peer-reviewed publications in the medical literature and through the department's internationally prominent Houston Aortic Symposium. The department has published hundreds of research articles and continues to be at the forefront of many national cooperative research efforts.

Professor and Chair

Safi, Hazim J., MD, FACS

Professor and Vice Chair for Research

Miller, Charles C. III, PhD

Department of Dermatology

The Department of Dermatology provides medical students and residents with a comprehensive approach, addressing disorders of the skin, hair, and nails. Special areas of expertise include immunodermatology, pediatric dermatology, dermatological oncology, cutaneous surgery (including Mohs surgery for difficult skin cancers), laser therapy, occupational dermatology, cosmetic dermatology, and cutaneous manifestations of internal disease. The department was ranked as one of the top eight clinical programs in the nation by Dermatology Times. The department also maintains its own dermatopathology and immunopathology (immunofluorescence) testing services, receiving specimens from all over the United States. The lab is one of the busiest of this type at any of the universities in Texas. The department has an active basic and clinical research program. Training facilities currently include Memorial Hermann – Texas Medical Center, UT MD Anderson Cancer Center, Lyndon B. Johnson General Hospital, selected private offices of the volunteer faculty, and other clinical facilities outside the Texas Medical Center.

Senior medical students are offered electives in clinical dermatology, dermatopathology, and basic research, as well as specialized rotations set up on an individual basis. A three-year residency program in dermatology is offered.

Electives are available for rotating residents from other specialties. Fellowship training opportunities include dermatopathology, procedural dermatology and Mohs surgery, and clinical research.

Josey Professor and Marvin E. Chernosky, MD Distinguished Chair (Joint Medical School and MD Anderson Cancer Center)

Rapini, Ronald P., MD

Professor and Deputy Chair (UT MD Anderson Cancer Center)

Duvic, Madeleine, MD

Department of Diagnostic and Interventional Imaging

The Department of Diagnostic and Interventional Imaging offers sub-specialty expertise with particular emphasis on collaboration exercises with other clinical and basic science institutions for our Residency Education Program. During the first academic year, normal radiographic anatomy is an integral component of gross anatomy. At the end of the second year, prior to the beginning of clinical clerkships, a one-week concentrated course in diagnostic imaging is included in the core curriculum.

Clinical electives are available to fourth-year medical students. These emphasize radiologic techniques, indications, and contraindications for various procedures and the fundamentals of diagnostic imaging and intervention. Teaching methods include formal lectures, self-instruction by means of permanent teaching files, programmed lectures, staff and student seminars, and participation in the various subspecialty areas in radiology. Many of the faculty actively participate in teaching conferences of the core clerkships.

The faculty and facilities of the department provide instruction and training in all contemporary imaging modalities, including nuclear radiology, ultrasound, computed tomography, angiography, magnetic resonance imaging, spectroscopy, and diagnostic and therapeutic interventional procedures.

Clinical radiation therapy is provided through the faculty and facilities at UT MD. Anderson Cancer Center and is a specialty separate from diagnostic radiology. This service affords experience in the evaluation, care, treatment, and follow-up of cancer patients treated with ionizing radiation, either alone or in conjunction with other modalities.

Special clinical and basic science electives are available for qualified students at any level of training. Arrangements can be made by contacting Lori Black in the department's Education Program Office at 713-500-7640.

Professor and Chair, John S. Dunn, Sr. Distinguished Chair in Radiology

John, Susan D., MD

Department of Emergency Medicine

The Emergency Medicine Department provides both third-year (EMER 3030) and fourth-year (EMER 4004) students with an elective rotation in the emergency centers of Memorial Hermann – Texas Medical Center and Lyndon B. Johnson General Hospital. These electives are Pass/Fail. There is also an Advanced Patient Care (APC) elective (APC 4110) offered during the fourth year which is a graded option for students looking for the “acting intern” experience as well as the opportunity to fulfill their APC requirement.

The clinical activities of the rotation are monitored by the department's faculty and house staff. The Memorial Hermann Emergency Center (EC) offers clinical experience typical of a large private institution and has the advantage of being a Level I Trauma Center. Memorial Hermann Hospital also has Life Flight, one of the oldest and busiest emergency medical air transport helicopter services in the country. The current patient volume seen at the Memorial Hermann EC is approximately 70,000 patients per year.

The emergency center at LBJ Hospital is representative of the busy public EC found in many metropolitan areas. The annual census is more than 80,000. This hospital's patient population is typical of the underserved indigent populations across the country, with a significant subset of Spanish-only speaking patients.

During this rotation, students have the opportunity to work side by side with emergency medicine faculty and residents from this and other major disciplines. The students interact with all of the consulting surgical and medical services. The rotation is designed to familiarize the students with the practice of emergency medicine; emphasis is placed on the undifferentiated presentation, diagnosis, and treatment of the wide spectrum of diseases commonly seen in emergency centers.

Clive, Nancy, and Pierce Runnells Distinguished Professor of Emergency Medicine

Associate Professor and Chair, Department of Emergency Medicine

McCarthy, James J., MD

Professor, Vice Chair, and Medical Director, LBJGH-EC

Robinson, David J., MD, MS

Department of Family and Community Medicine

The Department of Family and Community Medicine provides opportunities for students and residents to acquire the knowledge, attitudes, and skills necessary for the practice of family medicine. Training is provided in the full range of primary care skills in both ambulatory and inpatient settings.

Training facilities currently include Memorial Hermann – Texas Medical Center, Lyndon B. Johnson (LBJ) General Hospital, the UTP Center for Family Medicine, the Acres Home Community Health Center, and the Aldine Community Health Center. The department, which has faculty at 10 sites in the Houston area, provides medical staffing for five community health centers owned and operated by the Harris Health System.. All of these sites are utilized for medical student education.

The department administers the required third-year clerkship in Family Medicine and a required fourth-year preceptorship in Family Medicine in addition to offering multiple electives.

The department also administers The Family Medicine Residency Training Program. This residency program offers training in the full scope of clinical activities that prepare graduates for practice in both rural and urban settings.

The department is actively involved in research and scholarly activity at its multiple sites.

The C. Frank Webber Chair in Family Medicine, Professor and Chair

Moreno, Carlos A., MD, MSPH

Professor and Vice Chair

Fowler, Grant, MD

Department of Integrative Biology and Pharmacology

The Department of Integrative Biology and Pharmacology (IBP) is interested in the cell biology, physiology and pharmacology of cell regulation and communication. Major research themes include the molecular mechanisms and spatiotemporal dynamics of membrane signaling, intracellular and metabolic signaling, the biology and physiology of cell-cell interactions, and the use of computational, structural and systems approaches to decipher signaling networks. These efforts are aimed at understanding how normal and abnormal cell function translates into whole

animal physiology and pathophysiology, and at exploring the molecular pharmacology of existing and novel therapeutics. In this context, IBP has research programs in cancer cell biology, cardiovascular biology, tissue regeneration and plasticity (especially in nerve and muscle), and neuronal signaling in injury, inflammation, and pain. The department also investigates GI and renal physiology, making extensive use of a wide range of genetically tractable model organisms including mice, *Drosophila*, Zebrafish, *Aplysia* and *Arabidopsis*; computational techniques including classical and advanced molecular dynamics simulations, structural bioinformatics, and novel bioinformatic approaches to interrogate gene expression data sets; and contemporary molecular cell biology, biochemistry and electrophysiology.

IBP has a, an advanced cell-imaging facility that provides for confocal, TIRF, electron, wide-field and confocal FLIM microscopy, high content screening as well as an IVIS system for small animal imaging. In addition, there is a new departmental core for electrophysiology. Research in IBP is further supported by outstanding core facilities located within the Medical School for microarray analysis, proteomics, high throughput siRNA and drug screening, high throughput real-time qPCR, DNA sequencing, SNP analysis, and high throughput quantitative ELISA.

IBP faculty teach Physiology and Pharmacology to medical students and run an active graduate studies program in Cell and Regulatory Biology. They participate in the University Centers for Membrane Biology and Clinical and Translation Sciences within the medical school and in several training grants, including those in Pharmacological Sciences and Computational Cancer Biology.

Vice-Dean of Research

Executive Director, The Brown Foundation Institute of Molecular Medicine

Professor and Chair

John S. Dunn Distinguished University Chair in Physiology and Medicine

Hancock, John, F., MA, MB, BChir, PhD, ScD, MRCP, FRACP

Professor and Vice-Chair

O'Neil, Roger, PhD

Department of Internal Medicine

The Department of Internal Medicine provides opportunities for students, residents, and fellows to acquire training in the broad field of internal medicine and its sub-disciplines. The training program is designed to include clinically enriching experiences in bedside internal medicine and ambulatory care, as well as contemplative exercises in which students, house staff, and faculty can explore the pathophysiology of disease processes and the physiologic and ethical basis for clinical decision-making.

A faculty of physicians and laboratory investigators has been carefully chosen and cultivated to ensure that interests in general internal medicine, the subspecialties, and investigative aspects of the discipline are represented.

The educational experiences of the department are housed at Memorial Hermann (MHH) - Texas Medical Center, Lyndon B. Johnson (LBJ) General Hospital, and UT MD Anderson Cancer Center. The third-year student clerkship involves a two-month period during which medical students rotate through two four-week rotations on the general medicine ward services at either MHH or LBJ Hospital. The eight-week clerkship includes didactics as well as formative and graded experiences with standardized patients. A separate one-week Geriatrics/Palliative Care clerkship, which is required of all students, is an excellent opportunity for students to be exposed to the corresponding patient population. In addition, several Internal Medicine subspecialties offer a three-week third-year elective to fulfill the medical school's required component of the curriculum. The Department offers a one-month selective in ambulatory care as part of the required fourth-year ambulatory experience, a one-month selective in advanced patient care as part of the required fourth-year in-patient experience, and a one-month selective in critical care as part of the required fourth-year critical care experience. In addition, fourth-year electives are offered in each of the subspecialties of Internal Medicine.

The Department offers a three-year fully accredited Medicine Residency Program. The first of these three years, termed the PGY-1 year, is devoted to experiences in general internal medicine and subspecialty services, ambulatory care experiences in the Emergency Center and Ambulatory Care Center, and critical care experiences in the intensive and coronary care units. The inpatient services are located in the Memorial Hermann Hospital-Texas Medical Center, LBJ, Michael E. DeBakey VA Medical Center, and UT MD Anderson Cancer Center. In the remaining two years of the internal medicine training program, PGY-2 and PGY-3 residents spend time on consultative services in the subspecialties, in addition to further rotations on hospital inpatient services.

The department also offers a combined Internal Medicine/Pediatrics Residency Program. This four-year program splits each academic year into a six-month experience in internal medicine and the other six months in pediatrics. Upon completion of this training program, the resident is board-eligible in both fields.

Fellowship programs are available in each of the internal medicine subspecialties (see under subspecialties of Internal Medicine).

Chair and Professor

McPherson, David MD

Executive Vice Chair

Finkel, Kevin W., MD

Vice Chair for Divisions

Johnson, Philip C., MD

Vice Chair for Divisions

Fallon, Michael B., MD

Vice Chair for Education

Orlander, Philip, MD

Vice Chair for Research

Milewicz, Dianna M., MD, PhD

Vice Chair for Research

Reveille, John D., MD

Vice Chair for LBJ

Foringer, John R., MD

Vice Chair Quality

Khalid F. Almoosa, MD, MS, FCCP

Division of Cardiovascular Medicine

The Division of Cardiovascular Medicine provides medical students, residents, and fellows with a vision for world-class excellence, an opportunity to acquire comprehensive clinical training, and the expertise to carry out both basic and clinical cardiovascular research. Emphasis is placed on new ideas and approaches to experimental and clinical problems, particularly those involving prevention, acute care, and advanced technology.

Division facilities include state-of-the-art cardiac catheterization and electrophysiology laboratories; a Heart and Vascular Institute which includes echocardiography, nuclear cardiology, P.E.T., cardiac CT and CTCA, peripheral vascular facilities, and a center for statistical programs and core angiographic image processing; an angiographic animal laboratory; animal physiology laboratories; and extensive metabolic, biochemistry, and molecular biology research laboratories. There is a 17-bed coronary-care unit at Memorial Hermann - Texas Medical Center and a 56-

bed intermediate unit dedicated to cardiovascular patients. The P.E.T. facility features positron and CT imaging, and a cyclotron.

A cadre of outstanding faculty provides excellence across the spectrum of cardiovascular medical science. They practice and teach clinical diagnosis and management of problems such as heart failure, coronary artery disease, arrhythmias, valvular disease, cardiogenic shock, congenital heart disease in the adult, peripheral vascular disease, cardiovascular disease prevention, and cardiac rehabilitation. An important part of training is integrating cardiac technology with the art of medicine and the role of subspecialty consultation.

Novel aspects of cardiovascular interventions include percutaneous ASD and PFO closure, carotid stenting, endovascular AAA repair, percutaneous intervention for hypertrophic cardiomyopathy, percutaneous left ventricular assist devices, cutting edge treatment for myocardial infarction (including stem cell therapy and pre-hospital fibrinolysis), heart and lung transplant, percutaneous interventional aortic and mitral valve placement procedures, mitral clip, and peripheral interventions. There is state-of-the-art imaging including PET. for sophisticated myocardial metabolism; 3D echo for cardiac synchronization therapy, CT angiography and cardiac MRI; and robust research in myocardial metabolism, development of agents for targeted drug and gene delivery, stem cell therapy, genetics of aortic aneurysm formation, and myocardial salvage therapies.

Clinical Cardiac Electrophysiology is active and dynamic in providing a high standard of care to the patients with heart rhythm disorders. Highly skilled EP faculty members routinely perform complex and novel procedures, such as ablation for atrial fibrillation and ischemic ventricular tachycardia, in addition to the standard procedures such as ablation for typical SVTs, accessory bypass tracts, implantations of pacemakers, ICDs, and cardiac resynchronization (CRT) devices. These procedures are performed in the state-of-the-art electrophysiology laboratories equipped with bi-plane imaging and other cutting edge technologies, including 3-dimensional Electroanatomical CARTO and NaVx mapping systems, phase array intracardiac echocardiography, and a laser and non-laser lead extraction system.

On the education front, the division runs one of the nation's largest and most prestigious and sought after Fellowship Training Programs in Cardiovascular Medicine, Interventional Cardiovascular Medicine, Clinical Cardiac Electrophysiology, and Cardiac Imaging. There is a major affiliation with the Cardiovascular Department at UT MD Anderson Cancer Center, and the division is responsible for the Cardiovascular Medicine Service at the Lyndon B. Johnson General Hospital. In addition, the department provides consultative cardiology and imaging support for cardiovascular patients at the Texas Institute for Rehabilitation and Research Hospital.

Professor and Director
Division of Cardiovascular Medicine
Chair of Internal Medicine
Medical Director Heart & Vascular Institute
Memorial Hermann - Texas Medical Center
 McPherson, David D., MD, FAHA

Division of Hyperbaric Medicine and Wound Care

The division of Hyperbaric Medicine and Wound Care facilitates the treatment of acute and chronic indicated conditions with oxygen by using pressures greater than atmospheric (room air). Indicated conditions include decompression sickness (the bends), severe tissue infections, chronic and deep or infected diabetic foot ulcers, sudden loss of vision due to blockage of blood flow, carbon monoxide poisoning, delayed radiation injury, and air or gas trapped in blood vessels.

Division of Clinical and Translational Sciences

The Division of Clinical and Translational Sciences (DCTS) serves as a primary home for faculty in Biostatistics/Epidemiology/Research Design (BERD), a core component of the Center for Clinical and Translational Science (CCTS). CCTS was established in 2006 by one of the first 12 National Institutes of Health (NIH) Clinical and Translational Awards (CTSA), which were designed to transform clinical research at academic institutions.

DCTS aims to link academic and community health centers across local, regional, national, and international collaborative networks to increase the efficiency, quality, and impact of clinical and translational research on patient-centered outcomes and population health. From the broad patient-centered perspective, this division applies cutting-edge theory and technology to determine the most appropriate, ethical, and cost effective study design, data quality assurance, and analysis strategies needed to answer important clinical and translational research questions conclusively.

DCTS provides leadership in the establishment, development, coordination, and delivery of biostatistics, epidemiology, and research design expertise to investigators. DCTS faculty members collaborate with methodologic experts across our CCTS and the CTSA-affiliated networks. For example, DCTS faculty have active collaborations with BERD experts at UT MD Anderson Cancer Center, UT Health School of Public Health, and UTHealth Center for Clinical Research and Evidence Based Medicine to extend the application of adaptive Bayesian trial designs developed for cancer and non-cancer health issues such as stroke and heart failure.

The mission of DCTS is to promote innovative, state-of-the-art clinical and translational (CT) research of maximum public health and scientific benefit by contributing to the enhancement and further development of CT research infrastructure within DCTS and across UTHealth; developing short- and long-term collaborations between CT investigators and members of our network of BERD experts; contribute to the formal training and mentoring of the next generation of CT scientists with the necessary BERD skills they need to be successful; and contributing to advances in BERD within CT research.

DCTS supports research with a particular focus on study design, data management, and statistical analysis, and interpretation is provided by DCTS in one or more of the following capacities: collaboration, consultation, or fee-for service. Additionally, DCTS also has expertise in managing large data coordinating centers and data cores, clinical trial services, grant proposal support, publication support, statistical analysis plan and sample size calculation, randomization schemes, stopping rules, designing adaptive trials, and other related services. DCTS faculty members are committed to customer service, which is a basic premise for interaction with investigators in various CCTS-affiliated institutions, schools, and departments. The initial BERD consultation to assess an investigator's research needs is offered free of charge. After the initial consult, DCTS faculty members make an assessment regarding the needs of the project.

DCTS mainly handles clinical research in areas including, but not limited to, clinical trials, data management analysis, autism spectrum disorders, environmental sciences, genetics, methodology development, stroke, and trauma. In collaboration with networks of investigators from other departments, universities, and regional, national, and international organizations, the division both leads and supports numerous grants and projects funded by NIH and other agencies.

Division of Endocrinology, Diabetes and Metabolism

The Division of Endocrinology, Diabetes, and Metabolism offers comprehensive training in the areas of diabetes mellitus, reproductive endocrinology, thyroid disorders, calcium and bone metabolism, pituitary abnormalities, and other endocrine disorders. An elective for third- and fourth-year medical students is available monthly.

Students and residents rotate through consultative services at the Memorial Hermann (MHH) – Texas Medical Center and the Lyndon B. Johnson General (LBJ) Hospital, in addition to the clinics. Ambulatory teaching at the endocrine clinics is an integral part of the clinical elective and is conducted at the UT Endocrinology and Diabetes Clinic in the UT Professional Building and at the Harris County Endocrinology and Diabetes Clinic at Quentin Mease Community Hospital. The Quentin Mease clinic sees patients on a referral basis from the community clinics and includes a substantial number of patients with thyroid disorders and neoplasms. There is a weekly thyroid nodule clinic with ultrasound and fine needle aspirations, as well as a twice-weekly reproductive endocrinology clinic. There are several divisional conferences: Faculty Didactic, Fellows Didactic, Endocrine Tumor Board, journal club, and a weekly citywide conference including faculty from Baylor, UT MD Anderson Cancer Center, and surrounding institutions.

There are several major areas of active research in the division. Clinical research interests of the endocrine faculty include insulin resistance and ovulatory dysfunction (Dr. Nader), cardiovascular consequences of diabetes (Dr. Orlander), lipid disorders and diabetes (Dr. Gutierrez), and thyroid neoplasia (Dr. Varghese).

The division offers a two-year fellowship in Endocrinology, Diabetes and Metabolism, which includes pediatric endocrinology, reproductive endocrinology, and nuclear medicine rotations at Memorial Hermann (MHH) - Texas Medical Center, Lyndon B. Johnson General (LBJ) Hospital, and UT MD Anderson Cancer Center. There is opportunity for extensive experience with insulin pump therapy and intensive insulin management in the inpatient and outpatient setting.

Division of Gastroenterology, Hepatology and Nutrition

The Division of Gastroenterology, Hepatology and Nutrition provides clinical training opportunities for medical students, house staff, and fellows at both Memorial Hermann - Texas Medical Center and LBJ General Hospitals. Members of the consult team at both institutions encounter a wide variety of primary or associated gastrointestinal diseases and develop diagnostic and therapeutic options for individual patients through a series of rounds and teaching conferences.

The introduction of video endoscopy provides students and house staff with an enhanced ability to correlate specific endoscopic findings with clinical and laboratory abnormalities. An active Hepatology/Liver Transplant service allows students and house staff to participate in the diagnosis and therapy of complex liver diseases. Educational emphasis is placed on integrating the clinical, diagnostic, and therapeutic capabilities of the gastroenterologist into the overall care of the patient, with development of an appreciation of the skills and judgment required for prudent use of the array of various diagnostic procedures available.

A series of weekly clinical, radiology, physiology, and pathology conferences allows for the development of a strong theoretical background and supplements the clinical experiences in the service.

The gastroenterology fellowship training program and its affiliated hospitals (Memorial Hermann (MHH) - Texas Medical Center, Lyndon B. Johnson General (LBJ) Hospital, and UT MD Anderson Cancer Center) offer clinical training for the fellows in the development of cognitive, diagnostic, and therapeutic skills involved in the practice of gastroenterology and hepatology. Both clinical and basic research opportunities are provided, with particular emphasis on intestinal function that includes problems of diarrhea, intestinal motility, fluid and electrolyte transport, and carcinogenesis. Additional research opportunities are available in clinical hepatology/transplant and nutrition. Additionally, the division has a one-year advanced endoscopic fellowship for physicians who have completed an accredited gastroenterology fellowship program and want to gain knowledge and expertise in performing advanced endoscopic procedures.

Division of General Medicine

The Division of General Medicine has an active program involving teaching, patient care, and research. A major responsibility of the division is clinical care, which includes teaching ambulatory care at any of four ambulatory clinic sites. Division faculty are also involved in HIV care and teaching at the Thomas Street AIDS Clinic, a facility of the Harris County Hospital District. Activities at Memorial Hermann (MHH) – Texas Medical Center, Lyndon B. Johnson General (LBJ) Hospital, and the UT Harris County Psychiatric Center include supervision of a general medicine consultation service and participation on the majority of the Internal Medicine inpatient ward services throughout the year.

Training of house officers and medical students is a priority of the division. House officers are assigned to the ambulatory care services. Additionally, each house officer meets weekly with a panel of patients and follows this group of patients throughout the training program. All ambulatory clinic activities are supervised by full-time faculty who provide an active, multi-disciplinary teaching program. The opportunity to acquire a formal education is provided by all inpatient ward teams, consult services staffed by full-time attending faculty, and house officers who provide consultation to all specialty groups within the hospital.

Research activities of the division focus on safety and access to health care by adults, including marginalized populations. The General Medicine faculty have several NIH-sponsored grants in patient safety and the treatment of obesity. Other research efforts include the validity of data on the Internet and HIV treatment and compliance. Several faculty are involved in research in the area of teaching medical students and residents.

The Division of General Medicine faculty is dedicated to providing excellent training programs. Faculty in the division lead the Internal Medicine House Staff Program, the core rotation in Internal Medicine, and the Physical Diagnosis Course.

Division of Geriatric and Palliative Medicine

The Division of Geriatric and Palliative Medicine was established to prepare students from all health care disciplines, as well as residents, to care for older patients and skillfully provide compassionate end of life care. In order to do this, geriatric and palliative medicine services have been established at both the Lyndon B. Johnson General (LBJ) and Memorial Hermann (MHH) – Texas Medical Center to serve diverse sectors of the community and provide both public and private training sites. Trainees attend interdisciplinary team meetings and teaching conferences such as journal club, webinar presentations, and Huffington lecture series. Clinical areas include acute and chronic geriatric medicine, palliative medicine, pain control, elder mistreatment, and wound care. Clinical settings include patient units at Lyndon B. Johnson General (LBJ) and Memorial Hermann (MHH) – Texas Medical Center, public and private outpatient clinics, and house calls.

The Division offers two fellowship programs in Geriatric Medicine and Hospice and Palliative Medicine. The Geriatric Medicine program was established for Internal Medicine or Family Practice residents who wish to become geriatricians. This fellowship is currently a one-year clinical fellowship which will be expanded in future years to a two-year fellowship in order to offer research and clinical education. The Hospice and Palliative Medicine program was established for Internal Medicine, Family Practice, Pediatrics, and Internal Medicine/Pediatrics residents who wish to become palliative care physicians. This fellowship program is currently a one-year clinical fellowship.

Professor and Division Director

Roy M. and Phyllis Gough Huffington Chair in Gerontology

Dyer, Carmel, MD

Division of Hematology

Education: The Hematology Division's major academic goal is to promote the understanding of a wide scope of hematological diseases. The diagnosis and management of these diseases require broadly-based knowledge of bone marrow physiology and biochemistry, tumor cell growth, hemostasis and thrombosis, red blood cells and hemoglobin molecular biology, and immunology. The division is responsible for training medical students, residents, and subspecialty fellows in clinical hematology. At any given time, there are 4-5 trainees on the hematology service.

Clinical: The Hematology Division provides both inpatient and ambulatory care services. It provides consultation services at Memorial Hermann (MHH)– Texas Medical Center and Lyndon B. Johnson General (LBJ) hospitals. Dr. Miguel Escobar directs the Gulf States Hemophilia Diagnostic Treatment Center and has an academic appointment in the Hematology Division as well.

The UT Physicians Comprehensive Sickle Cell Center Clinic was opened in mid-August, 2015. It is funded by a Network Access Improvement Program (NAIP) grant from the Centers for Medicare & Medicaid Services (CMS). It is a free-standing clinic, which will function as a "sickle cell home". The major aims of the Sickle Cell Center are to decrease the disease burden in patients and their families and to treat patients at the clinic in order to reduce the need for emergency visits and hospitalizations.

Research: The Hematology Division has developed strong, cohesive NIH-supported research programs focusing on the biochemistry and cell biology of several heme-containing proteins, including the cell and molecular biology of prostaglandin and nitric oxide synthases, nitric oxide sensors, hemoglobin and cytochrome b reductase 1. These basic and clinical investigations have greatly enhanced the understanding of endothelial cell and blood cell functions in the contexts of health and disease. Clinical faculty members, in collaboration with the Department of Biochemistry and Molecular Biology, are investigating the role of several metabolites, including adenosine, in sickling of red blood cells.

Collaborations: Hematology Division faculty members have extensive interactions with faculty elsewhere in McGovern Medical School (Biochemistry & Molecular Biology, Pathology & laboratory Medicine, and Integrative Biology & Pharmacology), the clinical fellowship program in hematology-oncology at UT MD Anderson Cancer Center, and at Baylor College of Medicine (Texas Children's Hematology Center). These interactions enhance research, teaching, and patient activities.

Division of Infectious Diseases

Busy consultative services at Memorial Hermann (MHH)- Texas Medical Center and Lyndon B. Johnson General (LBJ) Hospital and outpatient practices at Thomas Street Health Center, UT Physicians, and the Bellaire clinic provide fellows (in general Infectious Diseases, HIV medicine, and Transplant Infectious Diseases), medical residents, and fourth-year medical students the opportunity to learn about infectious diseases under the direction of one of the faculty members.

Division faculty members provide medical students and house staff with the opportunity to obtain information on clinical diagnosis and treatment of infectious illness, infection control procedures in the prevention of nosocomial infection, diagnostic bacteriology and virology, appropriate use of antimicrobial agents, and host factors important to pathogenesis of infection. Two weekly medical student/house staff clinical conferences (one focused on general ID clinical cases and the other on Transplant ID and HIV medicine), a weekly journal club, and a weekly citywide conference are conducted to provide the opportunity to acquire the principles of the diagnosis and management of infectious diseases.

NIH-funded research is an important component of the division's activities, which, together with industry-funded research on *in vitro* studies, preclinical evaluations, and clinical trials, provides many opportunities for learning about and carrying out research projects relating to HIV, antibiotic resistance, infection prevention and antibiotic stewardship, and viral causes of meningoencephalitis, among others.

Division of Medical Genetics

The division's program provides medical students and house staff exposure to the rapidly expanding field of human genetic diseases. Clinical services focus on diagnosing adult onset genetic diseases, genetic counseling, and the pre-symptomatic diagnosis of genetic disorders. Clinical training is provided through consult services at Memorial Hermann (MHH) – Texas Medical Center, Texas Heart Institute/St. Luke's Hospital, and outpatient clinics. Clinical and basic research opportunities are available in the field of cardiovascular genetic diseases. Teaching conferences are held two times a week.

Division of Oncology

The aim of the Division of Oncology is to practice and teach excellence in medicine by highlighting cancer biology through clinical research and applying that knowledge to diagnosis and patient care. Through a multimodal approach to cancer care that emphasizes integrated roles of medical, surgical, and radiation oncology, students are exposed to both common and rare presentations of cancer. Faculty members are specialists in various tumor systems (e.g., urologic, gastrointestinal, gynecologic, thoracic, and hematologic cancers). Additionally, the department actively recruits other tumor specialists and academic-community general oncologists. Staff includes research nurses and coordinators, research scientists and laboratory technicians, regulatory specialists, bioinformatics and statistics staff, a genetic counselor, and a scientific editor – all of whom are available to assist with the Division's educational mandate.

The division's busy research program provides students with the opportunity to gain experience in translational research, giving them the bench-to-bedside training needed for physician-scientists. The division's approach combines research with standard of care therapy, focusing on cellular and molecular biology, pathology, surgery, radiotherapy, and the role of radiology, neurology, psychiatry, immunology, and palliative care in the treatment of patients with cancer. Molecular biology and genomics are taught as the basis of cancer diagnosis and therapy. By analyzing data, gathering evidence, and summarizing findings based on the application of the principles of scientific method, coherent conclusions regarding diagnosis and subsequent treatment are reached. The division faculty members also discuss the current social and economic issues of cancer care. All this is done within the framework of a process of critical thinking under the leadership of the diversely skilled division faculty.

The division's research efforts are enabled by our fully-equipped laboratory and our IRB-approved tissue banking and genomic repository protocols. Active research protocols include:

- Determining correspondences between pathologic features and molecular alterations in tumor tissue
- Detecting molecular alterations associated with treatment assignment and response
- Enumeration of circulating tumor cells (CTCs) from cancer patients
- Isolation of CTCs for characterization of molecular alterations and 3D cell culture
- Development of mouse models for specific tumor systems using patient xenografts
- Exploration of new techniques in proteomics, messenger RNA, microRNA, and free circulating DNA as cancer biomarkers

The division has a close partnership with the Memorial Hermann Health System; it oversees the Memorial Hermann Cancer Center, works closely with both Memorial Hermann and UT Physicians, and has a large regional referral base. This provides ample hands-on teaching opportunities for students and residents (and, in the near future, post-doctoral fellows) in both standards of care and new and emerging oncology treatments such as clinical trials in new chemotherapy drugs and regimens, cancer vaccines, immunotherapies, and molecular targeted agents.

Educational offerings include mentorship opportunities, Seminar Series, Grand Rounds, specific tumor boards, journal club meetings, and patient care conferences, as well as several didactic teaching sessions that cover topics ranging from common malignancies to cutting-edge developments in the field of oncology. Students are also welcome at weekly research meetings reporting the progress of our ongoing research projects.

The division's primary goal – to combine the highest quality clinical care with cutting-edge research – is tied closely to its educational mandate. The Division of Oncology is dedicated to creating the physician-scientists of the future.

Division of Pulmonary, Critical Care and Sleep Medicine

The teaching program of the Division of Pulmonary, Critical Care and Sleep Medicine provides opportunities for students, residents, and fellows to acquire education in the basic and clinical aspects of pulmonary diseases, critical care, and sleep medicine. Emphasis is placed on pathophysiology, pulmonary diagnosis and therapy, critical care management, mechanical ventilation, pulmonary function testing, exercise testing, polysomnography diagnostic techniques, and the clinical evidenced-based approach to diseases of the chest, sleep disorders, and diseases of the critically ill.

Students in the fourth-year at McGovern Medical School participate in the Required Critical Care Course. Students rotate through the Intensive Care Unit, receive multidisciplinary didactic curriculum in Critical Care Medicine, and participate in skill sessions utilizing bedside ultrasound and simulation. The students rotate through one of various Intensive Care Units, including: the Medical ICU (MICU), Shock-Trauma ICU, Neurologic Trauma ICU, Transplant Surgical ICU, Cardiovascular Surgery ICU, and Cardiac Care Unit or Heart Transplant ICU at Memorial Hermann (MHH) – Texas Medical Center; the Pediatric ICU at the Children's Memorial Hermann Hospital; the Medical-Surgical ICU (MSICU) at the Lyndon B. Johnson General (LBJ) Hospital; and the Medical and Surgical ICUs at UT MD Anderson Cancer Center. During their critical care rotations, the residents rotate through the MICU at Memorial Hermann (MHH) – Texas Medical Center and MSICU at Lyndon B. General (LBJ) Hospital on multidisciplinary teams lead by faculty and fellows. Pulmonary consult services at Memorial Hermann (MHH) – Texas Medical Center and the Lyndon B. Johnson General (LBJ) Hospital offer education in inpatient and outpatient pulmonary disease, pulmonary function testing, cardiopulmonary exercise testing, and post-operative surgery critical care. Ambulatory teaching at the pulmonary and sleep clinics is an integral part of the clinical elective and is conducted at UT Pulmonary Clinic and UT Sleep Clinic in the UT Professional Building, the Harris County Pulmonary Clinic at Lyndon B. Johnson General (LBJ) Hospital and the Harris County Sleep Clinics at Quentin Mease Hospital. Student and resident electives in sleep medicine are available at Memorial Hermann (MHH) – Texas Medical Center and Lyndon B. Johnson General (LBJ) Hospital. The sleep medicine elective at Memorial Hermann (MHH) – Texas Medical Center includes both pediatric and adult sleep medicine, as well as sleep clinics at McGovern Medical School and Quentin Mease Hospital.

There are several conferences: weekly pulmonary, critical care and sleep medicine multidisciplinary grand rounds and clinical case conferences; monthly journal club conferences; radiology and pathology conferences; performance

improvement conferences; research conferences; a pathophysiology conference; and a citywide sleep conference which includes faculty from Baylor, UT MD Anderson Cancer Center, and surrounding institutions. Faculty from McGovern Medical School and UT MD Anderson Cancer Center facilitate fifteen conferences per month, as well as weekly skills sessions in the Clinical Skills Center for fourth-year medical students during the critical care elective. Residents and fourth-year students are expected to attend and participate in all of the scheduled conferences.

The divisions offer two ACGME-accredited clinical fellowships: (1) a three-year fellowship in Pulmonary and Critical Care Medicine, which includes rotations at Memorial Hermann (MHH) – Texas Medical Center, UT MD Anderson Cancer Center, Lyndon B. Johnson General (LBJ) Hospital, and Kindred Hospital in pulmonary, medical and surgical critical care, interventional bronchoscopy, and sleep medicine, and (2) a one-year fellowship in sleep medicine with rotations at the Memorial Hermann (MHH) – Texas Medical Center Sleep Disorders Center, the Harris Health Sleep Disorders Center at Quentin Meese Hospital, and the UT MD Anderson Cancer Center Sleep Laboratory, as well as sleep clinics at Quentin Mease Hospital and the UT Professional Building in the Texas Medical Center. Sleep fellows learn all the aspects of sleep medicine in all age groups, including children.

There are several major areas of active research in sleep medicine, interstitial lung disease, pulmonary hypertension, critical care, chronic heart failure and medical ethics.

The Division of Renal Diseases and Hypertension

The Division of Renal Diseases and Hypertension strives to provide state-of-the-art patient care, innovative teaching, and cutting-edge research. These efforts are fostered by a dedicated and talented faculty of physicians and scientists, a vital and progressive academic community, and a rich clinical environment with a tradition of excellence in patient care.

The division has long been acknowledged as a center for teaching excellence for medical students, residents, and nephrology fellows. The division provides a superb clinical experience at four hospitals, three outpatient clinic sites, and two outpatient dialysis facilities. A large and diverse patient population provides students, residents, and fellows with stimulating and unique training experiences and the opportunity to apply new advances in renal diseases and hypertension to their clinical practice.

The division offers unique rotations in Critical Care Nephrology, Transplant Medicine, and Onco-Nephrology (at UT MD Anderson Cancer Center). The division also provides clinical consultation in all aspects of general nephrology, including: diabetic nephropathy; glomerulonephritis; fluid, acid-base, mineral, and electrolyte metabolism; and hypertension. The division also provides acute dialysis services, including a large number of continuous renal replacement therapies, for inpatients, as well as outpatient dialysis to a large population of patients.

Division of Rheumatology and Clinical Immunogenetics

This division emphasizes excellence in teaching, basic and clinical investigation, and patient care relevant to rheumatic and autoimmune diseases. Clinical and investigative training is available for students, house staff, and the postdoctoral fellows. Full-time faculty members participate in teaching and patient care activities in clinics in UT Professional Building, the Thomas Street HIV Clinic, and the Internal Medicine Inpatient Services of Memorial Hermann (MHH) – Texas Medical Center and Lyndon B. Johnson General (LBJ) hospitals.

Basic and clinical investigative interests focus on the multisystem rheumatic diseases, especially ankylosing spondylitis, scleroderma, systemic lupus erythematosus, and HIV-associated rheumatic diseases. . Genetic control of disease susceptibility, functional genomics, autoantibody production, outcome studies, and pathogenic mechanisms, especially by the HLA and other genetic systems, is a major research interest and provides many projects, technologies, and collaborations for interested trainees.

Division Director

Professor, George S. Bruce, Jr. Professorship in Arthritis and Other Rheumatic Diseases and Linda and Ronny Finger Foundation Distinguished Chair in Neuroimmunologic Disorders Director

Reville, John D., MD

Professor and Elizabeth Bidgood Chair in Rheumatology

Mayes, Maureen D., MD, MPH

Professor and Linda K. Finger Chair in Autoimmune and Connective Tissue Diseases

Tan, Filemon K., MD, PhD, (Fellowship Program Director)

Department of Microbiology and Molecular Genetics

The faculty of the Department of Microbiology and Molecular Genetics has a shared research mission to discern molecular mechanisms of microbial fitness. For microbial pathogens, fitness can be defined as the ability to survive and reproduce in the host environment, and ultimately spread to new hosts. Microbial pathogen fitness is dependent upon the ability of the microbe to sense and use nutrients available in specific host niches. Departmental faculty members investigate a variety of microbial systems using multiple aspects of molecular and cellular biology, genetics, and biochemistry.

In the first-year Microbiology course, medical students acquire knowledge of bacteria, fungi, parasites, and viruses important to human disease.

The course is taught by departmental faculty and other faculty holding cross and adjunct appointments.

Professor and Chair

Koehler, Theresa M., PhD

Department of Nanomedicine and Biomedical Engineering

The objective of this department is focused on inter-disciplinary research to combine nanomedicine, biomedical engineering, and computational sciences to develop novel therapeutic and diagnostic platforms for preventing and combating diseases including cancer, cardiovascular diseases, and infectious diseases. Areas of active research include nanomedicine, genomics, proteomics, imaging, drug discovery, and regenerative medicine.

A NanoMedicine and Biomedical Engineering Scholarly Concentration is designed to offer the student the opportunity to learn emerging new technologies in biomedical nanotechnology and engineering.

A series of cross-appointments with faculty in other departments, divisions, and units, in addition to adjunct appointments with faculty in other Texas Medical Center institutions, are utilized to enhance transdisciplinary research and expand the available opportunities for the training and teaching of students.

Professor and Chair

Gorenstein, David, PhD

Department of Neurobiology and Anatomy

The Department of Neurobiology and Anatomy provides educational research and training programs in the anatomical sciences and fundamental neurosciences.

Faculty members in the department make substantial contributions to McGovern Medical School curriculum. In the Foundations of Medicine module given in the fall of first year, areas of strength include gross anatomy, developmental anatomy, and introductory neuroscience. By coordinating anatomy and physiology, students have the opportunity to acquire a fundamental knowledge of the anatomical structure of the human body and its relevance to medicine, emphasizing, among other things, the relationship of structure to function. The Nervous

System and Behavior module given in the fall of second year presents an advanced application of neurobiological principles to neurological and psychiatric disease. Areas of emphasis include (neuro)anatomy, neurophysiology, neuropharmacology, neurochemistry, developmental neurobiology, neuroendocrinology, neuropathology, and neuropsychology. The department participates in the elective program for medical students and in postgraduate seminars and presentations related to human morphology and the nervous system.

Laboratory electives in single or multidisciplinary areas are available to medical students and graduate students, as are special research projects and fellowships, either clinically related or directed toward basic science research. In addition, the department offers a seminar series as an integral part of its didactic program for both faculty and students. Department faculty members have diverse research programs in the neurosciences, with a particular focus on issues related to neuronal plasticity and learning and memory.

Learn more about the Department of Neurobiology and Anatomy by visiting our website at <http://nba.uth.tmc.edu>.

June and Virgil Waggoner Chair and Professor

Byrne, John H., PhD

Nina and Michael Zilkha Distinguished Chair in Neurodegenerative Disease Research

Dash, Pramod, PhD

Department of Neurology

The Department of Neurology provides medical education opportunities in clinical neurology at undergraduate, graduate, and postgraduate levels of training. The clinical facilities of Memorial Hermann (MHH) - Texas Medical Center and Lyndon B. Johnson General (LBJ) Hospital are available for the care and study of a variety of acute and chronic neurological disorders. A four-week clerkship is required in the third year. Clinical experience is directed toward history-taking, physical and laboratory examinations relevant to neurological disease, and the management of neurological disorders such as stroke, epilepsy, multiple sclerosis, coma, muscle/nerve disorders, Parkinsonism, and dementia. Also available are several fourth-year electives which provide advanced exposure to neurologic subspecialties in out-patient offices, as well as a sub-internship on the stroke unit at Memorial Hermann (MHH) – Texas Medical Center. The department also provides opportunities for mentored laboratory and clinical research throughout the student and resident educational continuum. Summer research electives are available for students in the MS1 and MS2 years. Education and mentoring is a central theme within the Cerebrovascular Research Group, beginning at the high school level. Undergraduate, graduate, post-graduate, resident and fellowship level experiences are available through many mechanisms. The primary goal is to provide a rich educational environment that will prepare undergraduates, graduates and fellows for the interdisciplinary challenges that will lie ahead in their own careers.

Fellowships are available in clinical neurophysiology (Electroencephalography-EEG, Electromyography & Nerve conduction studies, Intraoperative monitoring-IOM, sleep polysomnography, and evoked potentials), stroke, epilepsy, movement disorders, multiple sclerosis/neurovirology neuroimmunology, and neuropsychiatry and behavioral neurology.

Professors

Interim Chair, and Bartels Family and Opal C. Rankin Professor Neurology

Wolinsky, Jerry S, MD

Roy M. and Phyllis Gough Huffington Chair in Neurology

Aronowski, Jarek, PhD

Frank M. Yatsu, MD Chair in Neurology

Savitz, Sean I, MD

Adriana Blood Chair in Neurology

Schiess, Mya C, MD

James C. Grotta, MD Chair in Neurological Recovery and Stroke

Noser, Elizabeth A, MD

Department of Neurosurgery

The Department of Neurosurgery is concerned with the diagnosis and treatment of conditions affecting the brain, spinal cord, and peripheral nerves, especially those best treated by surgical or endovascular intervention. As part of the fourth-year neurology/neurosurgery rotation, students participate with neurosurgeons in the operating room, at the bedside, and in outpatient activities. Emphasis is placed on information of general interest, such as neurological examination, management of acute head injury, care of patients with vascular or neoplastic diseases of the nervous system, spinal disorders, and evaluation and management of patients with intractable pain. Students are given an opportunity to become familiar with and know how to recognize neurosurgery problems.

An elective period of study can be arranged for interested students who have adequate background to pursue more specific areas within the field of neurosurgery.

Professor and Chair

Kim, Dong H., MD

Department of Obstetrics, Gynecology and Reproductive Sciences

This department's primary purpose is the education of medical students, resident house staff, fellows, and practicing physicians in the broad areas of primary health care of women and reproductive biology. Educational programs, designed to integrate basic biologic tenets with clinical practice, are provided by a faculty with training in general obstetrics and gynecology, and subspecialty training in maternal and fetal medicine, urogynecology, gynecologic oncology, and reproductive endocrinology and infertility. The principles of maternal and fetal medicine, family planning and population control, medical and surgical gynecology, gynecologic oncology, reproductive endocrinology and infertility, sexuality, and primary care for women are taught in the ambulatory care setting, in the classroom, and in the facilities of Memorial Hermann (MHH) – Texas Medical Center, Memorial Hermann Memorial City, Memorial Hermann Katy, Memorial Hermann Southeast, Memorial Hermann Southwest, Memorial Hermann Sugar Land, Lyndon B. Johnson General (LBJ) Hospital, UT MD Anderson Cancer Center, and St. Joseph's Hospital.

The department is responsible for teaching reproductive biology, which is required for all second-year medical students. A six-week clinical clerkship for third-year students is conducted. The department also offers a wide variety of fourth-year electives in clinical and laboratory investigative aspects of the specialty.

The department is responsible for two separate but integrated residency programs in obstetrics and gynecology. One program is based at Memorial Hermann (MHH)- Texas Medical Center and the other at Lyndon B. Johnson General (LBJ) Hospital. There are cross-rotations between these programs, and experience is provided at Memorial Hermann (MHH) – Texas Medical Center, Memorial Hermann Hospital Plaza Ambulatory Surgical Center, Memorial Hermann Memorial City, Memorial Hermann Southwest, Memorial Hermann Sugar Land, The Woman's Hospital of Texas, UT MD Anderson Cancer Center, Lyndon B. Johnson (LBJ) General Hospital, and Houston Fertility Institute at Memorial Hermann Plaza. A program of post-doctoral and fellowship training in maternal and fetal medicine, as well as fetal intervention, is offered to qualified physicians. The department also offers, in conjunction with the UTHealth Graduate School of Biomedical Sciences, opportunities for study leading to advanced degrees in the reproductive sciences.

Emma Sue Hightower Professor and Chair
Department of Obstetrics, Gynecology & Reproductive Sciences
 Blackwell, Sean C., MD

Robert K. Creasy, MD Professor, Vice Chair, and Director of the General Obstetrics Division
 Katz, Allan R., MD

Department of Ophthalmology and Visual Science

The department provides a full complement of inpatient and outpatient clinical services through its primary teaching facilities: the Cizik Eye Clinic, Memorial Hermann Hospital (MHH) – Texas Medical Center, Lyndon B. Johnson (LBJ) General Hospital, Settegast Community Health Center, Baytown Community Clinic, and the Acres Home Community Health Center. In addition, indigent patients from San Jose Clinic are seen at the Cizik Eye Clinic, which is located on the 18th floor of the Memorial Hermann Medical Plaza. A complete spectrum of ophthalmology services is provided at the Cizik Eye Clinic, which has a low vision unit, a photography section, an electro-diagnostic unit, a pediatric unit, a minor surgery unit, and a contact lens unit.

McGovern Medical School coordinates all residency training programs. Each year, ophthalmology enrolls four residents out of approximately 400 applicants for the three-year residency program. Approximately 75 percent of the department's graduating residents continue in fellowships of advanced subspecialty training under the department's faculty or in some other ophthalmology program. Monthly resident conferences and rounds include grand rounds, ethics rounds, journal club, photography conference, and case conferences in addition to reviews in basic and clinical science specialty lecture series. The department offers a month-long basic science course in ophthalmology, as well as various other continuing education courses throughout the year.

Vision research is a high priority of the department, with six full-time researchers on the faculty. A stimulating research environment is fostered by the collaborative relationships between McGovern Medical School and the UTHealth Schools of Health Information Sciences, Dentistry, Public Health, Nursing, and the Graduate School of Biomedical Sciences. In addition, UTHealth has a number of interdisciplinary centers, institutes, and programs.

The department's outstanding research faculty has collectively received many prestigious national grants and awards, including Research to Prevent Blindness (RPB) Career Development Awards, an RPB Dolly Green Scholars Award, grants from Fight for Sight, several major National Institutes of Health awards, and numerous grants from private research foundations. The department has held both a Core Grant for Vision Research and a Vision Training Grant from the National Eye Institute.

The department has strong ties to researchers in other departments of McGovern Medical School and other institutions in the Texas Medical Center, as well as with the College of Optometry at the University of Houston. A number of these individuals hold courtesy or joint appointments in the department. There are currently 10 to 12 collaborative research projects in addition to the clinical and basic science research being conducted by individual departmental faculty. The Cizik Eye Clinic is also a site for several clinical trial research projects.

Involvement in research is available and encouraged for the ophthalmologist in training; however, clinical ophthalmology is emphasized.

Clinical Professor and Chair
Richard S. Ruiz Distinguished University Chair
 Feldman, Robert M., MD

John S. Dunn Distinguished University Chair and Clinical Professor
 Ruiz, Richard S., MD

Elizabeth Morford Chair in Ophthalmology and Professor

Massey, Stephen C., PhD

Bernice Weingarten Chair in Ophthalmology and Clinical Professor

Garcia, Charles A., MD

Department of Orthopaedic Surgery

The department seeks to provide training for medical students, residents, and fellows in the field of orthopaedics. The training program incorporates scheduled rotations at several area institutions affiliated with the program for the purpose of education. These institutions include Memorial Hermann (MHH) – Texas Medical Center, and Lyndon B. Johnson (LBJ) General Hospital.

Orthopaedic training opportunities exist for fourth-year medical students as a four-week clinical rotation and for third-year medical students as a three-week clinical rotation. Operative and non-operative experiences are available as the students rotate through the different attendings' offices and the surgical suites, and students also participate in patient care on the floors.

Orthopaedic residents participate in a five-year residency program. The first year is under the faculty's direct supervision and includes rotations in general surgery, ICU, plastics/burns, trauma, anesthesiology, radiology, and rheumatology, in addition to six months in orthopaedics. The remaining four years are spent in the different sub-specialties of orthopaedics—foot and ankle, general orthopaedics, hand/upper extremity, pediatrics, spine, sports medicine, total joints, and trauma. The didactic/educational program includes weekly conferences covering all of the above sub-specialties, as well as anatomy, basic science, wet labs, oncology, research, and grand rounds.

Professor and Chair

Lowe, Walter, MD

Department of Otorhinolaryngology - Head and Neck Surgery

The Department of Otorhinolaryngology - Head and Neck Surgery conducts training programs for medical students and residents. The hospitals affiliated with this program are Memorial Hermann (MHH) – Texas Medical Center, Children's Memorial Hermann Hospital, UT MD Anderson Cancer Center, and Lyndon B. Johnson (LBJ) General Hospital.

Department faculty members participate in teaching medical student courses: in the first year, Developmental Anatomy, Neuroscience, and Computers in Research, and in the second year, Physical Diagnosis. Third-year medical students may complete a three-week pass-fail rotation in the department during the third year. Fourth-year medical students may select a four-week subinternship rotation on the service.

Residency training requires one year of surgical internship; mandatory rotations include general surgery, anesthesia, emergency medicine, intensive care, and other electives in surgical subspecialties. The first year is followed by four years in Otorhinolaryngology-Head and Neck Surgery. This includes eight to twelve months of training at UT MD Anderson Cancer Center. Two physicians are accepted each year into this residency program.

The department conducts a weekly continuing medical education lecture series by faculty and guest speakers, in addition to various educational activities including resident seminars, journal clubs, and multidisciplinary conferences.

Professor and Chair

Citardi, Martin J., MD, FACS

Professor, Vice Chair and Residency Program Director

Fakhri, Samer, MD, FACS, FRCS(C)

Department of Pathology and Laboratory Medicine

Pathologists produce approximately 70% of all data in medical records that influences the majority of all diagnostic and therapeutic decisions of medicine. Many scientific advances require new diagnostic tests and/or new interpretation of existing tests. Consequently, many, if not most, advances in the biologic sciences require pathologists to translate them into clinical practice. Pathologists have the tools to study tissues, body fluids, cells, cell interactions, DNA, RNA and proteins in the context of human disease with a precision not dreamt of even a decade ago. With a focus on the study disease as it exists in the human body, pathologic samples are becoming the material of choice for studying human diseases while animal and tissue culture studies are used for back up. Pathologists are uniquely positioned to discover new knowledge of human disease and to translate it into improved practices of medicine. *In toto*, pathologists seek to integrate clinical service, research and teaching in ways that enhance all of medicine. Pathology is taught longitudinally in the medical curriculum and in the graduate school and the department has fully accredited residency and fellowship programs in multiple disciplines.

Distinguished Chair in Molecular Pathology, Professor and Chair

Hunter, Robert L., Jr., MD, PhD

Rosenberg Chair in Pathology and Laboratory Medicine, Professor and Vice Chair

Brown, Robert E., MD

Distinguished Chair in Pathology and Laboratory Medicine, Professor and Vice Chair for Outreach

Ayala, Gustavo, MD

Professor and Vice Chair for Education

Uthman, Margaret O., MD

Robert Greer Professor and Vice Chair for Research

Norris, Steven J., PhD

Department of Pediatric Surgery

The Department of Pediatric Surgery provides the opportunity for third- and fourth-year students, as well as anesthesia, family practice, pediatric, and surgical house staff, to serve on its clinical services.

The department sub-specialty divisions include Pediatric Neurosurgery, Pediatric Plastic Surgery, and Pediatric Cardiovascular Surgery. Elective time for residents in other training programs is provided. The responsibilities of these residents are centered on pre- and post-operative diagnosis and care, nutritional therapy, and technical capabilities such as vascular access in the pediatric patient.

Division of Pediatric General and Thoracic Surgery

The division provides the opportunity for third- and fourth-year students, as well as anesthesia, family practice, pediatric, and surgical house staff, to serve on its clinical service. Third-year students spend time on the pediatric surgical service during their core clerkship in surgery. During this time, they are exposed to many of the surgical problems of childhood, congenital defects, traumatic injuries, and patients with childhood malignancies. Teaching sessions include a weekly residents conference and department grand rounds. The department's ambulatory clinics are an integral part of the teaching program. The students and residents interact daily with the pediatric surgery fellow, who is responsible for managing the service.

Fourth-year students may elect to spend one month in the division, where they function as acting interns. Particular attention is paid to the patients admitted to the pediatric intensive care units. In addition, both parenteral and enteral nutrition are emphasized, and fourth-year students are given the direct responsibility of administering these therapies under close supervision. Students may also rotate with the sections of pediatric urology or plastic surgery.

A.G. McNeese Chair in Pediatric General Surgery, and Professor and Chair

Lally, Kevin P., MD

George and Cynthia Mitchell Distinguished Chair in Neurosciences and Professor of Pediatric Surgery

Cox, Charles, MD

Division of Pediatric Trauma Nurse Practitioners

The Division of Pediatric Trauma Nurse Practitioners provides opportunities for medical students to spend time working with the trauma team in all units from the emergency department, operating room and all inpatient units. During this time, medical students are exposed to the comprehensive physical assessment of trauma patients. In addition, exposure to the medical and surgical management of trauma patients provides ongoing learning opportunities. There are also opportunities for research and publication in collaboration with the pediatric trauma surgical director and pediatric neurosurgeons.

Division of Pediatric Urology

The Division of Pediatric Urology offers an opportunity for medical students to be exposed to urological problems unique to children. Most pediatric urologists spend the majority of their time caring for children with urinary tract abnormalities. Students encounter a variety of clinical scenarios, from complex congenital abnormalities to routine outpatient care. In addition, there are opportunities to experience the counseling and potential interventions with prenatally diagnosed urological abnormalities. Pediatric urologists commonly treat children with hydroceles, hernias, testicular torsion, undescended testicles, malignancies of the bladder and testicle, vesicoureteral reflux, and urinary tract infections. In addition, students may encounter more complex urological problems such as posterior urethral valves, ureteropelvic junction obstruction, ambiguous genitalia, and bladder exstrophy.

Division of Pediatric Neurosurgery

Pediatric neurosurgeons in the division perform surgical procedures involving the entire spectrum of brain and spine pathology in children. The University of Texas Neurosurgeons for Children provides a comprehensive system of care for children with a variety of disorders of the nervous system. Based at Memorial Hermann Children's Hospital, the division has provided pediatric neurosurgical care since 1975. The division also has a combined brain tumor program with the UT MD Anderson Cancer Center which offers state-of-the-art care for children with brain tumors. Novel clinical trials, including some only offered at our center, are an important component of this combined program.

The division specializes in minimally invasive endoscopic brain surgeries for a variety of intracranial pathologies. In conjunction with the Texas Comprehensive Epilepsy Program, the division's epilepsy program is one of the largest in the country. Craniofacial abnormalities in children have been an interest here for 20 years. The neurosurgeons have great expertise in caring for children with Chiari Malformations and spina bifida, and the center performed the first in-utero repair for spina bifida in Texas. The division also provides comprehensive, multidisciplinary care for children with arteriovenous malformations and other vascular disorders of the brain. The non-surgical management of these problems has created a flow of patients to Houston from around the country and various parts of the world. The ability to transport extremely critical patients over long distance with one of the first air ambulance programs developed in the United States has resulted in saving many patients. The division is part of one of the largest pediatric neurosurgical trauma services in the country.

A consequence of having a large dedicated 24-hour critical neurosurgical service is the development of extensive experience not only in trauma, but other critical events such as pediatric vascular disease. The division's long standing interest in the surgical management of brain tumors is accentuated by the Gamma Knife Program.

Division faculty members work closely with associates at the UT MD Anderson Cancer Center to provide a comprehensive management scheme for nervous system cancer in children. Congenital anomalies are addressed on a daily basis. Complex spine disorders are handled at a variety of institutions, including a long-standing relationship with the Shriner's Hospital for Crippled Children in Houston. Taking the lead to help develop the Memorial Hermann Pediatric Neuroscience Center in conjunction with a variety of specialists in the neurosciences, division surgeons look forward to helping children with nervous system disorders.

Division of Pediatric Plastic and Reconstructive Surgery

The Division of Pediatric Plastic and Reconstructive Surgery provides opportunities for fourth-year medical students and externs after their first year of medical school to spend time working with the craniofacial team. During this time they are exposed to the surgical management of cleft lip and cleft palate, craniosynostosis, and other cranial conditions as well as the treatment of nevi and hemangiomas. There are also opportunities for research and publication.

The division is home to the Texas Cleft and Craniofacial Team, providing comprehensive multispecialty team care of patients with craniofacial anomalies.

Division surgeons have pioneered innovative treatments such as the microscopic approach to the release of cranial sutures, internal distraction osteogenesis, and use of computer simulation for surgical planning.

Division of Pediatric Cardiovascular Surgery

Children with congenital and acquired heart disease have more treatment options than ever before. Today, more than 95 percent of congenital heart disorders can be repaired through surgery, often in the first two years of life. Advances in imaging and surgical techniques have made extraordinary life-saving feats possible in fetal cardiac intervention and in the treatment of pediatric heart patients. A child's heart surgery may be the most stressful event a family will experience. The pediatric heart surgery team is dedicated to giving children the very best chance for a successful outcome in a caring, supportive environment. The team works closely with many other specialists, including pediatric cardiology, neonatology, pediatric cardiac anesthesiology, pediatric critical care, and pediatric perfusion to achieve clinical excellence in pediatric and congenital heart surgery. Pediatric cardiovascular surgeons perform the full-spectrum of pediatric cardiac surgery, including newborn cardiac surgery, single ventricle palliation, the Norwood procedure, the arterial switch procedure, aortic arch reconstructions, repair of tetralogy of Fallot, and pediatric cardiovascular surgery. The division provides opportunities for fourth-year medical students and externs to spend time working with the CV surgical team.

Department of Pediatrics

Faculty in the Department of Pediatrics emphasize teaching designed to maximize the health of each pediatric patient, with special focus on optimization of growth and development. Students are expected to develop their own approach to assist patients in achieving these goals. Children, from premature infants through adolescents, are followed in the inpatient and outpatient settings. Each patient encounter is viewed as an opportunity for the student to improve his or her abilities to work with pediatric patients and their families.

The department is responsible for a formal course in human genetics. In addition, the faculty includes subspecialists in adolescent medicine, cardiology, critical care medicine, developmental pediatrics, neonatal-perinatal medicine, genetics and metabolism, endocrinology, infectious diseases, hematology and oncology, nephrology, immunology, pulmonology, gastroenterology, and sports medicine. While there are numerous subspecialty elective opportunities available in two- or four-week units in the various clinical and laboratory aspects of pediatrics and its subspecialties, the importance of primary care is not lost. A major focus of the department is exposure to primary care in every student experience, whether it be in a general pediatric setting or in one of the specialty clinics.

The pediatric residency program is integrated into a curriculum involving Memorial Hermann Children's Hospital, UT MD Anderson Cancer Center, and Lyndon B. Johnson General (LBJ) Hospital. These residency programs, too, have a special emphasis on primary care and are designed to train excellent general pediatricians.

Accredited post-residency subspecialty fellowships training programs are available in the department and include child neurology, endocrinology, genetics/dysmorphology, hematology/oncology, neonatology, nephrology, infectious diseases, pulmonology, adolescent medicine, child protection, palliative care, and critical care medicine.

**David R. Park Professor of Pediatric Medicine and Chair
Neonatal-Perinatal Medicine Division Director
Assistant Dean for Children's Health Care Quality**
Eichenwald, Eric, MD

**Professor of Pediatrics and Community and General Pediatrics Division Director
Vice Chair for Clinical Operations**
Yetman, Robert J., MD

**Associate Professor
Vice Chair for Education and Training**
Crandell, Sharon S., MD

Professor of Pediatrics, Vice Chair of Pediatrics, Chief of Pediatrics, Lyndon B. Johnson General Hospital
Garcia, Jose, MD, SM

**Professor and Pediatric Research Center Director
Vice Chair for Research**
Hecht, Jacqueline T., PhD

**Professor and Pediatric Medical Genetics Division Director
Vice Chair**
Northrup, Hope, MD

Professor and Jacobo Geissler Distinguished Chair in West Syndrome Research, and Child and Adolescent Neurology Division Director Department of Pediatrics
Butler, Ian J., MD

Department of Physical Medicine and Rehabilitation

The Department of Physical Medicine & Rehabilitation (PM&R) provides services through the evaluation and management of patients with a broad range of disabling conditions. PM&R specialists, also called physiatrists, are experts in the diagnosis and management of problems involving the central and peripheral nervous, and musculoskeletal systems. Conditions commonly addressed by physiatrists include spinal-cord injury, brain injury, amputation, multiple trauma, stroke, burns, acute musculoskeletal-pain problems, chronic diseases such as pain and osteoarthritis, and other degenerative neurologic disorders.

The department is closely affiliated with the Memorial Hermann Rehabilitation System, and has its main base of operation at TIRR Memorial Hermann, ranked number 2 best rehabilitation hospitals by the *US News and World Report*. It also operates the cutting-edge *NeuroRecovery Research Center* at TIRR Memorial Hermann, which consists of the Center for Wearable Exoskeletons; Neuromodulation laboratory; Human-Machine Interfaces laboratory; Neurorehabilitation laboratory; Myo-Neural Engineering laboratory; and the Spasticity Treatment and Research Center, all led and staffed by McGovern PM&R faculty researchers. Current studies include federally funded investigations in human-robot interface, neuromodulation, and myoneural engineering, in persons with stroke and spinal cord injuries.

The department of PM&R has a faculty of 22 physiatrists, most of whom have subspecialty certification in brain injury medicine, spinal cord medicine, pediatric rehabilitation, and electrodiagnostic medicine. Faculty mentor clinical and research post-doctoral fellows, residents, and medical students.

Clinical Professor and Chair

Francisco, Gerard, MD

Department of Psychiatry and Behavioral Sciences

The goal of the Department of Psychiatry and Behavioral Sciences is to provide medical students, whatever their ultimate medical specialty choice, with opportunities to acquire (1) an appreciation for the patient as a whole person with an emotional as well as a physical life; (2) the ability to diagnose and treat the most frequent mental disorders; and (3) a positive attitude toward the importance of psychological well-being. In the second year, medical students are introduced to the biopsychosocial aspects of behavior. Using the life cycle as a framework, human growth and development, determinants of behavior, human sexuality, death and dying, and medical ethics are discussed. Information is presented on interviewing, communication and interpersonal skills; psychopathology, the psychosocial aspects of mental illness; and community and preventive medicine. During the third-year clerkship, students spend six weeks in the department outpatient clinics at the Behavioral and Biomedical Sciences Building, the UT Harris County Psychiatric Center, UT MD Anderson Cancer Center, Memorial Herman (MHH) - Texas Medical Center, and Lyndon B. Johnson General (LBJ) Hospital where they see and follow patients with psychiatric disorders. Several clinical and research electives are available to fourth-year students.

Professor and Chair

Pat R. Rutherford, Jr. Chair in Psychiatry

Soares, Jair, MD, PhD

Department of Surgery

The goal of the Department of Surgery is to achieve excellence in patient care, clinical training, and basic and applied research.

The third-year surgery clerkship is the core clerkship in surgery that is required of all students. The curriculum emphasizes basic clinical and surgical skills as applied to a common core of presenting problems. Students are introduced to preoperative, postoperative, traumatic, and ambulatory care of patients. By the completion of this educational program, students should demonstrate an understanding of the pathophysiology of surgically treatable diseases and should have acquired sufficient knowledge and diagnostic skills to be able to recognize when a patient's condition might best be served by a surgical consultation. Students will also develop the fundamental skills for safe and efficient management of patients in the hospital and ambulatory setting, clinical skills, and operative skills during the eight-week clerkship.

At least one month of the clerkship will be spent working with full-time faculty on a surgical service at Memorial Hermann (MHH) – Texas Medical Center or at the Lyndon B. Johnson (LBJ) General Hospital. The remaining month of the clerkship will be spent working on a general or surgical specialty service at Memorial Hermann (MHH) – Texas Medical Center or participating hospitals/services.

Clinical patient care is a significant part of students' surgical experience. The students are expected to make rounds in the morning and evening with their residents and/or faculty member, be available for on-call assignments, attend resident conferences, and assist in the work-up of patients who are admitted to their service. Students are expected to write daily progress notes on the patients to whom they are assigned. Additional time may be spent in resident and/or faculty clinics. By and large, this will be an in-hospital experience.

The fourth-year surgery clerkship is a four-week elective experience. Fourth-year students select this experience from a list of approved electives.

Postgraduate training begins with the categorical first-year program in surgery, specifically designed to provide graduates the opportunity to combine medical school knowledge with practical skills and to lay a firm foundation for the pursuit of any surgery or medicine specialty. Beyond that, full residencies in general surgery and surgery specialties are offered.

Denton A. Cooley, MD Chair in Surgery,
Jack H. Mayfield, MD Distinguished University Chair in Surgery
Professor and Chair,
Chief of General Surgery
 Andrassy, Richard J., MD

Division of Acute Care Surgery

The Division of Acute Care Surgery includes the section of Trauma, Emergency General Surgery, Critical Care Surgery and Burn Surgery. This division is concerned with the broad aspects of injury, critical care, burns and the care of patients with emergent general surgery conditions. This has been a very busy service over the years since the department's primary teaching hospital is one of the busiest in the United States and is the only Burn Center in Houston. Many students and residents have participated in research, both basic and clinical, as part of our Trauma Center Grant and T-32 training programs. Students are encouraged to participate in ongoing trials or laboratory research. An evidence-based approach to patient care is highlighted.

The third-year surgical clerkship is conducted at Memorial Hermann (MHH) – Texas Medical Center, Lyndon B. Johnson (LBJ) General Hospital, and UT MD Anderson Cancer Center. Fourth-year clerkships may be done at these institutions with selected clinical faculty. Summer research opportunities are available for all levels of medical school training.

The residency training program is a minimum of 5 years of progressively increased surgical experience. Many of the residents will pursue two or more years of research experience during their training. Following residency, fellowships in trauma, critical care, burns or acute care surgery are offered.

Division of Minimally Invasive Surgery, Bariatrics and Elective General Surgery

This Division includes MIST (Minimally Invasive Surgeons of Texas), bariatric surgery, surgical oncology, endocrine surgery, breast surgery, abdominal wall defects (hernias) and colorectal surgery. Students participate in a very busy and diverse general surgery experience. Clinical research trials are ongoing and many students and residents participate in these studies. Residents are given progressive responsibility including introduction to advanced laparoscopic techniques and robotic surgery.

Division of Surgery, Lyndon B. Johnson (LBJ) General Hospital

The division provides a broad variety of surgical care at our county hospital. Many of the faculty also work at Memorial Hermann (MHH) – Texas Medical Center. This is an ideal site for student education and increased responsibilities. The patients are numerous and with high levels of surgical illness. Large volumes of colorectal, minimally invasive and general surgical procedures are performed. Faculty teaching at this site is stressed and residents provide significant teaching opportunities for the students.

Division of Immunology and Organ Transplantation

The division seeks to apply basic immunologic findings to clinical practice in the field of organ transplantation. Members of the division offer basic courses and clinical experience in transplantation by participating in the first-year introductory immunology course and the third-year clinical clerkship. The fourth-year clinical and research electives also provide experience in the organ transplantation center. Emphasis during these electives is placed on actual and potential applications of basic immunology to clinical practice. Students have the opportunity to acquire

the techniques for measuring the components of the immune system in man, study immunodeficiency syndromes in man, and learn the principles of diagnosis and treatment of end-stage disorders of the kidney, liver, and heart.

The division collaborates with 20 satellite dialysis centers by offering renal transplantation services. By virtue of the evaluation of end-stage renal disease patients and continuing clinical follow-up post-transplantation, the student has the opportunity to understand renal failure at various stages and to assess treatment options.

Specialized training in immunology in the division leading to the PhD degree is available through the program in immunology in the UTHealth Graduate School of Biomedical Sciences.

Division of Oral and Maxillofacial Surgery

The division is concerned with the diagnosis and treatment of congenital, acquired, traumatic, and pathological conditions of the oral and maxillofacial regions.

The division, in conjunction with the Department of Oral and Maxillofacial Surgery at the UTHealth School of Dentistry, provides students with the opportunity to acquire the basic principles of diagnosis and treatment pertinent to the discipline. A postgraduate four-year program includes a basic science program and a six-year double-degree program with advanced placement in medical school. Rotations are at Memorial Hermann (MHH) – Texas Medical Center, The Methodist Hospital, Lyndon B. Johnson (LBJ) General Hospital, Ben Taub General Hospital, and the Michael E. DeBakey Veterans Affairs Medical Center.

Division of Plastic and Reconstructive Surgery

Basic principles of wound healing, critical analysis of clinical problems, and meticulous, innovative techniques are the hallmarks of plastic surgery. The division provides fourth-year medical students with the opportunity to acquire these important principles during the surgery clinical clerkship.

Students are offered the opportunity to expand their knowledge and sharpen clinical skills by spending one month in an elective assignment to the plastic surgery service. Students participate at a level commensurate with their ability and interest. Trainees are exposed to a variety of reconstructive problems and, given the opportunity, become proficient at basic wound care. Students participate in the teaching conferences and attend plastic surgery grand rounds.

Dr. Thomas D. Cronin Chair, Professor, and Interim Division Director

Andrassy, Richard J., MD

Division of Urology

The primary goal of this division's educational program is to allow students to recognize and treat diseases of the urinary tract and male genital tract and recognize when the assistance of a urologist is required. A series of urology lectures is given to third-year medical students during the general surgery rotation.

The pathophysiology, diagnosis, and treatment of hematuria, prostatism, urinary tract neoplasms, trauma and infections, urinary calculi, and pediatric logic problems are discussed.

Two electives are offered in urology. One month can be spent at Memorial Hermann (MHH) – Texas Medical Center and Lyndon B. Johnson (LBJ) General hospitals. Surgical procedures, evaluation, and diagnosis of diseases of the urinary and male genital tract and the care of the ambulatory patient are stressed. Students attend a weekly radiology conferences and a residents' conference. For students interested in oncology, an elective can be arranged at UT MD Anderson Cancer Center.

McGovern Medical School's Faculty

Advanced Heart Failure, Cardiopulmonary Support and Transplantation Program:

Mehmet Akay, MD
Visiting Associate Professor

Sachin Kumar, MBBS
Assistant Professor

Farshad Raissi Shabari, MD
Assistant Professor

Imran Dar, MD
Assistant Professor

Pranav Loyalka, MD
Associate Professor

Keshava Rajagopal, MD, PhD
Assistant Professor

Jorge Escobar Camargo, MD
Assistant Professor

Ankit Mehra, MBBS
Assistant Professor

Indranee Rajapreyar, MBBS
Assistant Professor

Rajiv Goswami, DO
Assistant Professor

Angelo Nascimbene, MD
Assistant Professor

Ismael Salas de Armas, MD
Assistant Professor

Igor Gregoric, MD
Professor

Sriram Nathan, MBBS
Associate Professor

Navin Thakur, MBBS
Assistant Professor

Marwan Jumean, MD
Assistant Professor

Jayeshkumar Patel, MB, ChB
Assistant Professor

Elizabeth Volz, MD
Assistant Professor

Soma Jyothula, MBBS
Assistant Professor

Manish Patel, MBBS
Assistant Professor

Brian Walton, MD
Assistant Professor

Biswajit Kar, MBBS, MD
Professor

Prashant Patel, MD
Assistant Professor

Randall Wolf, MD
Visiting Professor

Zahoor Khan, MBBS
Assistant Professor

Rajko Radovancevic, MD
Assistant Professor

Anesthesiology:

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Associate Professor

Samia Khalil, MB, ChB
Professor

Carlos Artime, MD
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Semhar Ghebremichael, MD
Assistant Professor

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Nishan Ashary, MB, BS
Assistant Professor

Noel Giesecke, MD
Visiting Professor

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Sudha Balan, MD
Assistant Professor

Anita Giezentanner, MD
Assistant Professor

Michael Lin, MD
Assistant Professor

Bridget Barrow, PhD
Assistant Professor

Clarence Gilmore, MD
Assistant Professor

Travis Markham, MD
Assistant Professor

Yefim Bogomolny, MD
Assistant Professor

Amy Graham-Carlson, MD
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Maria Matuszczak, MD
Professor

Bruce Butler, PhD
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Navneet Grewal, MBBS
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Vladimir Melnikov, MD
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Assistant Professor

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Jerry Thurman, MD
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Ginger Wilhelm, MD
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Dominique Balla, MD Assistant Professor	Prakash Giddaluri, MBBS Assistant Professor	Carlos Moreno, MD Professor
Nathan Bender, MD Assistant Professor	Glenda Goodine, MD Assistant Professor	Thomas Murphy, MD Assistant Professor
Larry Butcher, MD Assistant Professor	David Hall, MD Assistant Professor	Marilyn Murr, MD Assistant Professor
Kymerly Butler, MD Assistant Professor	Oyetokunbo Ibidapo-Obe, MB, BS Assistant Professor	Nanda Nemarugommula, MBBS Assistant Professor
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Kelley Carroll, MD Assistant Professor	Monika Jadhav, MD Assistant Professor	Phuc Duc Nguyen, MD Assistant Professor
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Lieu Chau, DO Assistant Professor	Leeann Lam, DO Assistant Professor	Babajide Olutimehin, MB, BS Assistant Professor

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Sarah Tran, DO
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John Rasmussen, PhD
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Eva Sevick, PhD
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Kai Sun, B.M., PhD
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Babie Teng, PhD
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Varatharasa Thiviyathan, PhD
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Hongyu Wang, MD, PhD
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Rick Wetsel, PhD
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Wa Xian, PhD
Assistant Professor

Yuanzhong Xu, PhD
Instructor

Zhen Xu, PhD
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Ningyan Zhang, PhD
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Sheng Zhang, PhD
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Banghe Zhu, PhD
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Eva Zsigmond, PhD
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George Stancel, PhD
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Ilya Levental, PhD
Assistant Professor

Jin Bin Tian, PhD
Assistant Professor

Ghislain Breton, PhD
Assistant Professor

Kandice Levental, PhD
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Kartik Venkatachalam, PhD
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Jeffrey Chang, PhD
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Yi-Ping Li, PhD
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Edgar Walters, PhD
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Xiaodong Cheng, PhD
Professor

Lenard Lichtenberger, PhD
Professor

William Weems, PhD
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Kwang-Jin Cho, PhD
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David Loose, PhD
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Ching On Wong, PhD
Instructor

Richard Clark, PhD
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Mykola Mamenko, PhD
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Qing Yang, MD
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Shane Cunha, PhD
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Fang Mei, MD
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Guohua Zhang, PhD
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Catherine Denicourt, PhD
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Roger O'Neil, PhD
Adjunct Professor

Yong Zhou, PhD
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Poyee Tung, MD
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Francisco Fuentes, MD
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Catalin Loghin, MD
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Khashayar Hematpour, MD
Assistant Professor

Justin Saunders, MD
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Chunyan Cai, PhD
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MinJae Lee, PhD
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Garbo Mak, MD
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Pascal Kingah, MD
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Professor

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Peng Chen, MD
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Daniel Kim, MD
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Nitin Tandon, MD
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Arthur Day, MD
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Dong Kim, MD
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James Beeson, PhD, MD Visiting Clinical Professor	Brian Heaps, MD Assistant Professor	Kenneth Moise Jr, MD Professor
Pamela Berens, MD Professor	Sara Holcombe, DO Assistant Professor	Alvaro Montealegre, MD Assistant Professor
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Teresa Byrd, MD Assistant Professor	Lynda Hunt, MSN Instructor	Milinda Morris, MD Assistant Professor
Rebecca Carter, MS Clinical Instructor	Randa Jalloul, MD Assistant Professor	Lauren Murphy, MS Instructor
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Andrew Li-Yung Hing, MD Assistant Professor	Timothy Noonan, MD Assistant Professor	Jerry Street, MD Assistant Professor
Walter Lowe, MD Professor	Summer Ott, PsyD Assistant Professor	Jocelyn Szeto, MD Assistant Professor
Aiping Lu, MD Assistant Professor	George Ozoude, MD Assistant Professor	Candice Teunis Washko, MD Assistant Professor
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Alfred Mansour III, MD Assistant Professor	Mark Prasarn, MD Assistant Professor	Matthew Wasserman, MD Assistant Professor
Stacey Martin, MD Assistant Professor	Thomas Rivers, MD Assistant Professor	Kevin Williams, MD Assistant Professor
Randhir Mascarenhas, MD Assistant Professor	Alysia Robichau, MD Assistant Professor	Kyle Woerner, MD Assistant Professor
Kenneth Mathis, MD Visiting Associate Professor	Milton Routt Jr, MD Visiting Professor	Shiraz Younas, MBBS Assistant Professor
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Yu Bai, MBBS, PhD Associate Professor	Shen-An Hwang, PhD Assistant Professor	Jaiyeola Thomas-Ogunniyi, MB, BS Professor
Meenakshi Bhattacharjee, MBBS Professor	Chinnaswamy Jagannath, PhD Professor	Hlaing Tint, MB, BS Assistant Professor
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