

UNIVERSITY of NORTH TEXAS HEALTH SCIENCE CENTER at Fort Worth

Graduate School of Biomedical Sciences



2 0 0 2 - 2 0 0 4 C A T A L O G

2002 - 2004 GRADUATE CATALOG

This catalog is an official bulletin of the University of North Texas Health Science Center Graduate School of Biomedical Sciences and is intended to provide general information. It contains policies, regulations, procedures and fees in effect as of July 1, 2002.

The health science center reserves the right to make changes at any time to reflect current board policies, administrative regulations and procedures, amendments by state law and fee changes. Information provided by this catalog is subject to change without notice and does not constitute a contract between the University of North Texas Health Science Center and a student or an applicant for admission. The institution is not responsible for any misrepresentation or provisions that might arise as a result of errors in preparation.

Students are responsible for observing the regulations contained herein; therefore, they are urged to read this catalog carefully. This catalog does not contain all institutional rules, regulations and policies for which a student is responsible. Students should also consult the Student Handbook and the web site (www.hsc.unt.edu). The health science center reserves the right to withdraw a student for cause at any time.

The University of North Texas Health Science Center at Fort Worth is an equal opportunity/affirmative action institution. It is the policy of the health science center not to discriminate on the basis of race, color, religion, sex, age, national origin, disability, or disabled veteran or veteran of the Vietnam era status, in its educational programs, activities, admissions or employment policies. Questions or complaints should be directed to the Equal Opportunity Office, 817-735-2357.



Graduate School of Biomedical Sciences



UNIVERSITY of NORTH TEXAS HEALTH SCIENCE CENTER *at Fort Worth*

3500 Camp Bowie Boulevard • Fort Worth, Texas 76107-2699 • 817-735-2560

www.hsc.unt.edu

Dean's Message

Welcome to the Graduate School of Biomedical Sciences. Your interest in us suggests you are an individual with vision and concern for the future. Biomedical research and the health sciences have transformed our understanding of the human condition and provided new ways to prevent, treat and cure disease. Although we have made tremendous progress, there are still many among us who suffer from Alzheimer's disease, arthritis, cancer, heart disease and diabetes. We must prepare for new challenges and future needs to preserve human health.

The graduate programs at the University of North Texas Health Science Center at Fort Worth are ready to assist you in obtaining the training you need for a career in this exciting field. Our graduate faculty are dedicated to creating an environment that is stimulating, creative and challenging. Our faculty have distinguished themselves nationally and internationally for their research programs that utilize state-of-the-art technology.

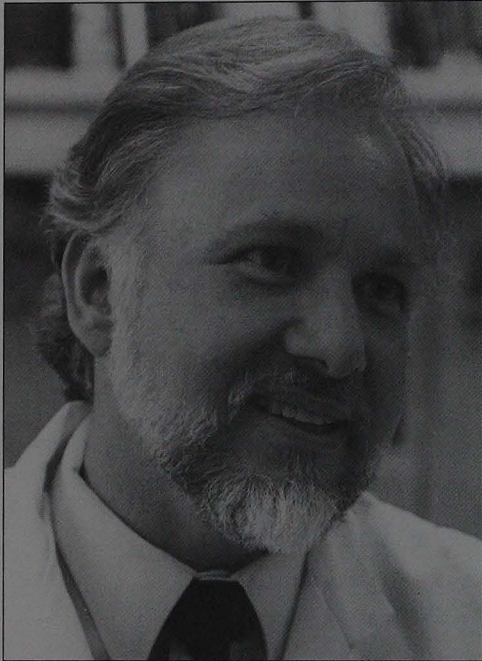
The institution's centers of research excellence are providing leadership in biotechnology, forensics, biomedical and health science research. Research areas focus on national needs including cancer, heart disease, diabetes, neuroscience, vision and aging.

Our institution recognizes the importance of diversity in our student population and the research areas that derive from an understanding of all cultures. Our graduate school has been nationally recognized for achieving a well-balanced representation of diverse populations that is reflective of our society. By studying in this environment, you will be better prepared to

apply your knowledge through research that will benefit all.

Our biomedical sciences program is designed with an integrated core curriculum that provides students a broad foundation of knowledge in the biomedical sciences with advanced courses that enhance specialty training in selected disciplines. Our curriculum teaches a team approach to solving complex problems and promoting the understanding of the biological principles that govern healthy lifestyles. Our goal is to provide you with the tools needed to undertake the challenges of tomorrow.

We are pleased that you have selected the University of North Texas Health Science Center at Fort Worth for your graduate training. The graduate faculty and I welcome you aboard for a most interesting expedition into the future.



Thomas Yorio, Ph.D.
Professor and Dean

Contents

Dean's Message	2	4/ Degree Programs	21	8/ Course Descriptions	61
2002-2003 Academic Calendar	4	Core Curriculum Requirements		Biomedical Sciences	
2003-2004 Academic Calendar	5	Master of Science Degree		Biochemistry & Molecular Biology	
Our Mission	6	Doctor of Philosophy Degree		Cell Biology & Genetics	
Introduction	7	Dual Degrees		Family Medicine	
1/ The Health Science Center	7	5/ Disciplines	28	Integrative Physiology	
Overview		Biochemistry and Molecular Biology		Microbiology & Immunology	
Graduate School of Biomedical Sciences		Biomedical Sciences		Osteopathic Manipulative Medicine	
Institutes for Discovery		Biotechnology		Pharmacology & Neuroscience	
Institutional Support Services		Science Education		Psychology	
Outreach Programs for Undergraduates		Clinical Research Management			
2/ Admissions	12	Post-Baccalaureate Premedical Certification		9/ Faculty, Officers & Staff	71
Application		Cell Biology & Genetics		Faculty	
Deadlines		Forensic Genetics		Adjunct Faculty	
Requirements for Admission		Clinical Research & Education:		Emeritus Faculty	
Additional Admission Policies		Family Medicine		Professional Library Faculty	
		Osteopathic Manipulative Medicine		Officers & Staff	
3/ Academic Policies	16	Integrative Physiology			
Academic Misconduct		Microbiology and Immunology		Non-Discrimination	
Annual Performance Review		Pharmacology & Neuroscience		& Harassment Policies	92
Appeal Processes				Campus Map	93
Auditing				Index	96
Change of Discipline		6/ Fiscal & Financial Aid Policies	54		
Class Attendance		Tuition and Mandatory Fees			
Concurrent Enrollment at Another Institution		Financial Aid			
Course Changes		Graduate Assistantships			
Course Deficiencies					
Courses of Instruction		7/ Student Life	58		
Enrollment Certification		Division of Student Affairs			
Final Examinations		Founders' Activity Center			
Full-time Enrollment		Health Insurance Program			
Grading System		Health Services			
Graduate Advisor		Identification Card Regulations			
Graduation		Liability			
Leave of Absence		Living Accommodations			
Open Records Policy		Motor Vehicle Regulations			
Policies		Students Organizations			
Summons		Scheduling Events			
Syllabi		Student Lounge			
Temporary Visa Holders					
Withdrawal from the Health Science Center					

PUBLISHED JULY 2002

Accreditation

The University of North Texas Health Science Center at Fort Worth is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Georgia 30033-4097; Telephone number 404-679-4501) to award master's and doctoral degrees.

2002-2003 Academic Calendar

	Fall 2002	Spring 2003	Summer 2003
Admissions			
Application deadline.	April 3	September 3	February 1
New Student Orientation (Mandatory)	August 5-8	—	—
Registration			
Regular registration. Period begins at 8:00 a.m. on first day and ends at noon on last day.	July 22-26	December 2-6	May 5-9
Late registration period. Period begins at 8:00 a.m. on first day and ends at noon on last day.	July 27-31	December 7-11	May 10-14
Important Class Days			
Classes begin	August 12	January 6	May 27
Audit enrollment date	August 27	January 22	May 30
Last day of classes	December 20	May 21	August 1
Schedule Changes			
Last day to add a course	August 19	January 13	May 29
Last day to drop a course or withdraw with a grade of W for courses that a student is not passing. After this date, a grade of WF may be recorded.	September 20	February 14	June 13
Instructors may begin dropping students with a grade of WF for non-attendance.	September 23	February 17	June 16
Last day to drop a course with the instructor's consent.	November 8	March 21	July 11
Last day to withdraw from the health science center.	December 9	May 12	July 25
Fee Payment Deadlines			
Student Account Statements generated by Accounting	July 31	December 10	May 14
Last day to pay tuition and fees	December 9	January 3	May 23
Refunds			
Note: If all courses for the semester are dropped, see Withdrawal Refunds, below.			
Last day for refund of any course dropped.	August 27	January 21	June 2
Last day for a partial refund of tuition upon withdrawal.	September 6	January 31	June 4
Withdrawal Refunds			
Last day to withdraw for a 100% refund.	August 9	January 3	May 26
Last day to withdraw for a 80% refund.	August 16	January 10	May 30
Last day to withdraw for a 70% refund.	August 23	January 17	June 6
Last day to withdraw for a 50% refund.	August 30	January 24	June 13
Last day to withdraw for a 25% refund.	September 6	January 31	June 20
Graduation Deadlines			
Last day to file Intent to Graduate.	September 30	February 3	June 6
Last day for degree candidates to complete all requirements for graduation	November 15	May 9	July 25
<ul style="list-style-type: none"> ■ File thesis, laboratory internship practicum report or dissertation with the Office of Graduate Admissions & Services ■ Pay all graduation fees ■ Remove grades of I in all courses required for degree 			
Commencement		May 17	
Holiday/Special Events (Subject to Board of Regents approval)			
Labor Day	September 2		
Thanksgiving Break	November 24-25		
Winter Break	December 20-January 2		
Martin Luther King, Jr. Day		January 20	
Spring Break		March 14	
Research Appreciation Day		April 4	
GSA Annual Awards Banquet		April 25	
Memorial Day			May 26
Independence Day			July 4

2003-2004 Academic Calendar

	Fall 2003	Spring 2004	Summer 2004
Admissions			
Application deadline.	April 1	September 2	February 3
New Student Orientation (Mandatory)	August 4-7	—	—
Registration			
Regular registration. Period begins at 8:00 a.m. on first day and ends at noon on last day.	July 21-25	December 1-5	May 3-7
Late registration period. Period begins at 8:00 a.m. on first day and ends at noon on last day.	July 26-30	December 8-12	May 8-12
Important Class Days			
Classes begin	August 11	January 5	May 24
Audit enrollment date	August 26	January 21	May 27
Last day of classes	December 19	May 19	July 30
Schedule Changes			
Last day to add a course	August 18	January 12	May 28
Last day to drop a course or withdraw with a grade of W for courses that a student is not passing. After this date, a grade of WF may be recorded.	September 19	February 13	June 11
Instructors may begin dropping students with a grade of WF for non-attendance.	September 22	February 16	June 14
Last day to drop a course with the instructor's consent.	November 7	March 22	July 19
Last day to withdraw from the health science center.	December 8	May 7	July 23
Fee Payment Deadlines			
Student Account Statements generated by Accounting	June 30	December 10	May 12
Last day to pay tuition and fees	August 9	January 2	May 21
Refunds			
Note: If all courses for the semester are dropped, see Withdrawal Refunds, below.			
Last day for refund of any course dropped.	August 26	January 20	May 28
Last day for a partial refund of tuition upon withdrawal.	September 5	January 30	June 1
Withdrawal Refunds			
Last day to withdraw for a 100% refund.	August 8	January 2	May 21
Last day to withdraw for a 80% refund.	August 15	January 9	May 28
Last day to withdraw for a 70% refund.	August 22	January 16	June 4
Last day to withdraw for a 50% refund.	August 29	January 23	June 11
Last day to withdraw for a 25% refund.	September 5	January 31	June 18
Graduation Deadlines			
Last day to file Intent to Graduate.	September 30	February 2	May 28
Last day for degree candidates to complete all requirements for graduation	November 14	May 7	July 23
■ File thesis, laboratory internship practicum report or dissertation with the Office of Graduate Admissions & Services			
■ Pay all graduation fees			
■ Remove grades of I in all courses required for degree			
Commencement		May 15	
Holiday/Special Events (Subject to Board of Regents approval)			
Labor Day	September 1		
Thanksgiving Break	November 27-28		
Winter Break	December 19-January 2		
Martin Luther King, Jr. Day		January 19	
Research Appreciation Day		April 2	
GSA Annual Awards Banquet		April 23	
Memorial Day			May 31
Independence Day			July 4

Our Mission

*The University of North Texas Health Science Center at Fort Worth,
a component institution of the UNT System, is dedicated to excellence
in education, research, healthcare and service.*

We achieve this mission by:

*Preparing our students in osteopathic medicine, biomedical sciences,
public health and physician assistant studies
for successful careers in health care, research and teaching.*

*Advancing the discovery of knowledge
through cutting-edge basic and applied research.*

*Teaching, practicing and encouraging
the effective delivery of primary health care.*

*Emphasizing health promotion, disease prevention and public health,
with a focus on underserved populations.*

*Actively collaborating with other academic institutions,
such as other components of the UNT System, health-related organizations
and the communities we serve.*

*Supporting a culturally diverse environment that advocates mutual respect
for all members of the health science center as they strive for excellence.*

*Meeting and exceeding the needs and expectations of our students,
patients, employees, partners, donors and the people of Texas.*

(Revised by the UNT Health Science Center Board of Regents August 2001.)

1 *The Health Science Center*

The University of North Texas Health Science Center is one of the nation's distinguished academic medical centers, dedicated to the advancement of all three disciplines of medical science — education, research and patient care.

A 15-acre, \$107 million medical complex, the health science center is located in the heart of Fort Worth's Cultural Arts District. Our campus sits among parks, museums and tree-lined streets rather than in the concrete world of a central hospital district.

The health science center includes the Texas College of Osteopathic Medicine, the Graduate School of Biomedical Sciences and the School of Public Health — with a combined faculty of more than 200, a staff of 900 and a cadre of some 300 volunteer community physicians.

TCOM is Texas' only college of osteopathic medicine, and one of only 19 in the nation. TCOM's Physician Assistant Studies Program offers a master of physician assistant studies degree, one of the growing number

of PA programs educating these mid-level medical professionals at the master's level.

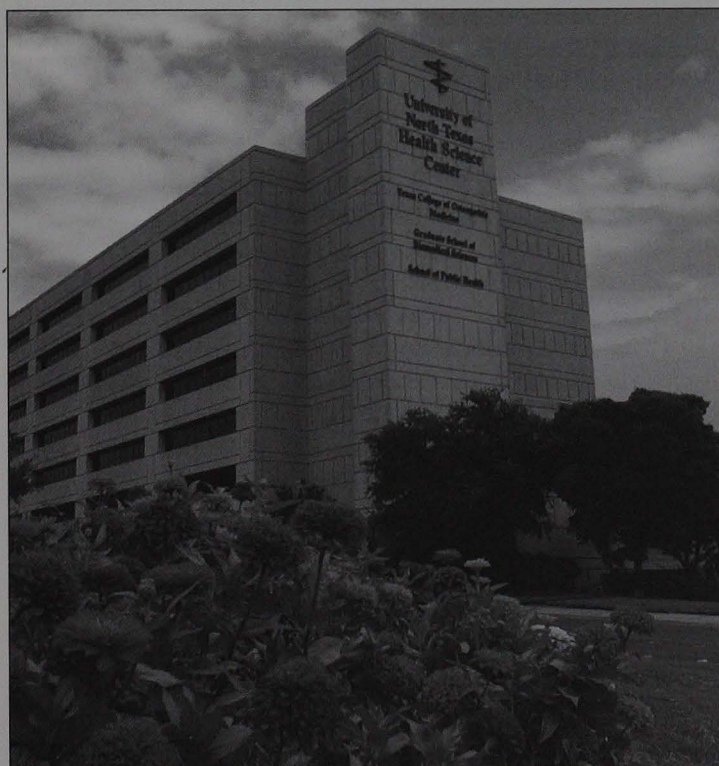
The Graduate School of Biomedical Sciences offers advanced degrees in the biomedical sciences, with specializations in cell biology and genetics, microbiology and immunology, pharmacology and neuroscience, integrative physiology, biochemistry and molecular biology, forensic genetics, clinical research management, and biotechnology. Post-baccalaureate premedical certification is also available.

The School of Public Health awards master of public health and doctor of public health degrees.

Faculty members in the health science center's Physicians & Surgeons Medical Group practice in 24 medical and surgical specialties and subspecialties. More than 188,000 patient visits are logged each year at the health science center's network of clinics and laboratories.

Among the health science center's physicians and scientists are nationally respected faculty members who are leaders in areas such as the biochemistry of aging, vision, cancer, heart disease, DNA and genetics, substance abuse, osteoporosis and tuberculosis. This growing team of experts has fostered the creation of the Institutes for Discovery.

The health science center is also home to one of the most advanced medical libraries in the Southwest and an internationally-recognized DNA identity testing laboratory.



Graduate School of Biomedical Sciences Mission Statement

The Graduate School of Biomedical Sciences is committed to achieving excellence in education, research and service. The graduate school offers students opportunities to earn advanced degrees in the biomedical sciences.

The graduate school provides an innovative educational environment that encourages rigorous investigation in areas of health science research, development of exemplary teaching skills and service to the community.

The graduate school, in conjunction with the Texas College of Osteopathic Medicine, has a further goal to train students for D.O./M.S., and D.O./Ph.D. degrees for future careers as physician scientists in academic medicine.

Graduates in biomedical sciences fill positions in health science centers, colleges and universities, community health centers, federal agencies and industry.

Institutes for Discovery

Cardiovascular Research Institute (CRI)

The Cardiovascular Research Institute was established in 1995 to promote basic and clinical research, education, patient care and community outreach in the prevention, detection, diagnosis, and treatment of cardiovascular disease and stroke. The CRI is directly involved in the adaptation of intellectual property to meet the needs of the medical community. Divided into seven divisions, the CRI is involved in the development of pharmaceuticals, biotechnology, medical devices, and the rehabilitation of victims of stroke.

Predoctoral and postdoctoral students receive advanced training in entrepreneurial research development through the CRI, along with studies and research through the Department of Integrative Physiology.

Institute for Aging and Alzheimer's Disease Research (IAADR)

The Institute for Aging and Alzheimer's Diseases Research was established in August 2000 to promote basic and clinical research, focusing on early detection of Alzheimer's Disease, estrogen replacement therapy for Alzheimer's Disease and Parkinson's Disease, estrogen and stroke therapy and identification and characterization of the oxidative process to measure the rate of aging.

The institute serves as a focal point for interaction with private-sector biotechnology and pharmaceutical companies with interest in neurological disorders. A seminar series is co-sponsored by the Institute and the Department of Pharmacology and Neuroscience. The institute's activities also include supporting educational and health promotion programs within the community that encourage physical, psychological and social well being.

Institute for Cancer Research (ICR)

The Institute for Cancer Research serves as the focus for academic leadership in all aspects of cancer research and education within the UNT Health Science Center, as well as for Fort Worth and the North Texas area. The institute serves as the focal point and coordinating organization for cancer-related educational activities at the health science center at the predoctoral, postdoctoral, undergraduate and continuing education levels.

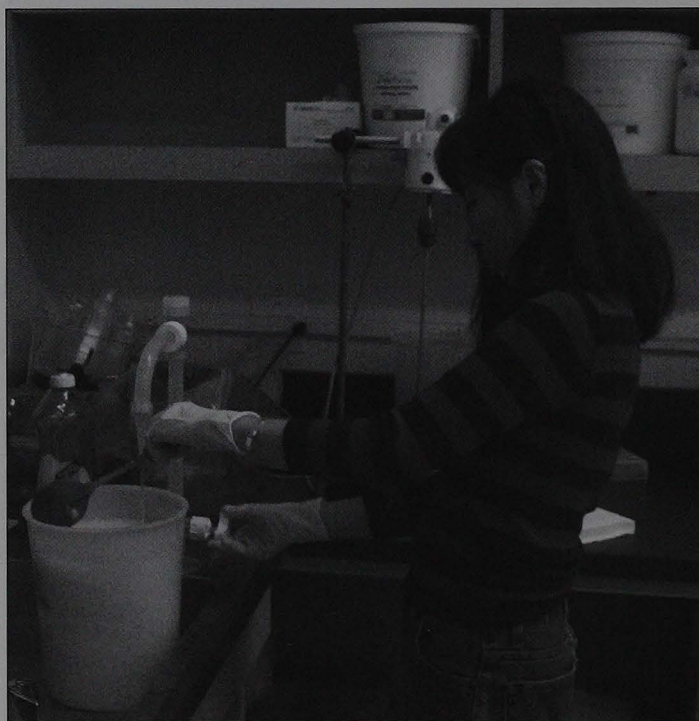
The institute's scope includes, but is not limited to, various aspects of basic and translational research. Institute activities emphasize cancer prevention and control, molecular diagnostics, clinical investigations, and cancer diagnosis and therapy. Basic and translational research areas include cell biology, biochemistry, molecular biology, gene therapy, progression, invasion, angiogenesis/vasculature, metastasis, immunology and experimental therapeutics.

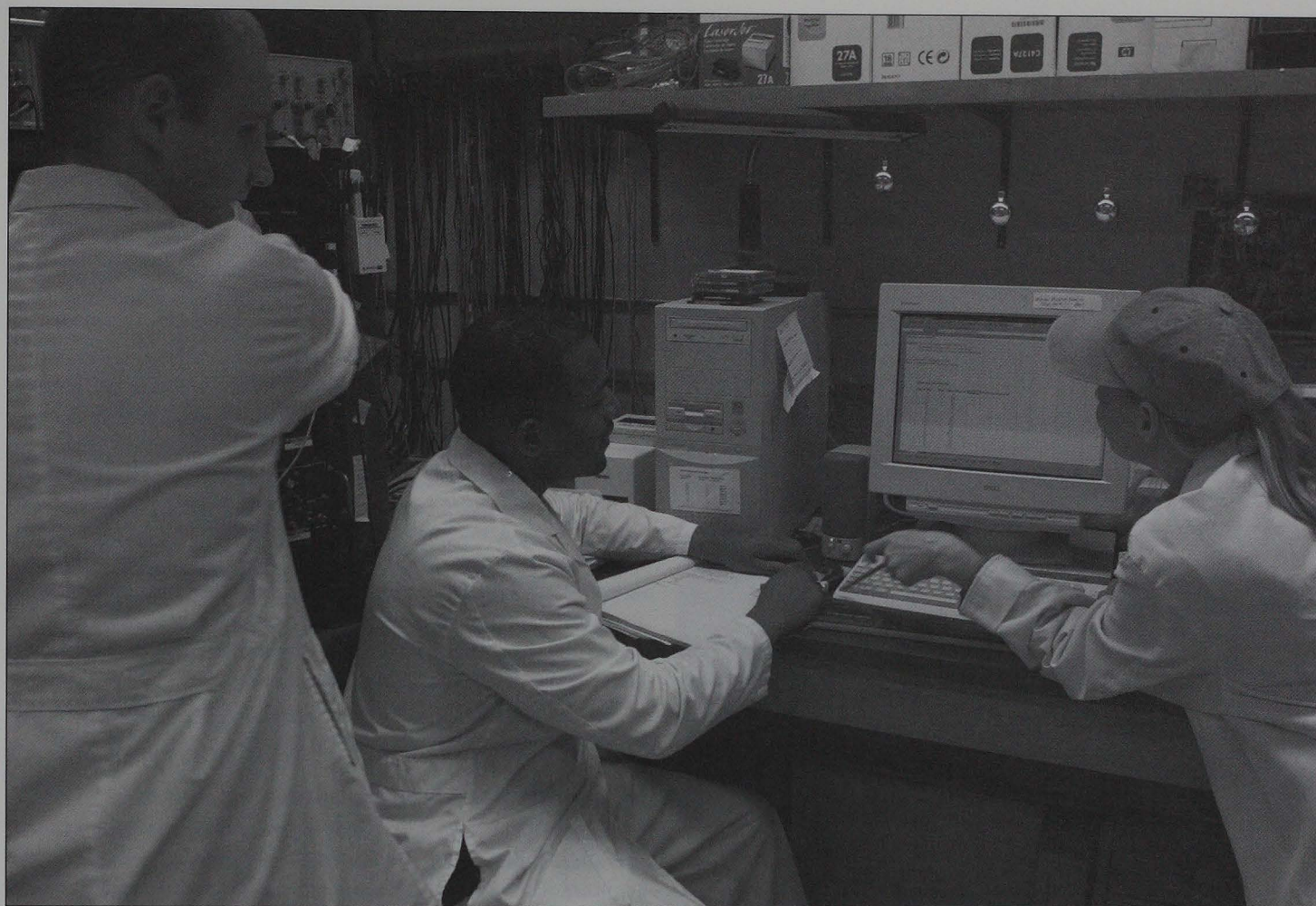
The institute serves as a focal point for interactions with private-sector biotechnology and pharmaceutical companies with interests in cancer.

North Texas Eye Research Institute (NTERI)

The North Texas Eye Research Institute was formed in 1992 to serve as an academic and research focus for basic and clinical science activities within the visual science community of Fort Worth and North Texas.

Institute faculty members are multidisciplinary basic and clinical scientists who have primary appointments at the health science





center, private practice or industry. Their research programs cover aspects of eye disease such as retinal degeneration, glaucoma, diabetic complications, aging and cataracts.

The institute sponsors a Distinguished Visual Scientist Seminar Series, a weekly journal club, continuing medical education courses for health professionals and eye health fairs. Institute faculty also conduct clinical trials for testing the safety and efficacy of various therapeutic drugs and devices.

Physical Medicine Institute (PMI)

The Physical Medicine Institute, established in 1998, promotes basic and clinical research, education, clinical practice and community outreach programs in the prevention, diagnosis, treatment and rehabilitation of neuromusculoskeletal disease of human beings of all ages.

The institute is a multidisciplinary organization composed of basic and clinical science professionals whose interests and work deal with neuromusculoskeletal physiology and pathophysiology. Emphasis is on education, clinical service and research in osteopathic manipulative medicine.

Objectives of the institute include development of a broad, universally accessible literature database related to osteopathic manipulative medicine and neuromusculoskeletal medicine; education of students, physicians, researchers and the community; provision of state-of-the-art clinical services in osteopathic manipulative medicine and neuromusculoskeletal medicine; development of an international, interdisciplinary taxonomy of manual medicine techniques; and development and publication

of clinical and basic science research into the mechanism of action and clinical efficacy of osteopathic manipulative treatment of neuromusculoskeletal disease.

Institute for Public Health Research (IPHR)

The Institute for Public Health Research, established in 2000 by the School of Public Health, addresses the health and health care needs of the local, state and global community through applied research, communication, and professional and community training. It provides specialized training, consulting, research and technical assistance to organizations and agencies that practice health care and public health.

The goal of the IPHR is to develop public health-related solutions for communities through academic-community partnerships with health departments, community organizations, health care delivery organizations, other health-related organizations and academic units within universities.

Institute Research Scholars have expertise in several areas of public health including epidemiology, health management, health policy and law, environmental and occupational health, behavioral sciences, health education, community health, and biostatistics.

The model guiding the institute's work emphasizes a collaborative approach to prevention research. IPHR research scholars, staff and students use an array of research methods, including intervention studies, evaluation research, field trials, and demonstration projects to affect changes in the health of targeted communities or population groups.

Institutional Support Services

Biomedical Communications

The Department of Biomedical Communications is an educational service unit that supports development and implementation of health science center programs. Composed of medical arts/photography, print services, audio-visual/television and electronic engineering, the department's primary functions are the design and production of various forms of learning materials and the repair of equipment used by faculty and students.

Videotaping of procedures, patients or lectures, as well as production of specialized educational or promotional programs, is available both in the studio and on location. New video conferencing technology links the health science center and the University of North Texas in Denton to teach courses and conduct meetings. The department also receives programs on a variety of medical and policy issues via satellite.

Classroom playback of instructional videos, setup of audio-visual equipment for classroom use, student equipment checkout, maintenance of biomedical and electronic equipment, audio-visual systems design, and duplicating and offset printing are additional services offered by the department.

Medical arts personnel create charts, graphs, illustrations, posters, brochures, newsletters and magazines for the various educational, research and community service endeavors of the institution. Medical photographers provide the prints and slides to complete these instructional and promotional materials, as well as on-site photography of patients, procedures and important events.

Gibson D. Lewis Health Science Library

The health science center's library supports the educational, patient-care, research and community-service missions of the institution by meeting the information needs of faculty, students, staff and the local health sciences community.

Featuring the latest information technology, this spacious and attractive facility provides the physical and intellectual resources needed for study, instruction and research. The library collection contains over 155,000 volumes and 2,200 serial titles in the basic biomedical sciences, clinical medicine and affiliated fields. Special Collections preserves historically significant materials, including over 2,400 volumes of osteopathic and nineteenth century medicine, The William G. Sutherland Collection, and institutional archives, photographs and oral histories.

The library uses the Library Information System (LIS) to provide access to the library's collections and to the National Library of Medicine's MEDLINE database. LIS may be accessed in the library, via telephone modem or through the Internet. Library instruction on LIS, MEDLINE and other library services, as well as reference services and mediated computer searches, are readily available.

Materials not owned by the library may be obtained through interlibrary loan from many sources. The library has been a resource library in the National Network of Libraries of Medicine since 1991. In addition, the library is a member of the South

Central Academic Medical Libraries Consortium, which provides access to all 14 academic medical/health science center libraries in Texas, Arkansas, Louisiana, Oklahoma and New Mexico.

The library's Media Resources Center houses an audio-visual collection of over 5,900 titles, including 376 computer software programs and some 124 anatomical models. The collection includes titles with a broad appeal to both medical/scientific users and the general public. Sixteen viewing rooms are equipped with video playback and slide-tape projectors.

Three networked computer labs, with Macintosh and Windows computers, are available for student, staff and faculty use. Monthly computer classes are also offered, and a third lab is reserved for classroom instruction. The Internet can be accessed in all three labs. There are also a number of open complete work stations. A few portable computers are available for overnight and weekend checkout.

All health science center students receive the full range of library services, including borrowing privileges, individual and group study areas, photocopying, computer searches, reference help, document delivery services, print indexes, personal instruction in the use of the library and access to the library's collections.

The library is a member in the Copyright Clearinghouse Center to ensure compliance with the copyright law.

Information Technology Services

Information Technology Services provides quality computer and telecommunication services to all academic, academic administrative and fiscal administrative areas of the health science center.

Systems and Programming Services designs and implements computer systems and programs for fiscal and academic administrative areas of the institution.

Network and Microcomputer Services is responsible for the design, installation and maintenance of academic and administrative local-area networks (LANs) on campus. Computer users connected to the LAN have access to a variety of software programs and are able to exchange data and electronic mail with users across the institution and off campus. Dial-in access is available for both IBM and Macintosh platforms.

The division provides consultation and user assistance to computer users relative to hardware and software use, communications, printing and planning a computer purchase.

Telecommunication Services operates and maintains the campus-wide telephone system with state-of-the-art equipment and software, and maintains and produces an in-house telephone directory for faculty and staff. This division also manages the telephone voice mail system, as well as all pagers and answering services, and advises users about cellular telephones.

Records Management maintains a program for the economical and efficient management of institutional records. The division is responsible for the preparation and maintenance of the records-retention schedule and approves all requests for the disposal of state records.

Office of Research and Biotechnology

The Office of Research and Biotechnology coordinates all basic and applied research, clinical trials and biomedical technology programs, including the Institutes for Discovery. Programs that promote these activities include seminars and workshops, faculty research programs, collaborative and community outreach activities and a variety of programs to encourage students to enter careers in research.

The office develops policies and administers programs to enhance research and scholarly activity and to assure institutional compliance with all mandated requirements related to research. The office assists in proposal development, identification of and negotiations with potential sources of support, and post-award management of research funds. The office manages intellectual property (patents and copyrights), institutional policies and research contractual matters.

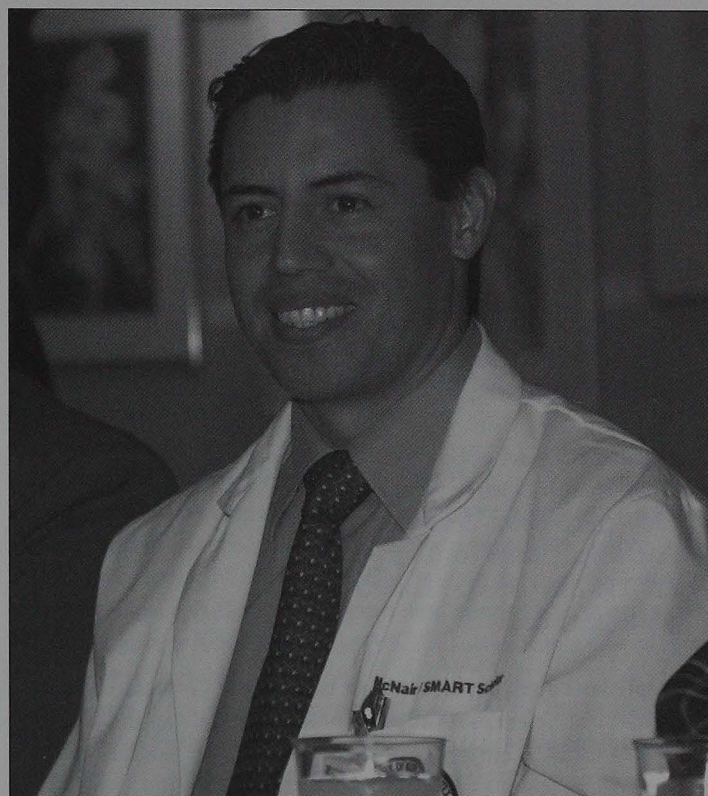
The office also plays a leadership role in establishing and nurturing new research partnerships, technology transfer, and commercialization with industry and the private sector.

Outreach Programs for Undergraduates

UNT Health Science Center has received prestigious recognition for its longstanding history of programs aimed at increasing diversity within the scientific community. These awards include the Award for Excellence in Minority Recruitment from the National Association of Graduate Admissions Professionals, designation as an NIH-Minority Access Role Model Institution, and the President's Award for Excellence in Science, Mathematics and Engineering from the National Science Foundation.

Summer Multicultural Advanced Research Training

Each summer, the Graduate School of Biomedical Sciences hosts the Summer Multicultural Advanced Research Training (SMART) program. Designed to familiarize undergraduate students with the varied disciplines and methodologies used in biomedical research, the SMART program allows students to work with faculty scientists in state-of-the-art laboratories. SMART participants also attend classroom lectures to study the physiological sciences, general laboratory principles and safety practices. Acceptance into the SMART program includes a stipend and housing allowance. An application may be obtained by calling the Graduate School of Biomedical Sciences' Office of Outreach at (866) 21-REACH or (817) 735-0174. It may also be requested by e-mail to: gsbs@hsc.unt.edu.



Ronald E. McNair Post-Baccalaureate Achievement Program

The Ronald E. McNair Post-Baccalaureate Achievement Program was established to prepare low-income students, first generation college students, and students from groups underrepresented in graduate education for doctoral study. It is a national program of the U.S. Department of Education, created in memory of Ronald E. McNair, Ph.D., an African American physicist killed in the Space Shuttle Challenger mission in 1986. Participants in the McNair program on the UNT Health Science Center campus receive tutoring, counseling, assistance with securing graduate program admission and financial aid, preparation for the Graduate Record Examination, and various other support services. McNair scholars also participate in summer internship programs in research laboratories with faculty mentors.

Participants from the Summer Multicultural Advanced Research Training program are given preference for placement in the McNair program but other students are encouraged to apply. An application may be obtained by calling the Graduate School of Biomedical Sciences' Office of Outreach at (866) 21-REACH or (817) 735-0174. It may also be requested by e-mail to: gsbs@hsc.unt.edu.

2 Admissions

Application

Applicants may apply online or download an application at www.hsc.unt.edu/gsbs. A paper application for admission may be obtained by writing or calling:

Graduate School of Biomedical Sciences
UNT Health Science Center at Fort Worth
3500 Camp Bowie Boulevard
Fort Worth, Texas 76107-2699
817-735-2560 or 800-511-GRAD
gsbs@hsc.unt.edu

Applicants applying for the first time to the Graduate School of Biomedical Sciences must pay a non-refundable application fee of \$25 for U.S. citizens, non-U.S. citizens and permanent residents. The fee must be paid in U.S. currency. This application fee is valid for one year from the application date. An additional \$50 foreign transcript evaluation fee is assessed to all applicants who have attended universities outside of the United States. McNair Scholars are not required to pay application fees but must provide documentation of participation in a McNair program.

Deadlines

The deadlines listed below are not postmark deadlines. All application materials must be received by 5:00 p.m. on deadline day. All application materials submitted become the property of UNT Health Science Center and cannot be returned.

Fall 2002	April 3, 2002
Spring 2003	Sept 3, 2002
Summer 2003	Feb 1, 2003
Fall 2003	April 1, 2003
Spring 2004	Sept 2, 2003
Summer 2004	Feb 3, 2004

The Graduate Council awards assistantships to entering doctoral students once a year. To be considered for this award, applications for admission in the Fall semester must be completed by March 1 of the same year.

It is highly recommended that non-U.S. citizens apply well in advance of these deadlines to allow preparation of immigration documents.

Requirements for Admission

General Admission Requirements

All applicants for admission to the Graduate School of Biomedical Sciences must meet the following requirements, whether or not admission to a specific degree program is sought.

1. The applicant must hold a bachelor's degree or its equivalent in biology, biochemistry, or equivalent field, from a regionally accredited institution.
2. Specific grade point average (GPA) requirements for both non-degree and degree-seeking students follow. The GPA is calculated by dividing the total number of grade points earned by the total number of semester hours attempted. The applicant must have at least a 3.0 GPA on the last 60 undergraduate semester hours of course work before receiving the bachelor's degree, or on all undergraduate work, in order to receive unconditional admission to the Graduate School of Biomedical Sciences. Applicants who have already completed a master's degree must have at least a 3.0 GPA on the master's or meet the undergraduate GPA standards listed above in order to be admitted unconditionally. Non-degree seeking students will be allowed to take a maximum 12 semester credit hours. The above requirements assume a 4.0 grade scale.
3. All applicants seeking admission to a degree program are required to take the Graduate Record Examination (GRE). Applicants to certain programs are allowed to substitute the Medical College Admission Test (MCAT). Specific requirements are listed later in this chapter.
4. The applicant may be required to take additional entrance examinations, either oral, written, or both, before admission to the Graduate School of Biomedical Sciences is granted.
5. The health science center requires an applicant from a foreign country to demonstrate satisfactory proficiency in oral and written English before being granted admission in addition to supplying official documentation of minimum scores for the Test of English as a Foreign Language (TOEFL) exam. Upon acceptance, if it is determined that a student is not proficient in the English language, he/she will be required to complete an English as a Second Language course at his/her own expense.

6. To be considered for admission, the applicant must file the following official credentials with the Graduate School of Biomedical Sciences at the address given above:
- an application for admission to the Graduate School of Biomedical Sciences;
 - complete official transcripts from all colleges or universities attended;
 - official scores on the required entrance test or tests (see below);
 - \$25 application fee and a \$50 transcript evaluation fee if necessary;
 - two letters of evaluation by individuals in positions to comment on the applicant's potential as a graduate student and future professional;
 - a written statement of personal career goals; and
 - a personal essay describing one recent scientific discovery explaining why or how it is of interest to the applicant.

An applicant who has attempted graduate work at another institution within the six-year period immediately before first enrollment in the Graduate School of Biomedical Sciences but has not received a graduate degree will be required to make up any grade point deficiency below a B average either at the institution at which graduate work was attempted or at the health science center. (See "Time

Limitations" in the Master's Degree Program section of this catalog for details concerning validity of previous graduate work.)

Admission to the Graduate School of Biomedical Sciences does not imply candidacy for a graduate degree.

Applicants for admission are furnished written notification of their admission status by the dean of the Graduate School of Biomedical Sciences. Statements by other health science center personnel concerning the applicant's admissibility are not valid until confirmed by the dean in writing.

Students who are admitted to a graduate degree program and do not enroll in the semester for which they have applied must contact the Graduate School of Biomedical Sciences to have their file re-evaluated.

Entrance Examination Requirements

All students seeking admission to a graduate degree program are required to take the Graduate Record Examination (GRE). Applicants to the D.O./M.S. or D.O./Ph.D. or the post-baccalaureate premedical certification programs may substitute an appropriate Medical College Admissions Test (MCAT) score. Only official score reports are acceptable.

The test score requirements may be waived by the graduate dean for the individual student only in exceptional cases and only on petition by the student to the graduate dean.



Admission Requirements for International Applicants

Applicants who are not U.S. citizens should apply for admission at least six months before the anticipated enrollment date. If transferring from a college or university they must meet all UNT Health Science Center transfer admission requirements. Specific requirements are detailed below.

The health science center will not issue immigration papers for student visas until all admission credentials have been received and approved. A \$25 application fee is required and must be submitted with the application for admission. A foreign transcript evaluation fee of \$50 is assessed to any applicant, regardless of national origin, who submits a foreign transcript for consideration. Applicants who submit pre-evaluated transcripts will not be charged a fee if the evaluation was conducted in English, utilizes the appropriate grading scale for consideration, and was conducted by a regionally accredited U.S. institution of higher education or nationally recognized transcript evaluation service. These fees are subject to change at any time.

Applicants who are graduates of foreign colleges or universities must present the following for application:

- application forms for admission to the Graduate School of Biomedical Sciences. \$25 (U.S.) application fee and a \$50 transcript evaluation fee, if necessary;
- official reports from Educational Testing Service (ETS) on the Graduate Record Examination;

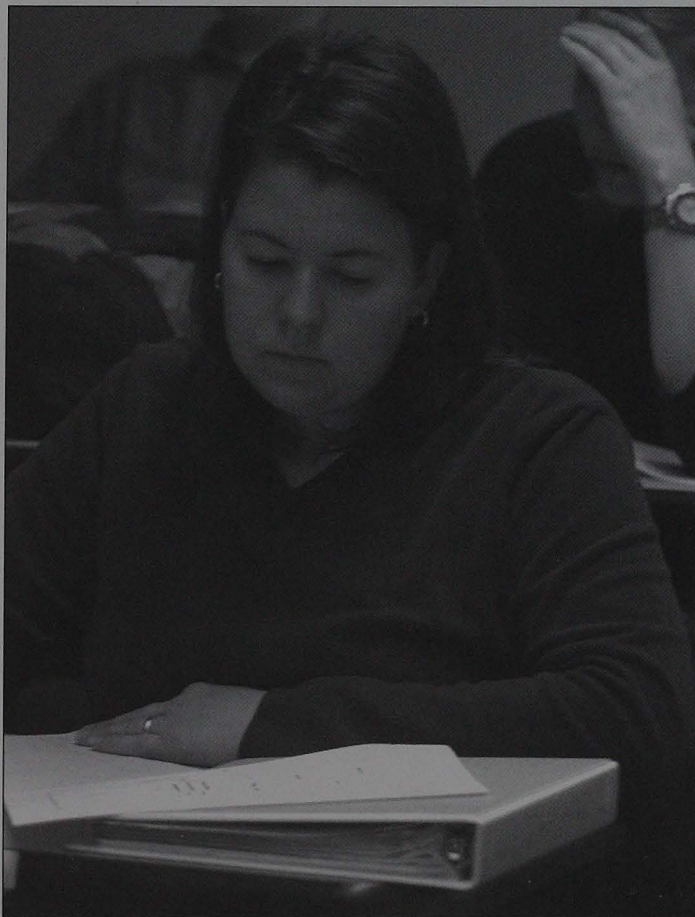
- official reports from ETS showing a minimum score of 213 on the computer-based Test of English as a Foreign Language (TOEFL) or evidence of successful completion of a non-credit intensive course in English;
- official transcripts from each college or university attended both in English and the native language;
- proof of available financial resources, filed with application for admission;
- transfer credit from foreign universities (The amount of such credit that can be applied to a degree earned at the health science center will be determined by the graduate dean on recommendation of the student's advisory committee and major department or division. Recognition by the health science center of graduate credit earned elsewhere does not imply that transfer credit will be allowed automatically.);
- two letters of evaluation from individuals in positions to comment on the applicant's potential as a graduate student and future professional;
- a written statement of personal career goals; and
- a personal essay describing one recent scientific discovery, explaining why or how it is of interest to the applicant.

Additional Admission Policies

Admission of Applicants to Non-Degree Status

The health science center recognizes that some students may wish to be admitted to the Graduate School of Biomedical Sciences for the purpose of taking courses not necessarily leading to an advanced degree. Admission to the Graduate School of Biomedical Sciences may be granted subject to the following provisions.

1. The applicant must meet all of the general admission requirements described above and must meet all application deadlines.
2. The student in this status is required to receive credit in all graduate courses taken, and must maintain a GPA of 3.0 on all such courses attempted.
3. A student who is admitted to non-degree status has no assurance that work completed under this status will be applicable toward degree requirements should he or she subsequently be admitted to a degree program at the health science center. A maximum of 12 semester hours may be taken. Exceptions to this policy can be approved only by the graduate dean upon recommendation of the student's advisory committee. Completion of departmental graduate courses by non-degree students does not obligate the Graduate School of Biomedical Sciences to grant admission to a degree program at a later date, unless all general and specific requirements for admission to that program have been met.





4. A student who wishes to change from non-degree status to degree status must have satisfactory GRE scores on file in the Graduate School of Biomedical Sciences.
5. International applicants are not eligible for non-degree admission.

Admission of Applicants to Probationary Status

UNT Health Science Center admits students on a probationary basis in cases where the GRE scores are below the average of the applicant pool, providing that all other admission criteria are met or exceeded. Students admitted on probation must earn a 3.0 GPA during the first semester of study and retake the GRE. Students may be continued on probation for one semester should these requirements not be met.

Admission of Continuing Students

A continuing student is defined as a student who enrolls one time during three consecutive semesters. Example: enrolls Summer 2002; no enrollment Fall 2002 or Spring 2003; re-enrolls Summer 2003.

Continuing students do not need to reapply to the Graduate School of Biomedical Sciences to enroll if they meet all of the following conditions:

1. The student has not received a degree from the health science center since last enrollment.
2. The student does not have any current blocks on his or her record, i.e., fiscal or academic.
3. The student has not attended any other academic institution during his/her absence from the health science center.

Students who are unsure that they meet all of the above conditions for re-enrollment should contact the Graduate School of Biomedical Sciences prior to the registration period.

Readmission of Former Graduate Students

Students who previously have been admitted to the Graduate School of Biomedical Sciences but have not enrolled here once during the last three consecutive semesters (i.e., Fall, Spring, and Summer) must follow these re-enrollment procedures:

1. File an admission application; and
2. Submit transcripts from all colleges attended (if any) since leaving the health science center, showing eligibility to re-enroll at each institution. Former students who have not enrolled elsewhere since leaving the health science center and are in good academic standing are required only to submit an admission application.

The application will be processed in the same manner as first-time applicants.

Courses Taken for Doctoral Credit by Students Completing the Master's Degree

Students completing the master's degree at the health science center who plan to continue work toward the doctorate degree are required to submit application for admission to the Graduate School of Biomedical Sciences in doctoral status. Those who wish to begin taking courses to be credited on the doctorate before receiving the master's degree must declare this intention in the office of the graduate dean at the time of registration for doctoral status, so that doctoral work may receive proper credit. Final acceptance of such work will not be granted until the student has secured full admission to a specific doctoral program of study.

3 Academic Policies

The general policies of the Graduate School of Biomedical Sciences are determined by the Graduate Council and administered by the dean.

Standards, fees and other requirements may be modified at any time by the Graduate Council. Students should review the Student Handbook for additional policies and procedures concerning their roles as students.

Academic Misconduct

Cheating and plagiarism are types of academic misconduct for which penalties are described and assessed under the health science center's Code of Student Conduct.

The term *cheating* includes, but is not limited to: (1) use of any unauthorized assistance in taking quizzes, tests or examinations; (2) dependence upon the aid of sources specifically prohibited by the instructor in writing papers, preparing reports, solving problems or carrying out other assignments; and (3) the acquisition, without permission, of tests or other academic material belonging to a faculty or staff member of the health science center.

The term *plagiarism* includes, but is not limited to, the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgment. Plagiarism also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

Specific penalties can be assigned by a faculty member for certain cases of academic misconduct (including cheating and plagiarism). These penalties include: giving a failing grade for the test or assignment; reducing or changing the grade for the test, assignment or course; requiring additional academic work not required of other students; and assigning a failing grade in the course. Other specific penalties can be recommended by a faculty member to the appropriate administrative/academic authority, including denial of the degree, expulsion from the health science center or revoking of a degree already granted.

All graduate students are responsible for making themselves aware of the definitions and implications of academic misconduct. For further information on academic misconduct, penalties and appeal procedures, the student should refer to the Code of Student Conduct and Discipline in the Student Handbook.

Annual Performance Review

Every graduate student accepted into a degree program will undergo an annual performance review by the major professor which will be reported to the graduate school through the discipline graduate advisor. The review process is designed to assist students in meeting discipline expectations and document students' annual progress toward degree.

Appeal Processes

Specific policies and procedures have been established for students seeking to file academic or misconduct appeals. These policies and procedures appear in the Student Handbook.

Appeals concerning admission to graduate school should be addressed to the graduate dean.

Advice concerning how to pursue appeals on any other matter can be sought from the Assistant Vice President for Student Affairs.

Auditing

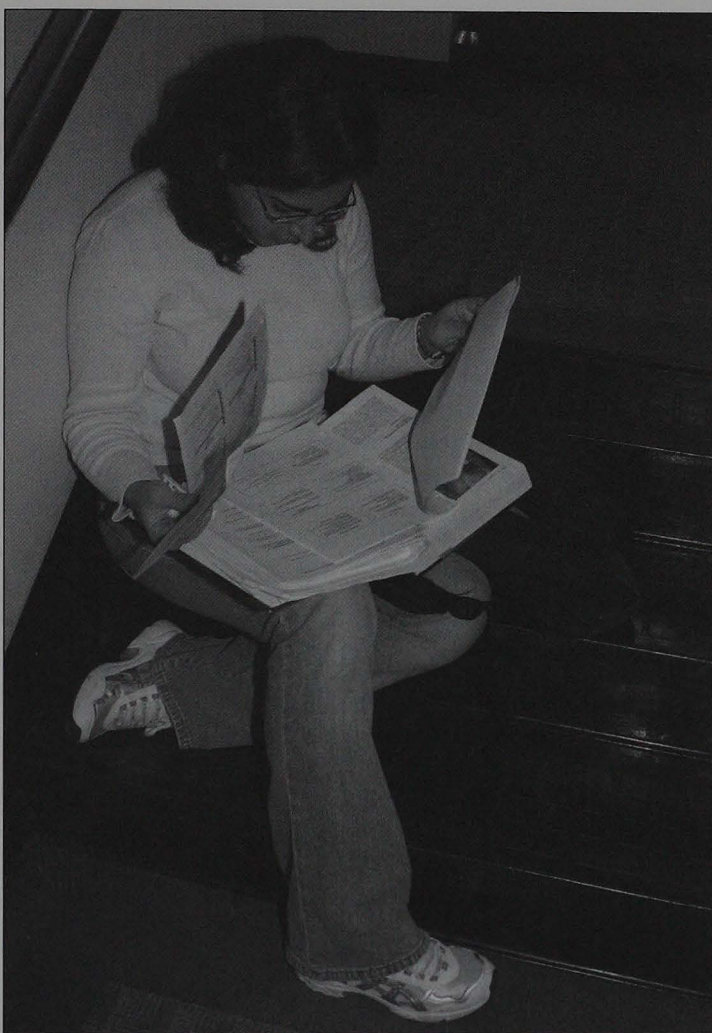
With the written permission of the department chair and the dean of the graduate school, an individual fully eligible to enroll in the graduate school may sit in a class as an auditor without receiving graduate credit. The auditor's name will not be entered on the class roll, and the instructor will not accept any papers, tests or examinations.

Attendance as an auditor may not be used as the basis of a claim for credit in the course. Students who are enrolled for credit may audit classes without payment of additional fees; others pay an auditor's fee as shown in the Tuition and Fee Register.

A person 65 years of age or older may enroll as an auditor and observer without credit and without payment of an audit fee if space is available and if approved by the department chair and the dean. Such enrollment entitles the person to library privileges, but not the use of laboratory equipment and supplies, health and hospital benefits.

Change of Discipline

Any student requesting a change of discipline must be in good academic standing and have approval of the major professor, graduate advisor and chair or division head of both the original and the requested disciplines.



Class Attendance

Regular and punctual class attendance is expected.

Although, in general, students are graded on intellectual effort and performance rather than attendance, absences may lower the student's grade where class attendance and class participation are deemed essential by the faculty member. In those classes where attendance is considered as part of the grade, the instructor should so inform students at the semester's beginning by a written notice. Any instructor who informs students in writing about the necessity of class attendance may request of the Registrar that a student be dropped from the course with a grade of WF upon the accumulation of the stated number of absences.

If the instructor-initiated drop action falls within the time that the student is eligible to drop with instructor consent and without penalty, the Registrar's Office notifies the student that a WF will be recorded unless the student initiates the drop procedure, in which case a W will be assigned.

Disciplines and similar academic units have authority to establish a discipline-wide or course-wide policy, so long as the policy is in accord with the above stipulations.

Concurrent Enrollment at Another Institution

Graduate students must secure written permission from the graduate dean before registering for any course or courses at another institution while registered for any courses at the health science center.

Failure to secure the required permission for concurrent enrollment prior to registration at the second institution may cause the health science center to refuse degree credit for the work taken elsewhere. In no case may the combined total of semester hours enrolled for at the two institutions exceed the maximum load permitted to graduate students.

Course Changes

Adding Courses

Graduate students are responsible for adding courses using the online registration system to complete the process. Consult the Academic Calendar for dates during which adds are allowed.

Dropping Courses

Students who wish to drop a course are responsible for using the online registration system to complete the process.

The grade of W is recorded for any course dropped with the instructor's consent before the end of the sixth week of classes (summer term, eight class sessions). After that time the student must have a passing grade in order for the instructor to assign a grade of W for a dropped course; otherwise, the grade WF is recorded.

Instructors may drop students with grades of WF from courses for non-attendance at any time after the sixth week of classes (summer term, eight class sessions). See "Class Attendance" above.

Drop procedures must be completed by 5 p.m. on the deadline dates specified in the Academic Calendar. After these dates a student may not drop a course for any reason.

Course Deficiencies

A student whose undergraduate record does not show completion of the courses prerequisite to his/her discipline will be required to make up such deficiencies in a manner prescribed by the major department or advisory committee.

Courses of Instruction

Courses normally meet one hour per week in lecture for each semester credit hour (SCH). For the exceptions, the course descriptions in each department will explain meeting times.

Individual courses of instruction are subject to change or withdrawal at any time and may not be offered each semester of every year. Any course may be withdrawn from current offerings if the number of registrants is too small to justify conducting the course.

Enrollment Certification

Enrollment verification and loan deferments are completed in the Registrar's Office based upon the student's having registered and paid tuition and fees according to the criteria listed under "full-time enrollment" below.

International students may also request the International Student and Scholar Office (ISSO, Kendall Hall, Room 103, University of North Texas, Denton, TX) to issue letters of enrollment for the use of foreign governments, embassies, scholarship agencies and banks.

Final Examinations

Faculty members are expected to administer final examinations during the final class meeting.

If a final examination is not given in a particular course, the faculty member is expected to use the final examination period for summary, evaluation or other productive purposes.

Students who have as many as three final examinations scheduled on one day may appeal to the graduate dean to reschedule one of those examinations on another day during the final week of the semester.

Full-time Enrollment

A student must enroll for nine semester hours for each long semester to be considered full-time. Enrollment in a total of six semester hours is considered full-time for the summer. However, doctoral students receiving financial support must enroll for 12 SCH for each long semester until they have advanced to candidacy.

The M.S. student who has completed all but the thesis requirements for the degree, must enroll in a minimum of six semester hours. Doctoral students who have advanced to candidacy must also enroll in a minimum of six semester hours.

Students are responsible for meeting enrollment requirements for federal or state financial aid purposes and visa regulations.

Student Load

Graduate students may schedule as many as 16 hours during any semester of the regular session, or seven hours in any summer term.

Grading System

Courses numbered 5000 or higher ordinarily are taken by students working toward master's and doctoral degrees; those numbered 6000 or higher are open principally to doctoral students.

The Graduate School of Biomedical Sciences' grading system uses the letters A, B, C, F, P, I, PR, W, WF and Z. The letter Z is used to indicate that a grade was not properly received and/or recorded for a course and is not punitive.

- A** Excellent work; four grade points for each semester hour.
- B** Good work; three grade points for each semester hour.
- C** Fair work; two grade points for each semester hour.
- F** Failure; given when a student: 1) has failed the course while still officially enrolled at the end of the semester; 2) is failing in a course and misses the final examination without satisfactory explanation; or 3) stops attending class without completing an official drop or withdrawal.
- P** Passed; a credit grade on pass/no pass option in selected graduate individual problems and research courses.
- I** Incomplete; a nonpunitive grade given only during the last one-fourth of a semester and only if a student is: 1) passing the course; 2) has justifiable reason why the work cannot be completed on schedule; and 3) arranges with the instructor to finish the course at a later date by completing specific requirements which the instructor must list on the grade sheet. For information on removal of I, see "Removal of I" below.
- PR** Assigned at the close of each semester or in which the graduate student is enrolled in laboratory internship practicum (BMSC 5920), thesis (BMSC 5950) or dissertation (BMSC 6950). No credit hours are shown when the grade of PR is assigned. When the thesis or dissertation has been completed and submitted to the graduate dean, appropriate grades and credit hours will be shown on the student's record for the required number of enrollments.
- W** Drop or withdrawal without penalty. Given when a student drops a course or withdraws from the graduate school according to the dates in the academic calendar. See regulations for dropping and withdrawing.
- WF** Drop or withdrawal with failing grade. May be assigned after the dates listed in the academic calendar. See regulations for dropping and withdrawing.

A complete record of all previously used grades and grading systems is detailed on the official transcript.

Grade Point Average

The overall grade point average (GPA) is used to determine student class loads, eligibility for admission to the graduate school and certain programs and eligibility for graduation. It is calculated by dividing the total number of grade points by the total number of semester hours attempted. All GPA calculations are subject to postaudit and correction by the Registrar's Office.

The number of semester hours attempted includes all courses with grades of A, B, C, F and WF unless replaced by a later grade.

Courses with grades of I, P, PR, W or Z are not counted as courses attempted and, therefore, are not calculated in the GPA.

Course Duplications

A student may enroll for a course a second or subsequent time and have it counted as part of the semester's load. If a course is repeated, the last grade recorded will be considered in calculating the GPA and in certifying the student's eligibility for graduation.

The responsibility for initiating the official recording of a grade duplication lies entirely with the student. In the absence of such a request the registrar will include a repeated course in the student's cumulative record of hours attempted and grade points earned.

Quality of Work Required

Graduate students must maintain an overall 3.0 GPA. The student whose GPA earned at another institution is below 3.0 will be required to make up the deficiency either at the other institution or at the health science center. This regulation applies not only to graduate work attempted elsewhere before the student was first admitted to the Graduate School of Biomedical Sciences, but also to graduate work attempted elsewhere after the student's admission at the health science center.

Students must make satisfactory progress toward completion of degree requirements in order to remain in good standing within a specific degree program. Students whose progress is unsatisfactory may be removed from the program by the graduate dean on recommendation of the major department.

A student who earns a C in an integrated core curriculum course (BMSC 5600, 5700, or 5800) will be required to repeat that course until a B or better is achieved. A student receiving an F in any of the integrated core curriculum courses will be dismissed from the Graduate School of Biomedical Sciences. Dismissals may be appealed to the graduate dean.

Probation and Suspension

A student who fails to maintain the required overall GPA of 3.0 will be subject to academic probation. If the student's grades do not improve, the student may be subject to suspension for a period of up to one calendar year before becoming eligible to re-enroll for further graduate courses. Graduate work completed elsewhere during a period of graduate suspension at the health science center may not be counted for graduate credit at the health science center.

The student whose graduate school GPA falls below 3.0 must make up the deficit, either by repeating courses in which the grades are low, or by completing other graduate school courses with grades high enough to bring the graduate school GPA up to 3.0. Low grades made in graduate courses at the health science center may not be duplicated at other institutions.

A student who earns a C in an integrated core curriculum course (BMSC 5600, 5700, or 5800) will be required to repeat that course until a B or better is achieved. A student receiving an F in any of the integrated core curriculum courses will be dismissed from the Graduate School of Biomedical Sciences. Dismissals may be appealed to the graduate dean.

Grade Changes

No grade except "I" may be removed from a student's record once properly recorded. Changes are not permitted after grades have been filed except to correct clerical errors.

Requests for error correction must be initiated immediately after the close of the semester for which the grade was recorded.

A faculty member who believes that an error has been made in calculating or recording a grade may submit a request for a grade change to the discipline chair and the graduate dean. The registrar accepts requests for grade changes only from the graduate dean.

Grade Reports

A grade report is mailed to each student's current mailing address at the close of each semester. Students may also view their transcripts online at any time. Grades are typically posted within one week after the end of each semester. If a grade or academic status is believed to be in error, the student must contact the Registrar's Office within 30 days.

Pass/Fail Grading

Any discipline of the health science center may elect to assign pass/fail grades in graduate-level courses. The course directors of any such course will identify it as pass/fail in the course syllabus.

Removal of Incomplete

A student may remove a grade of "I" within one year of receiving the initial grade by completing the stipulated work, obtaining signatures of the instructor and the graduate dean (on a form from the dean's office), and returning the form to the instructor. The instructor then files the form in the graduate school office, along with the grade, and the grade point average is adjusted accordingly. If a student does not complete the stipulated work within the time specified (not to exceed one year after taking the course), the instructor may change the grade of "I" to a grade of F, if appropriate, or the "I" will remain on the transcript and the student will be required to register for and repeat the course for it to count toward the degree plan. The GPA is adjusted accordingly.

Graduate Advisor

The graduate advisor is the official representative of the graduate dean in matters affecting graduate students in the advisor's academic unit. There should be a close working relationship between the advisor and the staff of the Graduate School of Biomedical Sciences. The graduate advisor is the liaison between the graduate dean and the discipline. The graduate advisor should keep the discipline chair informed on matters pertaining to graduate education. The dean is dependent upon the experience and judgment of graduate advisors and upon their recommendations in matters requiring the dean's action. The dean's staff provides information to the advisor on a continuing basis and responds to requests for special assistance.

The graduate advisor is responsible for supervising graduate study in the discipline, ensuring that each graduate student is assigned an individual faculty advisor within the discipline, and representing the graduate faculty as a member of the Graduate Council.

Graduation

It is the responsibility of the student to stay abreast of progress toward the degree and to file the appropriate degree application in the office of the graduate dean. Consult the academic calendar section in this catalog for the appropriate dates. The student's overall grade point average must be at least 3.0 for the application to be accepted.

Information concerning graduation fees is contained in the annual Tuition and Fee Register. Students anticipating graduation should consult the academic calendar for final dates for payment of fees and meeting other graduation requirements. All fines, fees, etc. must be cleared before issuance of the diploma.

Because of the time required to receive transcripts, students otherwise eligible for graduation who complete their last course or courses elsewhere will not graduate at the end of the semester in which the work is completed, but will receive their degrees at the close of a subsequent graduate school semester.

Commencement Exercises

Commencement exercises are held in May at the health science center. Diplomas may be obtained from the registrar after graduation has been verified.

Leave of Absence

Students may request a leave of absence from the graduate program for a period of up to one year for personal or medical reasons. The leave must be requested in writing to the dean and carry the approval of the major professor and graduate advisor. Students who do not return to study within the specified time must reapply for admission to the Graduate School of Biomedical Sciences.

Open Records Policy

Pursuant to the provisions and intent of Article 6252-17a, Texas Civil Statutes, known as the Open Records Act, and the Family Educational Rights and Privacy Act of 1974 as amended, known as the Buckley Amendment, the graduate school has established a policy relating to the accessibility of information in the custody of the University of North Texas Health Science Center.

Student records that include general information concerning the student and the student's individual relationship to the educational institution are available on request to health science center personnel who have an educational interest in the records, the student, and the student's parent or legal guardian if the student is a dependent for income tax purposes of the parent or legal guardian.

For information regarding the health science center's policy on access to records and to request accessibility to records, contact the designated Custodian of Public Records, Office of the Vice President and General Counsel, UNT Health Science Center.

Policies

Policies and regulations are explained or printed in the Student Handbook, available in the Office of Student Affairs, or the UNTHSC policy manual, available in the Office of Human Resources. All health science center policies are subject to change throughout the year.

Summons

In the event a student's conduct or behavior is found to be in violation of a published policy or regulation, a summons may be issued. A summons is an official request that the student appear before a health science center administrator. It is always important and must have the student's immediate attention. Failure to answer a summons may result in disciplinary action.

Syllabi

Students should receive a syllabus no later than the second class meeting of any course. Syllabi will not be distributed for courses in laboratory techniques, individual research, internship practicum, thesis, or dissertation. All other courses must provide students with syllabi that include the following information as appropriate to the course: required texts, exam dates, lecture topics and assignments for each class meeting, attendance policy, course objectives, explanation of how grades will be determined, and information on contacting the course director. Syllabi must be on file with the Graduate School of Biomedical Sciences prior to the first day of the semester.

Temporary Visa Holders

Students holding temporary visas are responsible for maintaining status with the U.S. Immigration and Naturalization Service (INS). All visa restrictions and regulations regarding enrollment, employment and visa renewal must be followed exactly as determined by the INS.

Withdrawal from the Health Science Center

A student may withdraw from the health science center at any time prior to the deadline in the academic calendar by making a request in the Registrar's Office. For withdrawals processed by the relevant deadline, the grade of W is recorded for each course in which a withdrawn student was enrolled. After this date a withdrawn student receives a grade of W only for those courses in which there were passing grades at the time of withdrawal; otherwise the grade WF is recorded.

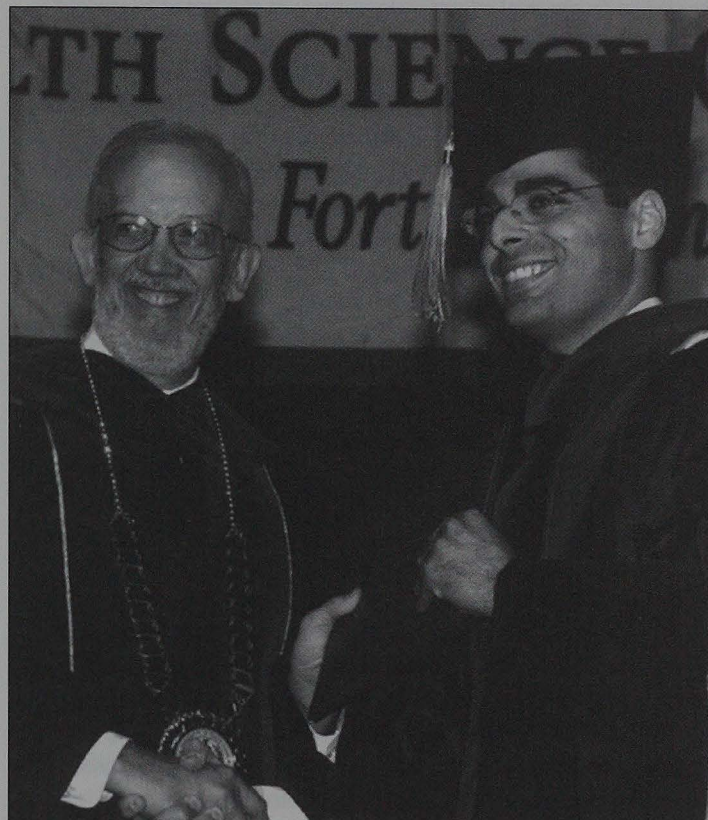
Official dates and deadlines for withdrawing are specified in the academic calendar.

4 Degree Programs

The Graduate School of Biomedical Sciences offers both M.S. and Ph.D. degrees in biomedical sciences. Students are encouraged to acquire a broad base of knowledge in those disciplines that flourish in the environment of a health science center and required to pursue specialized research and study in a particular area of biomedical and health science. The training that students obtain equips them for professional careers in health science centers, universities, the health care industry, state and federal agencies, pharmaceutical and biotechnology companies. Students obtain a degree in biomedical sciences, although a concentration in a discipline may be chosen from cell biology and genetics, biochemistry and molecular biology, clinical research and education, integrative physiology, microbiology and immunology, pharmacology and neuroscience, and integrative biomedical sciences. Specialized master's programs are available in science education, biotechnology, clinical research management, and forensic genetics. In addition, post-baccalaureate premedical certification is available.

Core Curriculum Requirements

All graduate students, regardless of discipline, are expected to complete the core requirements described below. The integrative biomedical sciences curriculum is designed to provide a broad background in biochemistry, microbiology, molecular biology, cell biology, immunology, pharmacology, neuroscience and physiology. Certain programs' requirements may deviate slightly from those listed below.



General M.S. Program

BMSC 5600	Integrative Biomedical Sciences I	5 SCH
BMSC 5700	Integrative Biomedical Sciences II	5 SCH
BMSC 5800	Integrative Biomedical Sciences III	5 SCH
BMSC 5940	Seminar in Current Topics	1 to 3 SCH
BMSC 5960	Biomedical Ethics	1 SCH
BMSC 5950	Thesis	3 to 6 SCH
Advanced Courses and Electives		

General Ph.D. Program

BMSC 5200	Biostatistics I	3 SCH
BMSC 5600	Integrative Biomedical Sciences I	5 SCH
BMSC 5700	Integrative Biomedical Sciences II	5 SCH
BMSC 5800	Integrative Biomedical Sciences III	5 SCH
BMSC 5940	Seminar in Current Topics	3 SCH
BMSC 5960	Biomedical Ethics	1 SCH
BMSC 5970	Techniques in Biomedical Sciences	3 SCH
BMSC 6010	Grant Writing	3 SCH
BMSC 6940	Individual Research	3 to 36 SCH
BMSC 6950	Doctoral Dissertation	3 to 12 SCH
Advanced Courses and Electives		

In addition, Ph.D. students must demonstrate competency in integrative biomedical sciences and in their chosen discipline by successfully completing a qualifying examination for doctoral candidacy prior to registering for BMSC 6010.

Master of Science Degree

General Requirements

The candidate for a master of science degree must earn 30 or more semester credit hours (SCH), depending upon the specific degree requirements. These degree requirements are determined by the graduate catalog currently in force at the time the student's degree plan is approved by the graduate dean.

The requirements set by the graduate school are that a minimum of 30 SCH must be taken for thesis, 17-20 SCH are core requirements plus three hours of thesis. The use of special problems course numbers (5900, 5910) is limited to a maximum of six SCH.

The Master of Science degrees in the disciplines of biotechnology, science education and clinical research management are administered by the Department of Biomedical Sciences, as well as the post-baccalaureate premedical certification. The Master of Science degree in Forensic Genetics is administered by the Division of Cell Biology and Genetics. Consult subsequent sections of this publication for the specific course requirements for the master of science degree.

Time Limitations

All requirements for the Master of Science degree must be completed within six years.

As individual courses exceed this time limit they lose all value for degree purposes. Credits that are more than six years old at the time of first registration for graduate work are not transferable from other institutions.

Time limits are strictly enforced. Students exceeding the time limit may be required to successfully complete a comprehensive exam, replace out-of-date credits with up-to-date work, and/or show other evidence of being up-to-date in their major fields. Students anticipating that they will exceed the time limit should apply for an extension before the normal time period to complete the degree expires. Holding a full-time job is not considered in itself sufficient grounds for granting an extension.

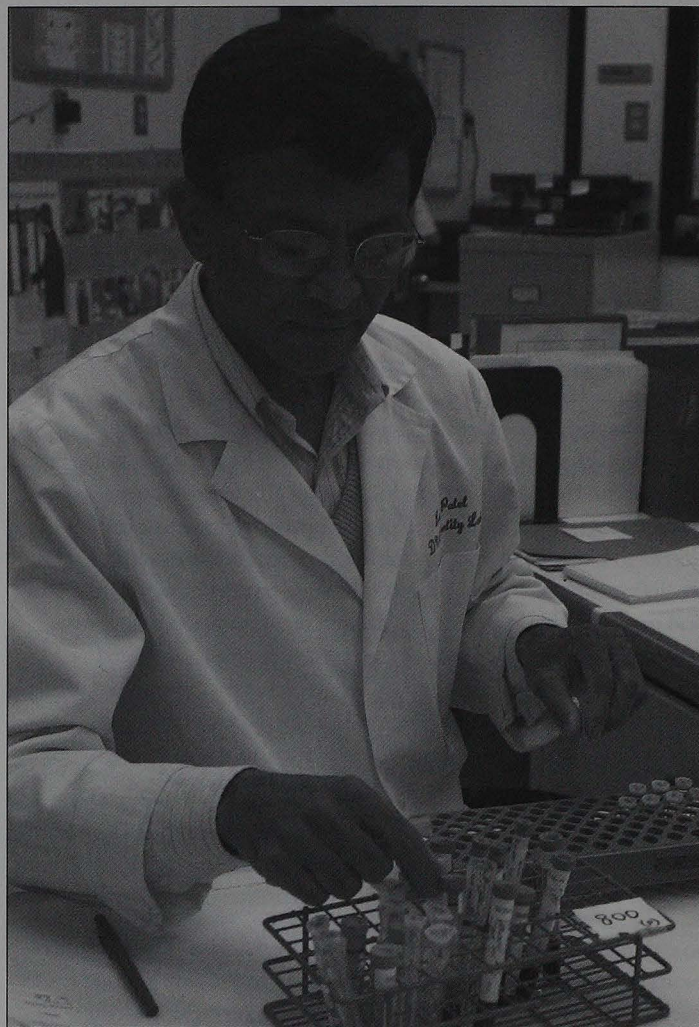
Time spent in active service in the U.S. armed forces will not be used in computing the time limit. However, career members of the armed forces should consult the graduate dean concerning the credit given to work completed before or during active military service.

Use of Transfer Credit

Depending on the student's previous preparation and degree plan, up to 6 SCH of graduate work completed elsewhere may be transferred toward a master of science degree. Only those courses with a grade of B or higher will be transferred.

Extension and correspondence credit earned at other institutions will not be counted toward a graduate degree at UNT Health Science Center. The Graduate School of Biomedical Sciences does not award credit for portfolio-based experiential learning.

It is the student's responsibility to insure that official transcripts of courses completed elsewhere are furnished to the office of the graduate dean, and that graduate credit has been assigned by the other institution or institutions to whatever courses are to be counted toward the health science center degree. The student must



provide the catalog description and/or syllabus from the semester the course was taken before transfer credit will be approved. Such courses, although listed on the health science center degree plan, will not be counted toward the degree until official transcripts showing graduate credit have been received and the credit has been approved by the graduate dean. All transfer courses are subject to the time limitation described above.

In accordance with the rules of the Texas Higher Education Coordinating Board, at least one-third of the semester credit hours required for any graduate degree must be completed in course work registered through UNT Health Science Center.

Advisory Committee

Each student must select an advisory committee. Typically, the major professor and/or the graduate advisor assist the student in selecting members to serve on the advisory committee. The committee guides the student in selecting course work appropriate for the degree program and defining research goals and approves the research proposal. In some disciplines, the advisory committee also serves as the examination committee for advancement to candidacy. The advisory committee administers the final examination for the degree.

The major professor serves as chair of the advisory committee.

Advisory committees for master of science students must include at least two additional graduate faculty members. Furthermore, all students will be assigned a university member (see details below) who ensures that the policies and procedures of the Graduate School of Biomedical Sciences and UNT Health Science Center are upheld.

Each student is required to meet with his/her advisory committee at least once per academic year.

Degree Plan

A degree plan listing all courses must be completed by the student, approved by the student's advisory committee and department, and submitted to the graduate dean before the completion of 24 SCH.

The major professor and advisory committee members are chosen on the advice of the department chair or graduate advisor in the major area. All subsequent requests for degree plan changes must be approved by the advisory committee and submitted in writing by the major professor to the graduate dean.

Master of Science degree requirements listed in the graduate catalog currently in force at the time the student's degree plan is approved by the graduate dean are those that should be completed by the student.

University Member

When the advisory committee is formed, the student must file a Request for University Member Designation form to submit the names of at least three graduate faculty members outside of the major department. From this list, the graduate dean will appoint the university member.

The university member must be incorporated into the review and approval process of the thesis or internship practicum report from the formal or substantive inception of the topic through the comprehensive examination and final approval of the thesis or practicum report.

The university member must take part in any formal hearing or defense. The university member is a voting member of the final examination committee and will sign the thesis or practicum report fly pages.

The purpose of the university member on advisory committees is to ensure that the policies and procedures of the Graduate School of Biomedical Sciences and UNT Health Science Center have been upheld. The presence of the university member is essential for the process of approval of research proposals and defense examinations. The university member's signature on appropriate forms indicates that the integrity of the review process has been preserved. It is the responsibility of the university member to report to the graduate dean any impropriety.

Traditional Master of Science Program Requirements

Each student is responsible for the completion of the Master of Science program according to the procedures that follow. Each item must be completed in the sequence and time period indicated. Forms are subject to revision at any time and should be obtained from the school web site.

1. Acceptance into the graduate school. If a student has been accepted on probation, he or she must take a minimum of 9 SCH of formal graduate course work during the first regular semester of enrollment. A minimum GPA of 3.0 must be obtained.
2. Before the completion of 24 SCH, the student must select an advisory committee and file a Designation of Advisory Committee form in the graduate school. Enrollment will be restricted to prevent the accumulation of more than 24 SCH without a designated advisory committee. At this time, the student must also request a university member. This individual must be present at the final defense.
3. The student must file a degree plan approved by the advisory committee with the graduate school before the completion of 24 SCH. Course work deficiencies will be stipulated at this time. Enrollment will be restricted to prevent the accumulation of more than 24 SCH without an approved degree plan.
4. A research proposal must be approved by the committee and filed with the graduate school prior to or during the semester in which the student first enrolls in thesis.
5. Once a student has enrolled in thesis, he/she must maintain continuous enrollment in a minimum of 6 SCH of thesis during each semester until the thesis has been accepted by the graduate school. Failure to maintain continuous enrollment will either invalidate any previous thesis credit or will result in the student's dismissal from the degree program unless granted an official leave of absence by the graduate dean for medical or other exceptional reasons.
6. The completed thesis or report must be submitted to the advisory committee at least two weeks prior to the defense.
7. A formal public seminar pertaining to the thesis or report will be presented in the student's last semester.
8. A final oral defense of the thesis or report and related work will be given by the advisory committee immediately following the seminar. Only the advisory committee and the university member may attend the defense meeting.
9. Three copies of the thesis or report must be bound for institutional use. These are distributed to the major professor, major department and the reference section of the Gibson D. Lewis Health Sciences Library. An additional copy is also required. This fourth copy will remain unbound in the library archives.
10. The thesis must be prepared for digital submission according to the instructions in the Guidelines for Filing Theses, Internship Practicum Reports and Dissertations. Practicum reports are excluded from this requirement.

Specialized Master of Science Program Requirements

Requirements of the specialized Master of Science programs are described under the following disciplines in Chapter 5.

Biomedical Sciences (Biotechnology, Medical Science, Science Education); Cell Biology and Genetics (Forensic Genetics).

Doctor of Philosophy Degree

General Requirements

The candidate for a doctor of philosophy degree must earn 60 SCH beyond the master's degree or 90 SCH beyond the bachelor's degree. The degree requirements are determined by the graduate catalog currently in force at the time the student's degree plan is approved by the graduate dean and must be completed by the student.

This quantitative requirement must be regarded as a minimum. The quantity of course work to be completed by each candidate is arranged individually by the supervisory committee, subject to the approval of the graduate dean, and may be modified both as to quantity and as to type during the progress of the student's course work.

Consult subsequent sections of this publication for the specific course requirements for the doctor of philosophy degree.

Residency Requirement

Every candidate for the doctoral degree must complete the appropriate residency requirement at the health science center. The minimum residency requirement consists of two consecutive long semesters in the graduate school (fall and the following spring, or spring and the following fall), or a fall or spring semester and one adjoining summer semester.

Time Limitations

All work to be credited toward the doctoral degree beyond the master's degree must be completed within a period of 10 years from the date doctoral credit is first earned. No course credit beyond the master of science degree that is more than 10 years old at the time the doctoral program is completed will be counted toward the doctorate.

Time limits are strictly enforced. Students exceeding the time limit may be required to repeat the comprehensive exam, replace out-of-date credits with up-to-date work, and/or show other evidence of being up-to-date in their major fields. Students anticipating that they will exceed the time limit should apply for an extension before their ninth year of study. Holding a full-time job is not considered in itself sufficient grounds for granting an extension.

Time spent in active service in the U.S. armed forces will not be used in computing the time limit. However, career members of the armed forces should consult the graduate dean concerning the credit given to work completed before or during active military service.

Use of Transfer Credit

Generally, up to 24 SCH of graduate work completed elsewhere may be transferred toward a Doctor of Philosophy degree, depending on the student's previous preparation and degree plan. Doctoral students may request approval of additional transfer credit in writing to the dean. Only those courses with a grade of B or higher will be transferred.

Extension or correspondence credit earned at other institutions may not be counted toward a graduate degree at UNT Health Science Center. The Graduate School of

Biomedical Sciences does not award credit for portfolio-based experiential learning.

It is the student's responsibility to insure that official transcripts of courses completed elsewhere are furnished to the office of the graduate dean and that graduate credit has been assigned by the other institution or institutions for courses to be counted toward the health science center degree. The student must provide the catalog description and/or the syllabus from the semester the course was taken before transfer credit will be approved. Such courses, although listed on the health science center degree plan, will not be counted toward the degree until official transcripts showing graduate credit have been received and the credit has been approved by the graduate dean. All transfer courses are subject to the time limitation described above.

In accordance with the rules of the Texas Higher Education Coordinating Board, at least one-third of the semester credit hours required for any graduate degree must be completed in course work on the campus of UNT Health Science Center.

Advisory Committee

Each student must select an advisory committee. Typically, the major professor and/or the graduate advisor assist the student in selecting members to serve on the advisory committee. The committee guides the student in selecting course work appropriate for the degree program and defining research goals and approves the research proposal. In some disciplines, the advisory committee also serves as the examination committee for advancement to candidacy. The advisory committee administers the final examination for the degree.

The major professor serves as chair of the advisory committee. Doctoral student advisory committees must include at least three additional graduate faculty members. Furthermore, all students will be assigned a university member (see details below) who ensures that the policies and procedures of the Graduate School of Biomedical Sciences and UNT Health Science center are upheld.

Each student is required to meet with his/her advisory committee at least once per academic year.

Degree Plan

Before the completion of 24 SCH, a degree plan listing all courses should be prepared by the student, approved by the student's advisory committee, graduate advisor, department chair and graduate dean. Entering students holding an appropriate master's degree must file a degree plan within the first year of study at UNT Health Science Center.

The major professor and committee members are chosen on the advice of the department chair or graduate advisor in the major area. All subsequent requests for degree plan changes must be submitted in writing by the major professor to the graduate dean.

The degree requirements are determined by the graduate catalog currently in force at the time the student's degree plan is approved by the graduate dean and must be completed by the student.

University Member

When the advisory committee is formed, the major professor and the student must file a Request for University Member Designation form to submit the names of at least three graduate faculty members outside of the major department. From this list, the graduate dean will appoint the university member.

The university member must be incorporated into the review and approval process of the doctoral dissertation, from the formal or substantive inception of the topic through the comprehensive examination and final approval of the dissertation.

The university member must take part in any formal hearing (proposal defense, qualifying examination, and final defense). The university member is a voting member of the final examination committee and will sign the dissertation fly pages.

The purpose of the university member on doctoral committees is to ensure that the policies and procedures of the Graduate School of Biomedical Sciences and UNT Health Science Center have been upheld. The presence of the university member is essential for the process of approval of dissertation proposals and defense examinations. The university member's signature on appropriate forms indicates that the integrity of the review process has been preserved. It is the responsibility of the university member to report to the graduate dean any impropriety.

Advancement to Candidacy

Doctoral students must complete the following two-part process to be advanced to candidacy. First, a discipline-based qualifying examination, designed and administered by the discipline's graduate faculty, must be successfully completed within 72 SCH of coursework inclusive of any advanced standing granted for the completion of a master's degree. At the minimum, this exam must consist of an oral examination. Depending on the discipline requirements, the exam may consist of both oral and written components. Second, the student must register for Grant Writing (BMSC 6010) in the first long semester immediately following successful completion of the qualifying examination and before the completion of 84 SCH.

The student is advanced to candidacy and must enroll in Doctoral Dissertation (BMSC 6950) in the first long semester immediately following successful completion of BMSC 6010.

Dissertation Requirement

A dissertation is required of all candidates for the doctorate. In general, 12 SCH are allowed for the dissertation. The student is required to enroll for dissertation credit and must maintain continuous enrollment in BMSC 6950 until the dissertation has been completed and submitted to the graduate dean. Enrollment in BMSC 6950 is limited to nine hours in each long term. Grades of PR will be recorded at the end of each semester until the dissertation is filed with the graduate school and approved by the graduate dean. Appropriate grades and credit hours will then be shown on the student's record. A minimum of six semester credit hours of dissertation enrollment are required during each long semester and one summer semester to maintain continuous enrollment.

Doctoral Program Requirements

Each student is responsible for the completion of the doctoral program according to the procedures below. Each item must be completed in the sequence and time period indicated. See the graduate office regarding paperwork when completing each step.

1. A major professor should be selected by the student at the earliest possible time, but no later than the completion of 24 SCH.
2. The student should meet with the intended major professor for guidance until a doctoral committee and degree plan are established.
3. The major professor and the student should select at least four doctoral committee members from the graduate faculty. The student has the responsibility for obtaining the agreement of the professors (using the Designation of Doctoral Advisory Committee form) and will file this in the graduate school before the completion of 24 SCH. At the time the committee is designated, the student should submit the names of at least three graduate faculty members from which the graduate dean will appoint the university member. Enrollment will be restricted to prevent the accumulation of more than 24 SCH without designation of an advisory committee and request for designation of university member.
4. The committee should meet and evaluate all credentials of the student pertinent to the development of the degree program. An approved degree plan will then be submitted to the graduate dean. The committee should meet with the student as needed to discuss progress, but must meet at least once per academic year. The doctoral committee has sole responsibility for quality control of the student's program and dissertation. Enrollment will be restricted to prevent the accumulation of more than 24 SCH without an approved degree plan.
5. A qualifying examination intended to establish the student's candidacy for the Ph.D. degree will be administered by the designated departmental committee upon completion of the core courses, techniques and some advanced coursework. The qualifying exam must be undertaken prior to the completion of 72 SCH. Results of the qualifying examinations will be sent to the graduate school in writing. Disciplines may have additional qualifying exam requirements, which are indicated in their graduate program descriptions. Enrollment will be restricted to prevent the accumulation of more than 24 SCH without successful completion of the qualifying examination.
6. After successful completion of the qualifying examination, the student must enroll in Grant Writing (BMSC 6010). As a component of this course, the student must attend a grant writing workshop held by the graduate school. The student will then write, present and defend an NIH-style grant application.
7. A research proposal must be approved by the committee and filed with the graduate school during the semester in which the student first enrolls in dissertation. Enrollment will be blocked to prevent the student from registering for additional

dissertation credits before an approved research proposal has been filed with the graduate school.

8. A student must maintain continuous enrollment in a minimum of 3 SCH of dissertation during each long semester and one summer session until the dissertation has been accepted by the dean of the graduate school.

Failure to maintain continuous enrollment will either invalidate any previous dissertation credits or will result in the student being dropped from the degree program unless granted an official leave of absence by the graduate dean for medical or other exceptional reasons.

9. Upon completion of the research and after consultation with the major professor, the student should submit a rough draft of the dissertation to the committee members at least one month before the receipt of the final draft. The final draft should be distributed to committee members at least two weeks prior to the defense. Committee members should return corrected drafts to the student as soon as possible. Working through committee members at all times, the student and major professor will resolve comments arising from the rough draft and incorporate them into a final draft.
10. During the semester of graduation, the student will present a formal public seminar on the research. This seminar should be scheduled immediately prior to the final defense. Only the advisory committee may attend the defense meeting.
11. The doctoral committee will administer the final defense and sign final copies of the dissertation. The university member must be present and sign final copies of the dissertation. The committee will notify the dean of the graduate school of results of the final examination.
12. Three copies of the dissertation must be bound for institutional use. These are distributed to the major professor, major department and the reference section of the Gibson D. Lewis Health Sciences Library. An additional copy is also required. This fourth copy will remain unbound in the library archives.
13. The dissertation must be prepared for digital submission according to the instructions in the Guidelines for Filing Dissertations and Theses.

Dual Degree Programs

General Description

UNT Health Science Center offers several dual degree programs. The Graduate School of Biomedical Sciences participates in the D.O./Ph.D. and D.O./M.S. programs with the Texas College of Osteopathic Medicine (TCOM). Typically, the D.O./Ph.D. program will be 6 to 7 years in length. The D.O./M.S. program is typically 5 years in length.

Students may pursue the D.O./Ph.D. through the Medical Scientist Training Program, which guarantees funding from the Graduate School of Biomedical Sciences during Block 2 of the program, as well as payment of graduate tuition and fees. Support may be available during other blocks of the program through TCOM.

Students may choose from a wide range of disciplines including cell biology and genetics, biochemistry and molecular biology, microbiology and immunology, physiology, and pharmacology and neuroscience.

Application Procedure

An applicant to the M.S.T.P. program must first apply to the Texas Medical and Dental Schools Application Service. The applicant should indicate the dual degree program in which he or she is interested on the application. If invited for interview, the applicant will participate in three interviews, rather than the standard two for applicants to the D.O. program. The application is then processed through a dual program admissions committee.

Individuals who become interested in pursuing the D.O./Ph.D. after gaining acceptance into either TCOM or the Graduate School of Biomedical Sciences must make formal application to the school in which he/she is not already enrolled. Procedures are in place to streamline this process by sharing information already in institutional records. Applicants who decide to pursue the D.O./Ph.D. after gaining acceptance to either TCOM or the Graduate School of Biomedical Sciences may not be considered for the M.S.T.P.

Applicants to the D.O./M.S. program may apply either using the dual degree admissions process described above or by applying to each school separately. D.O./M.S. applicants are not considered for the M.S.T.P.

D.O./Ph.D. Format

The general format of the dual-degree program is explained below. While the format may be regarded as the standard working format, it is understood that deviations from this format that meet the curriculum requirements are also acceptable. A degree plan is established by the student's major professor and advisory committee and filed in the graduate office.

Block 1. Block 1 consists of the preclinical years for the D.O. degree. During Block 1, the student will complete the first two years of the D.O. curriculum and will pass Part 1 of the College of Osteopathic Medical Licensing Examination (COMLEX). During this block the student will register only at TCOM.

An exception to this rule is if the student wishes to register for

		D.O.	Ph.D.
Block 1	Year 1	Semesters 1-4	Individual Research
	Year 2	Semesters 1-4	Specialty Courses
Block 2	Year 3		Electives, Qualifying Exam, Individual Research
	Year 4		Individual Research, Dissertation
Block 3	Year 5	Clinical Science, DO Rotations	
	Year 6	Clinic Rotations, Research Rotation Elective	

graduate courses which are not part of the D.O. curriculum during this block. In this case, the student will register for such graduate courses through the Graduate School of Biomedical Sciences. During Block 1, the student will select a graduate advisory committee, and will file an approved graduate degree plan of at least 90 semester credit hours (SCH) with the graduate school. DO/PhD. students are given 30 SCH advanced standing toward the Ph.D. for the basic science didactic course work required in the D.O. curriculum.

Block 2. Block 2 consists of two years dedicated to graduate study. During Block 2, the student is expected to complete all course work required for the Ph.D. degree, complete the requirements for advancing to candidacy, have an approved dissertation research proposal, and make significant progress toward the completion of the dissertation research. It is not uncommon for students to continue research and complete the dissertation during Block 3.

Block 3. During Block 3, the student will complete the required clinical rotations and electives and will pass Part 2 of the COMLEX. During this block, the student may also continue work toward the Ph.D. dissertation.

At the end of block 3, the student is expected to have completed the curriculum required for the D.O. degree and to have completed at least 60 additional hours of graduate courses under the Graduate School of Biomedical Sciences as required for the second degree, including the dissertation. Following completion of the curriculum required for both degrees, the student is awarded the D.O. degree through TCOM and the Ph.D. through the Graduate School of Biomedical Sciences.

D.O./M.S. Format

Block 1. Block 1 consists of the preclinical years for the D.O. degree. During Block 1, the student will complete the first two years of the D.O. curriculum and will pass Part 1 of the College of Osteopathic Medical Licensing Examination (COMLEX). During this block the student will register only in TCOM.

An exception to this rule is if the student wishes to register for graduate courses which are not part of the D.O. curriculum during this block. In this case, the student will register for such graduate courses through the Graduate School of Biomedical Sciences. During Block 1, the student will select a graduate advisory committee and will file an approved graduate degree plan of at least 30 semester credit hours (SCH) with the graduate school. D.O./M.S. students are given up to 6 SCH of advanced standing toward the M.S. for the basic science didactic course work required in the D.O. curriculum.

Block 2. Block 2 consists of at least one year dedicated to graduate study. During Block 2, the student is expected to complete all course work required for the M.S. degree, file an approved thesis research proposal, and make significant progress toward the completion of the thesis research.

Block 3. During Block 3, the student will complete the required clinical rotations and electives and will pass Part 2 of the COMLEX. During this block, the student may also continue work toward the master's thesis.

At the end of Block 3, the student is expected to have completed the curriculum required for the D.O. degree and to have completed at least 24 additional SCH of graduate courses under the Graduate School of Biomedical Sciences, as required for the second degree, including the research thesis. Following completion of the curriculum required for both degrees, the student is awarded the D.O. degree through TCOM and the M.S. through the Graduate School of Biomedical Sciences.

Costs, Financial Obligations and Assistance

D.O./Ph.D. and D.O./M.S. students pay the standard medical school tuition and fees during each block that they are enrolled in TCOM. They also pay the hourly tuition rate and fees for all courses not required for the D.O. degree, i.e., the credit hours required for the graduate degree. Non-Texas residents pursuing the D.O./Ph.D. are assessed tuition at the in-state rate for both medical and graduate school.

The health science center will provide financial support to those students selected into the M.S.T.P. by the dual program admissions committee to seek the D.O./Ph.D. This includes a fellowship in an amount sufficient to pay all graduate tuition costs during Block 2 and a graduate assistantship during this time. Support may be available during other blocks, as well.

Students who are not selected to participate in the M.S.T.P. often receive funding during Block 2 from other sources, including research grants, departmental assistantships, and other departmental funds.

All dual degree program students are eligible to apply for financial aid.

5 Disciplines

Biochemistry & Molecular Biology

Alakananda Basu, Ph.D., Graduate Advisor
Research and Education Building 437
817-735-2487
E-mail: abasu@hsc.unt.edu

Graduate Faculty: Andreev, Basu, Bhatt, Borejdo, Dimitrijevic, Dory, Easom, Gracy, Harris, Kitson, Kim, Kudchodkar, Kulkarni, Lacko, McConathy, Nair, Rao, Wu

Adjunct Graduate Faculty: Clark, Goldfarb, Zachariah

The Department of Biochemistry and Molecular Biology offers comprehensive graduate training in molecular aspects of biological processes. Both M.S. and Ph.D. degree programs are designed to accommodate a broad spectrum of student and faculty interests and require a significant contribution to knowledge through original research. Research training is conducted in modern laboratories and is complemented by informative didactic course work, seminars and journal clubs.

A broad range of students is accommodated by a diverse range of faculty research interests that range from clinical studies in human subjects to biophysical analyses of muscle contraction and from 3-dimensional cell culture and tissue regeneration to the molecular characterization of protein-protein-DNA interactions. Within the setting of the health science center, specific research interests of the faculty address a wide range of prominent diseases including cancer, diabetes, cardiovascular disease, Alzheimers, tobacco use, and sickle cell anemia. Other projects address aspects of wound healing and parasite control. Under these broad umbrellas, research topics encompass an interest in cellular processes such as signal transduction, tumor invasion, natural killer cell function, muscle contraction, cell-to-cell and cell-to-matrix interactions, enzymology, gene expression, hematopoiesis, angiogenesis, protease action and regulation, exocytosis, apoptosis, cell proliferation and differentiation, drug resistance, gene delivery, hyperbaric oxygen therapy, protein phosphorylation/dephosphorylation, and lipoprotein metabolism. All research projects employ state-of-the-art molecular and biochemical techniques. Students with undergraduate science majors in areas such as biology, chemistry and biochemistry that fulfill prerequisite courses of organic and inorganic chemistry will be considered for admission. The graduate curriculum consists of a multidisciplinary core course that surveys the fundamental principles of biochemistry, molecular biology, cell biology, microbiology, immunology, pharmacology and physiology. This is followed by advanced courses that focus on the most recent progress in various areas of biochemistry and molecular biology, and provide the student with a contemporary perspective in areas of greatest current scientific interest.

Most students complete the M.S. requirements in 1-2 years, while Ph.D. requirements are completed within 4-5 years.

Detailed policies and procedures are available from the graduate advisor and supplied to the student during orientation.

Degree Plans

The following are typical degree plans for students in the biochemistry and molecular biology discipline. It is advantageous to the student to begin graduate study in a fall semester. This degree plan may vary depending upon availability of course offerings in a given semester and each student's progress toward thesis and dissertation research.

M.S. Degree Plan for Biochemistry and Molecular Biology

Year 1

Fall

BMSC 5600	Integrative Biomedical Science I	5 SCH
BMSC 5700	Integrative Biomedical Science II	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
		<hr/> 12 SCH

Spring

BIOC 5940	Seminar in Current Topics	1 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
BMSC 5800	Integrative Biomedical Science III Electives	5 SCH
		<hr/> 5 SCH
		<hr/> 12 SCH

Summer

BMSC 5930	Individual Research	3 SCH
BMSC 5950	Thesis	3 SCH
		<hr/> 6 SCH

Year 2

Fall

BMSC 5950	Thesis	3 SCH
-----------	--------	-------

Total

33 SCH

Ph.D. Degree Plan for Biochemistry and Molecular Biology

Year 1

<i>Fall</i>		
BMSC 5600	Integrative Biomedical Science I	5 SCH
BMSC 5700	Integrative Biomedical Science I	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
		<u>12 SCH</u>

Spring

BIOC 5940	Seminar in Current Topics	1 SCH
BMSC 5800	Integrative Biomedical Science II	6 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
	Electives - Journal Club or Techniques	4 SCH
		<u>12 SCH</u>

Summer

BMSC 5200	Biostatistics I	3 SCH
BMSC 5970	Techniques in Biomedical Science	1 SCH
	Electives	2 SCH
		<u>6 SCH</u>

Year 2

<i>Fall</i>		
BIOC 5940	Seminar in Current Topics	1 SCH
BMSC 5970	Techniques in Biomedical Science	1 SCH
BMSC 6940	Individual Research	2-10 SCH
	Journal Club Course **	2-4 SCH
	Electives*	3-8 SCH
		<u>12 SCH</u>

Spring

BIOC 5940	Seminar in Current Topics	1 SCH
BMSC 5970	Techniques in Biomedical Science	1 SCH
BMSC 6940	Individual Research	2-10 SCH
	Journal Club Course **	2-4 SCH
	Electives*	3-8 SCH
		<u>12 SCH</u>

Summer

BMSC 6940	Individual Research	6 SCH
		<u>6 SCH</u>

Year 3

<i>Fall</i>		
BIOC 5940	Seminar in Current Topics	1 SCH
BMSC 6010	Qualifying Examination for Doctoral Students	3 SCH
BMSC 6940	Individual Research	8 SCH
		<u>12 SCH</u>

Spring

BMSC 6940	Individual Research	9 SCH
BMSC 6950	Doctoral Dissertation	3 SCH
		<u>12 SCH</u>

Summer

BMSC 6950	Doctoral Dissertation	6 SCH
-----------	-----------------------	-------

Year 4

<i>Fall</i>		
BMSC 6950	Doctoral Dissertation	6 SCH

Total

96 SCH

* Elective Core Courses (7-8 SCH from the following):

BIOC 5425	Advanced Biochemistry	4 SCH
BIOC 5435	Molecular Aspects of Cell Signaling	4 SCH
BIOC 6040	Molecular Biology of Lipid Transport	2 SCH
BIOC 6050	Molecular and Cell Biochemistry of Cancer	2 SCH
MICR 6300	Advanced Molecular Biology	3 SCH

** Journal Club Courses

BIOC 5510	Signal Transduction	2 SCH
BIOC 5520	Enzyme Regulation and Mechanism	2 SCH
BIOC 5530	Structure and Function of Proteins	2 SCH
BIOC 5540	Advanced Lipoprotein Metabolism	2 SCH
BIOC 5560	Current Topics in Cancer Biology	1 SCH
BIOC 5920	Cell Motility	2 SCH
BMSC 5720	Cellular Responses to Peptides	2 SCH

Advancement to Doctoral Candidacy

Qualifying Examination

The qualifying examination is to ensure that a doctoral student has sufficient mastery of fundamental principles of biochemistry and molecular biology to be successful as a Ph.D. candidate and independent researcher. A list of major topics to be examined will be distributed to the student after the completion of the first year. The student is expected to become knowledgeable in each of these topics through coursework, individual reading, or discussions with faculty members.

The qualifying examination will be administered by biochemistry and molecular biology faculty, except for the student's major professor, and will consist of both written and oral phases. In the written phase, a student will answer a given set of questions within a given time (3 hours). The oral phase, scheduled two to three weeks after the written examination, will further explore topics of written questions where necessary but may also be expanded to address other topics in the field of biochemistry and molecular biology. The student must demonstrate an ability to discuss and apply concepts of biochemistry and molecular biology.

Grant Writing

This stage of the advancement to doctoral candidacy will evaluate a student's aptitude for independent thought and scientific writing. In this course, a student is required to prepare an NIH-style research proposal, without the assistance of his/her major professor, and defend it before an examination committee. The proposal should be based on an original hypothesis that is distinct from the dissertation research and should describe specific experimental approaches to address this hypothesis. The student will present this proposal in the form of a public seminar and then privately address specific questions of an examination committee. The examination committee will consist of Biochemistry and Molecular Biology graduate faculty (at least three of the five members), associate faculty and adjunct faculty. The Graduate Advisor will serve as coordinator and will meet with enrolled students at the beginning of the semester to review guidelines and answer relevant procedural questions. Upon successful completion of this course, the student is advanced to candidacy.

Biomedical Sciences

Victoria L. Rudick, Ph.D., Graduate Advisor
Education and Administration Building 816
817-735-2560
E-mail:vrudick@hsc.unt.edu

Graduate and Adjunct Graduate Faculty: All members of the graduate and adjunct graduate faculty are included in Biomedical Sciences.

The Graduate School of Biomedical Sciences offers both M.S. and Ph.D. degrees in biomedical sciences. Students are encouraged to acquire a broad base of knowledge in those disciplines that flourish in an environment of a health science center and are required to pursue specialized research and study in a particular area of biomedical and health science. The training students obtain equips them for professional careers in health science centers, universities, secondary science education, health care industry, publishing, pharmaceutical and biotechnology companies. All entering graduate students are expected to complete a one year integrated biomedical sciences program that surveys the fundamental principles of biochemistry, cell biology, microbiology, immunology, pharmacology and physiology to prepare them for tomorrow's scientific advancements and employment opportunities.

The biomedical sciences discipline is interdisciplinary in nature; therefore, advanced courses focus on the individual student's particular interests. Mentors may be selected from any of the Graduate Faculty, regardless of departmental affiliation. The traditional M.S., M.S. in Biotechnology, M.S. in Clinical Research Management, M.S. in Science Education or Ph.D. may be obtained through the biomedical sciences discipline.

Biomedical Sciences Advisory Committee

Research leading to theses and dissertations must reflect the interdisciplinary nature of the biomedical sciences discipline, i.e. the research must involve two or more disciplines, such as integrative physiology and biochemistry/microbiology. Each traditional M.S. or Ph.D. student is required to select a major professor from the primary discipline. Together, the student and major professor select a minor professor from the secondary discipline. The student's research will then be conducted in both the major and minor professors' laboratories. The remaining advisory committee members will reflect the interdisciplinary nature of the student's specific research and may be selected from any discipline, provided that they are members of the graduate faculty. For the master's program, at least one additional member will be required and, for the doctoral program, at least two additional members will be required. Both master's and doctoral students must have a university member present at any qualifying examination, proposal defense, or final thesis/dissertation defense, as required by the Graduate School of Biomedical Sciences.

Degree Plans

The following are typical degree plans for students in the biomedical sciences discipline. Degree plans for students in the biomedical science discipline are tailored to the individual student's interest and vary greatly due to the interdisciplinary nature of the program. For these reasons, advanced and elective courses offered after completion of the first year core curriculum are not indicated.

Ph.D. Degree Plan for Biomedical Sciences

Year 1

Fall

BMSC 5600	Integrative Biomedical Sciences I	5 SCH
BMSC 5700	Integrative Biomedical Sciences II	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
		<u>12 SCH</u>

Spring

BMSC 5650	Laboratory Rotations	3 SCH
BMSC 5800	Integrative Biomedical Sciences III	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs Electives	1 SCH 3 SCH
		<u>12 SCH</u>

Summer

BMSC 5200	Biostatistics I Electives	3 SCH 3 SCH
		<u>6 SCH</u>

Year 2

Fall

BMSC 5940	Seminar in Current Topics	1 SCH
BMSC 5970	Techniques in Biomedical Sciences	1 SCH
BMSC 6940	Individual Research Electives	7 SCH 3 SCH
		<u>12 SCH</u>

Spring

BMSC 5940	Seminar in Current Topics	1 SCH
BMSC 5970	Techniques in Biomedical Sciences	1 SCH
BMSC 6940	Individual Research Electives	7 SCH 3 SCH
		<u>12 SCH</u>

Summer

BMSC 6940	Individual Research Oral Comprehensive Exam	3 SCH
BMSC 6940	Individual Research	3 SCH
		<u>6 SCH</u>

M.S. Degree Plan for Biomedical Sciences

Year 1

Fall

BMSC 5600	Integrative Biomedical Sciences I	5 SCH
BMSC 5700	Integrative Biomedical Sciences II	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
		<u>12 SCH</u>

Spring

BMSC 5650	Laboratory Rotations	3 SCH
BMSC 5700	Integrative Biomedical Sciences III	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs Electives	1 SCH 3 SCH
		<u>12 SCH</u>

Summer

BMSC 5200	Biostatistics I	3 SCH
BMSC 5930	Individual Research	3 SCH
		<u>6 SCH</u>

Year 2

Fall

BMSC 5930	Individual Research	6 SCH
Electives		2 SCH
		<u>8 SCH</u>

Spring

BMSC 5950	Thesis	6 SCH
		<u>6 SCH</u>

Total

44 SCH

Year 3**Fall**

BMSC 5940	Seminars in Current Topics	1 SCH
BMSC 6010	Grant Writing	3 SCH
BMSC 6940	Individual Research	2 SCH
		<hr/> 6 SCH

Spring

BMSC 5970	Techniques in Biomedical Science	1 SCH
BMSC 6940	Individual Research	6 SCH
Electives		2 SCH
		<hr/> 9 SCH

Summer

BMSC 6940	Individual Research	6 SCH
		<hr/> 6 SCH

Year 4**Fall**

BMSC 6950	Dissertation	6 SCH
-----------	--------------	-------

Spring

BMSC 6950	Dissertation	6 SCH
-----------	--------------	-------

Total		<hr/> 93 SCH
--------------	--	---------------------

Grant Writing (BMSC 6010)

Successful completion of Grant Writing (BMSC 6010) requires the preparation and oral defense of an original NIH grant proposal. Two attempts to successfully accomplish this are allowed.

The student should submit a report which presents the hypothesis, experimental strategy and specific aims for the proposal to the examination committee by mid-semester. The proposal must consist of the student's original ideas and is expected to significantly extend scientific knowledge in the chosen research area if the proposed experiments were actually conducted. The committee must approve this summary of the research proposal.

The student must prepare a detailed written report of the research proposal in NIH format after the summary has been approved. The final proposal will be typed and presented to the advisory committee at least two weeks prior to the oral defense. The grant proposal and presentation will be evaluated on the basis of originality and ability to synthesize and communicate this information.

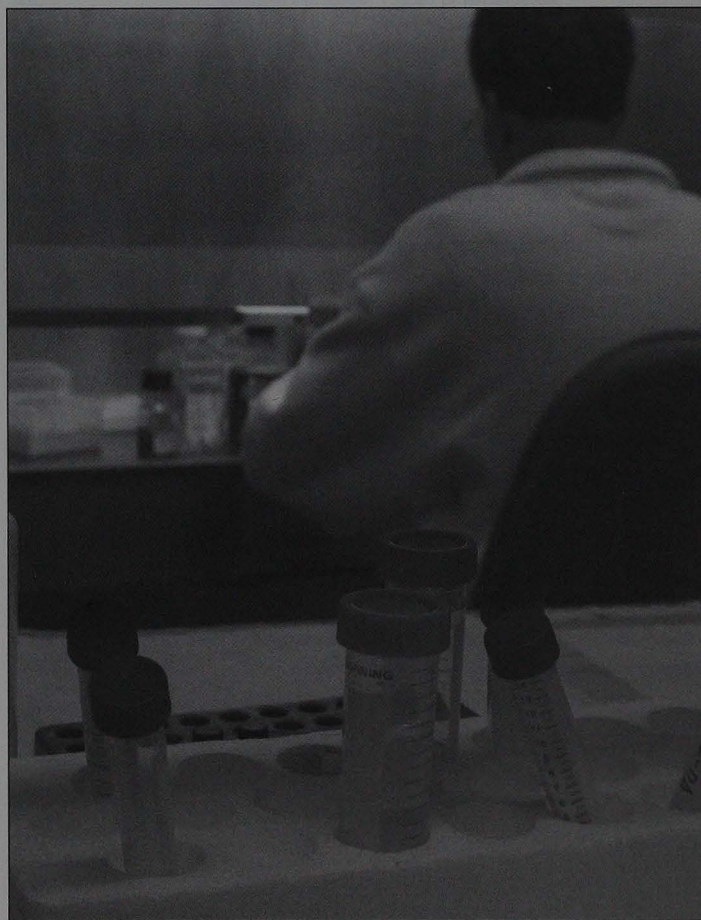
If the proposal and defense are satisfactory, the student is advanced to candidacy.

Advancement to Doctoral Candidacy**Qualifying Examination**

The qualifying examination ensures that the doctoral student has mastered a broad knowledge base in biomedical sciences necessary to succeed as an independent researcher at the doctoral level. The student obtains this knowledge through course work, reading of textbooks and scientific literature, and discussion with faculty members.

The oral qualifying examination is administered by each student's qualifying exam committee and may include topics from any aspect of the biomedical sciences. The student will select one area of primary interest from the areas covered in the integrative core curriculum. These include biochemistry, molecular biology, cell biology, microbiology, immunology, physiology, and pharmacology. The student will also identify two areas of secondary interest. Students are allowed to meet with committee members prior to the examination to discuss potential topics for the questions. Questions will be given to the student in writing 20 minutes prior to the beginning of the exam.

Two attempts to successfully pass the qualifying examination are allowed. Failure of the student to pass the qualifying examination results in dismissal of the student from the doctoral program. A doctoral student who does not pass may be allowed to complete the requirements for a Master of Science degree.



Biotechnology

Victoria L. Rudick, Ph.D., Graduate Advisor
Education and Administration Building 816
817-735-2560
E-mail: vrudick@hsc.unt.edu

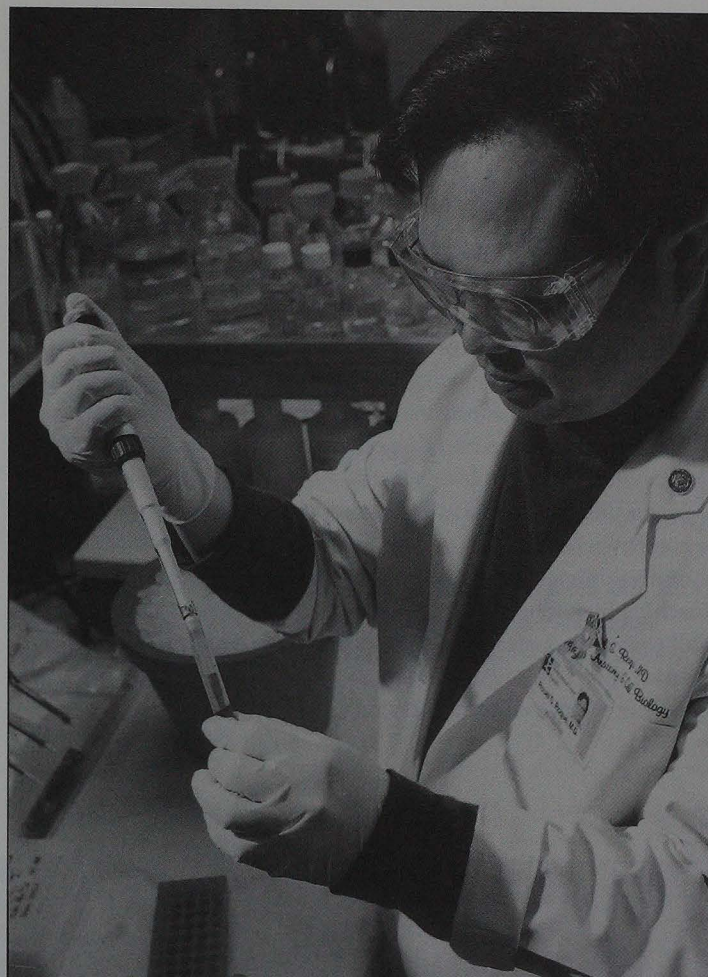
Graduate Faculty: All members of the graduate faculty and adjunct graduate faculty are included in Biotechnology.

Science advancements are moving at a record pace. New and exciting approaches have led to our greater understanding of health and disease. Keeping pace with these breakthroughs will require an educated and highly trained workforce.

UNT Health Science Center offers a Master of Science in Biomedical Sciences in the discipline of Biotechnology, designed to train individuals for careers in industry and research by providing the tools and experience needed for the highly technological positions offered in emerging biotechnology companies and research institutions. Students will take integrated biomedical sciences courses that provide the breadth and depth needed to understand complex biomedical problems. All students are required to train in molecular, cellular, physiological and pharmacological techniques and to complete an internship in a research or industrial laboratory that forms the basis of the laboratory internship practicum.

The typical curriculum includes:

BMSC 5200	Biostatistics I	3 SCH
BMSC 5520	Ethical, Legal and Social Issues for Responsible Clinical Research	1 SCH
BMSC 5600	Integrative Biomedical Sciences I	5 SCH
BMSC 5700	Integrative Biomedical Sciences II	5 SCH
BMSC 5800	Integrative Biomedical Sciences III	5 SCH
BMSC 5920	Laboratory Internship Practicum	6 SCH
BMSC 5940	Seminar in Current Topics	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
BMSC 5965	Introduction to Industry Practice	1 SCH
BMSC 5970	Techniques in Biomedical Sciences	3 SCH
CGEN 6030	Methods in Molecular Biology	4 SCH
Total		36 SCH



Laboratory Internship Practicum

Once the graduate mentor is chosen, the student will complete a 6 month internship in the mentor's laboratory (BMSC 5920; 6 SCH). During this time, the student will learn how to perform all of the duties expected of a laboratory technician. These may include working under researchers on their projects, doing the student's own research project, purchasing supplies and equipment, repairing and maintaining equipment, etc. The student is expected to keep a laboratory notebook using GLP protocol during this experience. At the end of the practicum, the student will write a report detailing the activities of the internship. The student's advisory committee must approve this report together with the laboratory notebook. The student must make a formal presentation to the advisory committee at this time. A copy of the report must be submitted within the appropriate deadlines to the graduate school according to the guidelines for completing the requirements for graduation.

Master of Science in Science Education

Rustin Reeves, Ph.D., Graduate Advisor
Research and Education Building 202-D
817-735-2050
e-mail: rustyr@hsc.unt.edu

The science education degree program is designed to provide advanced skills to individuals who have chosen careers in middle and high school science teaching. The program will enhance the candidate's appreciation of science and ability to present science in the classroom by providing the tools and experience needed to capture the interest of today's youth. Students will take integrated biomedical science courses that offer training in disciplines ranging from molecules to whole organisms, a specialized course in which students design scientific demonstrations/experiences for middle/secondary school classes, and an internship practicum in which they spend a minimum of ten hours a week assisting in the classroom teaching high school science. The master's degree that they receive will enable graduates to be more competitive and achieve better salaries upon entering the job market and thus, encourage life-long choice of science education careers.

Program Requirements

Each student is responsible for the completion of the requirements for the Master of Science in Science Education program according to the procedures that follow. Each item must be completed in the sequence and time period indicated. Graduate school forms are subject to revision at any time and can be obtained from the health science center web site www.hsc.unt.edu (select department> graduate school>forms). The average time to complete a degree is one full academic year plus one summer semester (14 months).

1. Acceptance into the graduate school. Requirements for acceptance into the graduate school may be accessed on the health science center web site. A teaching certificate is not a requirement for acceptance into the masters program. Applications are due in the graduate school by April 1. All applicants to the Master of Science Education program will be notified of acceptance by May 1 and will begin classes approximately June 1.

If a student has been accepted on probation, he or she must take a minimum of 12 SCH of formal graduate course work during the first fall semester of enrollment. A minimum GPA of 3.0 must be obtained.



2. By the end of the first summer semester, the student must select a faculty mentor from a designated group of faculty and an advisory committee consisting of the mentor and two other graduate faculty members. In addition, the student must have a university member as part of his/her advisory committee. The names of these four individuals must be filed with the graduate school. In addition, a degree plan must be filed with the graduate school at this time.
3. At the beginning of the fall term, the student will enroll in BMSC 5920, the Internship Practicum (2 SCH) to be conducted in the Fort Worth Independent School District high school biology classroom. The student will act as a science resource for the designated teacher. The internship will continue in the spring semester (2 SCH) so upon completion, the student will have spent a total of 9 months in the secondary school classroom. The fall and spring semester Practicum experiences will serve as the basis of the thesis.

During the summer semester of the second year, the student will continue to enroll in BMSC 5920 Internship Practicum-Thesis(2SCH) and must submit a report (thesis) to the mentor for his/her approval during this period. The advisory committee will meet with the student at this time to approve the work of the internship and the report. The student will present his work as both an oral and written report. The oral presentation will be open to the public and will then be followed by a private meeting (defense) with the advisory committee. The written report should be given to the committee one to two weeks before the formal meeting. After the defense, the committee will either approve/or not approve the work of the internship, the report, and oral presentation. If disapproved, the student may have a chance to revise the report and/or retake the defense at the discretion of the committee. The mentor together with the other members of the committee will assign a letter grade to the fall and spring practicum experiences (6 SCH). A copy of the report must be submitted within the appropriate deadlines to the graduate school in accordance with the guidelines for completing the requirements for graduation. It is strongly suggested that the student and mentor meet at least weekly to review the student's progress during all phases of the practicum.

Typical Curriculum

Summer

BMSC 5300	Tools for Teaching Science	2 SCH
BMSC 5650	Laboratory Rotation	1 SCH
BMSC 5970	Laboratory Techniques	2 SCH
		<hr/> 5 SCH

Fall

BMSC 5600	Integrative Biomedical Sciences I	5 SCH
BMSC 5700	Integrative Biomedical Sciences II*	5 SCH
BMSC 5920	Internship Practicum	2 SCH
BMSC 5940	Seminar in Current Topics: Intro. to Faculty Research & Studies	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
		<hr/> 14 SCH

* Students will register for BMSC 5700 in the fall, but it does not begin until BMSC 5600 ends. It then runs into the spring semester and is followed by BMSC 5800. Students will receive an incomplete ("I") in BMSC 5700 at the end of the fall semester until it is completed in the spring.

Spring

BMSC 5800	Integrative Biomedical Sciences III	5 SCH
BMSC 5920	Internship Practicum	2 SCH
BMSC 5940	Seminar in Current Topics: Intro. to Faculty Research & Studies	1 SCH
BMSC 5310	Educational Instrumentation and Evaluation	2 SCH
BMSC 5320	Issues in Higher Professional Education	2 SCH
		<hr/> 12 SCH

Summer

BMSC 5200	Biostatistics I	3 SCH
BMSC 5920	Internship Practicum (Thesis)	2 SCH
		<hr/> 5 SCH

Total Required Courses

36 SCH

The health science center reserves the right to make changes at any time to reflect current board policies, administrative regulations and procedures, amendments by state law and fee changes. Information provided in this document is subject to change without notice and does not constitute a contract between the University of North Texas Health Science Center and a student or an applicant for admission. The institution is not responsible for any misrepresentation or provisions that might arise as a result of errors in preparation.

Clinical Research Management

Victoria L. Rudick, Ph.D., Graduate Advisor
Education and Administration Building 816
817-735-2560
E-mail:vrudick@hsc.unt.edu

Clinical Research involves the testing and determination of safety and efficacy of new unapproved products, including pharmaceuticals, devices and biologics in human subjects. Clinical trials in humans (volunteers and patients) are required prior to marketing approval, by regulatory authorities such as the U.S. Food and Drug Administration (FDA). The law that governs clinical research is spelled out in Chapter 21 of the Code of Federal Regulations (CFR). In addition to requiring and legislating clinical trials, regulatory authorities define the standards by which clinical trials are to be conducted. These standards are known as Good Clinical Practices (GCPs).

In depth knowledge of the CFR and GCP guidelines as well as International Guidelines specifically as they relate to protection of human rights, prevention and detection of fraud and the use of sound scientific principles, is a fundamental requirement for a clinical research professional. These individuals are key personnel involved in the conduct of clinical trials, which in turn are pivotal in getting new products approved and on the market.

The master's program in Clinical Research Management will provide a strong foundation upon which to build a career. The rigorous curriculum focuses on providing students a broad-based view of the biomedical sciences, as well as in depth knowledge of regulatory requirements (code of federal regulations, good clinical practices), ethical issues, and both the medical writing and administrative skills necessary to conduct clinical research. As part of the program, all students will complete an internship practicum in clinical studies and use this experience to write the thesis pursuant to receiving the Master of Science degree. The average time to complete the degree is eighteen months.

Each student is responsible for the completion of the requirements for the Master of Clinical Research Management Program according to the procedures that follow. Each item must be completed in the sequence and time period indicated. Forms are subject to revision at any time and should be obtained from the Graduate School of Biomedical Sciences.

Opportunities for Graduates in Clinical Research Management

Well-trained clinical research professionals are in high demand. The tremendous increase in medical technology and information in the last decade has resulted in an explosion of potential new drugs, devices and biologics that must be tested before being released for use by the public. The profession is constantly challenged to improve and streamline the clinical research programs in order to shorten the development timelines and control the cost for new product development.



Clinical research professionals can hold a multitude of positions either in industry, at the investigational site, or in the clinical research service profession either at a contract research organization (CRO) or a site management organization (SMO). Job titles may include, but are not restricted to, clinical research associate, clinical research scientist, clinical research coordinator, medical writer, clinical trial auditor, clinical trial monitor, product safety specialist, clinical research trainer, etc. Industry (sponsor) and service professions (CRO, SMO) usually provide technical and managerial career paths and ample growth opportunities.

Typically a clinical research coordinator who has been involved with the implementation and coordination of a clinical trial at a research site (private, clinic, hospital), will advance his/her career by switching to either industry or one of the service professions. Others make the reverse switch because they prefer the interactions with the patients, or they may want to travel less than what is typically required from a clinical trial monitor. Turnover in all these industries and positions is relatively high because of the growing variety of choices clinical research professionals have, especially after they have accumulated a number of years of experience.

Program Requirements

Each student is responsible for the completion of the requirements for the Clinical Research Management program according to the procedures that follow. Each item must be completed in the sequence and time period indicated. Forms are subject to revision at any time and can be obtained from the health science center web site www.hsc.unt.edu (select >graduate school>forms).

1. The Graduate School Admission Committee will review all applicants for acceptance into the Clinical Research degree program. A student must have either a BA or BS degree and must meet the general requirements of the graduate school as described in the current graduate catalog. If a student has been accepted on probation, he/she must take a minimum of 12 SCH of formal graduate course work during the first regular semester of enrollment. A minimum GPA of 3.0 must be obtained.
2. By the end of the second semester, the student will be assigned a faculty mentor and an advisory committee consisting of the mentor and two other graduate faculty. In addition, the student must select a member of the graduate faculty to serve as a university member. This individual must be present at the final thesis defense. The names of these individuals must be filed in the graduate school. In addition, a degree plan must also be filed with the graduate school at this time. Forms may be obtained from the web site www.hsc.unt.edu (select >graduate school>forms).
3. During the summer of year one, the student will enroll in BMSC 5920, the Internship Practicum. The student will complete a five-six month internship at an off-campus site previously approved by the advisory committee. The student is responsible for transportation to and from the site. During this time, the student will learn how to perform the duties expected of the particular position in a particular clinical research position.
A formal plan describing how the practicum is to be spent must be approved by the advisory committee and submitted to the graduate school before the end of the spring semester, year one (Research Proposal Approval Form obtained from the health science center web page).
4. At the end of BMSC 5920, the student must submit a report (thesis) and internship daily notebook to the mentor for his/her approval. The advisory committee will meet with the student at this time and review both the notebook and written report. The student will present his/her work as both an oral and written report. The oral presentation will be open to the public and will then be followed by a private meeting with the advisory committee. The written report should be given to the committee one to two weeks before the formal meeting. At this time the committee will either approve/or not approve the work of the internship and the report. If disapproved, the student may have a chance to revise the report or repeat the practicum one time at the discretion of the committee. The mentor together with the other

members of the committee will assign a letter grade to the practicum. A copy of the approved report must be submitted to the graduate school before graduation in accordance with the graduate school rules and time limits for the Master's thesis.

A more detailed description of the internship practicum and thesis requirements may be found in the document *Internship Practicum Guidelines* available on the web site www.hsc.unt.edu (select graduate school>forms).

5. It is strongly suggested that the student and mentor communicate on a regular basis to review the student's progress during the practicum.

Typical Curriculum

The following curriculum is required for all students enrolled in the Clinical Research Management program:

Fall

BIOS 5210	Biostatistics I (School of Public Health course)	3 SCH
BMSC 5010	Scientific Communications	3 SCH
BMSC 5510	Introduction to Clinical Research & Studies	2 SCH
BMSC 5600	Integrative Biomedical Sciences I	5 SCH
BMSC 5960	Biomedical Ethics	1 SCH

Spring

BMSC 5520	Ethical, Legal and Social Issues for Responsible Clinical Research	1 SCH
BMSC 5700	Integrative Biomedical Sciences II*	5 SCH
BMSC 5800	Integrative Biomedical Sciences III	5 SCH
BMSC 5965	Introduction to Industry Practice	1 SCH

*Students will register for BMC 5700 in the spring, but it begins as soon as BMSC 5600 ends. It then runs into the spring semester and is followed by BMSC 5800

Summer

BMSC 5920	Internship Practicum	6 SCH
-----------	----------------------	-------

Fall

BMSC 5920	Internship Practicum	6 SCH
-----------	----------------------	-------

Total Required Courses

38 SCH

The health science center reserves the right to make changes at any time to reflect current board policies, administrative regulations and procedures, amendments by state law and fee changes. Information provided in this document is subject to change without notice and does not constitute a contract between the University of North Texas Health Science Center and a student or an applicant for admission. The institution is not responsible for any misrepresentation or provisions that might arise as a result of errors in preparation.

Post-Baccalaureate Premedical Certification Program

Victoria L. Rudick, Ph.D., Graduate Advisor
Education and Administration Building 816
817-735-2560
E-mail: vrudick@hsc.unt.edu

The Post-baccalaureate Premedical Certification program is open to individuals who have made prior application to medical school through the Texas Medical and Dental Schools Application Service, but have not yet been successful in obtaining admission. Culturally diverse and/or disadvantaged individuals are strongly encouraged to apply. The program is designed to provide opportunities to those individuals who would like to enhance their credentials for entry into medical school by offering a strong, challenging biomedical science core curriculum in the environment of a health science center. In addition, the program provides training in clinical research, that branch of biomedical sciences by which products (drugs, devices, and biologicals) and treatment protocols are developed for patient care. Preparation of health care professionals (both clinical/physician investigators and research site personnel) to conduct trials is critical to the expanding clinical research field. Thus, graduates will be able to use their knowledge either as future physicians who will become involved with clinical studies as part of their medical careers or, in the event that they do not attend medical school, as a means to complete a Master's degree at UNTHSC in Clinical Research Management. Following graduation, the degreed Masters' alumnae can then enter the job market as clinical research coordinators/associates. Students who are accepted into medical school also have the option of completing the requirements for a Master's degree in Clinical Research Management during their first year in medical school.

The average time to complete the certificate program is ten months (August through May) while the M.S. degree in Clinical Research Management can be completed in a total of eighteen months (August through December of the following year).

Each student is responsible for the completion of the requirements for Post-baccalaureate Premedical Certification according to the procedures that follow. Each item must be completed in the sequence and time period indicated. Forms are subject to revision at any time and should be obtained from the Graduate School of Biomedical Sciences.

Admissions Requirements

1. All applications must be completed and received into the Graduate School by April 1. The Post-baccalaureate Premedical Certification Admissions Committee will meet during April and decisions will be mailed out by May 15.
2. The Post-baccalaureate Premedical Certification Admission Committee will review all applicants for acceptance into the program. A student must have either a B.A. or B.S. degree and must meet the general requirements of the graduate school as described in the current graduate catalog.

3. The Medical College Admissions Test (MCAT) will be accepted as a substitute for the Graduate Record Examination (GRE). While not the only criterion considered in acceptance into TCOM, the applicant should have a competitive MCAT score before the April 1 application deadline (In general, composite MCAT scores below 20 and individual subset scores below 6 are not competitive for medical school).
 - If the applicant has plans to retake the MCAT for future medical school admissions, he/she must sit for the exam no later than August during the first semester of the year he/she enters the certificate program. The applicant must indicate in writing the actual date he/she will take the MCAT. This information must be filed with the graduate school at the time of admission to the degree program.
 - A student already accepted into another UNTHSC degree program that requests to transfer into the certificate program would be reviewed by the Post-baccalaureate Premedical Certification Admission Committee. All such applicants must have met the requirements described in steps one through three above.
 4. For those students who are planning to qualify for consideration for medical school admission at TCOM as part Post-baccalaureate Premedical Certification program, the following are required:
 - Successful completion all undergraduate course requirements for TCOM as listed in the current catalog;
 - Competitive undergraduate grade point average (In general, an overall undergraduate GPA below 2.8 is not considered competitive for medical school) and graduate school GPA of 3.5 as described under **The Post-baccalaureate Premedical Certification Program #3** (below);
 - Competitive MCAT score taken prior to the April 1 admission date;
 - Experience in a health care setting to be completed prior to the beginning of the April 1 admission date.
 - Completed medical school application submitted to the Texas Medical and Dental Schools Application Service (TMDSAS) and a secondary application submitted to the TCOM Office of Medical Student Admissions by November 1 of the post-baccalaureate fall semester. (TCOM must be designated as the first choice on the TMDSAS application if the student plans on competing for one of the designated program seats in next year's TCOM entering class).
- All students accepted into the post-baccalaureate program are required to attend a workshop given during the week of orientation on the medical school application process.

The Post-baccalaureate Premedical Certification Program

1. The following curriculum is required for all students enrolled in the program:

Fall

BMSC 5510	Introduction to Clinical Research & Studies	2 SCH
BMSC 5600	Integrative Biomedical Sciences I	5 SCH
BMSC 5700	Integrative Biomedical Sciences II*	5 SCH
BIOS 5210	Biostatistics I	3 SCH
BMSC 5960	Biomedical Ethics	1 SCH

* Students will register for BMSC 5700 in the fall, but it does not begin until BMSC 5600 ends. It then runs into the spring semester and is followed by BMSC 5800. Students will receive an incomplete ("I") in BMSC 5700 at the end of the fall semester until it is completed in the spring.

Spring

BMSC 5520	Ethical, Legal and Social Issues for Responsible Clinical Research	1 SCH
BMSC 5800	Integrative Biomedical Sciences III	5 SCH
CGEN 5010	Structural Anatomy	8 SCH

Total Required Courses

30 SCH

will transfer to the masters program and the student would be required to complete an internship practicum and thesis for graduation (see Masters of Clinical Research Management Description on the Graduate School web page at www.hsc.unt.edu).

Typical Time-Table for the Post-baccalaureate Premedical Certificate Program*

Application for the Post-baccalaureate Premedical Certificate program due in the graduate school	April 1
Review by Post-baccalaureate Premedical Certification Admission Committee	April
Graduate school acceptance letters mailed	May 15
Orientation and required workshop	August
MCAT re-examination (optional)	August
Interview Workshop	August/September
Medical school applications due	November 1
Classes (Semesters I and II)	August-May
Medical school interviews	September/December
Review by the TCOM Admissions Committee	May
Notification of medical school decisions	May-June
Orientation week TCOM for accepted students	August

* The student is responsible for determining actual deadlines. These dates may be obtained from the graduate school.

The health science center reserves the right to make changes at any time to reflect current board policies, administrative regulations and procedures, amendments by state law and fee changes. Information provided in this document is subject to change without notice and does not constitute a contract between the University of North Texas Health Science Center and a student or an applicant for admission. The institution is not responsible for any misrepresentation or provisions that might arise as a result of errors in preparation.

2. One of the objectives of program is to provide students with a workshop to enhance their interviewing skills. This will be available for all students during the fall semester. In addition, to provide practical experience in interviewing for medical school admission, all students will be offered the opportunity to have a formal interview with TCOM faculty.
3. At the end of the spring semester, all students seeking admission to TCOM who have achieved a 3.5 or higher GPA will be reviewed by the TCOM Medical Student Admissions Committee for possible acceptance into the next entering class. The acceptance of any students for the next TCOM entering class will be contingent upon completing the Post-baccalaureate Premedical Certificate program as described with a 3.5 or higher overall GPA.

The TCOM Medical Student Admissions Committee will place the reviewed students into one of the following categories:

- Accept into the August entering class;
- Place on the Wait List for the August entering class;
- Reject for the August entering class.

Applicants not receiving a seat in the TCOM class entering in August may reapply to TCOM for the next application cycle through TMDSAS or may request transfer into the Masters of Clinical Research Management program. All courses in the Post-baccalaureate program

Cell Biology & Genetics

Rouel S. Roque, M.D., Graduate Advisor
Research and Education-202
817-735-2045
E-mail: rroque@hsc.ut.t.edu

Graduate Faculty: Agarwal, Aschenbrenner, Cammarata, Cunningham, Eisenberg, M. Garner, Leppi, Planz, Putthoff, Reeves, Roque, Rudick, Sheedlo, Wordinger

Adjunct Graduate Faculty: Clark, Collier, W. Garner, McCartney, Pang, Shepard

Cell Biology and Genetics has a primary mission to provide instruction in cell biology, forensic genetics, and the anatomical sciences; develop and maintain research programs; and participate in the service endeavors of the institution and profession. Research focuses on the eye involving retinal degenerations, glaucoma, diabetic complications, and cataracts. Other research programs include angiogenesis, apoptosis, cell secretory mechanisms, cell signaling, glial cell biology, growth factors and neurotrophins, nuclear function, and stem cell research. Genetics research concentrates on the methods of analysis and procedures used in genetic identity testing of evidentiary materials from human and non-human sources utilizing advanced and state-of-the-art technologies, including microsatellite analysis, mitochondrial DNA, RT-PCR, and SNP technologies.

In support of the various research programs, the department maintains state-of-the-art facilities in microscopy, tissue culture and molecular biology. Over 8,000 square feet of research space is occupied by department faculty and staff.

The department is home to the North Texas Eye Research Institute which involves faculty from various basic science disciplines, as well as professionals in industry and private clinical practice.

Degree Plans

The following are typical degree plans for students in the Cell Biology and Genetics discipline. The degree plan for students in the Forensic Genetics program follows the program's description below. It is advantageous to the student to begin graduate study in a fall semester. This degree plan may vary depending upon availability of course offerings in a given semester and each student's progress toward thesis and dissertation research.

M.S. Degree Plan for Cell Biology and Genetics

Year 1

Fall

BMSC 5600	Integrative Biomedical Sciences I	5 SCH
BMSC 5700	Integrative Biomedical Sciences II	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
		<u>12 SCH</u>

Spring

BMSC 5800	Integrative Biomedical Sciences III	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
CGEN 6599	Current Topics in Cell Biology and Genetics	2 SCH
CGEN 5940	Seminar in Current Topics	1 SCH
CGEN 5900	Special Problems for MS Students	3 SCH
		<u>12 SCH</u>

Summer I

BMSC 5930	Individual Research	2 SCH
CGEN 6030	Methods in Molecular Biology (CGEN Advance Course)	4 SCH
		<u>6 SCH</u>

Year 2

Fall

	Electives	3 SCH
BMSC 5930	Individual Research	3 SCH
		<u>6 SCH</u>

Spring

BMSC 5930	Individual Research	3 SCH
BMSC 5950	Master's Thesis	3 SCH
		<u>6 SCH</u>

Total

42 SCH

Ph.D. Degree Plan for Cell Biology and Genetics

Year 1

<i>Fall</i>		
BMSC 5600	Integrative Biomedical Sciences I	5 SCH
BMSC 5700	Integrative Biomedical Sciences II	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
		12 SCH

Spring

BMSC 5800	Integrative Biomedical Sciences III	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
CGEN 5940	Seminar in Current Topics	1 SCH
CGEN 6599	Current Topics in Cell Biology and Genetics (Journal Club)	2 SCH
CGEN 6690	Special Problems in CGEN	3 SCH
		12 SCH

Summer I

BMSC 6000	Special Problems for Ph.D. Students	2 SCH
CGEN 6030	Methods in Molecular Biology (CGEN Advanced Course I)	4 SCH
		6 SCH

Total Credits Completed **30 SCH**

Year 2

<i>Fall</i>		
BMSC 6910	Special Problems for Ph.D. Students	1 SCH
CGEN 5000	Structural Neuroscience (CGEN Advanced Course 2)	6 SCH
CGEN 5940	Seminar in Current Topics	1 SCH
CGEN 6599	Current Topics in Cell Biology and Genetics	1 SCH
PHPM 5210	Biostatistics	3 SCH
		12 SCH

Spring

	Oral Qualifying Exam	0 SCH
	Elective I	4 SCH
BMSC 6900	Special Problems for Ph.D. Students	3 SCH
CGEN 5940	Seminar in Current Topics	1 SCH
CGEN 6599	Current Topics in Cell Biology and Genetics	1 SCH
CGEN 6080	Diseases of the Eye (CGEN Advanced Course 3)	3 SCH
		12 SCH

Summer

BMSC 6910	Special Problems for Ph.D. Students	2 SCH
BMSC 6940	Individual Research	4 SCH
		6 SCH

Total Credits Completed **30 SCH**

Year 3

<i>Fall</i>		
	Elective 2	3 SCH
BMSC 5964	Elective 3: Introduction to Industry Practice	1 SCH
BMSC 6010	Grant Writing 6010	3 SCH
BMSC 6910	Special Problems for Ph.D. Students	3 SCH
BMSC 6940	Individual Research	2 SCH
		12 SCH

Spring

	Elective 5	3 SCH
BMSC 6940	Individual Research	3 SCH
		6 SCH

Summer

	Elective 5	3 SCH
BMSC 6950	Doctoral Dissertation	3 SCH
		6 SCH

Total Credits Completed **30 SCH**

Year 4

<i>Fall</i>		
BMSC 6940	Individual Research	3 SCH
BMSC 6950	Doctoral Dissertation	3 SCH
		6 SCH

Spring

BMSC 6940	Individual Research	3 SCH
BMSC 6950	Doctoral Dissertation	3 SCH
		6 SCH

Total **96 SCH**

Advancement to Doctoral Candidacy

Qualifying Examination

The Qualifying Examination within the discipline of Cell Biology and Genetics must be successfully prior to concluding 72 semester credit hours (SCH). The main goal of the examination is to ensure that each doctoral student has a broad knowledge base in biomedical sciences and has mastered the fundamental principles of Cell Biology and Genetics in order to be a successful Ph.D. candidate and an independent researcher. The Qualifying Examination consists of written and oral phases. The examination will be directed towards the didactic coursework of the student. Basic knowledge and understanding of general research techniques in Cell and Molecular Biology will be included.

The initial phase of the Qualifying Examination consists of a set of written questions administered by a Qualifying Examination Committee (QEC) composed of 3 faculty members of the Department of Pathology and Anatomy. Within 4 weeks of taking

the written examination, the Chair of the QEC will schedule the oral examination. The oral examination will consist of questions that further explore the student's answers in the written phase, as well as questions on additional topics in Cell Biology and Genetics as deemed appropriate by the QEC. A University Committee Member must be in attendance for the oral phase of the examination.

The Qualifying Examination will be graded on a Pass/Fail basis. Successful completion of the Qualifying Exam must be accomplished before the student can register for Grant Writing (BMSC 6010). Two attempts to pass the Qualifying Examination will be allowed. Failure to pass the Qualifying Examination after 2 attempts will result in dismissal from the doctoral program. In this case, a student may be allowed to complete the requirements for a Master of Science degree.

Grant Writing (BMSC 6010)

After passing the Qualifying Examination, but prior to the completion of 84 SCH, the student must register for BMSC 6010-Grant Writing. This stage of the advancement to doctoral candidacy evaluates a student's aptitude for independent thought and scientific writing. The student is required to (a) prepare an NIH-style research proposal, (b) present the proposal in a public seminar, and (c) orally defend the proposal before the student's Doctoral Committee. The proposal should be based on an original hypothesis and should describe specific experimental approaches to address the hypothesis. The Graduate Advisor of Cell Biology and Genetics will appoint a member of the student's Doctoral Committee to coordinate the process. The student will meet with the Doctoral Committee at least 2 times during the semester to review drafts of the proposal. The final written proposal must be typed in NIH format and presented to the Doctoral Committee at least 2 weeks prior to the public seminar and oral defense. The grant proposal and the student's oral presentation and defense will be evaluated on the basis of originality and ability to synthesize and communicate the proposal content. The student's University Committee member must be present for the public seminar and oral defense of the proposal. Upon successful completion of BMSC 6010-Grant Writing, the student is advanced to doctoral candidacy. Two attempts to successfully complete BMSC 6010-Grant Writing will be allowed. Failure to pass BMSC 6010-Grant Writing, will result in dismissal from the doctoral program in Cell Biology and Genetics. In this case, a student may be allowed to complete the requirements for a Master of Science degree.

Forensic Genetics

*Rouel S. Roque, M.D., Graduate Advisor
Research and Education-202
817-735-2045
E-mail: roque@hsc.unt.edu*

The forensic genetics program is designed to offer a broad-based learning experience in forensic science with teaching and research emphasis in DNA technology. The Master of Science in Forensic Genetics degree requirements are met upon satisfactory completion of 48 semester hours of coursework including six semester hours of an internship that culminates in a report (thesis). In addition to completing the first year core biomedical science curriculum, students in forensic genetics are required to take among other subjects genetics, a DNA technology laboratory, and courses that prepare them to give legal evidence in forensic science. Thus, the program prepares individuals for careers in forensic DNA science, emphasizing the application of current methods and technologies to legal proceedings. Upon completion of the program, graduates will be qualified to become DNA Analysts and later, after obtaining job experience, to develop into Forensic DNA Laboratory Managers. Graduates will also find the program helpful in building a foundation to pursue further studies at the doctoral level. Certain individuals interested in related investigative fields or practicing law might find the curriculum appropriate for their professional objectives as well.

Program Requirements

Each student is responsible for the completion of the requirements for the Master of Science in Forensic Genetics program according to the procedures that follow.

Each item must be completed in the sequence and time period indicated. Forms are subject to revision at any time and can be obtained from the health science center web site www.hsc.unt.edu (select >graduate school>forms).

1. Acceptance into the graduate school. If a student has been accepted on probation, he/she must take a minimum of 12 SCH of formal graduate course work during the first regular semester of enrollment. A minimum GPA of 3.0 must be obtained.
2. By the end of the second semester, the student must select a faculty mentor and an advisory committee consisting of the mentor and two other graduate faculty. The names of these individuals must be filed in the graduate school. In addition, a degree plan must also be filed with the graduate school at this time. Forms may be obtained from the web site www.hsc.unt.edu (select >graduate school>forms).
3. During the summer of the second year, the student will enroll in BMSC 5920 (6 SCH), the Internship Practicum. The student will complete a 2.5-3.0 month internship either in the mentor's laboratory or at an approved off-campus site previously approved by the advisory committee. Examples of these off-campus sites include The Department of Public Safety, the Tarrant County Medical Examiner's Office, The F.B.I Academy, or the U.S. Game and Wildlife Agency. During this time, the



student will learn how to perform the duties expected of the particular position.

A formal plan describing how the practicum is to be spent must be approved by the advisory committee and submitted to the graduate school before the end of the spring semester, year two (Research Proposal Approval Form obtained from the health science center web page).

4. At the end of BMSC 5920, the student must submit a report (thesis) and laboratory notebook written in Good Laboratory Practice (GLP) format to the mentor for his/her approval. The advisory committee will meet with the student at this time and review both the notebook and written report. The student will present his/her work as both an oral and written report. The oral presentation will be open to the public and will then be followed by a private meeting with the advisory committee. The written report should be given to the committee one to two weeks before the formal meeting. At this time the committee will either approve or not approve the work of the internship and the report. If disapproved, the student may have a chance to revise the report or repeat the practicum one time at the discretion of the committee. The mentor together with the other members of the committee will assign a letter grade to the practicum. A copy of the approved report must be submitted to the graduate school before graduation in accordance with the graduate school rules and time limits for the Master's thesis.

A more detailed description of the internship practicum and thesis requirements may be found in the document *Internship Practicum Guidelines* available on the GSBS web site (www.hsc.unt.edu) under "Forms."

5. It is strongly suggested that the student and mentor communicate at least weekly to review the student's progress during the practicum.

Typical Curriculum

Year 1

Fall

BIOS 5210	Biostatistics for Public Health I	3 SCH
BMSC 5600*	Integrative Biomedical Sciences I	5 SCH
BMSC 5960	Biomedical Ethics	1 SCH
CGEN 5600	Forensics and Molecular Genetics Journal Club	1 SCH
Total Required SCH		10 SCH

* BMSC 5700 begins in the fall and continues into spring semester; registration will be in the spring semester.

Spring

BMSC 5700	Integrative Biomedical Sciences II	5 SCH
CGEN 5500	Forensic Laboratory Quality Assurance	1 SCH
CGEN 5600	Forensics and Molecular Genetics Journal Club	1 SCH
Total Required SCH		7 SCH

Summer

CGEN 5300	Population Genetics	3 SCH
CGEN 6030	Methods in Molecular Biology	4 SCH
Total Required SCH		7 SCH

Year 1 Total Required SCH

24 SCH

Year 2

Fall

CGEN 5100	Biological Evidence Evaluation	4 SCH
CGEN 5310	Genetic Data Analysis in Laboratory	4 SCH
CGEN 5600	Forensics and Molecular Genetics Journal Club	1 SCH
Total Required SCH		9 SCH

Spring

CGEN 5200	Expert Testimony in Forensic Science	3 SCH
CGEN 5600	Forensics and Molecular Genetics Journal Club	1 SCH
CGEN 5950	Forensic Anthropology	2 SCH
	Electives *	2 SCH
Total Required SCH		9 SCH

* Examples
CGEN 5700, Hair Analysis (1SCH)
CGEN 5800, Blood Spatter Analysis (1SCH)
CGEN 5900, Special Problems (1-3 SCH)

Summer

BMSC 5920	Laboratory Internship Practicum	6 SCH
Total Required SCH		6 SCH

Year 2 Total Required SCH

24 SCH

Total Required Courses

48 SCH

Clinical Research and Education: Family Medicine

John Licciardone, D.O., M.S., M.B.A., Graduate Advisor
Patient Care Center 252
817-735-2405

Graduate Faculty: : Cage, Coleridge, Franks, Licciardone, Marshall, Papa, Prather, Smith-Barbaro

The Family Medicine Predoctoral Fellowship in Clinical Research is designed to provide select osteopathic medical students with the research training, experience, and mentoring necessary to pursue a career in clinical research or academic medicine.

The fellowship offers research practica and mentoring in projects undertaken by many of the 41 Family Medicine faculty, plus other collaborating investigators within the Texas College of Osteopathic Medicine, the Graduate School of Biomedical Sciences, and the School of Public Health.

At entry to medical school and throughout the medical curriculum, each student will establish collaborative research relationships with faculty members within Family Medicine and other departments of the health science center. These relationships will enable the student to become part of research teams working on various projects relative to family medicine, primary care, and osteopathic medicine.

As part of the fellowship, students will also complete the Master of Science degree in Clinical Research and Education. This program is offered through the Graduate School of Biomedical Sciences and is tailored to provide students with clinical research training pertinent to family medicine and other issues involving primary care and osteopathic medicine. This degree affords students an opportunity to acquire the didactic training needed to complement their research practica.

The formal presentations and courses in this program are designed to give the student a knowledge base in clinical research design; evidence-based medicine; biostatistics and epidemiology; policies, procedures and compliance issues relevant to human subjects research and responsible conduct of research; scientific communications and writing; and educational methodologies for becoming an effective instructor.



Course Requirements

It is anticipated that a student will be able to complete the M.S. degree requirements within the four years allocated to medical school. Below is the list of required courses:

BIOS 5210	Biostatistics for Public Health (School of Public Health)	3 SCH
BMSC 5010	Scientific Communications	3 SCH
BMSC 5310	Educational Instrumentation and Evaluation	2 SCH
BMSC 5320	Issues in Higher Professional Education	2 SCH
BMSC 5510	Introduction to Clinical Research & Studies	2 SCH
BMSC 5520	Ethical, Legal, and Social Issues for Responsible Clinical Research	1 SCH
EPID 5100	Principles of Epidemiology (School of Public Health)	3 SCH
FAMM 5540	Family Medicine Research Colloquium	3 SCH
FAMM 5900	Special Problems in Family Medicine Research	6 SCH
BMSC 5950	Thesis	6 SCH

Clinical Research and Education: Osteopathic Manipulative Medicine

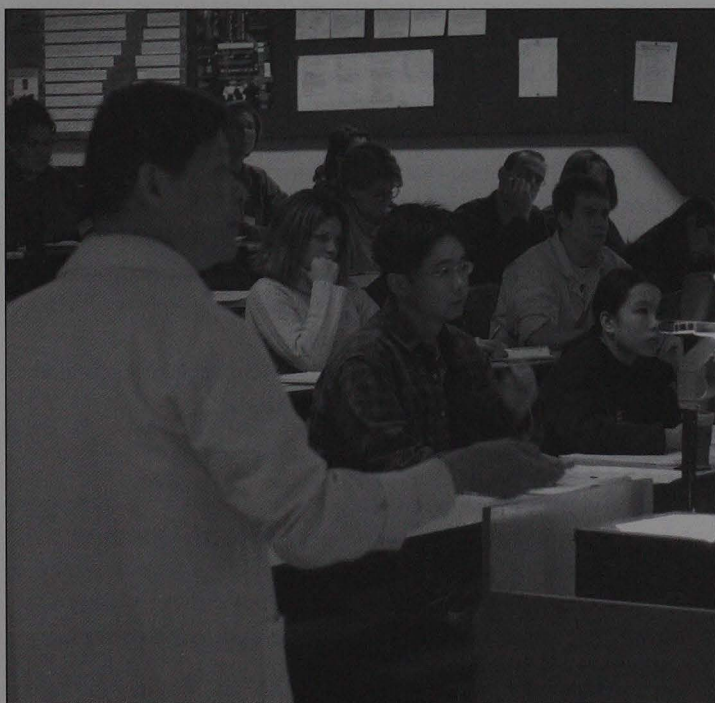
Robert Mallet, Ph.D., Graduate Advisor
Medical Education Building 2-302
817-735-2260

Graduate Faculty: Michael S. Carnes, D.O., Carole Davis, D.O., Jerry L. Dickey, D.O., Russell G. Gamber, D.O., Eric E. Gish, D.O., Robert Mallet, Ph.D., Jerry C. McGill, Ph.D., Sankar Pemmaraju, D.O., Michael L. Smith, Ph.D., Scott Stoll, D.O., Ph.D., Stuart Williams, D.O.

The Master of Science in Clinical Research and Education: Osteopathic Manipulative Medicine is directed toward students who have completed or are completing graduate level training in a clinical health care discipline who want to participate in advancing Osteopathic Medicine and Medical principles through teaching and/or research. The degree is designed to build on the student's clinical skills by fostering the development of additional skills in educational methodology and research techniques. While the degree can help any student planning a clinical career by helping them to be more sophisticated consumers of the latest research, it is designed to be of particular value to students planning a career in graduate medical education or in academic medicine.

The training is focused on the goal of producing clinicians who can enhance the resources of the Osteopathic medical profession in the development of clinical research and teaching of OMM. Therefore, these principles and techniques will provide the focus and foundation of this program.

Applications may be accepted from current students and from residents and clinicians who have already completed their primary training.



Admission Requirements

Predoctoral applicants must have a Bachelors degree from a regionally accredited institution and must have completed the first two years of a medical school curriculum or its equivalent by date of matriculation. Equivalency will be determined by the program faculty.

Postdoctoral applicants must have successfully completed a Doctor of Osteopathic Medicine or Doctor of Medicine degree, or the equivalent of those degrees.

Predoctoral students of the Texas College of Osteopathic Medicine of the University of North Texas Health Science Center who matriculate in the Graduate School of Biomedical Sciences' Master of Science program and are OMM predoctoral fellows may complete both the D.O. and M.S. degrees in 5 years. Two-year residents in NMM and OMM at the University of North Texas Health Science Center may be able to complete the degree concurrently with completion of the residency. Residents of other programs are also welcome to participate but are required to provide written approval from their residency program directors as a condition of admission.

Program Description

The formal presentations and courses in this program are designed to help the student gain a foundation in statistics and experimental design; in-depth understanding and experience in establishing and conducting a clinical research project; the policies, procedures and compliance issues of human subject research; the responsible conduct of ethical research; scientific communications; and the educational methodologies of effective teaching. All students will be expected to complete core courses in education and research, and will perform additional work in either educational principles or research methodology in accordance with their primary career goals.

The program will require a minimum of 30 semester credit hours for completion. The thesis topic will be determined by the student in consultation with the major professor and advisory committee.

Transfer of Credit

For applicants who are students or graduates of the Texas College of Osteopathic Medicine, the structure of the medical degree program is such that applicants meeting admission requirements are likely to qualify for transfer credit. However, the granting of transfer credit is never automatic and should not be assumed until formally approved. Approval of transfer credit will be determined by the advisory committee and granted with the approval of the Dean of the Graduate School of Biomedical Sciences.

Course Requirements

This program will be highly structured to insure that each student obtains a solid foundation in education and research, although the student will have room to take additional special problems courses in either clinical research or clinical education. The required courses are:

BMSC 5010	Scientific Communication	3 SCH
BIOS 5210	Biostatistics I (School of Public Health)	3 SCH
BMSC 5310	Educational Instrumentation and Evaluation	2 SCH
BMSC 5320	Issues in Higher Professional Education	2 SCH
BMSC 5520	Ethical, Legal and Social Issues for Responsible Clinical Research	1 SCH
OMMC 5510	Introduction to Osteopathic Research and Studies	3 SCH
OMMC 5540	Clinical Research Colloquium	1 SCH

6 SCH Total of Either:

OMMC 5900	Special Problems in Clinical Research	3-6 SCH
or		
OMMC 5910	Special Problems in Clinical Research and	3-6 SCH
BMSC 5950	Thesis	6 SCH
Transfer Credits		up to 6 SCH

Total Semester Credit Hours 30-36 SCH

Electives:

Students may choose to 1) take both OMMC 5900 and OMMC 5910 or 2) take either OMMC 5900 or 5910 twice.

Students may repeat OMMC 5540 for credit.

Electives may be taken with the approval of the advisory committee.

Integrative Physiology

H. Fred Downey, Ph.D., Graduate Advisor
Medical Education Building 2-302
817-735-2080

Graduate Faculty: Barker, Caffrey, Carrol, Dimitrijevic, Downey, Grant, Gwartz, Mallet, Raven, Shi, Smith, Tune

Physiology is an essential foundation for clinical and experimental medicine. The physiologist seeks an understanding of the physical and chemical mechanisms of biological processes. Thus, physiology is the study of the function of living organisms and their various components. It encompasses normal and abnormal function and ranges in scope from an understanding of basic molecular and cellular functions to a cognizance of biological control systems and of the integration of bodily functions among multiple organ systems.

The Department of Integrative Physiology maintains an active and productive research program with special emphasis on cardiovascular physiology. Research interests of the faculty include cardioprotection, myocardial energy metabolism, cardiac endocrinology, coronary flow and flow regulation, cardiovascular responses to exercise, and mechanisms of blood pressure and blood volume regulation. Faculty programs are funded by extramural sources including the American Heart Association, the National Institutes of Health, American Diabetes Association, and the National Aeronautics and Space Administration.

Students may enter the program with a variety of academic backgrounds, providing that they have fulfilled prerequisite courses in biology, chemistry, physics, and mathematics. The graduate training program involves one year of courses in biomedical sciences and advanced courses in physiology, neurobiology, pharmacology, molecular biology and biochemistry. The program is designed to integrate the fundamental processes of molecular biology with organ system functions. Students participate in teaching and seminars and receive extensive training in techniques of contemporary physiological research. Doctoral students and Master of Science students perform original, publishable research and present their research findings at national scientific meetings. At the end of the first year, all graduate students must pass an oral physiology progress examination. One to two years are required to complete the Master of Science degree requirements. Three to five years are required to complete the Doctor of Philosophy degree requirements. It is expected that, prior to the awarding of the doctorate, the student will have published, have on press, or have submitted two first-author publications in peer-reviewed journals.

Graduates with advanced degrees find employment in higher education, industry and government agencies.

Degree Plans

Typical degree plans for students in the integrative physiology subdiscipline appear below. It is advantageous to the student to begin graduate study in a fall semester. This degree plan may vary depending upon availability of course offerings in a given semester and each student's background and progress toward thesis or dissertation research.

M.S. Degree Plan for Integrative Physiology

Year 1

Fall

BMSC 5600	Integrative Biomedical Science I	5 SCH
BMSC 5700	Integrative Biomedical Science II	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
		<u>12 SCH</u>

Spring

BMSC 5800	Integrative Biomedical Science III	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
BMSC 5950	Thesis	3 SCH
PSIO 5940	Seminar in Current Topics Elective	1 SCH 2 SCH
		<u>12 SCH</u>

Summer

BMSC 5200	Biostatistics	3 SCH
BMSC 5950	Thesis	3 SCH
		<u>6 SCH</u>

Total

30 SCH

Ph.D. Degree Plan for Integrative Physiology

Year 1

Fall

BMSC 5600	Integrative Biomedical Science I	5 SCH
BMSC 5700	Integrative Biomedical Science II	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Program	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
		<u>12 SCH</u>

Spring

BMSC 5800	Integrative Biomedical Science III	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Program	1 SCH
PSIO 5900	Special Problems	2 SCH
PSIO 5940	Seminar in Current Topics Electives*	1 SCH 3 SCH
		<u>12 SCH</u>

Summer

BMSC 5200	Biostatistics I	3 SCH
BMSC 5210	Biostatistics II	3 SCH
		<u>6 SCH</u>

Year 2

Fall

PSIO 5100	Cardiovascular Physiology I	3 SCH
PSIO 5940	Seminar in Current Topics	1 SCH
BMSC 5970	Techniques in Biomedical Sciences Electives*	3 SCH 5 SCH
		<u>12 SCH</u>

Spring

PSIO 5110	Cardiovascular Physiology II	3 SCH
PSIO 5940	Seminar in Current Topics Electives*	1 SCH 8 SCH
		<u>12 SCH</u>

Summer

Electives*	6 SCH
------------	-------

Year 3		
<i>Fall</i> **	Electives*	12 SCH
		12 SCH
<i>Spring</i>		
BMSC 6010	Grant Writing	3 SCH
	Electives*	9 SCH
		12 SCH
<i>Summer</i>		
BMSC 6950	Doctoral Dissertation	6 SCH

Year 4		
<i>Fall</i>		
BMSC 6950	Doctoral Dissertation	6 SCH
Total		96 SCH

* Electives must include at least 3 SCH of BMSC Individual Research and at least 12 SCH from the following:

PSIO 5100	Cardiovascular Physiology I
PSIO 5110	Cardiovascular Physiology II
PSIO 5200	Respiratory Physiology
PSIO 5300	Renal Physiology
PSIO 5400	Molecular Genetics of Cardiac and Vascular Disease
PSIO 6050	Physiology of Skeletal and Smooth Muscle
PSIO 6060	Cardiovascular Regulation During Exercise
PSIO 6070	Advanced Endocrine Physiology
PSIO 6080	Advanced Autonomic Nervous System Physiology
PSIO 6090	Myocardial Metabolism: Concepts and Controversies

** The Admission To Candidacy Examination shall be taken during this semester.

Advancement to Candidacy

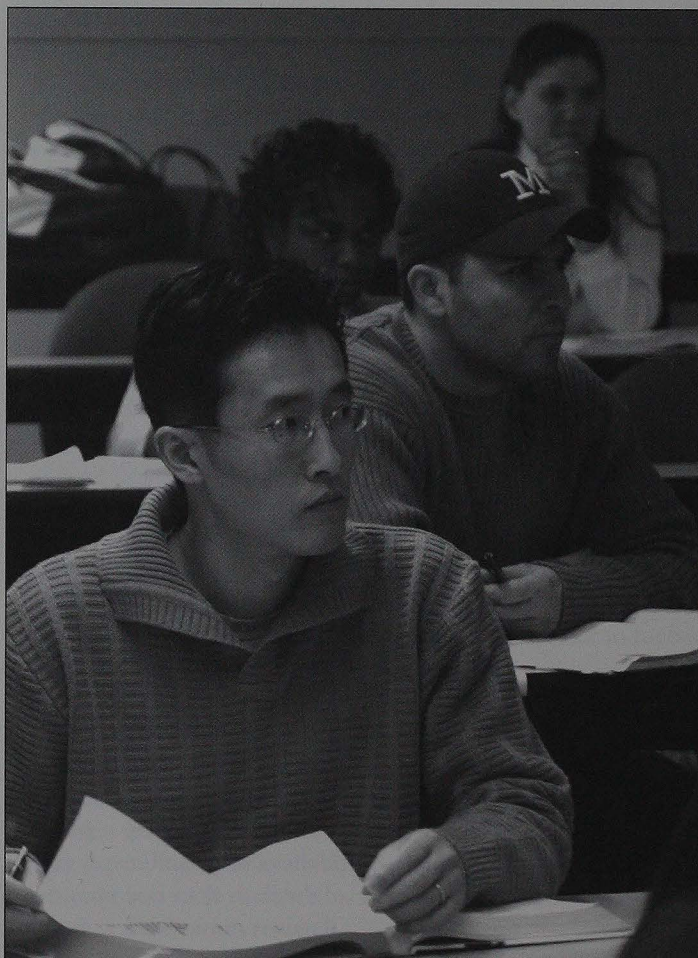
Qualifying Examination for Doctoral Students

Prior to registration for BMSC 6010, and before completion of 72 SCH of course work, doctoral students are required to pass an oral qualifying examination. The examination will be administered by a departmental examining committee, which will not include the student's mentor. The examination may address all aspects of physiology, and, in addition, assess the student's research skills and aptitude.

Grant Writing (BMSC 6010)

After passing the qualifying examination, the student must register for Grant Writing (BMSC 6010) in the next long semester. In this course, students are required to submit an NIH grant application to their Advisory Committee. The grant application will describe the student's dissertation research project, and will serve as the student's dissertation proposal. Following a public, oral presentation of the research proposal in the grant application, the student will defend the grant application and research proposal before the his/her Advisory Committee.

Upon approval of the grant application and the research proposal, the student is advanced to candidacy.



Microbiology & Immunology

Porunelloor Mathew, Ph.D., Graduate Advisor
Research and Education Building 428
817-725-2112

Graduate Faculty: Alvarez-Gonzalez, Brunson, Hart, Kitson, Mathew, Simecka

Adjunct Faculty: Goldfarb

Infectious diseases have a major impact on health around the world. New infectious agents have emerged, and diseases caused by known pathogens have reestablished themselves. Many of these infections result in life-threatening diseases. To complicate matters, many of these infectious agents have developed resistance to antibiotics routinely used in treatments. Thus, prevention and treatment of these infections are of tremendous importance. The development of new antibiotics and vaccines are dependent on an in depth understanding of the mechanisms of disease caused by these organisms and their basic biology. Also, many findings arising from the investigation of the molecular biology of microbes has significantly contributed to our understanding of the molecular basis of cancer.

Cancer continues to be a significant health problem, and is associated with genetic factors, diet and exposure to environmental insults and infectious agents. Cells of the body normally are limited in their growth. In contrast, cancer cells are derived from normal cells and divide uncontrollably, forming tumors. Also, cancer cells spread (metastasize) from primary tumors to distant tissues in the body. Understanding the biology of cancer and the process of metastasis will provide important clues in prevention and treatment of cancer.

Immunology is the study of the defense mechanisms of the host against infectious diseases, cancers and other diseases. By inducing immune responses, as in the case of vaccines, infections and disease can be prevented. Enhancement of appropriate immune responses can also result in the destruction of cancer cells. Research in immunology has a tremendous potential in developing new treatments to prevent or recover from cancer and infectious disease.

Faculty maintain active and productive research programs with special emphasis on infectious disease, microbiology, cancer and immunology. Research interests of the faculty include regulation of prokaryotic and eukaryotic gene expression; molecular biology of microbial virulence; regulation and molecular biology of bacterial carbohydrate metabolism; host response to respiratory infections; molecular immunology; tumor immunology, mRNA decay and RNA-based regulation mechanisms; structure and function of the human chromosome; vaccine development; cancer biology and metastasis. Faculty programs are funded by extramural sources including the National Science Foundation and the National Institutes of Health.

Students may enter the program with a variety of academic backgrounds, providing that they have fulfilled prerequisite courses. The graduate training program involves basic courses in microbiology and immunology, molecular biology, biochemistry and advanced courses in selected topics. Students participate in seminars and discussion of

current research and receive extensive training in techniques of contemporary microbiology, molecular biology and immunology. Doctoral students and Master of Science students selecting the thesis option perform original, publishable research and present their research findings at national scientific meetings. About two years are required to complete the Master of Science. Approximately four to five years are required to complete the Doctorate of Philosophy.

Graduates with advanced degrees find employment in higher education, industry and government agencies.

M.S. Degree Plan for Microbiology and Immunology

Year 1

Fall

BMSC 5600	Integrative Biomedical Science I	5 SCH
BMSC 5750	Integrative Biomedical Science II	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
		<hr/> 12 SCH

Spring

BMSC 5800	Integrative Biomedical Science III	5 SCH
BMSC 5930	Individual Research	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
MICR 5940	Seminar in Current Topics	1 SCH
		<hr/> 12 SCH

Summer

BMSC 5200	Biostatistics I	3 SCH
BMSC 5930	Individual Research	3 SCH
		<hr/> 6 SCH

Year 2

Fall

BMSC 5930	Individual Research	10 SCH
MICR 5300	Current Topics in Molecular Microbiology	2 SCH
		<hr/> 12 SCH

Spring

BMSC 5950	Thesis	6 SCH
MICR 5300	Current Topics in Molecular Microbiology	2 SCH
		<hr/> 8 SCH

Total

50 SCH

Ph.D. Degree Plan for Microbiology and Immunology

Year 1

<i>Fall</i>		
BMSC 5600	Integrative Biomedical Science I	5 SCH
BMSC 5700	Integrative Biomedical Science II	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
		<u>12 SCH</u>

Spring

BMSC 5800	Integrative Biomedical Science III	5 SCH
BMSC 6940	Individual Research	5 SCH
MICR 5940	Seminar in Current Topics	1 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
		<u>12 SCH</u>

Summer

BMSC 5200	Biostatistics I	3 SCH
BMSC 6940	Individual Research	3 SCH
		<u>6 SCH</u>

Year 2

<i>Fall</i>		
BMSC 5970	Techniques in Biomedical Science	1 SCH
BMSC 6940	Individual Research	9 SCH
MICR 5300	Current Topics in Molecular Microbiology	2 SCH
		<u>12 SCH</u>

Spring

BMSC 5970	Techniques in Biomedical Science	2 SCH
BMSC 6940	Individual Research	5 SCH
MICR 6300	Advanced Molecular Biology	3 SCH
MICR 5300	Current Topics in Molecular Microbiology	2 SCH
		<u>12 SCH</u>

Summer

BMSC 6940	Individual Research	3 SCH
BMSC 6940	Individual Research	3 SCH
		<u>6 SCH</u>

Year 3

<i>Fall</i>		
BMSC 6010	Grant Writing	3 SCH
BMSC 6940	Individual Research	7 SCH
MICR 5300	Current Topics in Molecular Microbiology	2 SCH
		<u>12 SCH</u>

Spring

BMSC 6940	Individual Research	1 SCH
MICR 5300	Current Topics in Molecular Microbiology	2 SCH
		<u>3 SCH</u>

Summer

BMSC 6940	Individual Research	3 SCH
-----------	---------------------	-------

Year 4

<i>Fall</i>		
BMSC 6940	Individual Research	1 SCH
MICR 5300	Current Topics in Molecular Microbiology	2 SCH
		<u>3 SCH</u>

Spring

BMSC 6950	Dissertation	3 SCH
-----------	--------------	-------

Summer

BMSC 6950	Dissertation	6 SCH
-----------	--------------	-------

Total

91 SCH

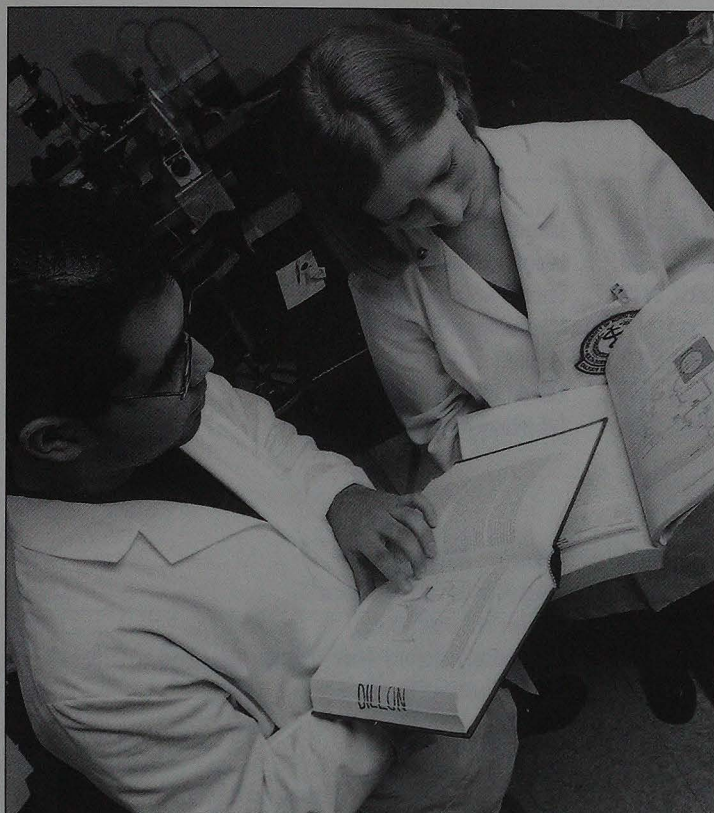
Advancement to Doctoral Candidacy

Qualifying Examination

The qualifying examination ensures that the doctoral student has mastered information needed to succeed as a Ph.D. in the area of Microbiology and Immunology. A list of key topics, compiled by the Microbiology and Immunology faculty, will be distributed to the student after completion of the first year of course work. The student is expected to become knowledgeable in each of these topics through their course work, reading of textbooks and scientific literature, and discussion with faculty members.

The qualifying examination consists of a written and oral phase. A committee comprising the Microbiology and Immunology graduate faculty, except for the student's major professor, administers the examination. The initial phase of the qualifying examination consists of a set of written questions given to all students. After a review of the student's answers, the examination committee will schedule an oral examination. The oral examination consists of questions that further explore the answers given on the written exam, as well as questions on additional topics of microbiology and immunology.

Two attempts to successfully pass the qualifying examination are allowed. Failure of the student to pass the qualifying examination results in dismissal of the student from the doctoral program. A doctoral student who does not pass may be allowed to complete the requirements for a Master of Science degree.



Grant Writing (BMSC 6010)

Successful completion of Grant Writing (BMSC 6010) requires the preparation and oral defense of an original NIH grant proposal. Two attempts to successfully accomplish this are allowed.

The designated faculty coordinator assigns a committee of five graduate faculty, including a committee chair, to serve as the student's grant proposal committee. Three committee members must be from within the department and at least one member must be from an outside department. The student's major professor may not serve as a committee member.

The faculty coordinator instructs the student on the regulations of the course and assists in initiating and preparing the proposal. The student should submit a report which presents the hypothesis, experimental strategy and specific aims for the proposal to the examination committee by mid-semester. The proposal must consist of the student's original ideas and is expected to significantly extend scientific knowledge in the chosen research area if the proposed experiments were actually conducted. The committee must approve this summary of the research proposal.

The student must prepare a detailed written report of the research proposal in NIH format after the summary has been approved. The final proposal will be typed and presented to the committee at least two weeks prior to the oral defense. The grant proposal and presentation will be evaluated on the basis of originality and ability to synthesize and communicate this information.

If the proposal and defense are satisfactory, the committee will recommend that the student be advanced to candidacy. This recommendation is presented to the discipline's graduate faculty for approval by the faculty coordinator. Upon completion of this process, the student is advanced to candidacy.

Pharmacology and Neuroscience

Glenn H. Dillon, Ph.D., Graduate Advisor
Medical Education Building 2-112D
817-735-2055

Graduate Faculty: Das, de Fiebre, Dillon, Forster, Koulen, Luedtke, Martin, Oglesby, Quist, Simpkins, Singh, Yorio
Adjunct Graduate Faculty: Bergamini, DeSantis, Dobbs, Pang, Sharif

The Department of Pharmacology and Neuroscience offers both M.S. and Ph.D. degrees in a wide range of research areas. Pharmacology is a discipline that bridges the basic and clinical sciences. Classically, pharmacologists sought to understand the pharmacological responses, mechanisms and clinical uses of drugs. In recent decades, the scope of pharmacology has expanded dramatically to include cutting edge research in signal transduction and cellular and molecular biology.

With the "graying of America," society is faced with increasing numbers of individuals affected with disorders of the nervous system. For example, it is estimated that by the year 2020, more than 14 million Americans will have Alzheimer's disease. Research in neuroscience includes efforts aimed at delineating the mechanisms of these debilitating neurological and neurodegenerative diseases, as well as fundamental studies to gain understanding of how the brain functions. The department of Pharmacology and Neuroscience has active research programs in these areas, as well as programs in cellular and molecular signaling, vision and glaucoma, molecular and behavioral analysis of substance abuse, and new drug discovery.

Students with a variety of academic backgrounds may gain acceptance to the Pharmacology and Neuroscience program, providing they have completed a number of prerequisite courses. All students entering the program will complete an integrated biomedical science core curriculum that includes fundamental principles of biochemistry, cellular and molecular biology, microbiology and immunology, pharmacology, physiology and neurobiology. Following the completion of the core curriculum, students may choose from a number of advanced courses in Pharmacology and Neuroscience that are related to their individual research interests. Students will also participate in seminars and group discussions of current research topics, and will be trained in a number of techniques required to address existing research problems in pharmacology and neuroscience. Ph.D. students and M.S. students who have chosen the thesis option will conduct original, publishable research and will be expected to present their results at national scientific conferences. Completion of the M.S. degree typically requires two years; the Ph.D. degree is generally completed in four to five years. Students who successfully complete a graduate degree in Pharmacology and Neuroscience will be well prepared for careers in academic and government research laboratories, as well as in the pharmaceutical/biotechnology industry.

Degree Plans

Typical degree plans for students in the pharmacology subdiscipline appear in this section. It is advantageous to the student to begin graduate study in a fall semester. This degree plan may vary depending upon availability of course offerings in a given semester and each student's progress toward thesis and dissertation research.

M.S. Degree Plan for Pharmacology

Year 1

<i>Fall</i>		
BMSC 5600	Integrative Biomedical Science I	5 SCH
BMSC 5700	Integrative Biomedical Science II	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
PHRM 6699	Current Topics in Pharmacology	1 SCH
		<hr/> 13 SCH

Spring

BMSC 5650	Laboratory Rotations	3 SCH
BMSC 5800	Integrative Biomedical Sciences III	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
PHRM 5940	Seminar in Current Topics	1 SCH
PHRM 6699	Current Topics in Pharmacology	1 SCH
	Electives	1 SCH
		<hr/> 12 SCH

Summer

BMSC 5200	Biostatistics	3 SCH
BMSC 6949	Individual Research	3 SCH
		<hr/> 6 SCH

Year 2

<i>Fall</i>		
BMSC 5950	Thesis	3 SCH

Spring

BMSC 5950	Thesis	3 SCH
-----------	--------	-------

Total		<hr/> 37 SCH
--------------	--	---------------------

Ph.D. Degree Plan for Pharmacology

Year 1

<i>Fall</i>		
BMSC 5600	Integrative Biomedical Science I	5 SCH
BMSC 5700	Integrative Biomedical Science II	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
PHRM 6699	Current Topics in Pharmacology	1 SCH
BMSC 5650	Laboratory Rotations	1 SCH
		<hr/> 14 SCH

Spring

BMSC 5650	Laboratory Rotations	2 SCH
BMSC 5800	Integrative Biomedical Science III	5 SCH
BMSC 5940	Seminar in Current Topics: Introduction to Faculty Research Programs	1 SCH
PHRM 6699	Current Topics in Pharmacology	1 SCH
PHRM 5940	Seminar in Current Topics	1 SCH
	Electives	3 SCH
		<hr/> 13 SCH

Summer

BMSC 5200	Biostatistics I	3 SCH
PHRM 6940	Individual Research	3 SCH
		<hr/> 6 SCH

Year 2

<i>Fall</i>		
BMSC 6940	Individual Research	4 SCH
PHRM 6699	Current Topics in Pharmacology	1 SCH
PHRM 5940	Seminar in Current Topics	1 SCH
	Electives*	6 SCH
		<hr/> 12 SCH

Spring

BMSC 6940	Individual Research	3 SCH
PHRM 6699	Current Topics in Pharmacology	1 SCH
	Electives*	8 SCH
		<hr/> 12 SCH

Summer

BMSC 6940	Individual Research	6 SCH
		<hr/> 6 SCH

Year 3**Fall**

PHRM 6699	Current Topics in Pharmacology	1 SCH
BMSC 6010	Grant Writing	3 SCH
BMSC 6940	Individual Research	2 SCH
Electives*		6 SCH
		12 SCH

Spring

BMSC 6950	Doctoral Dissertation	3 SCH
Electives*		3 SCH
		6 SCH

Summer

BMSC 6950	Doctoral Dissertation	6 SCH
-----------	-----------------------	-------

Year 4**Fall**

BMSC 6950	Doctoral Dissertation	6 SCH
-----------	-----------------------	-------

Spring

BMSC 6950	Doctoral Dissertation	6 SCH
-----------	-----------------------	-------

Total**96 SCH**

* Elective Courses (Must include 9 SCH in the following courses offered by the Department of Pharmacology):

PHRM 5070	Neuropharmacology	4 SCH
PHRM 5100	Neurobiology of Aging	3 SCH
PHRM 5900	Special Problems	3 SCH
PHRM 5910	Special Problems	3 SCH
PHRM 6020	Advances in Molecular Pharmacology	3 SCH
PHRM 6030	Advances in Behavioral Pharmacology	3 SCH
PHRM 6050	Ocular Pharmacology	3 SCH
PHRM 6080	Receptors and Drug Actions	4 SCH
PHRM 6410	Basic and Clinical Pharmacology	3 SCH
PHRM 6699	Current Topics in Pharmacology	3 SCH

Advancement to Doctoral Candidacy**Qualifying Examination**

The qualifying examination determines if the doctoral student has mastered information needed to succeed in the discipline of Pharmacology. The student is required to demonstrate reasonable proficiency in the topics of pharmacology presented during the first two years of graduate study. The student will be administered an oral qualifying examination by a committee comprised of Pharmacology graduate faculty, selected by the departmental graduate advisor. The student's major professor may be present but will not participate in the examination. The initial phase of the qualifying examination consists of presentation of a published pharmacology journal article, approved by the graduate advisor, with a subsequent question period. In the second phase of the examination, the student will be required to address questions on their knowledge of pharmacology, neuroscience and basic biomedical sciences. A maximum of two attempts to pass the qualifying examination will be allowed. A doctoral student who does not pass after the second attempt may be dismissed or allowed to complete the requirements for a Master of Science degree.

Grant Writing (BMSC 6010)

Successful completion of Grant Writing (BMSC 6010) requires the preparation and oral defense of an original NIH grant proposal. The student's doctoral advisory committee serves as the student's grant proposal committee. The graduate advisor and the student's major professor instruct the student on the regulations of the course and assists in initiating and preparing the proposal. The student will submit a summary report, which presents the hypothesis, experimental strategy, and specific aims for the proposal to the examination committee at the end of the second year. The proposal must consist of the student's original ideas and is expected to significantly extend scientific knowledge in the chosen research area. The committee must approve this summary of the research proposal. The student must then prepare a detailed written report of the research proposal in NIH format. The final proposal will be typed and presented to the committee at least two weeks prior to the oral defense. The student will present the proposal to faculty and graduate students. The grant proposal and presentation will be evaluated following the presentation, by the committee on the basis of originality and ability to organize and communicate information. A maximum of two attempts to pass will be allowed.

If the proposal and defense are satisfactory, the committee will recommend that the student be advanced to candidacy.

6 Fiscal & Financial Aid Policies

Tuition and Mandatory Fees

The amounts shown in this catalog are subject to change without notice by action of the Texas Legislature or the University of North Texas Board of Regents. For current information on tuition and fees, see the Graduate School of Biomedical Sciences' Tuition and Fee Register printed for the particular academic year in which enrollment is planned, or inquire in the graduate office.

The UNT Board of Regents has been granted the authority, within established guidelines, to set graduate tuition rates by program.

For 2002-2003, graduate tuition is \$70 per credit hour for in-state residents and \$288 per credit hour for out-of-state students. To calculate costs for graduate courses, use the table below.

Students are responsible for payment of the charges listed in the table below.

Admission Application Fee

All applicants new to the University of North Texas Health Science Center must pay a \$25 non-refundable admission application fee with the exception of McNair Scholars. Proof of participation in the Ronald E. McNair Post-Baccalaureate Achievement program is required.

Option to Pay Tuition by Installment

The Texas Legislature has the authority to modify or eliminate installment payment of tuition at each regular or called legislative session.

The health science center allows the payment of tuition and fees during the fall and spring semesters through the following alternatives:

- full payment of tuition and fees upon registration or by the payment deadline for early registration; or

- one-half payment of tuition and fees upon registration, or by the payment deadline for early registration, with separate one-fourth payments before the start of the sixth and 11th class weeks. Note: All course-related or optional fees are paid with the initial installment payment.

Fees (Non-Refundable) for Payment of Tuition by Installment

Handling fee: \$15

Delinquent payment fee: \$15

See the Academic Calendar for installment payment deadlines.

Tuition and Fee Payments

Tuition and fee payments may be made by cash, cashier's check, money order or personal check. Credit cards are not accepted.

Administrative Withdrawal for Non-Payment

Tuition and fee charges are incurred upon registration. Failure to pay either the first installment of the tuition payment plan or tuition and fees in full according to the deadlines set forth in the Academic Calendar, will result in the students administrative withdrawal from the institution without additional notice.

Account statements are mailed to the student's home address. It is the student's responsibility to contact the Office of Accounting to determine account balance if a statement is not received.

Tuition and Fee Policies

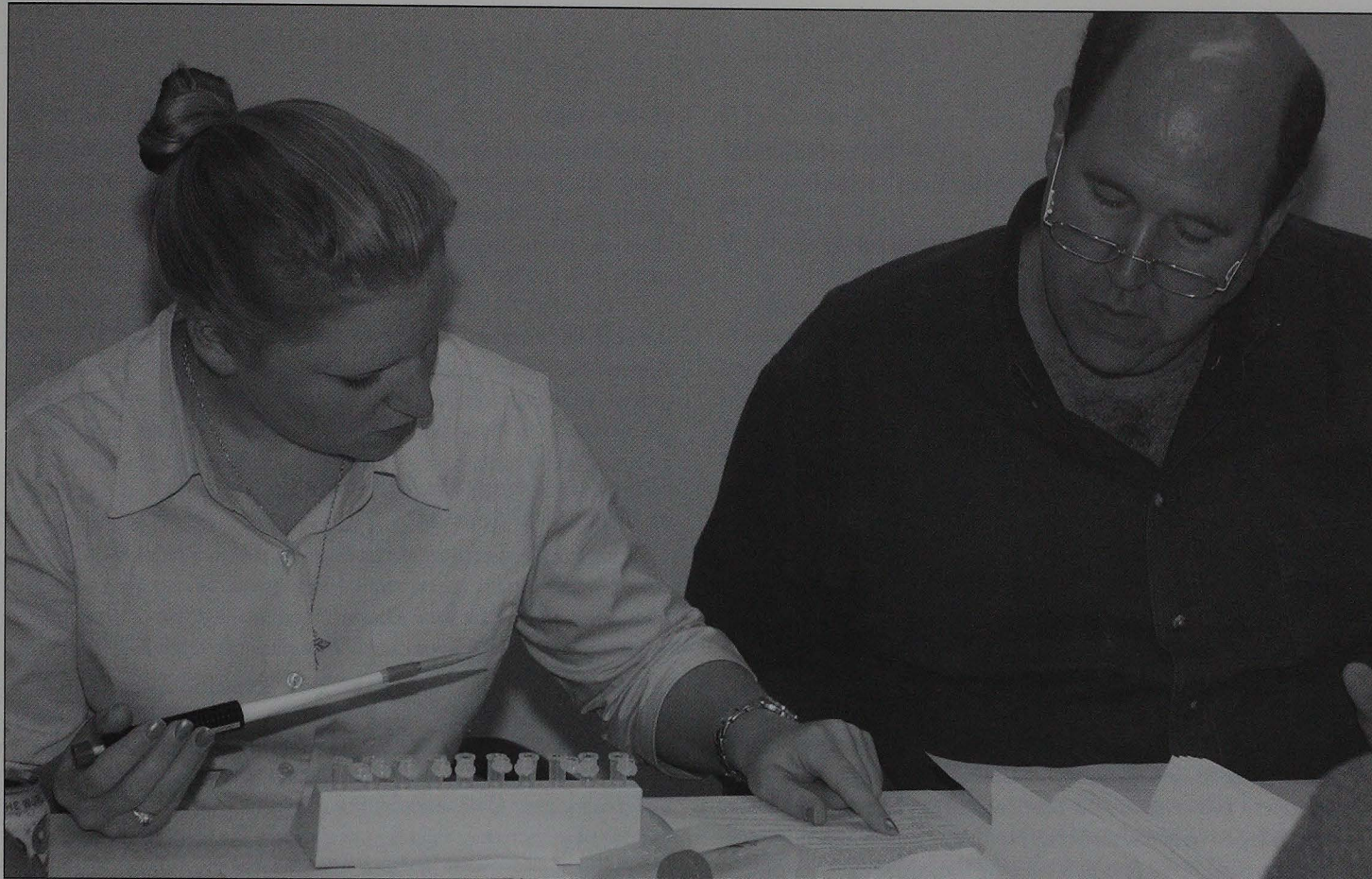
Tuition covers graduate work. It and the various fees provide limited health services and admission to various center-sponsored events. Course-related fees and materials are additional. Students must purchase their own textbooks and supplies.

Fees charged for application, late registration, duplication of

Tuition and Mandatory Fees for 2002-2003

	TEXAS RESIDENTS	NON-RESIDENTS	
Tuition per semester hour	\$70	\$288	Minimum of \$100 in long semesters;
Designated tuition per semester hour	\$6	\$8	Maximum \$60
Student service fee per semester hour	\$8	\$6	Maximum \$96
Activities Center fee each semester	\$25	\$25	
Computer fee each semester	\$42	\$42	
Medical fee each semester	\$50	\$50	
Identification card fee	\$5	\$5	One-time fee; replacement ID cards are \$5

Tuition rates for non-resident and foreign students must be determined no later than January 1 of each odd-numbered year by the Texas Higher Education Coordinating Board. The tuition rate is currently set at \$288 per semester credit hour.



records, graduation and regalia, late filing for graduation, replacement diplomas and miscellaneous items are noted in the current Tuition and Fee Register available at the graduate office.

Residency Regulations for Tuition Purposes

Rules and regulations for determining residency status are specified under Title III of the Texas Education Code and are available in the Graduate School of Biomedical Sciences. In general, students must physically reside in Texas for the 12-month period immediately preceding their initial registration in an educational institution in Texas. Other factors may be considered for residency determination for tuition.

Students who are not legal residents of Texas must pay non-resident tuition including the statutory tuition charges and standard health science center fees approved by the UNT Board of Regents. Admission requirements for non-residents are the same as for resident students.

Certain residency exceptions do not affect actual residency status but do allow for a non-resident tuition exemption. Refer to "Tuition and Fee Waivers" section of this chapter for further information.

Responsibility of the Student

The student is responsible for knowing residence status and for registering under the proper status. Any questions concerning residency must be discussed with the proper authority in the graduate office before registration.

Any student erroneously classified as a resident will be reclassified and will be required to pay all out-of-state tuition due.

Attempts to evade non-resident fees may subject the student to the statute penalty and to possible disciplinary action.

Change of Status: Non-resident to Resident

A student who is at any time classified as a non-resident retains non-resident status until reclassification as a resident is applied for and is officially approved by the registrar.

Change of Status: Resident to Non-resident

Students who are classified as residents but become non-residents by virtue of any change of domicile must notify the registrar of such change immediately. Students who believe they have been erroneously classified have the opportunity for appeal. The appeal is to be made to the authority by whom the original classification was assigned, either in the graduate office or in the Registrar's Office.

Tuition and Fee Waivers

Several exemptions and waivers are available to qualifying students within the regulations established by the state legislature and the Texas higher Education Coordinating Board. Brief descriptions of these are listed below. Waiver refunds must be requested during the semester application is made. Such requests must be made before the 12th class day in long semesters and the fourth class day in summer terms. Requests for retroactive refunds cannot be honored. Additional information and applications are available in the graduate office.

Exemptions and Waivers

1. Certain veterans, dependents, etc., of the U.S. armed forces who are Texas residents are exempted from payment of tuition.
2. Certain orphans of members of the U.S. armed forces, Texas National Guard and Texas Air National Guard are exempted from payment of all dues, fees and charges except student service fees.
3. Deaf or blind students are exempted from payment of tuition.
4. Disabled peace officers are exempted from payment of tuition.
5. Children of U.S. prisoners of war or persons missing in action are exempted from payment of tuition.
6. Military personnel stationed in Texas, their spouses and dependent children are assessed resident rather than non-resident tuition.
7. Certain students from other nations of the Western hemisphere (other than Cuba), are exempted from the payment of tuition.
8. Resident rather than non-resident tuition is applied to teachers and professors of Texas state institutions of higher education, their spouses and their children.
9. Resident rather than non-resident tuition is applied to a teaching or research assistant provided the student is employed at least one-half time by the health science center in a position that relates to the degree sought.
10. Resident rather than non-resident tuition is applied to a non-resident holding a health science center competitive academic scholarship of at least \$1000 for the academic year for which the student is enrolled.
11. Students who are concurrently enrolled in more than one program at UNT Health Science Center are not charged duplicate fees.
12. Certain health science center fees are waived for students enrolled only in off-campus courses.
13. Individuals 65 or older may be exempted from paying tuition for up to six hours per semester.
14. Resident rather than non-resident tuition is assessed to students enrolled in graduate programs not offered in their home states via the Academic Common Market.

Tuition and Fee Refunds

A student who drops a course or withdraws from the graduate school within certain time periods may be entitled to a partial refund of tuition and fees. These refunds are calculated according to the category and time schedule listed below. Application fees, late registration charges, fee for student identification card, delinquent payment fees, and installment handling fees are non-refundable. Any financial obligation to the health science center must be resolved before any refunds will be made.

Class Drops

Refunds are made for any course dropped through the 12th class day for the long semester and through the fourth class day in the summer (see Academic Calendar for dates). The semester's first class day is always the first official day of classes for the graduate school rather than the first day of an individual's class.

To calculate the refund for a class dropped, take the fee paid for the original hours and subtract the fee shown in the Tuition and Fee Register for the new number of hours. The difference between the two is the amount of the refund. Note: If all classes for the semester are dropped, see "Schedule of Withdrawal Refunds" in this catalog.

Withdrawal from the Graduate School of Biomedical Sciences

Withdrawal refunds are determined by the number of enrolled semester credit hours at the time of withdrawal. Withdrawal percentages are applied to the total amount of tuition and fees as prescribed by state law, not the amount paid. The withdrawal schedule and percentages of refund shown below pertain to total withdrawal for the semester. The withdrawal schedule and the percentages of refund are mandated by the Texas Legislature. The semester's first class day is always the first official graduate school day of classes rather than the first day the individual attends class. A withdrawal refund is based on the day of withdrawal, regardless of the date the class first meets. See the Academic Calendar in this catalog for the dates classes begin.

Additional information may be found in the Tuition and Fee Register or by contacting the graduate office.

Schedule of Withdrawal Refunds

UNT Health Science Center shall refund a percentage of tuition and mandatory fees to students withdrawing from the institution during a fall or spring semester according to the following withdrawal schedule:

Before first day of class	100%
During the first five class days	80%
During the second five class days	70%
During the third five class days	50%
During the fourth five class days	25%
After the fourth five class days	None

General Financial Policies

The UNT Health Science Center is a state-supported institution subject to state laws. Extension of credit is prohibited and all financial obligations to the health science center must be paid when due. Any outstanding obligation must be cleared prior to registration in the next subsequent semester. Tuition and fees are subject to change by action of the Texas Legislature or the UNT Board of Regents.

Correction of Errors

Students are responsible for any additional amounts due the health science center resulting from auditing and correction of records after registration fees have been paid including all registration assessment errors, change from off-campus to on-campus classes, invalid employment waivers, etc.

Payments by Third Party

Checks issued by a third party in payment of a student's tuition, fees or other charges should be made payable to either the student or to both the student and the health science center. Arrangements may be made with the graduate office in cases where cash amounts should not be made available to the student.

Returned Checks

A returned check is defined as any check returned to the health science center unpaid due to no fault of the bank or the university.

Upon receipt of a returned check, notification is mailed to the issuing party or the individual in whose behalf the check was issued. The address on the check and/or the address in the official health science center records is used.

An additional \$5 fee is charged for each returned check.

Financial Aid

UNT Health Science Center offers programs to assist graduate students in meeting the costs of financing their education. Though financial aid is an alternative for eligible students, it should be considered a supplement to a student's own financial resources. Students must be accepted into an eligible program to be considered for financial aid. Non-degree seeking students are not eligible for financial aid.

Student Eligibility

To be considered for financial assistance, a student must meet the following eligibility criteria:

- Certify that he or she does not owe a refund on any grant or loan, is not in default on any loan or has made satisfactory arrangements to repay any defaulted loan, and has not borrowed in excess of the loan limits on any federal programs.
- If required to do so, must be registered with the Selective Service.
- Must maintain satisfactory academic progress.
- Must use all funds received as financial aid for educational purposes only.

Student Counseling

Individual student counseling is available and encouraged. The counselors are available to discuss budgeting and types of financial aid awards. Students receiving federal loans are required to receive in-person counseling before the release of the first disbursement of their first loan.

Student Budgets

Student budgets are developed within federal guidelines and must meet the approval of the Texas State Coordinating Board. These budgets are re-evaluated periodically and may or may not change depending on requirements by federal law. The cost of attendance is summarized as follows and is for the student only:

- Tuition and fees
- Books and supplies
- Room and board
- Transportation
- Miscellaneous expenses

Allowances for those students with dependents requiring dependent care and allowances for handicapped students may be permitted for students meeting specific requirements. In addition, students with unusual or extenuating school-related circumstances that may require special consideration should contact the Financial Aid Office promptly. In some instances, students may be required to supply additional information for a complete evaluation of a request.

A student may apply for financial aid by completing the Free Application for Federal Student Aid (FAFSA). This should be done immediately upon acceptance to UNTHSC and yearly thereafter.

Federal Programs

Students who complete the FAFSA, show financial need as determined by the needs- analysis service and meet all general eligibility requirements as outlined for each program may apply for federal financial aid. In addition, most aid programs require that the recipient adhere to academic and/or financial criteria in order to maintain eligibility. Some programs have limited funds; therefore, student files that are completed first are considered first.

Federal and State Programs

- Federal Work Study
- Federal Perkins Loans
- Federal Family Education Loan Program
- Texas Public Education Grant

In addition, students may apply through the health science center's Office of Financial Aid for assistance to private programs. Students may also apply directly to private foundations for scholarships and loans. Most programs have individual selection criteria and various award limits.

Contact the Office of Financial Aid, Education and Administration Building 247 at 817-735-2520 or 800-346-8266 for more information.

Graduate Assistantships

Graduate assistantships are awarded annually to qualified doctoral students by disciplines and by the Graduate Council. Funding for doctoral and master's students may also be available from research grants held by individual faculty members.

The Graduate School of Biomedical Sciences mandates the level of funding to be at least \$18,156 for doctoral students and \$14,156 for master's students. The assistantship entitles the recipient to applicable health insurance and allows out-of-state students to pay tuition at the in-state rate.

7 Student Life

Division of Student Affairs

The Division of Student Affairs assists the president of the health science center in interpreting student needs, creating an atmosphere that stimulates learning and integrating extracurricular experiences into the formal learning programs.

The goals of this office are to encourage student participation in and contribution to the health science center's programs, to establish and coordinate a system of student academic advisement, and to interpret institutional regulations on academic and non-academic matters to students.

Staff members are available for general counseling or information and assistance with any phase of campus life. In emergency situations (such as a death in the family) special assistance can be provided for notification of professors, medical withdrawal, etc. The office provides rights adjustment upon request, handles disciplinary and social adjustment problems, and offers self-development opportunities and enrichment activities.

The Division of Student Affairs encompasses student development, academic support, financial aid and the registrar.

Academic Support Services

The Office of Academic Support provides co-curricular support for student learning. Learning strategies assessment and other services are available to current students by appointment or on a walk-in basis. Workshops on learning strategies, test-taking skills, time management and academic tutoring are available upon request.

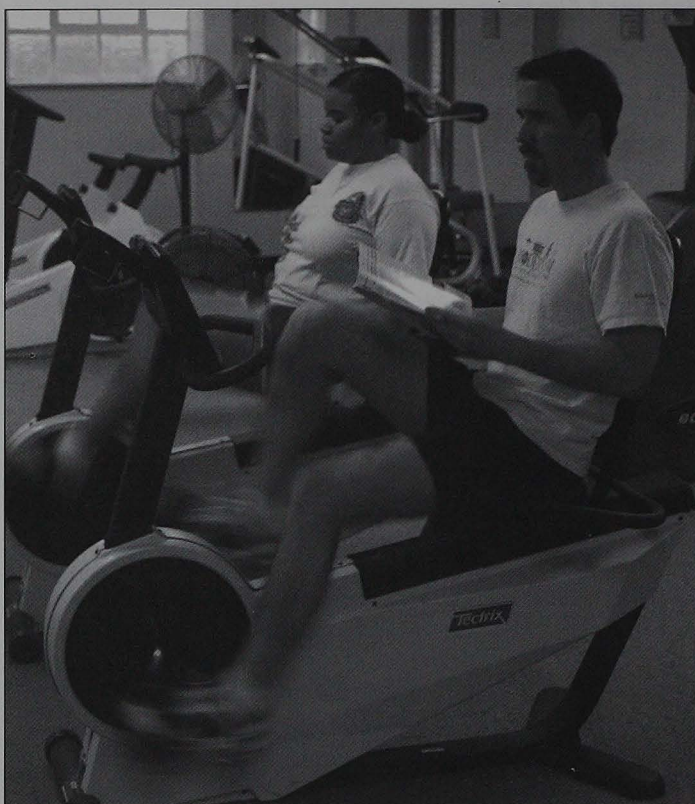
For more information or to make an appointment for study skills counseling, contact Academic Support Services at (817) 735-2409 or pdansere@hsc.unt.edu.

Student Development Services

The Office of Student Development supports the mission of the Division of Student Affairs and the health science center. Its role is to address issues that are relative to all medical and graduate students, from pre-enrollment through graduation. This office coordinates programs and activities that promote the intellectual, professional, moral, social, physical and emotional development of all students. These programs and activities include:

- Clubs and organizations
- New Student Orientation
- Ranchland
- Holiday Dinner Dance
- Spring Fling

The Student Development Office also provides students and prospective students information on housing, child care and employment opportunities in and around Fort Worth.



Founders' Activity Center

The Founders' Activity Center, located on the north end of campus, is open to students, faculty and staff seven days a week. The center features aerobics classes, regularly scheduled recreational sports, lecture series, multi-purpose outdoor court and recreational equipment. Cardiovascular exercise equipment is available, as well as free weights and weight machines. Exercise and nutrition programs can be tailored to the individual by the center's Health Promotions Manager.

Health Insurance

As noted in the Academic Policies section of this catalog, it is compulsory for all students to carry medical and hospitalization insurance.

Although health insurance may be purchased from any insurance carrier, a group student health insurance plan is offered by a non-university-affiliated carrier for students enrolled at the health science center. Application forms are available in the Office of Student Affairs.

Health Services

Health care services are available to students and their immediate family members through the UNT Health Science Center's Central Family Practice Clinic, which is in the Patient Care Center on the northwest corner of campus. This clinic is a public family practice facility, however, and you must make an appointment for every visit. You also must provide insurance information, and a claim will be filed.

Identification Card Regulations

The identification card is distributed after all fees have been paid. The card entitles the bearer to access to all health science center facilities and serves as an identification for clinic and health services.

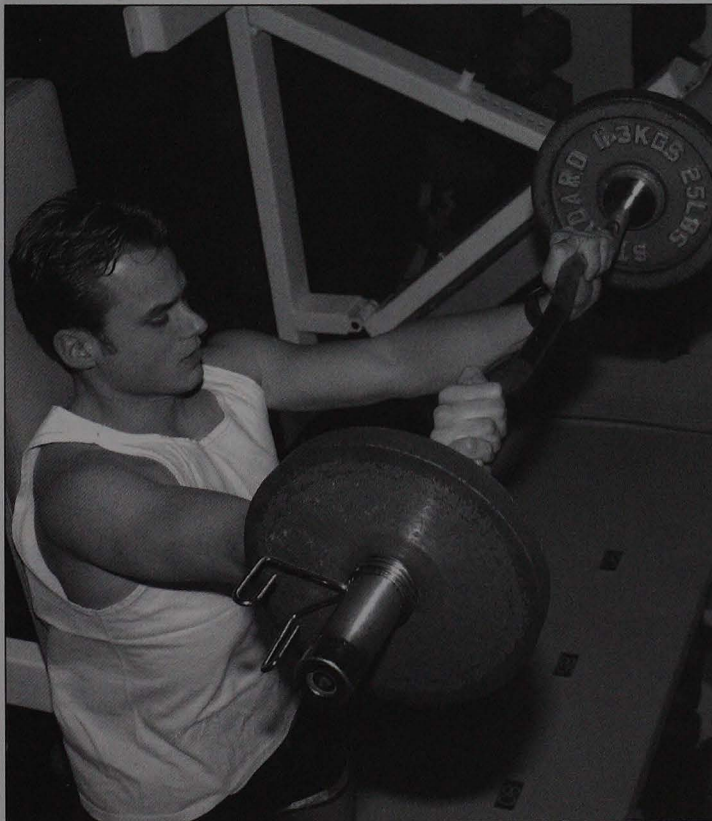
Lost ID cards may be replaced for a \$5 charge.

The card is void upon termination or interruption of enrollment and when not properly encoded.

Fraudulent use of the ID card subjects the user to a fine of \$2,000 and up to one year in jail (Class A Misdemeanor). Anyone who uses the ID card to give false information to a police officer is subject to a fine of \$200 (Class C Misdemeanor).

Liability

The health science center is not responsible for and does not assume any liability for loss of or damage to personal property. A student may want to provide personal insurance coverage for possessions on campus.



Living Accommodations

There is no on-campus housing at UNT Health Science Center. The health science center does not assume any responsibility in housing arrangements but does support the federal housing policies that housing owners not discriminate because of race, color, sex, age, disability, veteran status or national origin. Information on local housing accommodations is available in the student lounge.

Motor Vehicle Regulations

People who operate motor vehicles and bicycles on the health science center campus must comply with the Texas Uniform Traffic Code and the published center regulations regarding vehicle and bicycle use, parking, display of decals and penalties for violation. See Student Handbook for details on parking policies.

Student Organizations

The University of North Texas Health Science Center recognizes the right of any group of students, faculty or staff to form a voluntary organization for purposes not forbidden by the laws of the United States or the state of Texas. All organizations that include enrolled students as members must be registered with the Office of Student Affairs if they will use any university facilities, space or grounds for meetings.

Policies regulating the organization, functioning, sponsorship and privileges of registered or recognized organizations are available in the Office of Student Affairs.

Graduate Student Association

All members of the graduate student body, full or part-time, are full and equal members of the Graduate Student Association (GSA). GSA promotes the interests and opinions of the student body, sponsors projects and events beneficial to students and acts as the voice of students on matters of policy and student welfare. Monthly GSA meetings are held during the long semesters. Members elect officers at the end of each spring semester. The GSA president and vice president serve as student representatives to the Graduate Council.

Black Graduate Student Association

The Black Graduate Student Association (BGSA) is open to all African-American graduate students. BGSA was formed to promote fellowship among African-American graduate students. Further goals of the organization include assisting in recruitment and retention efforts, generating funds for scholarships, and serving as role models in the arena of science for elementary and secondary youth.

D.O./Ph.D. Student Association

The D.O./Ph.D. Student Association (DPSA) is open to all students involved in the dual D.O./Ph.D. program. DPSA takes an active roll in developing the policies governing the dual program.

DPSA serves as a formal liaison between the Graduate Student Association and the Student Government Association of the Texas College of Osteopathic Medicine. A further goal of the organization is to promote research among fellow osteopathic medical students.

Society for the Advancement of Latino Scholars in Academia

The Society for the Advancement of Latino Scholars in Academia (SALSA) was founded to educate and serve Latino and minority students of the importance of education and the opportunities available in academia. Further goals of this organization include assisting in the recruitment and retention of Latino students and educating the campus community on the contributions made by Latino scientists and health care practitioners.

McNair/SMART Student Association

The McNair/SMART Student Association (MSSA) is open to all participants of the Graduate School of Biomedical Sciences' outreach programs. MSSA was formed to aid in the recruitment and retention of a multicultural student body, serve as positive role models to the community, promote interaction among outreach program participants and the graduate school.

Scheduling Events

Student organizations are required to schedule events, seminars, programs and lectures through the Student Development Office. Facilities reservation forms may be picked up from this office and submitted to the Office of Student Affairs for official approval and scheduling.

Student Lounge

The Student Lounge is located on the first floor of Medical Education Building 1, directly across from the Main Auditorium. The lounge provides a relaxed atmosphere for students with various recreational game tables available. The Student Development Coordinator and Speculum offices are housed within the lounge.



8 Course Descriptions

Prequisite requirements may be waived on an individual basis as determined by department. All courses require permission of the course director for enrollment.

Biomedical Sciences (BMSC)

5000. Introduction to Concepts in Biomedical Science.

2 hours. Course designed for undergraduate participants in the summer research programs with emphasis on data collection, analysis and presentation in the areas of physiology, pharmacology, microbiology, molecular biology, anatomy and cell biology. Offered each Summer.

5010. Scientific Communications.

3 hours. The purpose of this course is to develop skills and gain experience in the types of scientific writing required for: submitting articles for publication; grant applications; preparing presentations for lectures and seminars; preparing posters for meetings. Offered Fall and Spring semesters.

5080. Radioisotopes in Biomedicine.

1 hour. Radiation sources, interaction of radiation with matter and human tissues, radiation measurement and dosage, instrumentation, regulations, and practical and safety procedures. Prerequisite(s): consent of department. Offered on demand.

5200. Biostatistics I.

3 hours. Statistical methods and experimental design; descriptive statistics; data presentation; parametric and non-parametric methods of hypothesis testing including two-sample tests, analysis of variance, regression and correlation analyses; introduction to multivariate statistics. Competency with computer statistical packages is developed. Offered each Summer.

5210. Biostatistics II.

3 hours. Course content includes multivariate analysis, experimental design and statistical software. Prerequisite: BMSC 5200. Offered each Summer II.

5300. Tools for Teaching Science.

2 hours. Workshop format to prepare students to serve as resources and teachers in secondary schools. Offered each Summer.

5310. Educational Instrumentation & Evaluation.

2 hours. Methods of evaluation and instruction of science curriculum will be taught in lecture format. Offered each Fall.

5320. Issues in Higher Professional Education.

2 hours. Topics include a discussion of medical school curricula, new approaches to teaching medical students and techniques for developing effective syllabi.

5400. Regulation of Human Subject Research.

1 hour. Regulations involved with human subject research will be discussed both from historical and contemporary perspectives. Case studies will be presented and students will attend an actual Institutional Review Board meeting. Prerequisite: BMSC 5960 or permissions from the department. Offered each Spring.

5500. Advanced Topics in Biomedical Sciences.

2 hours. Designed to introduce concepts in the biomedical sciences to undergraduates in the McNair program, this course is team-taught, and the topics and faculty rotate to each basic science department on a five-year cycle. The departments include Integrative Physiology, Pharmacology and Neuroscience, Molecular Biology and Biochemistry, Microbiology and Immunology, and Cell Biology and Anatomy.

5510. Introduction to Clinical Research and Studies.

2 hours. Course covers drug development process, ethical and scientific principles of clinical research, clinical trial preparation, study design, informed consent forms, clinical coordinator responsibility and regulatory considerations. Conducting clinical trials from initiation to implementation. Offered each Fall.

5520. Ethical, Legal, and Social Issues for Responsible Clinical Research.

1 hour. Regulations involved with human subject research will be discussed both from an historical and contemporary perspective. Case studies will be presented and students will attend an Institutional Review Board meeting. Prerequisite: BMSC 5960 or equivalent. Offered each Spring.

5600. Integrative Biomedical Sciences I.

5 hours. Course designed to provide foundation for studies in biomedical sciences through an integrated curriculum that includes instruction in biochemistry, micro/molecular biology and cell biology. Offered each Fall.

5650. Laboratory Rotations.

1-3 hours. Designed to allow first-year graduate students an opportunity to work in a particular research laboratory on activities directed by the instructor in order to become acquainted with the research and laboratory environment before selecting a mentor. Prerequisite: instructor consent. Offered each semester.

5700. Integrative Biomedical Sciences II.

5 hours. Course designed to provide foundation for studies in biomedical sciences through an integrated curriculum that includes biochemistry, cell biology and pharmacology. Prerequisite: BMSC 5600. Offered each Fall (course continues into spring semester).

5720. Cellular Responses to Peptides.

2 hours. This course focuses on the cellular signaling pathways involved in endogenous active peptides interacting with their receptors. In particular, ocular peptides that may have a role in normal homeostatic function and pathophysiology of the eye are featured. Prerequisites: 5600, 5700, and 5800.

5800. Integrative Biomedical Sciences III.

5 hours. The third course in the core curriculum of integrated topics in biomedical sciences. Includes basic information in the disciplines of immunology, physiology and pharmacology. Prerequisites: BMSC 5600 and BMSC 5700. Offered each Spring.

5900-5910. Special Problems.

1-3 hours each. For master's students capable of developing a finite problem independently through conferences and activities directed by the instructor. Problem chosen by the student with the consent of the instructor. May be repeated for credit. Offered each semester.

5920. Internship Practicum

6 hours. The candidate must complete an internship at an approved site. At the completion of the practicum, the student will write a report detailing the activities of the internship. A copy of the report must be submitted within the appropriate deadlines to the graduate school according to the guidelines for completing the requirements for graduation. Offered each semester.

5930. Individual Research.

1-12 hours. Master's-level research of independent nature. A maximum of 12 SCH allowed toward degree. Offered each semester.

5940. Seminar in Current Topics.

1 hour. Student will attend 15 lectures of current interest presented by students and/or invited speakers throughout the institution. Attendance is mandatory. May be repeated for credit. Offered Fall and Spring.

5950. Thesis.

3-6 hours. To be scheduled only with consent of department. 6 SCH required. No credit assigned until thesis has been completed and filed with the graduate dean. Continuous enrollment required once work on thesis has begun. May be repeated for credit. Offered each semester.

5960. Biomedical Ethics.

1 hour. Covers major ethical issues in biomedical sciences, including: authorship and intellectual property; conflict of interest; data selection/research design; privacy and confidentiality; discrimination and sexual harassment; misconduct and whistle-blowing; animals in research; human subjects in research; implication of funding sources for research. Offered each Fall.

5965. Introduction to Industry Practices.

1 hour. Introduction to the practice of industry science with an emphasis on good laboratory practice, new drug applications, FDA regulations, clinical trials and biotechnology transfer. Offered each Spring.

5970. Techniques in Biomedical Sciences.

1-2 hours (varies by technique chosen). A practical course in techniques. Students will participate in laboratories demonstrating up-to-date techniques in biomedical sciences. A listing of the techniques of participating laboratories is available in the schedule of classes. Offered each semester.

6010. Grant Writing.

3 hours. Demonstration of competence in a specific area of biomedical science as evidenced by writing, presenting and defending an NIH grant application. Attendance at a grant writing workshop held by the graduate school is required. Must be undertaken prior to the completion of 84 SCH. Prerequisite: Successful completion of a discipline-based qualifying examination. This course is graded Pass/Fail. Offered Fall, Spring and Summer I.

6900-6910. Special Problems.

1-3 hours each. For doctoral students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with the consent of the instructor. May be repeated for credit. Offered each semester.

6940. Individual Research.

1-12 hours. Doctoral research of independent nature. A maximum of 24 SCH allowed toward degree. Offered each semester.

6950. Doctoral Dissertation.

3, 6 or 9 hours. To be scheduled with consent of department. A maximum of 12 SCH allowed toward degree. No credit assigned until dissertation has been completed and filed with the graduate office. Doctoral students must maintain continuous enrollment in this course subsequent to passing qualifying examination for admission to candidacy. May be repeated for credit. Offered each semester.

Biochemistry & Molecular Biology (BIOC)

5425. Advanced Biochemistry.

4 hours. Topics include structure and function of nucleic acids and proteins, lipids, carbohydrates and regulation of metabolism. Tools for structural studies will be considered and current research reports in this area will be discussed. Prerequisites: BMSC 5600, 5700 and 5800. Offered each Spring.

5435. Molecular Aspects of Cell Signaling.

4 hours. Advanced study of signal transduction events from the plasma membrane to the nucleus. Topics include receptor activation, the generation of second messengers and eukaryotic transcriptional activation and repression. Prerequisites: BMSC 5600, 5700 and 5800. Offered each Fall.

5510. Signal Transduction.

2 hours. Current publications in the general area of receptor-signal transduction will be discussed in the journal club format. Students are required to participate in presentation and discussion of current articles. Offered each Fall and Spring.

5520. Enzyme Regulation and Mechanism.

2 hours. Current topics in the areas of Enzyme Mechanism and Regulation will be discussed, based on student and faculty presentations of literature articles. Offered each Fall and Spring.

5530. Structure and Function of Proteins.

2 hours. Topics will include the isolation of proteins from tissue, their structural and functional characterization, effects of natural and synthetic mutants on the structure, stability and function of proteins. Prerequisite: BIOC 5010 or BIOC 5011; may be taken concurrently. Offered each Fall and Spring.

5540. Advanced Lipoprotein Metabolism.

2 hours. Presentation and discussion of recent research findings and literature reports in lipoprotein metabolism and related areas. Prerequisite: BIOC 5010 or BIOC 5011; may be taken concurrently. Offered each Fall and Spring.

5550. Advanced Clinical Biochemistry.

3 hours. This course has an emphasis on performance, evaluation and diagnostic interpretation of clinical laboratory tests. Topics include endocrine biochemistry, cancer biochemistry tumor markers, biochemistry of nutrition, etc. Offered each Fall and Spring.

5560. Current Topics in Cancer Biology.

1 hour. Course reviews and emphasized current research articles in cancer-related fields including apoptosis, cell cycle regulation, and metastasis. Students are required to participate in presentation and discussion of current articles. Faculty and research staff members may participate in presentations. Offered each semester.

5680. Selected Topics in Biochemistry.

1-3 hours. Current research interests in the field of biochemistry. May be repeated as topics vary. Offered on demand.

5900-5910. Special Problems.

1-3 hours each. For students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with consent of the instructor and department. May be repeated for credit. Offered each semester.

5920. Seminar in Cell Motility.

1 hour. Review of the current literature in muscle contraction, ciliary movement, microfilaments and actin-binding proteins, microtubules and microtubule-associated proteins, intermediate filaments, non-muscle motility, the organization of the cytoskeleton and the novel biochemical and biophysical techniques. Offered each Fall and Spring.

5940. Seminar in Current Topics.

1 hour. Specialized weekly lectures on topics of current interest by students, faculty and/or invited speakers. May be repeated for credit. Offered Fall and Spring.

6040. Molecular Biology of Lipid Transport.

2 hours. Sterol-mediated regulation of gene expression, molecular function of lipoproteins. Emphasis on discussion of assigned readings and student presentations of literature articles. Prerequisites: BMSC 5600, 5700, 5800. Offered each Spring.

6050. Molecular and Cell Biochemistry of Cancer.

2 hours. Emphasis on cancer; initiation, promotion and progression — apoptosis/caspases, angiogenesis, oncogenes and tumor suppressors, adhesion molecules; tumor immunology and metastasis. Course format will consist of brief lecture, discussion of assigned readings, and student presentations of literature articles. Prerequisites: BMSV 5600, 5700, 5800. Offered each Spring.

6680. Advanced Techniques in Biochemistry.

1 hour. Methods and instrumentation currently used in biochemical analyses. Presented in four-week mini-courses consisting of 8 hours of lecture and 24 hours of laboratory. Topics vary from year to year but will include among others, protein sequencing and amino acid analysis, nucleic acid sequencing, tissue culture, monoclonal antibody production, column chromatography, radioisotopes, peptide synthesis and gel electrophoresis and electrofocusing. Offered on demand.

6690. Current Topics in Biochemistry and Molecular Biology.

1-3 hours. Emphasis on the current literature and contemporary approaches dealing with current topics in Biochemistry and Molecular Biology. Each semester will focus on one of several research areas. Prerequisite: BIOC 5425. Offered on demand.

Cell Biology & Genetics (CGEN)

5000. Structural Neuroscience.

6 hours. A complete study of the structure and function of the human nervous system utilizing basic principles of neuroanatomy, neurohistology, and neurophysiology. Laboratory activities will require students to participate in gross dissections of the brain and spinal cord. This integrated approach will provide the student with a fundamental understanding of the basic concepts of neuroscience. The course will consist of both lectures and labs related to the functioning of the normal and diseased nervous system. Prerequisites: BMSC 5600, 5700, 5800. Offered each Fall.

5010. Structural Anatomy.

8 hours. A complete study of the gross morphological and histological structures of the human body (excluding those areas taught in Structural Neuroscience). The unity of the human body will be examined beginning at the cellular level and progressing to the macroscopic level. Lecture material and dissections in the gross anatomy portion are organized regionally. Laboratory activities will require students to participate in gross dissections of the abdomen, thorax, pelvis, perineum, lower limb and portions of the head and neck. Dry labs (dissections) of the superficial and deep back, axilla, and the upper limb will be performed through computer simulation. Students will also be required to examine, by means of light microscope and computer simulation, the cells, tissue and organs of the human body. Each student will be required to participate fully in dissection of a human cadaver for successful completion of the course. In addition, both lecture and laboratory sessions will emphasize clinical significance. Prerequisites: BMSC 5600, 5610, 5700, 5710. Offered each Spring.

5020. Structural and Developmental Anatomy of the Human Genitourinary System.

3 hours. Designed to familiarize the student with the development and the gross and microscopic structures of the human genitourinary system. Lecture materials on the gross and histological morphology of the organs and structures associated with the human genitourinary system will be supported by detailed dissections of those structures in human cadavers. Completion of a mentor-directed research project utilizing knowledge of the genitourinary system and dissection skills acquired in the laboratory is required. Offered each spring. Requires prior approval from course director.

5030. Structural and Developmental Anatomy of the Human Cardiorespiratory System.

3 hours. Designed to familiarize the student with the development and the gross and microscopic structures of the human cardiorespiratory system. Lecture materials on the gross and histological morphology of the human cardiovascular and respiratory organs and associated structures will be supported by detailed dissections of those structures in human cadavers. Completion of a mentor-directed research project utilizing knowledge of the cardiorespiratory system and dissection skills acquired in the laboratory is required. Offered each spring. Requires prior approval from course director.

5040. Structural and Developmental Anatomy of the Human Digestive System.

3 hours. Designed to familiarize the student with the development and the gross and microscopic structures of the human digestive system. Lecture materials on the gross and histological morphology of the organs and structures associated with the human digestive system will be supported by detailed dissections of those structures in human cadavers. Completion of a mentor-directed research project utilizing knowledge of the digestive system and dissection skills acquired in the laboratory is required. Offered each Spring. Requires prior approval from course director.

5050. Methods in Forensic Molecular Biology.

4 hours. An intensive laboratory course designed to give student experience and expertise in the basic molecular biology techniques currently utilized in forensic DNA analysis. Techniques will include multiple methods of extraction of nucleic acids from various sources; DNA quantitation methods; design and process of PCR amplification; agarose gel electrophoresis; capillary electrophoresis theory and methods; analysis of microsatellite DNA; mitochondrial DNA sequencing and analysis; single nucleotide polymorphism analysis methods. Offered each Summer.

5100. Biological Evidence Evaluation.

4 hours. Course topics include collection and preservation of biological evidence, chain of custody, evidence screening for biological components (blood, seminal fluid, saliva, hairs, etc.), presumptive and confirmatory testing, and an overview of historical testing procedures. Training will also include DNA extraction procedures, RFLP, ASO and STR analysis. Offered each Fall.

5200. Expert Testimony in Forensic Science.

3 hours. This course is intended to provide students with training in forensic testimony in the courtroom. Students will be required to provide testimony in a moot court setting. Discussions of admissibility standards, visual aids and trial preparation will be covered. Offered each Spring.

5300. Population Genetics.

3 hours. Course topics will include the evaluation and characterization of genetic and phenotypic variation, population substructure, selection and random drift models, molecular processes of genetic change, quantitative genetics, and processes and modes of speciation, and organismal zoogeography. Offered each Spring.

5310. Genetic Data Analysis.

4 hours. Methodological approaches to evaluating genetic data for population analysis, phylogenetic analysis, and genetic evaluation of quantitative trait loci. Several software packages will be utilized for processing diploid and haploid genetic data sets. Microsatellite DNA, SNP panels and DNA sequences as applied to forensic DNA data.

5400. Non-Human Forensic Genetics.

3 hours. Course content and methods will concentrate on identification of biological evidence that is from non-human sources. Emphasis on biological methods for identifying and individualizing materials from vertebrate organisms of economic and environmental concern.

5500. Forensic Laboratory Quality Assurance.

1 hour. Principles of quality assurance, current industry standards for quality systems in forensic DNA and other forensic disciplines. Creating, maintaining and improving quality systems.

5600. Current Topics in Forensic and Molecular Genetics.

1 hour. Seminar course in which new and advanced methods in the genetic evaluation of biological forensic evidence will be discussed to expand the training of students in the Forensic Genetics program and students interested in clinical genetics. Topics to be discussed will include statistical analysis, microarray technology, bioinformatics, genomics and legal testimony. Offered each Fall and Spring.

5700. Forensic Hair Analysis.

1 hour. Introduction to the microscopic analysis of hair for forensic evidence evaluation. Offered each Spring.

5800. Blood Spatter Pattern Analysis.

1 hour. Introduction to the analysis of blood spatter patterns for forensic evidence and crime scene evaluation. Offered each Spring.

5900-5910. Special Problems.

1-3 hours each. For students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with the consent of the instructor and department. May be repeated for credit. Offered each semester.

5940. Seminar in Current Topics.

1 hour. Specialized weekly lectures on topics of current interest by students, faculty and/or invited speakers. May be repeated for credit. Offered Fall and Spring.

5950. Forensic Anthropology.

3 hours. Human identification techniques with emphasis on identification from human skeletal remains. Fundamental biology of osseous and dental tissues; forensic botany and entomology; genetics of human variability; serotyping; HLA typing; analysis of hair and dermatoglyphic lines; DNA fingerprinting.

6020. Proteomics.

3 hours. The goal of this course is to introduce students to concepts and methods used in defining a database of tissue specific and disease specific protein expression. Topics to be discussed include: transcriptomes, proteomes, protein structures, protein structure prediction based on gene sequence, two-dimensional structures, mass spectrometry, laser capture microdissection, functional analysis of proteins, and yeast two hybrid system for

protein-protein interactions. Through a series of problems and problem solving sessions, students will learn to design experiments to apply proteomics to their specific fields of interest. Offered each Spring.

6030. Methods in Molecular Biology.

4 hours. An intensive laboratory course designed to give students the expertise to perform basic techniques currently utilized in cell and molecular biology. Techniques will include plasmid preparation; isolation of cDNA inserts from various plasmids; extraction of nucleic acids; agarose gel electrophoresis; Northern and Southern blot analyses; cDNA cloning; sequencing and analysis; PCR amplification; protein gel electrophoresis; and immunoblot analysis. Prerequisite: graduate-level biochemistry. Offered each Summer.

6040. Advances in Ocular Biology.

3 hours. Emphasis is on the current literature and contemporary approaches dealing with current topics in ocular biology. Each year will focus on one or several research and/or clinical areas. Offered every other Fall (odd years).

6050. Visual Sciences Seminar.

1 hour. A monthly presentation by a visiting distinguished visual scientist. The seminar will be preceded by a journal check where articles relating to the seminar will be discussed. Offered each Fall and Spring.

6080. Diseases of the Eye.

3 hours. Structure and function of the various ocular tissues, as well as the diseases which affect them. Lectures presented by basic scientists and clinical ophthalmologists. Offered on demand.

6599. Current Topics in Cell Biology and Genetics.

1 hour. Contemporary topic chosen each semester from the broad areas of anatomy, cell biology, visual science. Format consists of presentations of current research articles by both faculty and students. May be repeated for credit as topics vary. Offered each Fall and Spring.

6690. Special Problems in Cell Biology and Genetics.

1-3 hours. For students capable of developing a problem independently through conferences and activities directed by the faculty. Problem chosen by the student with the consent of the instructor and the department chair. Offered each semester.

6699. Special Problems in Ocular Research.

1-3 hours. For students capable of developing a problem independently through conferences and activities directed by the faculty in areas of visual sciences. Problem chosen by the student with the consent of the instructor and the department chair. Offered each semester.

Family Medicine (FMED)

5540. Family Medicine Colloquium.

3 hours. This colloquium course will explore the practical issues of clinical research in family medicine and is presented in a seminar format. Speakers will include UNTHSC faculty, invited guests and student participants. Offered each semester.

5900-5910. Special Problems in Family Medicine.

3 hours. An individualized problem under the direction and supervision of a graduate faculty mentor. Offered each semester.

Integrative Physiology (PSIO)

5100. Cardiovascular Physiology I.

3 hours. Designed to familiarize the student with current concepts and progress in human cardiovascular function with an emphasis on the heart. Topics include molecular basis of myocardial contraction, electrochemical coupling, regulation of myocardial mechanics and ventricular performance, the coronary circulation, myocardial ischemia, cardiac failure, and neural control of the circulation. Course format includes lectures, student presentations, term paper, and examinations. Prerequisite: BMSC 5600, 5700, 5800. Offered every other Fall (even years).

5110. Cardiovascular Physiology II.

3 hours. Continuation of PSIO 5100 with emphasis on the circulation. Topics include capillary and lymphatic dynamics, control of blood pressure, splanchnic blood flow, regulation of cardiac output and specific cardiovascular perturbations. Prerequisites: BMSC 5600, 5700, 5800 and PSIO 5100. Course format includes student presentations, term paper and examinations. Offered every other Spring (odd years).

5200. Respiratory Physiology.

3 hours. Designed as an in-depth study of the functional anatomy and physiology of the respiratory system with emphasis on the human. Topics include pulmonary mechanics and blood flow. Respiratory blood gases and neurohumoral control of ventilation. Course format includes lectures, student presentations, term paper, and examinations. Prerequisite: BMSC 5600, 5700, 5800. Offered every other Fall (odd years).

5300. Renal Physiology.

3 hours. This course familiarizes the student with current concepts and progress in human renal function. Topics include the body fluids, the renal vascular bed, glomerular filtration, tubular function, acid-based physiology, renal pathophysiology and the history of renal physiology. Course format includes lectures, student presentations, term paper, and examinations. Prerequisite: BMSC 5600, 5700. Offered every other Spring (even years).

5400. Molecular Genetics of Cardiac and Vascular Disease.

3 hours. Advanced in-depth study of the molecular biology and

genetics of both normal and disease state cardiovascular functions. Emphasis is to be placed on the genetics behind disease state etiologies. A thorough review of all new genetic and molecular techniques developed to explore disease state physiology will be presented. Course format includes lectures, student presentations, term paper, and examinations. Prerequisites: BMSC 5600 and 5700, 5800. Offered every other Spring (odd years).

5900-5910. Special Problems.

1-3 hours each. For students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with the consent of the instructor and department. May be repeated for credit. Offered each semester.

5940. Seminar in Current Topics.

1 hour. Specialized weekly lectures on topics of current interest by students, faculty and/or invited speakers. May be repeated for credit. Offered Fall and Spring.

6020. Advances in Cardiovascular Physiology I.

3 hours. Directed, in-depth study of current research literature with emphasis on the heart. Oral reports and written reviews are required. Prerequisite: PSIO 5100. Offered each semester.

6030. Advances in Cardiovascular Physiology II.

3 hours. Directed, in-depth study of current research literature with emphasis on the peripheral circulation. Oral reports and written reviews are required. Prerequisite: PSIO 5110. Offered each semester.

6050. Physiology of Skeletal and Smooth Muscle.

3 hours. Designed as an in-depth study of the functional anatomy and physiology of skeletal and smooth muscle. Topics include functional anatomy, molecular basis of contraction, excitation-contraction coupling, electro- and pharmaco-coupling and regulation of muscle mechanics and adaptations of the neuromuscular system. Special topics are presented by students. Course format includes lectures, student presentations, term paper, and examinations. Prerequisites: BMSC 5600, 5700, 5800. Offered every other Fall (odd years).

6060. Cardiovascular Regulation During Exercise.

3 hours. The course will provide an integrative physiological basis of blood pressure regulation during exercise. The mechanisms to be discussed include "Central Command" and the "exercising muscle pressor reflex" and their integration with basic hemodynamic responses to exercise. Course format includes lectures, student presentations, term paper, and examinations. Offered every other Summer (even years).

6070. Advanced Endocrine Physiology.

3 hours. An interactive survey of modern endocrinology presented largely from the current primary literature. The scope will focus on mechanisms and will extend from molecular biology (hormone interactions with genes, receptors, ion channels, second messengers, etc.) to systematic control (feedback, secretion,

distribution, metabolic clearance rate, etc.) Broad topic areas discussed will be determined in part by class interests. Offered every other Fall (odd years).

6080. Advanced Autonomic Physiology.

3 hours. This course will cover anatomy, neurotransmitters, and cellular mechanisms of the autonomic nervous system with special emphasis on the peripheral systems. Parasympathetic and sympathetic control of physiological function will be discussed with system emphasis determined in part by student interests. Current research literature combined with up to date reviews will be used to spur discussions which will focus on mechanisms extending from molecular biology to systemic control. Individual student interests will be used to determine special topic areas for the last half of the course. Course format includes lectures, student presentations, term paper, and examinations. Prerequisites: BMSC 5600, 5700, 5800 and PSIO 5100. Offered every other Fall (even years).

6090. Myocardial Metabolism: Concepts and Controversies.

3 hours. Comprehensive survey of current scientific issues related to heart muscle metabolism and function. Specific topics include: control of myocardial substrate metabolism; ATP synthesis and utilization; myocardial ischemia, "stunning," and "hibernation;" advanced techniques for studying myocardial metabolism. Course format includes lectures, student presentations, term paper, and examinations. Prerequisites: BMSC 5600, 5700, 5800. Offered every other Spring (odd years).

6699. Current Topics in Physiology.

1-3 hours. Survey of literature, oral presentations and written reports. Offered each semester.

Microbiology & Immunology (MICR)

5050. Host-Parasite Relationships in Infectious Diseases.

3 hours. Emphasis on pathogenicity, pathogenesis, and the host's innate and acquired resistance to infection. Lectures, conferences, literature review are utilized for student instruction. Demonstration of independent student initiative is an essential part of this course, and a special project is required. Offered once every 2-3 years.

5120. Current Topics in Immunology.

1 hour. Format consists of presentations of current research articles in the various areas of immunology by faculty, research staff and students. May be repeated for credit. Offered each semester.

5130. Structure and Function of the Eukaryotic Chromosome.

2 hours. Current publications in the general area of chromosomal structure and function in mammalian cells will be discussed in the journal club format. Students are required to participate in the presentation and discussion of current articles related to chromatin structure, nucleosomes, histone proteins, metaphase chromosomes, telomeres, centromeres, nuclear matrix, nuclear pores, nucleolus, nuclear envelope, nuclear laminae, DNA replication, transcription, DNA damage and repair, ribonucleoprotein particles, spliceosomes,

and macromolecular interactions in heterochromatin and euchromatin (interphase chromatin). Offered each Spring.

5300. Current Topics in Molecular Microbiology.

2 hours. Presentation and discussion of current research, emphasizing microbial physiology, genetics and molecular biology. Offered each semester.

5940. Seminar in Current Topics.

1 hour. Specialized weekly lectures on topics of current interest by students, faculty and/or invited speakers. May be repeated for credit. Offered Fall and Spring.

6080. Advances in Virology.

3 hours. Course is designed to cover modern culture techniques, molecular biology, host-virus interaction, interferon and antivirals among other topics. Prerequisite: MICR 5020. Offered on demand.

6300. Advanced Molecular Biology.

3 hours. Course designed for students familiar with basic molecular biology. Lectures emphasize modern paradigms in molecular biology. Offered once every 2-3 years.

6650. Current Topics in Microbiology and Immunology.

3 hours. A consideration of findings in the most recent literature—microbiology, immunology, parasitology and virology. Course will follow a small group interactive format, student's presentations and panel discussions. Prerequisite: MICR 5020. Offered on demand.

Osteopathic Manipulative Medicine (OMMC)

5510. Introduction to Osteopathic Research and Studies.

3 hours. This course is intended to introduce the student to clinical research project design, institutional procedures for review and approval of research involving human subjects, ethical principles of clinical research, and proper implementation and conduct of clinical trials. Prerequisite: BMSC 5960. Offered each semester.

5540. Clinical Research Colloquium.

1 hour. This colloquium course will explore the practical issues of clinical research, review of journal articles and is presented in a seminar format. Speakers will include UNTHSC faculty, invited guests and student participants. Offered each semester.

5900. Special Problems in Clinical Research.

3 hours. An individualized problem under the direction and supervision of a graduate faculty mentor. Offered each semester.

5910. Special Problems in Clinical Education.

3 hours. An individualized problem under the direction and supervision of a graduate faculty mentor. Offered each semester.

Pharmacology & Neuroscience (PHRM)

5030. Principles of Pharmacology.

3 hours. Topics include cardiovascular, endocrine and antibiotic pharmacology. Offered each Fall.

5050. Introduction to Toxicology.

3 hours. The interrelationships of natural and synthetic agents to biologic systems are compared with the resulting toxicological response of the organism. Identification of causative agents and determination of limits of detection and safety are discussed. The principles of instrumentation methods and their use in a toxicological laboratory are described. Offered on demand.

5060. Experimental Toxicology.

3 hours. Lecture and laboratory experience emphasizes adverse reactions to chemicals and drugs, environmental hazards and analytical techniques for detection of foreign substances in biological fluids and tissues. Includes qualitative and quantitative laboratories, identification of causative agents and metabolic studies of toxic agents. Visits to professional laboratories specializing in toxicology are included. Offered on demand.

5070. Neuropharmacology.

4 hours. In-depth presentations on: 1) mechanisms of neurotransmitter synthesis, storage and release; 2) mechanisms of neuropharmacological agents; 3) molecular and behavioral aspects of Alzheimer's and aging; and 4) drugs and neurodegenerative diseases. Prerequisites: BMSC 5600, 5610, 5700 and 5710. Offered every other Spring (even years).

5100. Neurobiology of Aging.

3 hours. This course will serve as an introduction to the aging nervous system and age-related nervous system diseases. The course will include lectures by experts in the field of neurobiology of aging and discussion of selected topics in the field. By the completion of the course, the student should have a working knowledge of major issues that drive research in the neurobiology of aging. Prerequisites: 5600, 5700, and 5800. Offered every other Spring (even years).

5900-5910. Special Problems.

1-3 hours each. For students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with the consent of the instructor and department. May be repeated for credit. Offered each semester.

5940. Seminar in Current Topics.

1 hour. Specialized weekly lectures on topics of current interest by students, faculty and/or invited speakers. May be repeated for credit. Offered Fall and Spring.

6020. Advances in Molecular Pharmacology.

3 hours. An in-depth review of the current literature on modern pharmacology and signal transduction of drug receptors. Oral reports and written reviews required. Prerequisite: ANAT 6020. Offered on demand.

6030. Advances in Behavioral Pharmacology.

3 hours. Directed, in-depth study of current research literature with an emphasis on behavioral pharmacology. Oral reports and written reviews required. Prerequisite: PHRM 5070. Offered every other Spring (odd years).

6050. Ocular Pharmacology.

3 hours. Review of pharmacological principles and therapeutic approaches regarding ocular diseases and eye organ systems. Offered on demand.

6080. Receptors and Drug Action.

4 hours. In-depth course of drug receptor pharmacology and receptor classes. Emphasis on techniques for studying receptor function, second messenger signaling and molecular pharmacology. Offered every other Spring (even years).

6410. Basic and Clinical Pharmacology

4 SCH. Medical Pharmacology is a course designed for graduate students in the biomedical sciences and presents an introduction to major drugs used for the treatment and prevention of disease. The course begins with an overview of the general principles of pharmacology, including major concepts of pharmacodynamics (drug action) and pharmacokinetics (drug time course, dosing). The remainder of the course examines the major classes of drugs that modify the functioning of the autonomic, cardiovascular, central nervous, hematopoietic, and endocrine systems; antibiotics and NSAIDs are also covered. Emphasis is placed on the therapeutic use and mechanism of action of major drugs by class. The format of the course is student self-directed study supported by interactive sessions with faculty. Cross-listed with PSYC 6410. Offered each Fall.

6699. Current Topics in Pharmacology.

1-3 hours. Review of current topics in pharmacology including pharmacology of aging, ocular pharmacology, behavioral pharmacology and new drugs on the horizon. Offered each Fall.

Psychology (PSYC)

PSYC 6010. Geriatric Health Psychology.

3 hours. Examination of general and cellular theories of aging and general age-related changes in various body systems including neurological, immunological, cardiovascular, and endocrine systems. An empirical understanding is provided to permit distinction between physical health and aging, normal age-related changes and common chronic illnesses associated with old age. Students will focus on methods of evaluating the health status and needs of the elderly in relation to planning and evaluating multidisciplinary programs. Prerequisite(s): UNT PSYC 5070 or consent of department. Offered each Spring.

PSYC 6820/6830. Health Psychology Preceptorship.

3 hours. Practical experience that will focus on the integration of the Health Psychologist with the Primary Care Physician, where the Health Psychologist functions as an important member of the primary care team in a manner that overcomes managed care barriers to this integration. The goal is for the student-doctor to achieve an advanced degree of competence in skills, knowledge, judgment, and ethics that will allow for the development of a greater understanding and identification with the role of the professional Clinical Health Psychologist. Offered each semester.

6110. Developmental Neurobiology.

3 hours. Molecular and cellular events underlying neuronal differentiation, axon guidance, synapse formation, neurotrophic factors, and neural death, with special emphasis on activity-dependent plasticity and its role in generating and maintaining transient or long-lasting and precise connections and circuits as found in the nervous system.

6210. Clinical Neuropsychology and Cognitive Rehabilitation.

4 hours. An overview of neurocognitive disorders including methods for diagnostic differentiation, theoretical foundations, research methodology, clinical methods, clinical applications, and current issues. Recent advances and research in the theoretical models of neurocognitive rehabilitation will be considered, along with the development of methods for targeted interventions, monitoring progress and treatment outcomes. Prerequisite(s): UNT PSYC 6420 or consent of department. Offered each Spring.

6250. Human Neuroanatomy.

3 hours. Introduction to the anatomical organization and basic functional principles of the major sensory, motor, associational, and modulatory systems of the human brain. Students learn to identify visually specific structures on slides, magnetic resonance images (MRI), and dissected brain specimens in relation to neural pathways and system interconnections. This course provides an understanding of the function of each major brain system in relation to the organization and synaptic connections of their principal nuclei as well as to neurological disorders associated with disease or lesions at specific locations.

6410. Basic and Clinical Pharmacology

4 SCH. Medical Pharmacology is a course designed for graduate students in the biomedical sciences and presents an introduction to major drugs used for the treatment and prevention of disease. The course begins with an overview of the general principles of pharmacology, including major concepts of pharmacodynamics (drug action) and pharmacokinetics (drug time course, dosing). The remainder of the course examines the major classes of drugs that modify the functioning of the autonomic, cardiovascular, central nervous, hematopoietic, and endocrine systems; antibiotics and NSAIDs are also covered. Emphasis is placed on the therapeutic use and mechanism of action of major drugs by class. The format of the course is student self-directed study supported by interactive sessions with faculty. Cross-listed with PHRM 6410. Offered each Fall.

6610. Psychology Research Seminar and Practicum.

4 hours. Will focus on the initiation, conduct and consummation of advanced research projects, as well as dialogues related to the art and practice of publishing. The purpose of the practicum is twofold: to engender an appreciation for scholarship and to engage students in research projects that have a high probability of resulting in journal publications. Prerequisite(s): doctoral standing in psychology. May be repeated for credit. Offered each semester.

6710. Neurobehavioral Toxicology.

3 hours. This course is an examination of a range of environmental determinants that can be toxic to the human condition. It will consider recent advances and research on the implications of chemical exposure, nutrition, radiation, and various pollutants to neuropsychological, behavioral, and other processes and health risks. Offered each Spring.

6720. Psychophysiological Processes.

4 hours. A review of current psychophysiological methods, principles and research. Emphasis is on electrodermal, cardiovascular, electromyographic and electrocortical measurement in research on arousal, attention, stress, adaptation, emotion, personality and health. Prerequisite(s): UNT PSYC 5790 or consent of department. Offered each Fall.

6770. Biofeedback Methods and Behavioral Medicine.

4 hours. An introduction to and overview of biofeedback and self-regulation, including experimental foundations, research methodology, clinical methods, clinical applications and current issues. Laboratory work includes supervised practice in the design and implementation of biofeedback training programs for individuals from both normal and deviant populations. Prerequisite(s): PSYC 6720 or consent of department. Offered each Spring.

6780. Cardiovascular Behavioral Medicine.

3 hours. An in-depth examination of current issues and research in cardiovascular behavioral medicine, emphasizing cardiovascular measurement, research methods, individual differences and biobehavioral perspectives on the pathophysiology, assessment and treatment of cardiovascular diseases. Prerequisite(s): PSYC 6720 or consent of department. Offered each Spring.

6810. Treatment Outcomes in Health Care.

3 hours. This course provides students with the basic knowledge and skills to effectively design and implement treatment outcome measurement strategies in health care settings. The course will also provide computer instruction to facilitate the effectiveness of treatment outcome measurement. Students will learn about the various settings in which outcome measurement occurs, such as family medicine clinics, pain centers, hospitals, pharmaceutical industries, and psychiatric facilities. Database management, quality control, and analysis of health care data will be demonstrated. Students will develop and analyze a simulated treatment outcome database of their own and present their findings in class. Offered each Fall.

6920. Functional Human Anatomy.

3 hours. Introduction to anatomical organization and physiological mechanisms in humans. The focus will emphasize physiological and structural factors in major medical disorders.



9

Faculty, Officers & Staff

Full-time faculty members are classified as Category I, II or III. The qualifications in appointment to a category depend upon the faculty member's record of scholarly, creative and research activities. Category III reflects the highest level of scholarly attainment. Faculty members in any of the three categories may serve on thesis or dissertation committees as a member. Category II faculty members may serve as directors of thesis committees and co-directors of dissertation committees. Graduate faculty members in Category III are the only faculty eligible to serve as chairs of dissertation or doctoral lecture recital committees. Each faculty member's status is enclosed in parentheses.

Graduate faculty of the University of North Texas Toulouse School of Graduate Studies and the University of North Texas Health Science Center at Fort Worth School of Public Health are also members of the graduate faculty of Graduate School of Biomedical Sciences and thus can serve as mentors or committee members of GSBS students appropriate to their appointments. See the catalogs of the respective schools in graduate faculty listings.

All personnel listings in this section are based on information available when this bulletin went to press.

Faculty

AGARWAL, NEERAJ, Associate Professor of Pathology and Anatomy. PhD, The Post-Graduate Institute of Medical Education and Research. (III)

ALEXANDER, JERRY, Associate Professor of Medical Education. PhD, University of Southern Mississippi. (I)

ALVAREZ-GONZALEZ, RAFAEL, Associate Professor of Molecular Biology and Immunology. PhD, University of North Texas. (III)

ANDREEV, OLEG, Research Assistant Professor of Molecular Biology and Immunology. PhD, Moscow Institute of Physics and Technology. (I)

ASCHENBRENNER, JOHN, Associate Professor of Pathology and Anatomy. PhD, Baylor University. (I)

BARKER, DAVID, Associate Professor of Integrative Physiology. PhD, University of Illinois at Urbana Champaign. (II)

BASU, ALAKANADA, Associate Professor of Molecular Biology and Immunology. PhD, University of Pittsburgh. (III)

BLACKWELL, DEBORAH, Associate Professor of Pediatrics. DO, University of North Texas Health Science Center at Fort Worth. (I)

BOREJDO, JULIAN, Associate Professor of Molecular Biology and Immunology. PhD, Macquarie University. (III)

BRUNSON, KENNETH, Research Professor of Molecular Biology and Immunology. PhD, University of Minnesota. (III)

CAFFREY, JAMES, Professor of Integrative Physiology. PhD, University of Virginia. (III)

CAGE, CLIFTON, Assistant Professor of Family Medicine. DO, Philadelphia College of Osteopathic Medicine. (I)

CAMMARATA, PATRICK, Professor of Pathology and Anatomy. PhD, Hunter College, City University of New York. (III)

CARNES, MICHAEL, Assistant Professor of Osteopathic Manipulative Medicine. DO, University of North Texas Health Science Center at Fort Worth. (II)

CARROLL, JOAN, Assistant Professor of Integrative Physiology. PhD, University of Florida. (III)

CIPHER, DAISHA J., Assistant Professor of Biostatistics of School of Public Health. PhD, Southern Methodist University. (I)

COLERIDGE, SAMUEL T., Professor of Family Medicine. DO, University of Health Sciences. (II)

CUNNINGHAM, LINDA, Associate Professor of Pathology and Anatomy. MD, Vanderbilt University. (I)

- DAS, HRIDAY K.**, Associate Professor of Pharmacology and Neuroscience. PhD, University of Nebraska-Lincoln. (III)
- DAVIS, CAROLE**, Assistant Professor of Osteopathic Manipulative Medicine. DO, MPH, MBA, University of North Texas Health Science Center at Fort Worth. (II)
- DE FIEBRE, CHRISTOPHER**, Assistant Professor of Pharmacology and Neuroscience. PhD, University of Colorado. (III)
- DICKEY, JERRY L.**, Associate Professor of Osteopathic Manipulative Medicine. DO, University of North Texas Health Science Center at Fort Worth. (II)
- DILLON, GLENN H.**, Associate Professor of Pharmacology and Neuroscience. PhD, University of Illinois at Urbana-Champaign. (III)
- DMITRIJEVICH, S. DAN**, Research Associate Professor of Molecular Biology and Immunology. PhD, University of Bath. (III)
- DORY, LADISLAV**, Professor of Molecular Biology and Immunology. PhD, McGill University. (III)
- DOWNNEY, H. FRED**, Professor of Integrative Physiology. PhD, University of Illinois at Urbana-Champaign. (III)
- EASOM, RICHARD A.**, Associate Professor of Molecular Biology and Immunology. PhD, University of Glasgow. (III)
- EISENBERG, ARTHUR**, Associate Professor of Pathology and Anatomy. PhD, State University of New York at Albany. (III)
- FAIRCHILD, THOMAS**, Associate Professor of School of Public Health. PhD, Wayne State University.
- FORSTER, MICHAEL J.**, Professor of Pharmacology. PhD, Bowling Green State University. (III)
- FRANKS, SUSAN**, Assistant Professor of Family Medicine. PhD, University of North Texas. (III)
- GAMBER, RUSSELL**, Associate Professor of Osteopathic Manipulative Medicine. DO, Kirksville College of Osteopathic Medicine. (II)
- GARNER, MARGARET**, Associate Professor of Pathology and Anatomy. PhD, Indiana University. (III)
- GATCH, MICHAEL B.**, Research Assistant Professor of Pharmacology and Neuroscience. PhD, Utah State University. (I)
- GISH, ERIC E.**, Assistant Professor of Osteopathic Manipulative Medicine. DO, University of North Texas Health Science Center at Fort Worth.
- GRACY, ROBERT W.**, Professor of Molecular Biology and Immunology. PhD, University of California at Riverside. (III)
- GRANT, GEOFFREY**, Research Associate Professor of Molecular Biology and Immunology. PhD, University of California. (I)
- GRANT, STEPHEN R.**, Assistant Professor of Integrative Physiology. PhD, University of Tennessee. (III)
- GWIRTZ, PATRICIA A.**, Professor of Integrative Physiology. PhD, Thomas Jefferson University. (III)
- HALL, JAMES R.**, Associate Professor of Internal Medicine (Geriatrics). PhD, University of Nevada-Reno. (III)
- HARRIS, BEN G.**, Professor of Molecular Biology and Immunology. PhD, Oklahoma State University. (III)
- HART, MARK E.**, Assistant Professor of Molecular Biology and Immunology. PhD, Mississippi State University. (III)
- HUANG, REN-QI**, Research Assistant Professor of Pharmacology and Neuroscience. PhD, Shanghai Institute of Physiology. (I)
- KIM, MYOUNG**, Research Assistant Professor of Molecular Biology and Immunology. PhD, University of North Texas Health Science Center at Fort Worth.
- KING, GEORGE**, Research Associate Professor of Pharmacology and Neuroscience. PhD, SUNY at Stony Brook.
- KITSON, RICHARD P.**, Research Associate Professor of Molecular Biology and Immunology. PhD, University of Michigan. (II)
- KNEBL, JANICE**, Associate Professor of Internal Medicine. DO, Philadelphia College of Osteopathic Medicine. (II)
- KOULEN, PETER**, Assistant Professor of Pharmacology and Neuroscience. PhD, Max-Planck-Institute for Brain Research. (III)
- KRISHNAMOORTHY, RAGHU R.**, Research Assistant Professor of Pharmacology and Neuroscience. PhD, University of Bombay. (I)
- KUDCHODKAR, BHALCHANDRA J.**, Research Associate Professor of Molecular Biology and Immunology. PhD, University of Saskatchewan. (II)
- KULKARNI, GOPAL**, Research Assistant Professor of Molecular Biology and Immunology. PhD, Indian Institute of Science. (II)
- KUMARESAN, PAPPANAICKEN R.**, Research Assistant Professor of Molecular Biology and Immunology. PhD, University of Madras, India. (I)
- LACKO, ANDRAS G.**, Professor of Molecular Biology and Immunology. PhD, University of Washington. (III)
- LEMKE, HENRY**, Assistant Professor of Family Medicine. PA, Saint Francis College. (I)
- LICCIARDONE, JOHN**, Professor of Family Medicine. DO, Kirksville College of Osteopathic Medicine. (III)
- LUEDTKE, ROBERT R.**, Associate Professor of Pharmacology and Neuroscience. PhD, University of Pennsylvania. (III)
- MALLET, ROBERT T.**, Associate Professor of Integrative Physiology. PhD, George Washington University. (III)
- MARSHALL, MURIEL**, Associate Professor of Family Medicine. DO, Michigan State University College of Osteopathic Medicine (II)
- MARTIN, MICHAEL W.**, Assistant Professor of Pharmacology and Neuroscience. PhD, University of Texas at Houston. (III)

MATHEW, PORUNELLOO, Associate Professor of Molecular Biology and Immunology. PhD, University of Poona. (III)

McCONATHY, WALTER J., Associate Professor of Internal Medicine. PhD, University of Oklahoma School of Medicine. (III)

McGILL, JERRY C., Associate Professor of Osteopathic Manipulative Medicine. PhD, University of North Texas.

MOTHERAL, M. SUSAN, Assistant Professor of Medical Education. PhD, Duke University. (I)

OGLESBY, MICHAEL W., Professor of Pharmacology and Neuroscience. PhD, State University of New York at Buffalo. (III)

PAPA, FRANK, Professor of Family Medicine. DO, Philadelphia College of Osteopathic Medicine; PhD, University of North Texas. (III)

PEMMARAJU, SANKAR, Assistant Professor of Osteopathic Manipulative Medicine. DO, University of North Texas Health Science Center at Fort Worth. (II)

PESKA, DON, Associate Professor of Surgery. DO, University of Osteopathic Medicine Health. (I)

PLANZ, JOHN, Assistant Professor of Pathology and Anatomy. PhD, University of North Texas. (III)

PRASANNA, GANESH, Research Assistant Professor of Pharmacology and Neuroscience. PhD, Wayne State University. (I)

PRATHER, IRVINE, Associate Professor of Family Medicine. DO, West Virginia School of Osteopathic Medicine. (III)

PUTTHOFF, STEPHEN, Associate Professor of Pathology and Anatomy. DO, University of Health Science College of Osteopathic Medicine-Kansas City, MO. (I)

QUIST, EUGENE, Associate Professor of Pharmacology and Neuroscience. PhD., University of British Columbia. (III)

RAO, G.S. JAGANNATHA, Research Assistant Professor of Molecular Biology and Immunology. PhD, Indian Institute of Science. (II)

RAVEN, PETER B., Professor of Integrative Physiology. PhD, University of Oregon. (III)

REEVES, RUSTIN, Assistant Professor of Pathology and Anatomy. PhD, University of North Texas Health Science Center at Fort Worth. (I)

ROQUE, ROUEL, Associate Professor of Pathology and Anatomy. MD, University of the Philippines. (III)

RUBIN, BERNARD, Professor of Medicine. DO, Chicago College of Osteopathic Medicine. (II)

RUDICK, VICTORIA L., Associate Professor of Pathology and Anatomy. PhD, Ohio State University. (III)

SHEEDLO, HAROLD, Assistant Professor of Pathology and Anatomy. PhD, Memphis State University. (III)

SHI, XIANGRONG, Associate Professor of Integrative Physiology. PhD, Yale University. (III)

SHORES, JAY, Associate Professor of Medical Education. PhD, University of Wisconsin. (I)

SIMECKA, JERRY W., Associate Professor of Molecular Biology and Immunology. PhD, University of Alabama at Birmingham. (III)

SIMPKINS, JAMES, Professor of Pharmacology and Neuroscience. PhD, Michigan State University. (III)

SINGH, MEHARVEN, Assistant Professor of Pharmacology and Neuroscience. PhD, University of Florida. (III)

SMITH, MICHAEL L., Associate Professor of Integrative Physiology. PhD, University of North Texas. (III)

SMITH-BARBARO, Peggy, Assistant Professor of Family Medicine. PhD, Rutgers University. (II)

STOLL, SCOTT, Associate Professor of Osteopathic Manipulative Medicine. DO, PhD, University of North Texas Health Science Center at Fort Worth. (III)

TUNE, JOHNATHAN, Research Assistant Professor of Integrative Physiology. PhD, University of North Texas Health Science Center at Fort Worth. (III)

WARREN, JOSEPH, Instructor of Pathology and Anatomy. PhD, University of North Texas. (II)

WATSON, DAVID, Research Assistant Professor of Pharmacology and Neuroscience. PhD, Ohio State University. (I)

WEIS, STEPHEN, Professor of Internal Medicine. DO, College of Osteopathic Medicine-Des Moines. (III)

WILLIAMS, STUART, Assistant Professor of Osteopathic Manipulative Medicine. DO, University of North Texas Health Science Center at Fort Worth. (II)

WORDINGER, ROBERT, Associate Professor of Pathology and Anatomy. PhD, Clemson University. (III)

WU, MING-CHI, Professor of Molecular Biology and Immunology. PhD, University of Wisconsin. (III)

YORIO, THOMAS, Professor of Pharmacology and Neuroscience. PhD, Mt. Sinai School of Medicine. (III)

Adjunct Faculty

ARRENDONDO, LACHELLE, Adjunct Faculty in Biomedical Sciences. PhD, Rice University. (I)

BENS, ANNITA VERSTAPPEN, Adjunct Faculty in Biomedical Sciences. PhD, University of North Texas at Denton. (I)

BERGAMINI, MICHAEL, Adjunct Faculty in Pharmacology. PhD, Mt. Sinai School of Medicine. (III)

CLARK, ABBOTT, Adjunct Faculty in Molecular Biology and Immunology. PhD, Case Western Reserve University. (III)

COLLIER, ROBERT, Adjunct Faculty in Pathology and Anatomy. PhD, University of Rochester. (III)

CRIDER, JULIE, Adjunct Faculty in Biomedical Sciences. PhD, University of North Texas Health Science Center at Fort Worth. (I)

GARNER, WILLIAM, Adjunct Faculty in Pathology and Anatomy. PhD, Indiana University. (III)

GOLDFARB, RONALD H., Adjunct Faculty in Molecular Biology and Immunology. PhD, State University of New York. (III)

JIMENEZ-WILLIAMS, Cynthia, Adjunct Faculty in Biomedical Sciences. (I)

LEPPI, JOHN, Adjunct Faculty in Pathology and Anatomy. PhD, Yale University. (I)

MCCARTNEY, MITCHELL, Adjunct Faculty in Pathology and Anatomy. PhD, Dalhousie University. (I)

MILLER, DAVID SCOTT, Adjunct Faculty in Biomedical Sciences. MD, University of Oklahoma. (I)

NAPIER, LESLIE, Adjunct Faculty in Biomedical Sciences. PhD, University of North Texas Health Science Center at Fort Worth. (I)

NEWMAN, ROBIN, Adjunct Faculty in Biomedical Sciences. RN, MSN, CPNP, CCRA, University of Texas. (I)

PAGE, RAY, Adjunct Faculty in Biomedical Sciences. DO, PhD, University of North Texas Health Science Center at Fort Worth. (II)

PANG, IOKHOU, Adjunct Faculty in Pharmacology. PhD, University of Texas Southwestern Medical Center at Dallas. (III)

PREJEAN, JULIE, Adjunct Faculty in Biomedical Sciences. RN, BSN, OCN, Northwestern State University. (I)

RICHARDSON, BARBARA, Adjunct Faculty in Biomedical Sciences. MSN, University of Texas at Arlington. (I)

SCHAFER, HEIDI, Adjunct Faculty in Biomedical Sciences. MA, CCRA, University of Colorado. (I)

SHARIF, NAJ, Adjunct Faculty in Pharmacology. PhD, University of Southampton. (III)

SHEPARD, ALLAN, Adjunct Faculty in Pathology and Anatomy. PhD, University of Iowa. (III)

VANRITE, MARY LOU, Adjunct Faculty in Biomedical Sciences. RN, University of Texas at Austin. (I)

WEISS, DELLA, Adjunct Faculty in Biomedical Sciences. RN, Far Eastern University. (I)

WHITE, KAREN, Adjunct Faculty in Biomedical Sciences. PhD, University of North Texas Health Science Center at Fort Worth.

Neeraj Agarwal, PhD

The Post Graduate Institute of Medical Education and Research, Chandigarh, India
Associate Professor

Department of Pathology and Anatomy

Research focuses with the question of neurodegeneration and neuroprotection using retinal ganglion cell (RCGGC) death as a model in glaucoma. We are using cultured retinal ganglion cells to test the hypothesis that blockade of retrograde transport of trophic factors results in oxidative damage/ischemia which is responsible for the retinal ganglion cell death. To understand the signaling mechanisms relating to RGC death, we are studying the role of nuclear factor-kappa B, NF-kB and other apoptosis related genes such as Bcl-2, Bax, and caspases towards the apoptotic cell death of retinal ganglion cell death. Our research indicates that RelA subunit of NF-kB is down-modulated under oxidative stress and may play a critical role in RGC death. We are also investigating if over-expression of Bcl-2 and/or RelA by gene transfer to cultured retinal ganglion cells will protect the cells from neurotrophin deprived and oxidative stress induced apoptosis of RGC cells. Furthermore, we have established an elevated intra-ocular pressure induced animal models of glaucoma by cauterization of episcleral veins. These animal models have similar damage to optic nerve head as in the human patients and therefore used to study neuroprotection by upregulation of various neurotrophins via using α -agonists and β -adrenoceptor antagonists. We are using gene knockout animals to establish the role of various neuroprotectants in the maintenance and health of retinal ganglion cells. Various approaches used in the laboratory are, gel shift assays, gene transfections, immunoblot analysis, immunocytochemistry, Northern, Southern blot analysis, RT-PCR, and various other cell and molecular biological techniques.

Rafael Alvarez-Gonzalez, Ph.D.

University of North Texas

Associate Professor

Department of Molecular Biology and Immunology

This laboratory studies signal transduction pathways, chromatin structure and function, and gene expression in eucaryotes. Emphasis is placed in the molecular biology and biochemical regulation of DNA-replication, transcription, carcinogenesis (DNA damage and repair), and calcium signaling by ADP-ribose transfer enzymes. Projects currently in progress include: the characterization of ADP-ribosylated DNA-binding proteins, e.g., DNA-metabolizing enzymes, transcription factors, and histone proteins; the physiological function of oncogenes (c-fos, c-jun), p53 (a tumor suppressor gene) and chromatin-(ADP-ribosyl)ation in apoptosis and cell necrosis; the enzymology (molecular, chemical, kinetic, and regulatory mechanisms) of poly(ADP-ribose) polymerase, poly(ADP-ribose) glycohydrolase, and ADP-ribose cyclase; and the biological function of cyclic(ADP-ribose), a potent intracellular calcium mobilizing cyclic nucleotide. Methods and laboratory techniques utilized include: tissue culture of human cells (normal and transformed); cell fractionation, chromatin isolation, and protein purification; DNA-replication, transcription and enzyme assays; immunoprecipitation, immunofluorescence, and immunoblotting; electrophoresis, autoradiography and radiochemi-

cal assays; affinity chromatography and HPLC; and peptide mapping, mobility shift and DNA-"footprinting" assays.

Oleg A. Andreev, Ph.D.

Moscow Institute of Physics and Technology

Research Assistant Professor

Director of Confocal Microscopy and Fluorescence Spectroscopy Laboratory

Department of Molecular Biology and Immunology

Research interests are in molecular biophysics, muscle contraction, fluorescence studies of cell and proteins. Current research projects are: (1) Molecular mechanism of muscle contraction. Fluorescence and cross-linking studies of interaction of myosin with actin and ATP. Mechanism of coupling of ATP hydrolysis with force generation in muscle. Structure and function of skeletal and cardiac muscle cells. (2) Fluorescence and cross-linking studies of metalloproteinases. Role of metalloproteinases in cancer metastasis. (3) Application of confocal microscopy to study cell regulation and function.

John Aschenbrenner, Ph.D.

Baylor University

Associate Professor

Department of Pathology and Anatomy

Current research endeavors involve the use of both light and electron microscopy methods to study retinal photoreceptor regeneration.

David Barker, Ph.D.

University of Illinois at Urbana-Champaign

Associate Professor

Department of Integrative Physiology

Current interests are in instructional technology and internet-based education.

Alakanada Basu, Ph.D.

University of Pittsburgh

Associate Professor

Department of Molecular Biology and Immunology

Dr. Basu's research interest is in signal transduction, especially in the context of cancer chemotherapy. A major research effort is to investigate how signal transduction pathways regulate cell death by apoptosis. Currently used anticancer agents are of limited value due to their toxicity to normal tissues and development of resistance by malignant tissues to these drugs. One area of research is to investigate how signal transduction pathways regulate anticancer drug sensitivity and to elucidate the molecular mechanism(s) of drug resistance. Tumor necrosis factor- α (TNF), a pleiotropic cytokine has been associated with septic shock, inflammatory disease, autoimmune disease and cancer. Another area is to study TNF signaling in breast cancer. A third area is to define the role of protein kinase C and Akt/protein kinase B signal transduction pathways in tumorigenesis and as a target for anticancer therapy. The ultimate goal is to exploit intracellular signaling systems to benefit cancer therapy.

E-mail address: abasu@hsc.unt.edu

Deborah L. Blackwell, D.O., FACOP

Associate Professor, Department of Pediatrics

Associate Dean, Texas College of Osteopathic Medicine

Research interests are in the development of health policy, continuous quality improvement, and medical education innovation and implementation.

Current studies focus on the need to redistribute disproportionate share of hospital funds with an increasing indigent population, implementation of academic and accreditation standards to instruct and reinforce CQI, and analysis of faculty workloads.

Julian Borejdo, Ph.D.

Macquarie University

Associate Professor

Department of Molecular Biology and Immunology

The long term goal of this laboratory is to find out how muscle works. The key to understanding the mechanism of contraction is the knowledge of the interactions between actin and myosin — the two chief protein components of skeletal muscle. We have been studying this interaction by three independent approaches: (i) biochemical approach to determine the proximity of actin to myosin (ii) physico-chemical approach to measure the orientation of myosin in vivo and (iii) molecular biology approach (cloning mutants of myosin) to establish the role of various amino acid residues in muscle function.

Kenneth W. Brunson, Ph.D.

University of Minnesota

Research Professor, Department of Molecular Biology and Immunology

Deputy Director, Institute for Cancer Research

The major research focus is on cancer cell biology and immunology related to metastasis, which is the major cause of death among cancer patients. The control of cancer metastasis is among the most urgent problems for the management of cancer. Studies on tumor invasion, angiogenesis, cell surface changes, drug resistance, and interaction with the immune system during tumor progression and metastasis employ orthotopic models of both murine syngeneic and human xenograft models. These metastatic variant tumor models have been designed and developed to mimic as closely as possible the pathophysiology of clinically relevant human cancer, and include models for melanoma, lymphoma, prostate and lung cancer. Cells derived from the tumor cell lines are grown in tissue culture flasks for basic cancer cell biology experiments in vitro, or used in vivo for experimental therapy to attempt to eradicate established cancer metastases. Current research efforts include experiments to enhance activity of host effector cells (e.g., natural killer cells) for the potential elimination of metastatic tumors, and molecular characterization of malignant human non-small cell lung carcinoma and prostate cancer cells, especially as related to appropriate microenvironmental cancer sites. The cancer metastasis models are also used to test the efficacy of anticancer agents in preclinical trials. The ultimate goal is to learn more about metastatic cancer in order to translate basic research results into the development of more effective therapies for established cancer metastases. E-mail address: kbrunson@hsc.unt.edu

James L. Caffrey, Ph.D.

University of Virginia

Professor

Department of Integrative Physiology

Endocrine and neuroendocrine responses which enable the organism to cope with circulatory stress. This program concentrates on interactions between the autonomic nervous system and endogenous opioids in the regulation of the heart and peripheral vasculature. Stress results in profound activation of the pituitary-adrenal and sympatho-adrenal axes and the rapid release of steroids, catecholamines and opioids (dynorphins, enkephalins and endorphins). Significant opioid concentrations identified in the myocardium have been found to respond to changes in the functional autonomic circulatory environment. Studies suggest that cardiac opioids may be important to our understanding the cardiovascular adaptations to exercise, heart failure, silent myocardial ischemia, ventricular fibrillation, circulatory shock and drug abuse.

Patrick Cammarata, Ph.D.

Hunter College, City University of New York

Professor

Department of Pathology and Anatomy

Mechanism(s) of ocular diabetic complications, including sugar cataract development. Inositol lipid metabolism, myo-inositol uptake and efflux, molecular cloning, fine structure analysis of the sodium/myo-inositol cotransporter gene, promoter characterization and transcriptional regulation of the sodium/myo-inositol cotransporter gene.

Michael S. Carnes, D.O.

University of North Texas Health Science Center at Fort Worth

Assistant Professor

Department of Osteopathic Manipulative Medicine

Primary research emphasis includes the investigation of the clinical efficacy of osteopathic manipulative medicine in primigravida women. Ongoing research looks at the ability of osteopathic manipulative treatment (OMT) to decrease pain, increase quality of life, and decrease complications associated with pregnancy and delivery. Additional research includes investigation of the effectiveness of OMT to improve clinical outcomes in hospitalized patients after coronary artery bypass graft surgery.

Joan F. Carroll, Ph.D.

University of Florida

Assistant Professor, Department of Integrative Physiology

Major research focus is in obesity-related cardiovascular function, in particular on mechanisms, which reduce heart function in obesity. Another research emphasis is the study of exercise training and its effect on reducing cardiovascular abnormalities seen in obesity.

Daisha J. Cipher, Ph.D.

Ph.D., Southern Methodist University
M.S., UT Southwestern Medical Center
Assistant Professor, Department of Biostatistics
School of Public Health

Major research focus is examining biological, psychological, and social elements of treatment success among persons suffering from chronic pain and chronic illnesses. Current research activities include the development of a verbally-administered inventory of pain among the hospitalized elderly, as well as studying the effects of pain, cognitive impairment, functional impairment, depression, and behavioral dysfunction on the quality of life among elderly persons residing in hospitals and long-term care facilities.

Samuel T. Coleridge, D.O.

University of Health Sciences
Professor and Chair
Department of Family Medicine

All facets of emergency and family medicine, including issues in rural medicine. additional interests include obstructive sleep apnea and the immunological response to stress.

Hriday K. Das, Ph.D.

University of Nebraska-Lincoln
Associate Professor
Department of Pharmacology and Neuroscience

Project I: Presenilin-1 (PS1) protein is involved in a variety of critical physiological processes including embryogenesis, CNS development, cell death, and pathogenesis of Alzheimer's disease (AD). PS1 influences mammalian development and neuronal apoptosis by controlling the proteolytic cleavage of Notch 1 receptor, and PS1 also causes pathogenesis of early-onset AD (FAD) by altering the processing of b-amyloid precursor protein (APP). Thus, PS1 gene regulation plays a crucial role to control these events. However, we do not yet understand the precise regulatory mechanisms controlling the transcription of the PS1 gene, and in the absence of that information it has been difficult to target the PS1 gene locus in designing therapies to control mammalian development and AD. Our laboratory has been involved to elucidate the regulatory mechanisms of PS1 gene transcription.

Project II: Plasma levels of LDL cholesterol and apolipoprotein B (apoB) correlate directly with atherosclerosis susceptibility. Therefore, apoB gene plays a central role in lipoprotein metabolism. Transcription factors regulating apoB gene expression likely control LDL cholesterol level in plasma and thus, increase or decrease the risk of atherosclerosis. Cloning of genes encoding these transcription factors and their co-activators will provide avenues to treat heart disease.

Carole Davis, D.O., M.P.H., M.B.A.

University of North Texas Health Science Center at Fort Worth
Assistant Professor
Department of Osteopathic Manipulative Medicine

Dr. Carole Davis is involved in clinical practice and preliminary research investigation into the clinical efficacy of osteopathic manipulative treatment in the in-patient rehabilitation setting of hospitalized patients after post-total knee and total hip arthroplasty.

Christopher M. de Fiebre, Ph.D.

University of Colorado
Assistant Professor
Department of Pharmacology and Neuroscience

The laboratory's primary focus is on the role of neuronal nicotinic acetylcholine receptors (nAChRs) in the etiology of and in the treatment of neuropathologies. Studies utilize techniques of molecular biology, electrophysiology, neurochemistry, cell culture, pharmacogenetics and behavioral analyses. Major areas of emphasis are on the role of nAChRs in alcohol abuse and in Alzheimer's disease (AD) and other neurodegenerative disorders. One series of studies into interactions between ethanol and nicotine examines potential genetic factors which regulate these interactions. Neurochemical, cell culture and whole animal analyses are complemented by studies of recombinant nAChRs which are expressed from cDNAs in *Xenopus* oocytes (frog eggs). The interactive effects of ethanol and nicotinic drugs at various nAChR subtypes are examined electrophysiologically. Another project examines the interactive effects of ethanol and nicotine in regulating neuronal viability. These studies have shown that nicotinic agonists protect against ethanol-induced neurotoxicity and have led to current efforts to develop nicotinic agonists for the treatment of binge drinking-induced neurotoxicity. In a similar project in the area of AD research, nicotinic agonists are being developed as potential therapeutics for treating AD. Drugs in development are selective for the alpha7 nAChR subtype. Recently, it has been found that the major pathological protein in the brains of Alzheimer's patients, beta-amyloid, binds with very high affinity to alpha7 nAChRs. Studies are being conducted to determine whether alpha7 receptors are required for beta-amyloid-induced toxicity and to determine how genetic variability in alpha7 receptors affect beta-amyloid-induced toxicity. Animal as well as cell culture models are used.

Jerry L. Dickey, D.O., F.A.A.O.

University of North Texas Health Science Center at Fort Worth
Associate Professor
Department of Osteopathic Manipulative Medicine

Current research includes the investigation of clinical efficacy of osteopathic manipulative treatment in outpatients post coronary artery bypass graft surgery. Research studies investigating viscerosomatic reflexes have been completed. These studies include the identification of musculoskeletal reflect changes associated with transient coronary ischemia in chronically instrumented dogs.

Glenn H. Dillon, Ph.D.

University of Illinois at Urbana-Champaign

Associate Professor

Department of Pharmacology and Neuroscience

Neurotransmitter Receptor/Ion Channel Function. Research interests are directed toward understanding the mechanisms and functional domains through which neurotoxins and other agents (both exogenous and endogenous) affect ion channel function. A variety of techniques, including site-directed-mutagenesis, patch clamp electrophysiology and radioligand binding, are used to assess the actions of these ligands on both recombinant and native neurotransmitter receptors, and the influence of receptor structure on the ability of these ligands to modulate channel activity. An additional more recent interest deals with abnormalities in cardiac ion channel function in transgenic models of heart failure. E-mail address: gdillon@hsc.unt.edu

S. Dan Dimitrijević, Ph.D.

University of Bath

Research Associate Professor

Director, Wound Healing Research Institute

Department of Integrative Physiology

Studies directed towards understanding the role of cell-cell and cell-matrix interactions in human tissues under normal and wound healing conditions. Human tissue equivalents, in vitro living models of human skin and ocular tissue, have been developed and are being used in studies of human epithelial and endothelial injury and repair. The effects of hyperbaric oxygen and growth factors (FGF) on wound healing, initiation and amplification of inflammatory process in the anterior segment of the eye (e.g. cornea, conjunctiva), and control of tissue contraction/scar formation are studied at cellular and molecular level (specific gene activation and expression). A major recent interest concerns the effect of near zero gravity on tissue development (skin), and the role of rotating wall vessels in tissue engineering. These interests are directed towards developing strategies for tissue and cell replacement therapies.

Ladislav Dory, Ph.D.

McGill University

Professor

Department of Molecular Biology and Immunology

Laboratory focused on several areas of research centering on atherosclerosis. One is the regulation of expression of apoE in cultured cells with emphasis on post-transcriptional loci. The role of coordinate regulation of apoE expression and cholesterol efflux from peripheral cells in the prevention of atherosclerosis is actively pursued. The effect of hyperbaric oxygen on the expression of several candidate anti-oxidant enzymes is also actively investigated. These studies are designed to understand the protective effect of hyperbaric oxygen in animal models of atherosclerosis. Caveolin -1 and -2 expression in macrophages and their relationship to sterol metabolism in these cells represents the third major area of active research. Overall, tools of molecular and cellular biology are used along the more traditional biochemical techniques. E-mail address: ldory@hsc.unt.edu

H. Fred Downey, Ph.D.

University of Illinois at Urbana-Champaign

Professor

Department of Integrative Physiology

Mechanisms controlling coronary blood flow and myocardial oxygen demand in the normal and diseased heart. Differential effects of lack of oxygen (hypoxia) and lack of blood flow (ischemia) on the coronary circulation and on heart function and metabolism are investigated. Of particular interest are endogenous cardioprotective mechanisms that enable myocardium to survive moderate ischemic and hypoxic insults. These mechanisms include collateral blood flow, modulation of ventricular contractile function and wall stiffness, and substrate selection. Cardiovascular responses to nicotine and tobacco products are also investigated.

Richard Easom, Ph.D.

University of Glasgow

Associate Professor

Department of Molecular Biology and Immunology

Endocrine Pancreas Development/ Regulation of Insulin Biosynthesis and Exocytosis. Two events contributing to the manifestation of Diabetes mellitus are autoimmune destruction of the endocrine pancreas or the loss of function of insulin producing b-cells. Research efforts are therefore directed towards understanding b-cell mechanisms that control b-cell growth/differentiation and insulin secretion. Current goals are: (1) to evaluate the role of Ca^{2+} -dependent protein kinases and phosphatases in insulin gene expression and secretory granule exocytosis; and (2) to achieve the expansion, in culture, of functional human islets for replacement therapies for the treatment of Type I diabetes. E-mail address: reasom@hsc.unt.edu

Arthur Eisenberg, Ph.D.

State University of New York at Albany

Director of the DNA Identity Laboratory and GeneLink DNA Repository

Associate Professor

Department of Pathology and Anatomy

The application of molecular based methodologies for human identification in both paternity and forensic analysis. Our laboratory has been a pioneer in the development of novel methodologies for the rapid identification of genetic polymorphisms. We are currently using DNA PCR based methodologies for identifying genetic risk factors for a variety of diseases including Alzheimer's Disease. Our laboratory also serves as a repository for DNA samples from families with a history of a variety of genetic disorders.

Thomas J. Fairchild, PhD

Wayne State University

Associate Professor

School of Public Health

Research interests include management and organizational culture issues in the areas of long-term care and retirement housing. Research activities focus on quality improvement in long-term care and the impact of management practices and culture on the delivery of services to persons with Alzheimer's disease. This research has an applied orientation that involves working directly with providers and policymakers to address day-to-day issues that impact organizational performance and residents' quality of life.

Michael J. Forster, Ph.D.

Bowling Green State University

Professor

Department of Pharmacology and Neuroscience

Mechanisms of brain aging and the associated declines of cognitive, sensory and motor functions. Longitudinal and cross-sectional studies of aging mice are focused on identification of biological factors responsible for brain aging using behavioral testing techniques applied across the life span. A focal hypothesis is that oxidative molecular damage is an important factor in age-related functional losses. This hypothesis is being tested by examining molecular damage as a correlate of behavioral dysfunction, and by examination of functional aging in mice following experimental interventions that impact concurrently upon life-span and the degree of age-related oxidative molecular damage. These interventions include lifelong dietary restriction, antioxidant treatment, and genetic manipulations.

Susan F. Franks, Ph.D.

University of North Texas

Assistant Professor

Department of Family Medicine

Psychosocial, cultural, and behavioral aspects of chronic disease management (e.g. Type 2 diabetes, obesity). Minority health promotion and disease prevention. Environmental and nutritional influences on health and disease. Neurocognitive features of neurological disease (dementia, brain injury).

Margaret Garner, Ph.D.

Indiana University

Associate Professor

Department of Pathology and Anatomy

Cell nuclei accumulate, release or exclude large macromolecules (RNA and proteins), small molecules (sugars and amino acids), cations (Na^+ , K^+ , Ca^{2+}) and anions (Cl^-). While the nuclear membrane is believed to be restrictive to proteins, it is probably not restrictive to smaller organic molecules or ions because of the large internal diameter of the nuclear pore complex. To effectively exclude or release the small organics and ions, transport systems are present in the nuclear envelope to counteract the sizable leak. The nuclear envelope has its own Ca^{2+} stores, Ca^{2+} channels, a Ca^{2+} -ATPases, enzymes to generate cAMP and IP_3 chloride channels, and K^+ channels.

Na^+ , K^+ -ATPases in the nucleus, primarily along the inner nuclear membrane and perhaps associated with euchromatin have been discovered in this laboratory. The longer-term goal is to define the role of the perinuclear cisternae (nuclear envelope lumen) as ion reservoirs that are available for regulation of cell cycle, programmed cell death, and cellular differentiation. The second goal is to define the role of the Na^+ , K^+ -ATPases of the cell nucleus and their endogenous inhibitors in prevention and treatment of cancer. E-mail address: mgarner@hsc.unt.edu

Michael B. Gatch, Ph.D.

Utah State University

Research Assistant Professor

Department of Pharmacology and Neuroscience

Research is devoted to preclinical models of drug abuse; in particular development of medications for treatment of ethanol withdrawal and for cocaine addiction. One major area of research is on experimental models of the subjective effects of drugs. Drug discrimination using pentylenetetrazol models the anxiety experienced during ethanol withdrawal, and drug discrimination of cocaine is used for screening compounds that will block subjective effects of cocaine as part of a NIDA-funded project searching for effective treatment drugs for cocaine addiction. The other major area of research examines increases in sensitivity to pain during withdrawal from drugs of abuse, including morphine, heroin, cocaine, and ethanol, and how this contributes to the abuse liability of these drugs.

Eric E. Gish, D.O.

University of North Texas Health Science Center at Fort Worth

Assistant Professor

Department of Osteopathic Manipulative Medicine

Research interests include investigation of the clinical efficacy of osteopathic manipulative treatment in esophageal reflux disease and hospitalized patients after total hip and total knee arthroplasty. Interest is also directed toward osteopathic manipulative treatment in moderately severe osteoarthritis.

Robert W. Gracy, Ph.D.

University of California at Riverside

Professor

Department of Molecular Biology and Immunology

Associate Vice President for Research and Biotechnology

Aging: Abnormal proteins accumulate in aging cells and tissues and account for many of the medical problems of aging. For example, oxidized proteins accumulate in the brain and are believed to be a primary cause of Alzheimer's disease. The molecular basis for the accumulation of these modified proteins with age is being examined with the goal of designing drugs or therapies to prevent their accumulation or to aid in their degradation and removal. Research is also directed toward the development of early diagnosis of Alzheimer's and other neurodegenerative diseases using both protein and gene biomarkers. In addition, aging is being studied in vitro using human tissue equivalents. For example, human skin equivalents derived from young and old persons should provide insight into the age-related impairment of wound healing and tissue repair.

These systems are also ideally suited for the development of transdermal delivery of new drugs.

Stephen R. Grant, Ph.D.

University of Tennessee

Assistant Professor

Department of Integrative Physiology

Molecular Genetics of Enlarged Heart and Dilated Cardiac Myopathy research focuses on molecular mechanisms controlling contractile protein gene expression during cardiovascular hypertrophy. Recent research efforts have identified a new calcium sensitive nuclear signaling pathway. This activated signaling pathway can transcriptionally activate and/or silence contractile protein expression in the cardiovascular system. Transcriptional up-regulation involves the activation of a calcium dependent phosphatase. Transcriptional silencing involves a calcium dependent kinase. Maintenance of this signaling pathway controls hypertrophy events in the mammalian cardiovascular system. Murine transgenic models for human cardiac hypertrophy and early heart failure using truncated mutated genes of these two enzymes are currently being generated. The research plan includes: 1) generating in vivo murine models of early heart failure by over-expressing the constitutively active forms of each of the two cardiac calcium-sensitive enzymes; 2) characterizing a newly identified cardiac transcriptional repression model; 3) modeling transcriptional control of vascular hypertrophy in arteries during chronic exercise; and 4) characterizing YY1 induced cardiac repression as a mechanism for a stress-responsive cardiomyocyte phenotype.

James R. Hall, Ph.D.

University of Nevada-Reno

Associate Professor

Department of Internal Medicine (Geriatrics)

Neurocognitive assessment of dementia. The use of innovative technologies (Virtual Reality) in the neurocognitive assessment of functional behavior (e.g. driving). Psychological determinants of adaptation to chronic disease (e.g. diabetes). use of simulation and interactive video in teaching psychotherapeutic skills to health care providers.

Patricia A. Gwartz, Ph.D.

Thomas Jefferson University

Professor and Acting Chair

Department of Integrative Physiology

Current research emphasizes neural and local control of coronary blood flow. Two experimental models are used. Chronically instrumented conscious dog model is used to examine neural control mechanisms at rest and during exercise. Isolated coronary microvessels are also used to examine interaction between neural, endothelial and humoral control mechanisms. Cardiovascular adaptations in response to both exercise training and to hypertension are also major focuses of this research. Arterial hypertension is a major risk factor for cardiac and coronary vascular disease. Studies show that arterial hypertension impairs coronary vascular function by causing an imbalance between vasodilator and vasoconstrictor

factors. The overall goal of proposed studies is to identify the mechanisms responsible for the defect in vascular endothelial function and local- and autonomic-mediated dilation. Evidence indicates that physical activity can lower blood pressure and has the potential to reduce and/or reverse some of the damaging effects of hypertension. Exercise may even prevent the need for antihypertensive medication. Thus, cardiovascular adaptations to exercise training are also under investigation.

Ben G. Harris, Ph.D.

Oklahoma State University

Professor

Department of Molecular Biology and Immunology

Biochemistry of parasitic helminths. Research interests are in the area of regulation of carbohydrate metabolism in parasitic helminths. The parasite primarily studied is the roundworm, *Ascaris suum*. Projects involve physico-chemical, kinetic and structural characterization of regulatory enzymes governing the utilization of carbohydrates in the essentially anaerobic parasites. Some of the enzymes being studied are phosphofructokinase and malic enzyme. Current projects involve x-ray crystallographic studies of malic enzyme, sequence studies on both malic enzyme and phosphofructokinase, and structural studies on both enzymes.

Mark E. Hart, Ph.D.

Mississippi State University

Assistant Professor

Department of Molecular Biology and Immunology

Mechanisms of diseases caused by *Staphylococcus aureus*. Despite numerous antimicrobial regimens and improved public health, *Staphylococcus aureus* remains an important bacterial pathogen responsible for a number of disease syndromes in both humans and animals. Diseases caused by this microorganism ranges from minor skin infections and abscesses to life-threatening diseases such as osteomyelitis, endocarditis, pneumonia, and meningitis. This microorganism is also the leading cause of hospital-acquired infections and is notorious for being resistant to most available antibiotics. At present there is no known vaccine. The research focus in my laboratory centers on three areas of interest. One, the involvement of staphylococcal enzymes that are responsible for the reduction of oxygen radical intermediates in resistance to killing by professional phagocytes; two, the determination of staphylococcal virulence factors critical to causing pneumonia; and three, the isolation and identification of in vivo-expressed genes of *S. aureus*. It is anticipated that these studies will lead to the identification of factors critical to the disease process and ultimately provide a source of potential candidates for vaccine and antimicrobial drug development.

Ren-Qi Huang, Ph.D.

Shanghai Institute of Physiology

Research Assistant Professor

Department of Pharmacology and Neuroscience

Our research is aimed at understanding how brain functions are altered when normal brain pH is changed during a lot of pathological conditions such as ischemia/anoxia episodes, seizure and trauma. People have already known that normal brain functions are determined by the proper balance between inhibitory and excitatory forces (neurotransmission). We think that this balance may be destroyed during changing pH. As the result, neuronal functions would be changed. We are focusing on the GABA-A receptors, the major inhibitory neurotransmission in the brain, and trying to understand that modulation of this receptor function by pH may contribute to alteration of brain functions. We have already demonstrated that changing pH modulates recombinant GABA-A receptor function. We believe this is also true in native GABA-A receptors in the specific brain regions. We will study whether this receptors in the brain are modulated by different pH. Furthermore, we will attempt to find out in detail how the receptor function is modulated by pH.

Robert Kaman, Ph.D.

Virginia Polytechnic Institute

Assistant Dean, Graduate School of Biomedical Sciences

Associate Professor, School of Public Health

Exercise physiology. Athletic performance may be enhanced by food supplements that enable exercise training to be conducted at a higher intensity, thereby leading to an enhanced training effect. The focus of these studies is the effect of Chinese herbal products on glycogen and fatty acid metabolism. Worksite health promotion may be the best way to attack the problem of rising employee health care costs. As this expense rises, companies find themselves struggling to maintain employee health benefits without losing profitability. Health promotion which provides programs to encourage healthy behaviors has been shown to be effective in lowering risk for illness among participants, improving productivity, and reducing illness-related absenteeism. Research is designed to quantify those outcomes by studying company records for health care expenditures, absenteeism and productivity.

Myoung H. Kim, Ph.D.

Texas A&M University, College Station, TX

Research Assistant Professor

Department of Molecular Biology and Immunology

Research Interests: The long term research focus is in understanding how chemotherapeutic agent(s) work on tumor cells thus leading to the better control of cancer growth and metastasis. Current research activity is about the elucidation of molecular mechanism of the effect of genistein, a principal soy isoflavone, on the inhibition of tumor cell growth via modulating cell cycle and apoptotic regulatory proteins and on the inhibition of invasiveness via modulating the expression of matrix metalloproteinases (MMPs) and tissue inhibitors of MMP (TIMPs).

George R. King, Ph.D.

State University of New York—Stony Brook

Research Associate Professor

Department of Pharmacology and Neuroscience

Compulsive cocaine abuse in humans is characterized by a binge pattern of consumption. During a binge, the individual frequently takes large amounts of cocaine for up to several days. Bingeing produces a withdrawal syndrome that is characterized by decreased mental and physical energy and an inability to experience pleasure. During this withdrawal period the individual is the most likely prone to relapse, and to start another binge cycle. We have developed an animal model of the binge and withdrawal syndrome that involves the continuous administration of cocaine via a subcutaneously implanted osmotic minipump. This method of delivering cocaine produces effects consistent with the withdrawal symptoms reported by bingeing cocaine abusers. My research focuses on the behavioral and neurobiologic changes induced by chronic cocaine administration. The primary focus of the research is on changes in 5-HT₃ receptors, as well as changes in the dopamine and serotonin transporters. The research takes a multilevel approach, and evaluates behavior, neurotransmitter release in brain slices and changes in receptor binding.

Richard P. Kitson, Ph.D.

University of Michigan

Research Associate Professor

Department of Molecular Biology and Immunology

Proteases of natural killer (NK) cells. Current studies are focused on three classes of NK cell proteases: matrix metalloproteinases, the urokinase plasminogen activator (uPA) system and the proteasome. These studies are examining the role of matrix metalloproteinases as well as components of the uPA system enzymes in the accumulation of NK cells within tumor metastases and the regulation of these enzymes by cytokines, integrins and other molecules which influence NK cell function. The proteasome is a large multisubunit protease involved in the degradation of intracellular proteins. The enzymology of the NK cell proteasome is the current focus of these studies with a particular emphasis on the chymotrypsin-like activity of this enzyme. In addition to studies on the proteases of NK cells, other projects include the investigation of new classes of anticancer agents in models of experimental metastasis and the examination of endocytosis in tumor cells and how it differs from that of normal cells.

Peter Koulen, Ph.D.

Max-Planck-Institute for Brain Research

Assistant Professor

Department of Pharmacology and Neuroscience

The overall goal of the research program is to understand the function of synaptic proteins in order to define causes and potential treatments of diseases affecting the nervous system and of traumatic neuronal damage mediated through neurotransmitter receptors. The current research focus is on the structural and functional segregation and clustering of signaling proteins at neuronal contacts, the synapses. These synaptic specializations are investigated using electron microscopy and immunohistochemistry, optical imaging

of intracellular calcium concentrations and single channel electrophysiology of intracellular ion channels. Defining the changes in protein function that accompany localization in synapses will help identifying novel pharmacological targets for neuronal pathophysiology.

Raghu R. Krishnamoorthy, Ph.D.

University of Bombay

Research Assistant Professor

Department of Pharmacology and Neuroscience

The major research emphasis is on understanding biochemical and molecular mechanisms underlying the etiology of glaucoma. Specific research interests are to understand the regulation of expression of the vasoactive active peptides, endothelins, and their receptors, which are thought to contribute to glaucomatous optic neuropathy. The long-term goals are to provide treatment modalities that block inappropriate expression of endothelin receptors in ocular tissues.

Bhalchandra J. Kudchodkar, Ph.D.

University of Saskatchewan

Research Associate Professor

Department of Molecular Biology and Immunology

Increased plasma levels of high density lipoproteins (HDL) are believed to protect from the development of atherosclerosis. Although mechanism of this protection is not clear, increasing attention is being focused on the potential antioxidant activity of serum enzymes associated with HDL. One of these enzymes, paraoxonase has been postulated to play an important role in preventing oxidation of plasma LDL and thus prevent atherosclerosis. Regulation of serum paraoxonase expression is the focus of our investigation. hyperbaric oxygen (HBO: treatment with 100% oxygen at greater than atmospheric pressure) was recently found to markedly suppresses atherosclerosis in cholesterol fed rabbits without affecting their elevated plasma cholesterol levels. The mechanism by which oxygen exerts an inhibitory effect on atherosclerosis is presently under investigation.

Gopal Kulkarni, Ph.D.

Indian Institute of Science

Research Assistant Professor

Department of Molecular Biology and Immunology

Molecular biology of parasitic helminths. Current research focuses on the molecular cloning functional expression and genetic analysis of key regulatory enzymes involved in the carbohydrate metabolism in the parasitic nematode *Ascaris suum*. As a basis for the study of molecular architecture of these enzymes to aid in rational drug design, site-directed mutagenesis and biochemical characterization of mutant enzyme forms are proposed.

Pappanaicken R. Kumaresan, Ph.D. (Kumar)

University of Madras, India.

Research Assistant Professor

Department of Molecular Biology and Immunology

Natural killer (NK) cells play an important role in natural immunity by mediating the lysis of virally infected cells and certain tumors, without prior sensitization. My major research interest is to identify and characterize the activating elements, which are responsible for the killing activity of the NK cells. Current studies focus on the functional role of novel molecules, which our lab has identified in rodent and human NK cells. We wish to characterize their interaction with their ligands and study, how this modulates the function of the immune system.

Andras G. Lacko, Ph.D.

University of Washington

Professor

Department of Molecular Biology and Immunology

Research Areas: Enzymology, Plasma Lipoprotein Metabolism and Cholesterol Transport

Research interests include 1) The mechanism of action of the enzyme lecithin:cholesterol acyltransferase (LCAT); a rate limiting step in reverse cholesterol transport and

2) Utilization of high density lipoprotein (HDL) type complexes to enhance the delivery of hydrophobic anticancer drugs.

Henry R. Lemke, MMS, PA-C

Saint Francis College

Assistant Professor

Director, Physician Assistant Studies

Department of Family Medicine

Research interests include evaluation of effectiveness of health-care delivery systems including design, the use of mid-level providers (such as physician assistants) in those systems, and outcomes related to delivery. Additional interests in comparing different methods used to educate different types of healthcare professionals.

Robert R. Luedtke, Ph.D.

University of Pennsylvania

Associate Professor

Department of Pharmacology and Neuroscience

There are multiple subtypes of dopamine neurotransmitter receptors, (D1-D5). Studies are ongoing to screen novel synthetic compounds to identify D3 receptor selective agonists and antagonists. In addition, extracts of Bolivian, Chinese and Indian medicinal plants are being evaluated for their ability to interact with D1 and D2 dopamine receptors using radioligand binding and adenylyl cyclase assays. The identification of pharmacologically selective dopaminergic compounds has potential use a) in the treatment of substance abuse, b) as a diagnostic tool in neuropsychiatric illnesses and neurological disorders and c) as safe pharmacotherapeutic agents for neuropsychiatric illnesses. Concurrently, studies have been initiated to identify the amino acid residues within the D2 and D3 dopamine receptor binding sites that directly interact with the dopaminergic compounds. This will be accomplished by preparing mutant receptors structurally related to the D2 and D3

dopamine receptor subtypes to precisely define the position of the pharmacophore within the neurotransmitter binding site. The results of these studies will 1) provide information on how our current D3 dopamine receptor selective compounds bind to the neurotransmitter binding site and 2) provide additional structural information that will assist us in the design of novel compounds with increased selectivity for D3 dopamine receptors.

John C. Licciardone, D.O.

Kirkville College of Osteopathic Medicine

Professor

Department of Family Medicine

Clinical Epidemiology. Primary interests include osteopathic health serves and policy research, efficacy of osteopathic manipulative treatment in various medical conditions, use of evidence-based medicine in primary care, and consumer use of online health information. A major focus of research involves the Osteopathic Survey of Health Care in America, a longitudinal study based on random national telephone surveys.

Robert T. Mallet, Ph.D.

George Washington University

Associate Professor

Department of Integrative Physiology

Metabolic basis of cardiac performance and mechanisms of metabolic cardioprotection. Recent investigations in this laboratory have demonstrated that certain metabolic fuels exert favorable antioxidant effects in the heart, enabling the heart to recover from injury inflicted by oxygen-derived free radicals and ischemia. Current research focuses on delineating the mechanisms for metabolic substrate enhancement of the heart's antioxidant defenses, with a global objective of developing novel treatments to mitigate cardiac injury. Other investigations are studying mechanisms of cardiac injury by chronic nicotine exposure and diabetes mellitus. Methodologies include both in vivo and isolated perfused heart models as well as state-of-the-art analytic techniques.

Michael W. Martin, Ph.D.

University of Texas at Houston

Assistant Professor

Department of Pharmacology and Neuroscience

Molecular mechanisms of neurotransmitter and hormone signal transduction. The research applies biochemical and molecular approaches to investigate adaptive changes that occur in membrane receptors and their coupling to signal transduction apparatus using animal models and cultured cell systems. The aim of these studies is to understand how cells, especially neurons, modulate their sensitivity to extracellular chemical signals. These fundamental regulatory processes are important not only for normal cellular activity, but also may be the underlying mechanisms responsible for the development of tolerance/dependence to benzodiazepines, alcohol, cocaine and other drugs of abuse in humans.

Porunelloor Mathew, Ph.D.

University of Poona

Associate Professor

Department of Molecular Biology and Immunology

Cancer Immunology: Molecular basis of tumor cell killing by Natural Killer (NK) cells. Characterization of receptors expressed on NK cells and how they interact with the ligands on tumor cells. Major area of research also includes the transcriptional regulation of NK receptors and the signaling mechanism. The long term objective is to eliminate tumor cells by manipulating one's own immune system using recombinant DNA technology

Walter J. McConathy, Ph.D.

University of Oklahoma School of Medicine

Associate Professor

Department of Internal Medicine

Structure and function of human apolipoproteins/lipoproteins in health and disease. Currently, the focus is on the role of lipoproteins/apolipoproteins at the endothelial barrier in promoting flux of cholesterol using biochemical, molecular and cell biology techniques. Other areas of interest include role of androgens in cardiovascular disease; development and application of analytical microprocedures to monitor events at the molecular level; Alzheimer's disease and the blood brain barrier; phylogeny and ontogeny of the plasma lipid transport system; and the relationships between plasma lipids, nutrition, and various pathological states such as breast cancer and respiratory distress.

Jerry C. McGill, Ph.D.

University of North Texas

Associate Professor

Department of Osteopathic Manipulative Medicine

Research interests are directed toward investigating the clinical uses of osteopathic manipulative treatment in terminal cancer patients and primigravida women. Additionally, studies have been conducted on the inter-rater reliability of palpation on somatic dysfunction.

M. Susan Motheral, Ph.D., M.B.A.

Duke University

Assistant Professor

Department of Biomedical Sciences

Envisioning information. Scientific recordkeeping. The impact of health care reform on health care delivery systems, and on work force needs for health care professionals and biomedical scientists. Biomedical and medical ethics.

Michael W. Oglesby, Ph.D.

State University of New York at Buffalo

Professor

Department of Pharmacology and Neuroscience

Drug tolerance and withdrawal. An animal model has been developed that is useful for investigation of subjective events that occur during drug withdrawal. Additional studies focus on the mechanisms of development of tolerance after chronic use. The research involves training animals to detect the stimulus

properties of drugs (i.e., the presence or absence of a perceived drug effect). This laboratory also investigates the fundamental variables that control the detection of drug stimuli.

Sankar Pemmaraju, D.O.

University of North Texas Health Science Center at Fort Worth
Assistant Professor
Department of Osteopathic Manipulative Medicine

Research and expertise concentrates on electromyographic assessment of shoulder kinematics. Additional projects include involvement in a collaborative research partnership with the biomechanical laboratory at the University of Texas at Arlington to develop robotic upper extremity prostheses.

John V. Planz, Ph.D.

University of North Texas
Assistant Professor, Department of Pathology and Anatomy
Associate Director, DNA Identity Laboratory

Research Interests include: Genetic trends of molecular change in vertebrate and invertebrate populations; development and applications of DNA techniques for individual identification, assessment of genetically inherited mutations, and parameters of population variability in DNA-based samples; development and applications of PCR-based DNA analysis in diagnostic testing, environmental monitoring, forensic sciences and agricultural development; quantification of genetic change in populations due to natural and anthropogenic environmental effects; habitat and wildlife management strategies and applications of ecosystem monitoring. Current research areas center on the development of multilocus virtual SNP arrays for forensic identity testing and clinical diagnostics. These methods are being applied to population studies of the mitochondrial genome and Y chromosome sites, development of diagnostic tests for Lyme disease, as well as ecological studies on Borreliosis in Texas.

Ganesh Prasanna, Ph.D.

Wayne State University
Research Assistant Professor
Department of Pharmacology and Neuroscience

Research interests are focused on the pharmacological role of ocular neuropeptides, specifically, endothelins (ETs) in the regulation of intraocular pressure and in the development of glaucoma. Current emphasis is on evaluating the signal transduction pathways and understanding the cellular and molecular actions of ETs in ocular tissues, with specific reference to glaucomatous optic neuropathy. Some of the research techniques employed include Fura-2 intracellular calcium imaging, kinase assays, radioimmunoassays, RT-PCR, Northern, Southern, and Western blotting. The ultimate goal is to develop better therapeutic interventions for glaucoma.

Stephen L. Putthoff, D.O.

University of Health Sciences
Associate Professor and Chair
Department of Pathology and Anatomy

Forensic Pathology, medical education methodologies, computer-assisted instruction.

Eugene Quist, Ph.D.

University of British Columbia
Associate Professor
Department of Pharmacology and Neuroscience

Roles of neurologic and endocrine hormones and cytokines in myocardial adaptation. The heart is capable of adapting or remodeling in response to aging and exercise training. Goals are to define how hormones influence intracellular messages transmitted by phospholipase C, protein kinases, adenylate cyclase and Ca^{2+} to modulate protein synthesis and Ca^{2+} mobilization in myocardial tissue or in primary cultures of cardiomyocytes from adult heart. Emphasis is on regulation of remodeling with aging and exercise training.

G.S. Jagannatha Rao, Ph.D.

Indian Institute of Science;
Research Assistant Professor,
Department of Molecular Biology and Immunology

Biochemistry of parasitic helminths. Research interests are in the area of enzymology and protein chemistry, with particular emphasis on enzyme mechanisms, allosteric regulation, x-ray crystallography, protein phosphorylation and dephosphorylation. Studies include Aspartate transcarbamylase, a key regulatory enzyme of the pyrimidine biosynthetic pathway, phosphofructokinase, a key allosteric enzyme of carbohydrate metabolism, and NAD-malic enzyme, involved in energy production in *Ascaris suum*, Calcineurin, a calmodulin-dependent protein phosphatase and O-acetylserinesulfhydrylase from *Salmonella typhimurium*. These enzymes have been purified and characterized by kinetics, chemical modification, physicochemical studies including fluorescence, circular dichroism and x-ray crystallography.

Peter B. Raven, Ph.D.

University of Oregon
Professor
Department of Integrative Physiology

Cardiovascular regulation of the human during exercise and orthostasis. Aerobic fitness, weight training and aging have all been shown to affect regulation of blood pressure during exercise and orthostasis. Indeed orthostatic hypotension is a clinical syndrome which affects 25% of the population over the age of 65 years. By using invasive and non-invasive procedures integrative physiological mechanisms of cardiovascular regulation of the human are investigated during dynamic exercise and gravitational stress in both young and elderly individuals.

Rustin E. Reeves, Ph.D.

University of North Texas Health Science Center at Fort Worth

Assistant Professor

Department of Pathology and Anatomy

Current interests include introduction of multimedia into new medical and graduate curricula, with an emphasis on web-supported educational materials. These activities include the development of digital images of anatomical and histological structures for use as study, testing and instructional materials in the medical, graduate and physician assistant programs. Additional interest include the development of web-based courses in the anatomical science for use by graduate and medical (or premedical) students interested in these subject areas.

Rouel S. Roque, M.D.

University of the Philippines College of Medicine

Associate Professor

Department of Pathology and Anatomy

Cellular and molecular mechanisms of angiogenesis and neuronal degeneration. The role of growth factors and cytokines, and their receptors, in the mechanisms of cell death or cell survival in the CNS, especially in the retina, are of main interests. Ongoing studies are directed towards investigating the role of the p75 neurotrophin receptor in photoreceptor cell apoptosis and of vascular endothelial growth factor in retinal neovascularization, and their respective signaling pathways, utilizing cellular and molecular biology techniques. Molecular events during degenerative retinopathy closely resemble neurovascular changes in CNS diseases such as Alzheimer's or Parkinson's and may involve similar molecules.

Bernard Rubin, D.O.

Chicago College of Osteopathic Medicine Professor

Department of Medicine

Clinical research involving innovative techniques for the treatment of osteoporosis, rheumatoid arthritis, osteoarthritis and fibromyalgia syndrome. Therapeutic protocols involve combinations of pharmaceutical products and nontraditional medical therapies with outcomes measured by biological markers and quality of life assessments.

Victoria Rudick, Ph.D.

Ohio State University

Associate Professor, Department of Pathology and Anatomy

Associate Dean, Graduate School of Biomedical Sciences

Research interests include study of trafficking of both secreted proteins and lipids in cultured mammalian cells and investigating the control of endomembrane biogenesis. Caveolins compose a family of unusual proteins whose members have been implicated in regulation of cell signaling, cholesterol binding, and cancer. Furthermore, caveolin-1 is secreted from certain cells, although its extracellular function is unknown. Using a variety of biochemical, cellular and molecular tools, we are currently studying the relationship between caveolin-1 and cholesterol. Interaction between the two molecules may allow cholesterol to be released from the plasma membrane to be taken up by high density lipoprotein (HDL) particles. This has direct medical implications since the plasma

concentrations of HDL-cholesterol have been correlated with reduced risk of cardiovascular disease. Other studies are directed toward introducing genes that code for exogenous secretory proteins into mammalian cells in order to explore what happens to the particular protein as it is routed through the secretory pathway and to observe what effects it may have on the cell. For example, expression of the human growth hormone gene has been used to examine the nature and consequences of hypertrophy of Golgi elements, while the expression of the apolipoprotein A-I gene allows investigation of apoA-I protein processing and trafficking. ApoA-I is a major constituent of HDL. E-mail address: vrudick@hsc.unt.edu

Harold J. Sheedlo, Ph.D.

Memphis State University

Assistant Professor

Department of Pathology and Anatomy

Study of the temporal response, such as the survival, proliferation and differentiation, of progenitor cells from embryonic and postnatal rat retinas to endogenous growth factors, secreted by the retinal pigment epithelium (RPE) and progenitor cell survival/differentiation upon transplantation into rat eyes. RPE cells exist as a monolayer, immediately adjacent to the neural retina, thus in a unique position to influence retinal development, particularly progenitor cells, by trophic interactions. Retinal explant cultures exposed to conditioned media (CM) from RPE cultures showed neurites and the production, survival, proliferation and differentiation of retinal progenitor cells, which expressed the message for various growth factors and receptors and nestin, a neuroepithelial cell marker. Pure populations of progenitor cells from embryonic and postnatal rat retinas will be cultured in growth factors known to be secreted by the RPE and tested by reverse transcriptase-polymerase chain reaction (RT-PCR) for their respective biological response, such as upregulation or downregulation of other growth factors and retinal cell-specific proteins. These cells will also be grown on extracellular substrates and monitored for morphological and genetic differentiation. Progenitor cells have been produced from human fetal retinas by exposure to RPE-CM. Thus, progenitor cells isolated from rat retinal explants will be transplanted into diseased rodent eyes to document the feasibility of such a procedure in human ocular diseases such as age-related macular degeneration (ARMD) and retinitis pigmentosa (RP). E-mail: hsheedlo@hsc.unt.edu

Xiangrong Shi, Ph.D.

Yale University

Assistant Professor

Department of Integrative Physiology

Arterial and cardiopulmonary baroreflexes and their interaction in the regulation of blood pressure; Body fluid and volume-regulating hormonal responses to physical exercise and various environmental challenges; Aging-related adaptations of body fluid and cardiovascular regulation; Impact of acute exercise and chronic training on blood volume and cardiovascular function.

Jay Shores, Ph.D.

University of Wisconsin

Associate Professor, Department of Education

Primary research interest is the cognitive processes used by physicians to diagnose illnesses. Further interest in modeling phenomena in the biomedical sciences using multifactorial statistics. Assists clinical colleagues in conducting research on the efficacy of osteopathic manipulation in the treatment of disease.

Jerry W. Simecka, Ph.D.

University of Alabama at Birmingham

Associate Professor

Department of Molecular Biology and Immunology

Respiratory disease is a major health problem, particularly in the young and elderly. There is a need to understand the role of host responses to infectious agents in the pathogenesis and resistance to disease. This information will contribute to the development of new vaccines and approaches to therapy. This laboratory is characterizing the development of immune and inflammatory responses during the development and recovery from bacterial and viral respiratory diseases. In addition, new approaches to vaccination against respiratory infection are being studied. E-mail address: jsimecka@hsc.unt.edu.

James W. Simpkins, Ph.D.

Michigan State University

Professor and Chair, Department of Pharmacology and Neuroscience

Director, Institute for Aging and Alzheimer's Disease Research

Major research is in neurodegenerative diseases, such as Alzheimer's Disease and acute neurodegenerative conditions, such as stroke. Current research emphasis is on discovery of mechanism of nerve cell death and discovery and development of neuroprotective drugs. A major focus is on estrogenic compounds and their use in treating age-related brain diseases.

Meharvan Singh, Ph.D.

University of Florida

Assistant Professor

Department of Pharmacology and Neuroscience

Principal research interests are focused on mechanisms by which gonadal hormones, particularly progesterone, serve a neuroprotective role in the brain. Tissue culture (organotypic explants) and cell culture systems are used to characterize signal transduction pathways elicited by estrogen and progesterone, using morphometric (microscopy), biochemical and molecular techniques. Current

research include characterizing the involvement of the MAP Kinase and PI-3K/Akt pathways in progesterone's actions, and how such actions may potentially prevent cell death associated with the pathobiology of Alzheimer's Disease. In addition, given that progesterone can influence estrogen's actions, interactions between these two hormone systems at the biochemical and molecular levels are also being investigated.

Michael L. Smith, Ph.D.,

North Texas State University

Associate Professor

Department of Integrative Physiology

Research efforts focus on the neural control of cardiovascular function. Two lines of research relate to factors which precipitate sudden cardiac death: 1) autonomic neural responses during ventricular dysrhythmias, and 2) neural responses during recovery from exercise and the effects of training on these responses. Two other lines of research relate to abnormal control mechanisms provoked in sleep disorders: 1) mechanisms of the association between obstructive sleep apnea and hypertension, and 2) effects of sleep deprivation on normal cardiovascular control.

Scott T. Stoll, D.O., Ph.D.

University of North Texas Health Science Center at Fort Worth

Chairman and Associate Professor

Department of Osteopathic Manipulative Medicine

Research interests are directed toward a wide variety of investigations into both the mechanisms of action and clinical efficacy of osteopathic manipulative treatment. This includes NIH grant funding for the development of a post- and predoctoral fellowship research training program in osteopathic manipulative medicine. Research topics involving osteopathic manipulative medicine include: 1) Inter-rater reliability of palpatory findings on somatic dysfunction; 2) osteopathic manipulative treatment (OMT) in fibromyalgia; 3) integration of OMT into conventional health care; 4) efficacy of OMT on somatic dysfunction in primigravida women; 5) OMT in chronic low back pain; 6) OMT in hospitalized patients after post-total knee or total hip arthroplasty; 7) OMT in terminal patients with cancer; 8) OMT in moderately severe osteoarthritis; 9) OMT in musicians; and 10) development and implementation of Continuing Medicine Education (CME) seminar series in complementary and alternative medicine.

Johnathan D. Tune, Ph.D.

University of North Texas Health Science Center

Research Assistant Professor

Department of Integrative Physiology

Research interest is in mechanisms which regulate the balance between coronary blood flow and myocardial metabolism. Current studies are focused on mechanisms of impaired coronary blood flow control and cardiac dysfunction in type 1 and type 2 diabetes mellitus.

Joseph E. Warren, Ph.D.

University of North Texas

Instructor/Assistant Laboratory Director

Department of Pathology and Anatomy

Research Interests: Development of human Y chromosome minisatellite and SNP based genetic markers for forensic and evolutionary studies; further development of mitochondrial DNA analysis for human identification; designing protocols and guidelines for low copy number DNA found in criminal evidence samples.

David G. Watson, Ph.D.

Research Assistant Professor

Department of Pharmacology and Neuroscience

Research Objectives: To examine the role of cellular signal transduction pathways as potential mediators of estrogen-induced neuroprotection. Utilizing both in vitro and in vivo models, experimental studies are designed to determine the cell signaling mechanism(s) through which estrogen exposure induces neuronal protection. At present, the focus of the research centers on the effects of estrogen on the activity and intracellular distribution of individual components of the Protein kinase C (PKC) and mitogen-activated protein kinase (MAPK) signaling pathways. These studies have implications for designing and using novel neuroprotective agents to combat neurodegenerative diseases and neuronal insults.

Stuart Williams, D.O., C-FP, FACP

University of North Texas Health Science Center at Fort Worth

Assistant Professor

Department of Osteopathic Manipulative Medicine

Currently developing research to investigate the clinical efficacy of osteopathic manipulative treatment in carpal tunnel syndrome.

Robert Wordinger, Ph.D.

Clemson University

Associate Professor

Department of Pathology and Anatomy

Role of growth factors in the development of glaucoma. Glaucoma is a leading cause of blindness and is characterized by a defect in the ability of aqueous humor to drain efficiently through the human trabecular meshwork. This leads to an intraocular pressure higher than the eye can tolerate and blindness through death of retinal ganglion cells. The primary hypothesis of this laboratory is that gene expression and mRNA levels of specific growth factors or their high affinity receptor is altered in glaucomatous trabecular meshwork cells. Recent studies have utilized in vitro culture of normal and glaucomatous trabecular meshwork cells and molecular biology techniques including reverse transcriptase-polymerase chain reaction and Northern and Southern blotting techniques. The members of this laboratory are also interested in steroid induced glaucoma and study this by exposing trabecular meshwork cells to the glucocorticoid dexamethasone. This approach should further our knowledge of the biologic characteristics of healthy and glaucomatous human trabecular meshwork cells and will be critical to discover new and innovative avenues for the diagnosis, management and treatment of glaucoma.

Ming-chi Wu, Ph.D.

University of Wisconsin

Professor

Department of Molecular Biology and Immunology

Two major research projects are currently being conducted in this lab. (1) Regulation of Macrophage Colony-stimulating Factor (M-CSF) gene expression specifically the effects of CAMP on the regulation of NF-KB activation by IKB expression. (2) Turning blood into brain: An in vitro model. Neural stem cells derived from bone marrow are isolated and cultured. They are induced by chemicals and cytokine to undergo neural differentiation. Morphology, cell surface markers as well as network dynamics will be used to assess their differentiation and maturation. Signal mechanism involving the cytokine action will also be studied once the cell model has been established. Other projects include: angiostatin production from a pancreatic carcinoma cell line, orthomolecular treatment of sickle cell anemia, recombinant cytokine production and cloning and mechanism of action of a novel leukemia differentiation factor.

Thomas Yorio, Ph.D.

Mt. Sinai School of Medicine

Professor, Department of Pharmacology and Neuroscience

Chair, Department of Biomedical Sciences

Dean, Graduate School of Biomedical Sciences

Identifying the cellular and molecular basis for glaucoma. In particular, the mechanisms that are coupled to the regulation of intraocular pressure, including the regulation of aqueous humor dynamics. In addition, we are investigating the mechanisms that contribute to optic neuropathy and in characterizing those elements that play a role in the etiology of optic nerve degeneration. We utilize second messenger cell signaling assays, molecular approaches to identify transcriptional regulation and animal models, including knockouts, to test our approaches. It is our intent to identify new treatment paradigms for the management of glaucoma.

Emeritus Faculty & Library Faculty

Emeritus Faculty

Coy, Marion E., D.O., F.A.C.G.P.

Professor Emeritus, Manipulative Medicine;
B.S. Eureka College,
D.O. Kirksville College of Osteopathic Medicine

Elko, Edward E., Ph.D.

Professor Emeritus, Pharmacology;
B.S. University of Scranton,
Ph.D. University of Tennessee

Jenkins, William R., D.O., F.A.C.O.S.

Professor Emeritus, Surgery;
B.S. Texas Wesleyan University,
D.O. Kirksville College of Osteopathic Medicine

Korr, Irvin M., Ph.D.

Professor Emeritus, Manipulative Medicine;
B.A. and M.A. University of Pennsylvania,
Ph.D. Princeton University

Lal, Harbans, Ph.D.

Professor Emeritus, Pharmacology;
B.S. Punjab University,
M.S. University of Kansas,
Ph.D. University of Chicago

Ogilvie, Charles D., D.O., F.A.O.C.R., F.A.C.O.S.

Professor Emeritus, Medical Humanities;
D.O. Kirksville College of Osteopathic Medicine

Schunder, Mary, Ph.D.

Professor Emeritus, Anatomy and Cell Biology;
B.A. Texas Christian University,
M.S. Texas Christian University
Ph.D. Baylor University

Wilkins, Frederick M., D.O., F.A.O.C.R.

Professor Emeritus, Radiology;
B.S. Elizabethtown College,
D.O. Philadelphia College of
Osteopathic Medicine

Stern, Paul A., D.O.

Professor Emeritus, Anesthesiology;
B.S. Wayne State University
D.O. University of Osteopathic Medicine and Health Sciences

Walker, Lee J., D.O., F.A.C.O.O.G.

Professor Emeritus, Obstetrics and Gynecology;
B.S. Hillsdale College
D.O. University of Osteopathic Medicine and Health Sciences

Professional Library Faculty

Brooks, Ann, M.L.S., M.B.A., A.H.I.P.

Associate Director, Public Services;
Assistant Professor, Medical Education;
B.S. California State Polytechnic University,
M.L.S. University of Pittsburgh,
M.B.A. Texas Christian University

Burgard, Daniel E., M.S.L.I.S.

Instructional Services Librarian;
Instructor, Medical Education;
B.S. and M.S.L.I.S. University of Illinois at Urbana-Champaign

Carter, Bobby R., M.S.

Acting Associate Vice President for Information Resources;
Director, Library Services;
Associate Professor, Medical Education;
B.S. University of Houston,
M.S. Louisiana State University

Elam, Craig S., M.L.S., A.H.I.P.

Associate Director, Technical Services;
Assistant Professor, Medical Education;
A.B. Stanford University,
M.L.S. University of California at Berkeley

Foster, Moira, M.A., M.L.S.

Audiovisual Librarian;
Assistant Professor, Medical Education;
B.Ed. Nottingham University,
M.A. Glasgow University,
M.L.S. University of North Texas

Johnson, Lynn F., M.I.S., C.A.S.

Special Projects Librarian;
Instructor, Medical Education;
B.S. Arkansas Tech University,
M.I.S. University of North Texas
C.A.S. University of North Texas

Martin, Dohn, H., M.S.L.S.

Associate Director, Biomedical Informatics;
Instructor, Medical Education;
M.S.L.S. University of North Carolina, Chapel Hill

Mason, Timothy D., M.L.S.

Technical Services Librarian;
Instructor, Medical Education;
B.A. University of Cincinnati,
M.L.S. University of North Texas

Raines, Jack W., M.L.I.S., M.A.T.

Extension Librarian;
Assistant Professor, Medical Education;
B.A. and M.A.T. Georgia State University,
M.L.I.S. University of Hawaii

Muirhead, Phyllis, M.L.S.

Instructional Services Librarian;
Assistant Professor, Medical Education;
B.A. Baylor University,
M.L.S. University of North Texas

White, Sherry, M.L.S.

Serials Librarian;
Instructor, Medical Education;
B.A. Southwest Texas State University,
M.L.S. University of Texas at Austin

Board of Regents

Bobby Ray, Plano
Chair

Burle Pettit, Lubbock
Vice Chair

Charles "Chuck" Beatty, Dallas

Marjorie B. Craft, DeSoto

Tom Lazo Sr., Dallas

Robert Nickell, Irving

George Pepper, Fort Worth

Gayle Strange, Denton

C. Dan Smith, Plano

Chancellor

Lee Jackson, M.P.A.

Officers & Staff

Administration

- Ronald R. Blanck, D.O.,**
President
- Richard Rifes, J.D., Ph.D.,**
Vice Chancellor and General Counsel
- Daniel M. Jensen,**
Assistant Vice Chancellor
for Governmental Affairs
- Steve R. Russell,**
Senior Vice President
for Finance and Administration
- Adela N. Gonzalez, M.P.A.,**
Vice President
for Strategic and Institutional Affairs
- Gregory P. McQueen, Ph.D.,**
Vice President for Academic Affairs
- Marc B. Hahn, D.O.,**
Dean of the Texas College of Osteopathic Medicine
- Thomas Yorio, Ph.D.,**
Dean of the Graduate School of Biomedical Sciences
- Fernando M. Treviño, M.P.H., Ph.D.,**
Dean of the School of Public Health
- Robert Gracy, Ph.D.,**
Associate Vice President
for Research and Biotechnology
- J. Warren Anderson, Ed.D.,**
Dean for Educational Affairs
- Steve Oeffner, C.P.A.,**
Associate Vice President for Finance
- Bobby R. Carter, M.L.S.**
Acting Associate Vice President
for Information Resources
and Director, Library Services
- Victoria Rudick, Ph.D.**
Associate Dean
of the Graduate School of Biomedical Sciences
- Mitchell Forman, D.O.,**
Associate Vice President for Student Affairs
- Robert Kaman, J.D., Ph.D.**
Assistant Dean
of the Graduate School of Biomedical Sciences

Administrative Staff

- Don Beeson,**
Police Chief
- Betty Belton,**
Registrar
- Bobby R. Carter,**
Director of Library Services
- Pat Casey,**
Director of Institutional Budgets
and Grants Management
- Thomas Fairchild, Ph.D.,**
Director of Special Projects on Aging
- Claire Graham,**
Director of Student Affairs
- W. Rand Horsman,**
Director of Human Resource Services
- Joel H. Lanphear, Ph.D.,**
Director of Biomedical Communications
- Carla J. Lee,**
Director of Biomedical Sciences
Admissions and Services
- Henry R. Lemke, P.A.-C., M.M.S.,**
Director of Physician Assistant Studies Program
- Raymond Medina,**
Executive Director and Chief Operating Officer
of Medical Services Research and Development Plan,
Physicians & Surgeons Medical Group
- M. Susan Motheral, Ph.D.,**
Director of Institutional Research
- Lane Nestman,**
Director of Purchasing and Central Services
- Robert Nimocks,**
Director of Information Technology Services
- Douglas Shriner,**
Director of Financial Aid
- James Sims, Ph.D.,**
Safety Officer
- Rynn Sloan,**
Student Development Coordinator
- Laura Squires, M.S.**
Senior Director of Marketing & Communications

Graduate Council

Thomas Yorio, Ph.D.

Dean, Graduate School of Biomedical Sciences

Neeraj Agarwal, Ph.D.

At-Large Graduate Faculty Representative

Alakananda Basu, Ph.D.

Graduate Advisor, Biochemistry and Molecular Biology

Samuel T. Coleridge, D.O.

Clinical Faculty Representative

Glenn Dillon, Ph.D.

Graduate Advisor, Pharmacology and Neuroscience

H. Fred Downey, Ph.D.

Graduate Advisor, Integrative Physiology

Susan Franks, Ph.D.

Graduate Advisor, Psychology

Stephen Grant, Ph.D.

At-Large Graduate Faculty Representative

John Licciardone, D.O., M.S., M.P.H.

Graduate Advisor, Clinical Research and Education
(Family Medicine)

Robert Mallet, Ph.D.

Graduate Advisor, Clinical Research and Education
(Osteopathic Manipulative Medicine)

Porunelloor Mathew, Ph.D.

Graduate Advisor, Microbiology and Immunology

Rovel Roque, M.D.

Graduate Advisor, Genetics and Cell Biology

Rustin Reeves, Ph.D.

Graduate Advisor, Science Education

Victoria Rudick, Ph.D.

Graduate Advisor, Biomedical Sciences

Graduate Student Association President

Graduate Student Association Vice President

Ex-Officio Members

Bobby Carter

Director of the Library

Carla J. Lee

Director of Biomedical Sciences Admissions and Services

Graduate School of Biomedical Sciences

Office of the Dean

Thomas Yorio, Ph.D.

Dean

Victoria Rudick

Associate Dean

of the Graduate School of Biomedical Sciences

Laura Barber

Senior Executive Assistant

Carolyn Polk

Senior Administrative Assistant

Office of Graduate Admissions and Services

Carla J. Lee

Director of Biomedical Sciences
Admissions and Services

Jan Sharp

Administrative Services Officer

Cheryl Stanley

Senior Administrative Assistant

Office of Outreach

Robert Kaman, J.D., Ph.D.,

Assistant Dean
and Director of Outreach

Elizabeth Davis, M.Ed.,

Associate Director of Outreach

Minnie Zavala,

Senior Administrative Assistant

Non-Discrimination & Harassment Policies

Respect for Diversity

The Nondiscrimination/Equal Employment Opportunity and Affirmative Action policy affirms the requirement for every member of the UNT Health Science Center community to comply with existing federal and state equal opportunity laws and regulations.

The UNT Health Science Center is committed to the philosophy of a multicultural environment. The institution prohibits harassment based on race, gender, disability, age, national origin, religion, veteran status or lifestyle.

The health science center has long been an open, tolerant and democratic institution, proud of its commitment to personal and academic excellence but unpretentious in the atmosphere of its campus in its willingness to accept all members of the health science center community on their value as human beings.

The increasing diversity of the UNT Health Science Center community is one of the institution's greatest strengths. Differences of race, religion, age, gender, culture, physical ability, language, nationality and lifestyle make it a microcosm of the nation as a whole, reflecting the values of our pluralistic society.

As an educational institution, the UNT Health Science Center is committed to advancing the ideas of human worth and dignity by teaching respect for human beliefs and values and encouraging open discussions. Hatred or prejudice and harassment of any kind are inconsistent with the center's educational purpose.

The UNT Health Science Center is strongly committed to the ethical principle that every member of the community enjoys certain human and constitutional rights, including the right to free speech. As a community of scholars, the health science center also is dedicated to maintaining a learning environment that is nurturing, fosters respect, and encourages growth among cultures and individuals represented here. Individuals who work, study, live and teach within this community are expected to refrain from behaviors that threaten the freedom and respect every individual deserves.

Sexual Harassment

A primary objective of the UNT Health Science Center is to provide an environment in which faculty, staff and students may pursue their careers and studies with a maximum of productivity and enjoyment.

Harassment of students on the basis of gender is a violation of Section 106.31 of Title IX of the Education Amendments of 1972. Harassment of health science center employees on the basis of gender is a violation of Section 703 of Title VII of the Civil Rights Act of 1964 and the Texas Commission on Human Rights Act. Sexual advances, requests for sexual favors and other verbal or physical conduct of a sexual nature constitutes sexual harassment.

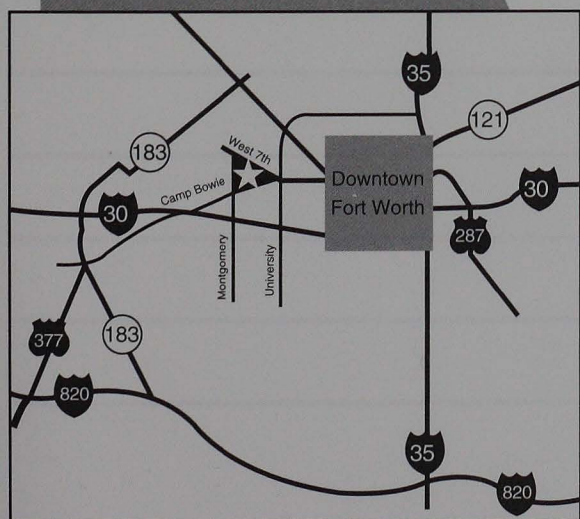
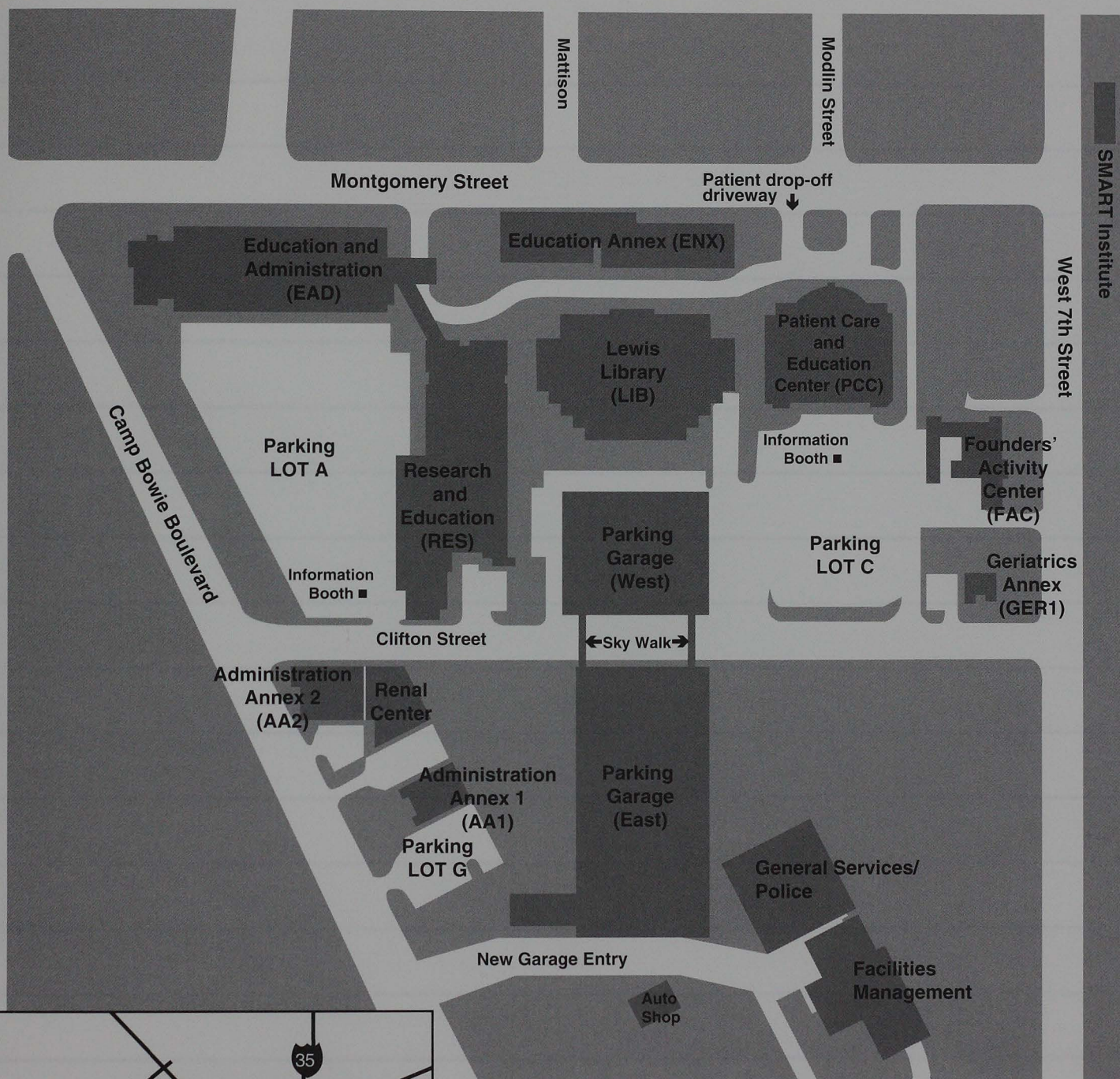
It is the policy of the health science center to maintain a workplace and a learning environment free of sexual harassment and intimidation. Behavior or conduct that interferes with this goal is not condoned or tolerated.

Americans with Disabilities Act

The UNT Health Science Center does not discriminate on the basis of an individual's disability and complies with Section 504 and Public Law 101-336 (Americans with Disabilities Act) in its admissions, accessibility, treatment and employment of individuals in its programs and activities.

The UNT Health Science Center provides academic adjustments and auxiliary aids to individuals with disabilities, as defined under the law, who are otherwise qualified to meet the institution's academic and employment requirements. For assistance contact the Equal Employment Opportunity Office at the health science

Campus Map



Index

Academic Support Services	58	Emeritus Faculty	88	Pass/Fail Grading	19
Academic Calendars	4	Enrollment Certification	18	Payment by Installment	54
Academic Misconduct	16			Pharmacology and Neuroscience	51, 68
Accreditation	3			Policies	20
Activity Center, Founders'	58	Faculty	71	Post-baccalaureate	
Adding Courses	17	Family Medicine	44, 66	Premedical Certification	38
Administration	90	Final Examinations	18	Probation	19
Advancement to		Financial Aid	57	Psychology	69
Doctoral Candidacy		Financial Policies	56		
25, 30, 32, 41, 48, 50, 53		Forensic Genetics	42		
Advisory Committee	22, 24, 30	Full-time Enrollment	18	Quality of Work Required	19
Admission to Graduate School	12				
Application Deadlines	12	Grade Changes	19	Refunds	56
Application Fee	12, 54	Grade Point Average	18	Regents, Board of	89
Americans with Disabilities Act	92	Grade Reports	19	Removal of Incomplete Grade	19
Annual Performance Review	16	Grading System	18	Residency Regulations	55
Appeal Processes	16	Graduate Advisor	19	Residency Requirements	24
Attendance	17	Graduate Assistantships	57	Residency Status	55
Auditing	16	Graduate Council	91		
		Graduation	20		
Biochemistry and				Scheduling Events	60
Molecular Biology	28, 63	Health Insurance	58	Science Education	34
Biomedical Sciences	30, 61	Health Services	59	Sexual Harassment	92
Biotechnology	33			Student Affairs	58
		Identification Card Regulations	59	Student Development Services	58
Campus Map	93	Institutes for Discovery	8	Student Lounge	60
Cell Biology and Genetics,	40, 64	Institutional Support Services	10	Student Organizations	59
Commencement	20	Integrative Physiology	46, 66	Summons	20
Concurrent Enrollment	17	Internship Practicum	33, 37, 43	Suspension	19
Core Curriculum Requirements	21			Syllabi	20
Course Deficiencies	17				
Course Descriptions	61	Leave of Absence	20	Temporary Visa Holders	20
Course Duplications	19	Liability	59	Time Limitations	22, 24
Courses of Instruction	18	Library Faculty	88	Transfer Credit	22, 24
Clinical Research and Education	44, 45	Library, Gibson D. Lewis		Tuition and Fee Waivers	55
Clinical Research Management	36	Health Science	10	Tuition and Mandatory Fees	54
		Living Accommodations	59		
Degree Plan				University Member	23, 25
23, 24, 28, 29, 31, 40,		Master of Science	22		
41, 43, 46, 47, 49, 52		Microbiology and Immunology	49, 67	Withdrawal for Non-Payment,	
Degree Programs	21	Mission Statements	6, 8	Administrative	54
Discipline, Change of	16	Motor Vehicle Regulations	59	Withdrawal from Classes	20
				Withdrawal Refunds	56
Dissertation Requirement	25				
Diversity, Respect for	92	Officers and Staff	88		
Doctor of Philosophy	24	Open Records Policy	20		
Dropping Courses	17	Osteopathic Manipulative Medicine	45, 67		
Dual Degrees	26	Outreach Programs	11		

Notes

Notes



UNIVERSITY of NORTH TEXAS HEALTH SCIENCE CENTER *at Fort Worth*



Education, Research, Patient Care *and* Service

3500 Camp Bowie Boulevard, Fort Worth, Texas 76107-2699
www.hsc.unt.edu