



LSU Health Sciences Center in New Orleans School of Graduate Studies



# LSU HEALTH SCIENCES CENTER IN NEW ORLEANS SCHOOL OF GRADUATE STUDIES



## Joseph M. Moerschbaecher, III, PhD, Dean

Appointed to the Deanship: July 1, 1998

Appointed to the Health Sciences Center Faculty: May 1, 1983

Faculty Academic Rank: Professor of Pharmacology

Address: School of Graduate Studies  
433 Bolivar Street, Suite 826  
New Orleans, LA 70112

Telephone Number: (504) 568-2211

Website: <http://graduatestudies.lsuhschool.edu>

Email Address: [gradschool@lsuhsc.edu](mailto:gradschool@lsuhsc.edu)

## Administration

JOSEPH M. MOERSCHBAECHER, III, PhD  
Dean

KATHLEEN H. MCDONOUGH, PhD  
Associate Dean - New Orleans

JACK D. HINES, III  
Coordinator of Student Affairs

ANGELA AMEDEE, PhD, Microbiology, Immunology and  
Parasitology, appointed

JEFFREY HOBDEN, PhD, Microbiology, Immunology and  
Parasitology, elected

THOMAS LALLIER, PhD, Oral Biology, appointed

EMEL SONGU-MIZE, PhD, Pharmacology and  
Experimental Therapeutics, appointed

CHARLES NICHOLS, PhD, Pharmacology and  
Experimental Therapeutics, elected

ANDREW CATLING, PhD, Pharmacology and  
Experimental Therapeutics, Senate Representative

GREGORY BAGBY, PhD, Physiology, appointed

PATRICIA MOLINA, PhD, Physiology, elected

W. DOUGLAS SCHEER, PhD, Pathology, appointed

DAITOKU SAKAMURO, PhD, Pathology, elected

THEODORE WEYAND, PhD, Neuroscience Center of  
Excellence, appointed

HAMILTON FARRIS, PhD, Neuroscience Center of  
Excellence, appointed

JEFFREY ERICKSON, PhD, Neuroscience Center of  
Excellence, elected

## Advisory Council

KATHLEEN MCDONOUGH, PhD, Associate Dean, Chair

RANNEY MIZE, PhD, Cell Biology and Anatomy,  
appointed

JUDITH VENUTI, PhD, Cell Biology and Anatomy,  
elected

DONALD MERCANTE, PhD, Biostatistics, appointed

CRUZ VELASCO, PhD, Biostatistics, elected

SUNYOUNG KIM, PhD, Biochemistry and Molecular  
Biology, appointed

SURESH ALAHARI, PhD, Biochemistry and Molecular  
Biology, elected

DIPTASRI MANDAL, PhD, Genetics, appointed

PAULA GREGORY, Genetics, PhD, elected

## HISTORY

The Louisiana State University Health Sciences Center was established in 1931 for the training of medical and nursing students and graduate students in the basic sciences. For many years, the lack of adequate research space limited graduate enrollment severely, and it was not until 1954 that expansion permitted a considerable increase in the student body. Although the Graduate School of LSU, Baton Rouge, granted degrees in the early years of the program, the Graduate School of the LSU System was reorganized in 1965 with separate autonomous units established at Baton Rouge, the University of New Orleans, and the LSU Health Sciences Center. On July 1, 2005, the LSU Health Sciences Center in Shreveport established a separate School of Graduate Studies.

The Faculty of the School of Graduate Studies is composed of selected members of the faculties of the other professional schools of the Health Sciences Center, principally in the basic health sciences. Those faculties at the rank of assistant professor or above are eligible to be nominated for membership in the Graduate faculty. Such nomination must be made by two members of the Graduate faculty, through the Dean, to the Graduate Advisory Council. Membership criteria include current and continuing interest in creative research as evidenced by publications in recognized journals in the field and interest in the teaching of graduate students.

## CHRONOLOGY

Five people have served as Associate Dean or Dean of the Louisiana State University School of Graduate Studies of the Health Sciences Center since its establishment in 1965.

The name of the former Associate Dean, and his period of deanship

Roland Armstrong Coulson, PhD (1965-1974)

The name of the former Deans, and periods of deanship

John Charles Finerty, PhD (1974-1984)

Robert F. Dyer, PhD (1984-1989)

Marilyn L. Zimny, PhD (1990-1998)



## CALENDAR 2008-2009

### 2008 Fall Semester

#### August

Friday	01	Orientation and registration
Wednesday	13	Classes begin
Wednesday	27	Final date for adding courses for credit and for dropping courses without a penalty

#### September

Monday	01	Labor Day
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#### November

Tuesday	11	Final date for submission of theses and dissertations
Thursday	27	Thanksgiving Holiday
Friday	28	Thanksgiving Holiday

#### December

Friday	05	Fall Semester ends
Thursday	11	Conferral of Degrees

### 2009 Spring Semester

#### January

Monday	05	Last day of registration
Wednesday	14	Classes begin
Monday	19	Martin Luther King, Jr. holiday
Wednesday	28	Final date for adding courses for credit and for dropping courses without a penalty

#### February

Tuesday	24	Mardi Gras holiday
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#### March

Wednesday	25	Pre-Registration
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#### April

Friday	10	Easter holiday
Thursday	16	Final date for submission of approved theses and, dissertations

#### May

Friday	08	Spring Semester ends
Saturday	16	Commencement

### 2009 Summer Semester

#### May

Tuesday	12	Last Day of registration
Wednesday	20	Classes begin

#### June

Wednesday	03	Final date for adding courses for credit and for dropping courses without a penalty
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#### July

Friday	03	Independence Day holiday
Tuesday	07	Final date for submission of approved theses and, dissertations
Friday	31	Summer Semester ends

#### August

Saturday	08	Conferral of Degrees
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## ADMISSIONS

### REQUIREMENTS FOR ADMISSION

There are five requirements for admission to the School of Graduate Studies.

1. A baccalaureate degree from a college or university approved by a regional accrediting agency
2. Grade point average of at least 3.0 for undergraduate work and 3.0 for graduate work, on a 4-point scale and based upon all work for which a grade is given
3. Satisfactory scores on the Graduate Record Examination
4. Satisfactory standing at the most recent educational institution attended
5. Acceptance in a Graduate program

Individual Programs may establish requirements more rigid than the minimal standards of the School of Graduate Studies, so a student meeting minimal School requirements may not be adequately prepared to enter graduate study in a particular program.

All international students must present acceptable scores on the Test of English as a Foreign Language (TOEFL) examination before they will be accepted as graduate students. These examinations are offered several times a year throughout the world.

Graduate students, who apply for admission to the LSU School of Medicine, or any other professional school, shall not be enrolled in the professional school until they have completed the graduate degree toward which they are working.

### TYPES OF ADMISSION

**Unconditional Admission** – Applicants who meet all requirements are normally granted unconditional admission.

**Probationary Admission** – Applicants who fail to meet all qualifications but are judged by the program concerned and by the Dean to show promise for successful graduate work may be considered for probationary admission.

**Provisional Admission** – Applicants who appear to be admissible but who are unable, for good reason, to supply the required credentials prior to the stated deadline may request provisional admission. In such cases, complete credentials must be received not later than sixty days after the first day of classes (forty-five days in the Summer term).

### ADMISSION PROCEDURE

Complete the School of Graduate Studies Application Form available on the School of Graduate Studies [Website](#).

**Application Fee** – The application fee for the School of Graduate Studies is \$30. Make checks or money orders payable to "LSU Health Sciences Center." The fee of \$30 must be submitted each time you apply to a program.

**Official Report of GRE Scores** – Request that the Educational Testing Service send an official report of your Graduate Record Exam (GRE) scores to the School of Graduate Studies. The code is 6385. We require that you take the GRE Aptitude

Test. We also suggest that since it takes at least six weeks and sometimes longer for the official GRE reports to reach us, you might like to submit a photocopy of your "Student Copy" of the scores. This would enable the Admissions Committee to evaluate your application while waiting for the official scores to arrive. We require a total combined score of 1000 on the Verbal and Quantitative segments as a minimum for consideration.

**Official Transcripts** – Send two copies of your official transcript from each college or university that you have attended (including other institutions in the LSU System). Transcripts that show transfer credits from other colleges you have attended are not acceptable. We require that the transcripts be sent from the Registrar's Office of your University directly to this Office. Transcripts issued to students are not considered official.

**Goal Letter** – All programs require a letter from applicants stating your long-term and short-term goals in relation to your program of study.

**Letters of Recommendation** – Arrange for two letters of recommendation to be sent to the School of Graduate Studies (preferably from professors who have taught you in the basic sciences). Use the Letter of Recommendation Form provided on the [Website](#).

**TOEFL** – Foreign students must submit scores for both the Graduate Record Exam and the Test of English as a Foreign Language.

Send the 7 items described above to the following address.

Office of the Dean  
School of Graduate Studies  
LSU Health Sciences Center  
433 Bolivar Street, Suite 826  
New Orleans, LA 70112-2223

The completed application, including transcripts, letters of recommendation, goal letters, and GRE scores, will be sent to the Program for review and recommendation. Students will be notified of acceptance into the graduate program by the graduate coordinator or department head and then by the Dean of the School of Graduate Studies.

### DEADLINES

Deadline dates for each Program vary, depending upon the number and quality of applicants, so early application is advised. You may contact the Graduate Studies Office at (504) 568-2211, and your call will be transferred to the proper department to inquire about their deadlines.

### REAPPLICATION

Students once registered in the School of Graduate Studies who wish to resume work after an absence of more than one semester will be required to submit an application for re-admission at least ten days before registration. Supplementary transcripts must be submitted if any work has been taken at another institution during the interim.

Exceptions to this requirement must be by successful petition of the Dean.

## REGISTRATION

All students are expected to comply with the general Health Sciences Center provisions governing registration as specified in the General Information Section of the Catalog/Bulletin. Dates for registration are listed in the Calendar of this section. Late registration is permitted only under unusual circumstances and a fee will be assessed.

It is sometimes necessary for a student to carry more than 15 hours of credit per semester in the first year of graduate study. Permission to exceed the usual 15 hour credit limit may be granted by the Program.

All full-time students engaged in research should register for it. Although only six hours will be counted for the master degree and fifteen for the doctoral degree, students should continue to register for research every semester in which they are engaged in research.

## HEALTH REQUIREMENTS

A physical examination, selected blood work and immunizations are mandatory prior to registration at the Health Sciences Center. Students will receive information and instructions pertinent to student health in their acceptance packet.

## MULTI CAMPUS REGISTRATION

Students enrolled full-time in the LSU System (LSU BR, UNO, LSUHSC) may cross enroll. Students are required to complete an application for LSU System Multi-Campus Registration (available in Student Affairs Office). This form must be submitted to the Student Affairs office two weeks prior to registration. Students should first register with their home school. Documentation that fees have been paid at the home school, a course schedule form, and two copies of Multi-Campus Registration Form must be submitted at registration.

## AUDITING CLASSES

Enrolled students may audit courses without credit. Persons not enrolled in the School of Graduate Studies will not be permitted to audit.

## DEGREES FOR FULL-TIME FACULTY AND STAFF

The School of Graduate Studies will not award graduate degrees to full-time faculty of the Health Sciences Center above the rank of Instructor or to other employees without permission of the Program and the Dean.

## FULL-TIME EMPLOYEES

LSUHSC employees may not register for more than six hours of credit per semester. No full-time employee will be permitted to register without written approval of the employee's immediate supervisor, Department Head and the Dean of the School of Graduate Studies. The employee must deliver the letter to the Dean's Office of the School of Graduate Studies in the Resource Center at least two weeks before registration. The employee must also complete a Graduate School Application Form and pay the \$30

application fee. At registration, the employee will pay for the course according to the Health Sciences Center Fee Schedule. Employees may qualify for a Tuition and Fee exemption. Criteria and eligibility information may be obtained from the Assistant Vice Chancellor for Administration and Finance on the eighth floor of the Resource Center.

Employees are limited to a total of 12 graduate course hours. Only under extraordinary circumstances can this total be exceeded and only upon the recommendation of the Graduate Advisory Council and the approval of the Dean of the School of Graduate Studies.

## STUDENT AID

A complete, detailed summary of all provisions governing financial aid available to students of the Health Sciences Center may be found in the General Information Section of this publication, or on the LSUHSC-NO web at <http://www.lsuahsc.edu/no/students/financialaid/>

## STANDARDS

### ACADEMIC STANDARDS

#### Statement of Satisfactory Academic Progress

The Program and the Dean of the School of Graduate Studies review the qualitative and quantitative academic progress of each student. A student may be dropped from a Program at anytime when academic progress is judged inadequate. A student may be permitted to remediate upon the recommendation of the student's Program and concurrence by the Dean. Such a student is considered to be making satisfactory academic progress.

## GRADING SYSTEM

The School of Graduate Studies uses a letter-grading system. Letter grades are assigned numerical values called Quality Points based on a semester hour. These Quality Points are used to compute the grade point average (GPA). A = 4; B = 3; C = 2; D = 1; F = 0; I (incomplete) = 0.

No letter grades are given for research or seminar courses. For these courses students receive either S for satisfactory or U for unsatisfactory. Letter grades are allowed for special topics and methods courses, but these courses must be approved in advance by the Curriculum Committee and by the Dean.

Individual Programs may set higher standards and not accept a grade of C or lower for credit. In addition, they may consider consistent grades below A in the major field as evidence of unsatisfactory performance. It is the graduate students' responsibility to know the specific requirements of the Program in which they are enrolled.

Grading in the School of Dentistry and the School of Medicine may be different from that of the School of Graduate Studies. Letter grades will be issued to graduate students enrolled in courses in these schools.

## INCOMPLETE GRADES

An incomplete grade (I) may be given for satisfactory work that has been done by a student, who for reasons beyond the student's control could not complete all requirements of the course. The student is responsible for petitioning the concerned Faculty with an appropriate excuse before an incomplete grade can be issued. Failure by the student to do this will result in a grade of F. An F will also be given if the incomplete grade is not converted prior to the deadline for adding courses for credit as published in the Catalog/Bulletin. In extraordinary cases, such as a student called up for military service, the Dean may authorize making an incomplete grade permanent or extending the time for its removal.

## FOR EXAMINATION ONLY

If a student registered "for examination only" does not take the examination, an S grade will be issued and the registration carried over to the next semester. An unsuccessful examination, or any delay greater than three semesters in taking the exam, will require the student to register for three hours.

## SATISFACTORY-UNSATISFACTORY GRADES

At the discretion of the student's Program, up to two courses taken outside of the major field (which are normally evaluated by letter grades A-F) may be issued the grades: S (satisfactory), or U (unsatisfactory). If an S grade (A-C) is earned, credit hours will be given for the value of the course. If a U grade (D-F) is incurred, no credit hours will be given. The GPA of the student will not be affected by either an S or U grade.

Students must declare at the time of registration their intention to base a course on a satisfactory-unsatisfactory grade. The registration form is completed in the usual manner except the letters, "S-U," are put after the number of the course.

## GRADE REQUIREMENTS

To receive a graduate degree a student must have at least a B average on all work taken as a graduate student. A student will be dropped from the rolls of the School of Graduate Studies if the student's cumulative average is below a B for three consecutive semesters. Credits received in thesis or dissertation research are not used in computing the grade point average. A Summer term is counted as a semester. Students in serious scholastic difficulties may be dropped from the rolls at the end of any semester if the program and Dean feel that the student is not qualified to continue.

## WITHDRAWAL GRADES

A withdrawal grade is given when a student drops a course after the second week. If a student drops a course within the last two weeks of the course, an F grade is issued.

## GRADUATION

Satisfactory completion of individual program requirements and all requirements as noted in both the "Requirements for the Master of Science Degree" or the "Requirements for the Doctor of Philosophy Degree" must be documented.

The student is expected to have satisfactorily met all financial obligations to the LSU Health Sciences Center and the LSU System at least ten days prior to graduation.

## REQUIREMENTS FOR THE MASTER OF SCIENCE DEGREE

Residence – One academic year, two semesters, or four Summer terms represents the minimum requirement. Two years' residence represents a more realistic average.

Semester Hours – The minimum requirement is 30 semester hours of graduate work, not over six hours of which is allowed for research and composition of a thesis, and not more than two credit hours of seminars. At least 15 semester hours must be in graduate courses outside the medical or dental curriculum. Program requirements will generally exceed these minimal requirements. Although concentration is required in the major field of interest, every program for a master's degree should include at least six semester hours of credit in one or more related fields. INTER 220 and INTER 260 are required courses for all students.

Transfer Credit – Candidates for the Master of Science degree may receive up to thirteen hours of transfer credit at the discretion of the Program involved, providing they have completed courses, which are comparable to School of Graduate Studies' courses in another graduate level institution, and satisfy the subject matter requirements. No transfer credit is permitted for course work receiving a grade below B and transfer of the credit does not reduce the residency requirement.

Candidacy - A student becomes a candidate if the student has completed 12 semester hours of work with a B average and has received Program approval.

Foreign Language – There is no School of Graduate Studies requirement for foreign languages, but individual Programs may require one or more.

Thesis Instructions – Instructions on the preparation of the dissertation may be obtained from the School of Graduate Studies Website. For the planned graduation date, the student should check the school calendar for the final date for submission of the thesis to the School of Graduate Studies. Final approval of the thesis rests with a committee of not less than three graduate faculty members, one of whom must be from a Department other than the student's Department, nominated by the Head of the Department, and appointed by the Dean. The Dean may serve as a member or may appoint members to the Committee.

Thesis Defense – When the thesis is nearly complete, the candidate will be required to successfully defend the thesis. This examination may be solely oral or written and oral. The Committee votes by secret ballot, and to pass the examination there may be no more than one negative vote. Examination and defense request forms are available from the Student Affairs Office. To access fillable PDF forms, use the "Forms" link on the School of Graduate Studies [Website](#).

Time Limit – All work towards an Master of Science degree must be completed in not more than four years. Any requests for extension of this policy are subject to approval by the student's Graduate Research Committee and the Dean.

## REQUIREMENTS FOR THE DOCTOR OF PHILOSOPHY DEGREE

The doctor of philosophy degree is the highest degree offered by universities. It is conferred only for work of distinction in which the student displays original scholarship.

Residence – Three years (9 semesters) of full-time residence are required, although in most programs more time is needed. Exceptions may be made by petition to the Graduate Dean. One year (three consecutive semesters) must be taken in residence at the Health Sciences Center following completion of the preliminary examination. Credit may be transferred from other institutions if approved by the Major professor and Department Head. Written notification clearly listing the courses to be transferred must be sent to the Dean who will notify the Registrar.

Course Requirements – Specific course requirements are dependent upon individual Program policy. However, in general, a minimum of 60 credit hours is required and at least 30 of those hours must be taken in courses, which require a letter grade for evaluation. The minimum courses required by each Program are listed in the Course Descriptions in the Catalog/Bulletin. Some of the credit must be earned in one or more minor fields and, ordinarily, it is expected that a student should have at least twelve hours outside of the major field. At least 15 hours must be in courses outside of the medical or dental curriculum. No more than fifteen credits may be counted for research and dissertation and no more than four credits for seminar, even though both may be carried throughout the program. Programs may have additional requirements for students to participate in teaching in the graduate, medical, dental, nursing, allied health, and undergraduate courses. INTER 220 and INTER 260 are required courses for all students.

Transfer Credit – Candidates for the doctor of philosophy degree may receive up to twenty-six hours of transfer credit at the discretion of the Program involved, providing they have completed courses, which are comparable to School of Graduate Studies' courses in another graduate level institution, and satisfy the subject matter requirements. No transfer credit is permitted for course work receiving a grade below B and transfer of the credit does not reduce the residency requirement.

Qualifying Process – Each Program will be responsible for the qualifying process and will develop appropriate policies, which will be on file in the Dean's Office.

Foreign Languages – There is no School of Graduate Studies requirement for foreign languages, but individual Programs may require one or more.

Preliminary Examination – The applicant becomes eligible for the Preliminary Examination at a time chosen by the faculty but not less than one academic year (three consecutive semesters) before graduation. The student and his/her major professor, with the approval of the Department Head and the Dean, will recommend a research committee and petition the Dean to appoint the committee and allow the student to schedule the examination. Examination and defense request forms are available from the Student Affairs Office. To access fillable PDF forms, use the "Forms" link on the School of Graduate Studies [Website](#).

The preliminary examination committee will ordinarily consist of the student's major professor and at least four other Graduate Faculty members representing major and minor disciplines. At least one member must be from another Department and one member may be from outside the Health Sciences Center. Substitution or addition of committee members may be made by the Dean after consultation with the major professor and Department Head, but continuity of membership is sought to provide consistent guidance of the student through the program. This examination is the most thorough in the doctorate program. It should require the candidate to demonstrate competence in a broad segment of the major and minor fields. Although the examination may be solely oral or written and oral, a written section is strongly recommended. If there is no more than one negative ballot out of a minimum of five, the student becomes a "candidate" after the Dean has been notified by the student's major professor and Department Head of successful completion of the preliminary examination.

Dissertation – The dissertation must be a significant contribution to the field, suitable for publication in a peer reviewed journal of international repute. Instructions on the preparation of the dissertation may be obtained from the School of Graduate Studies Website. The format of the dissertation should follow the rules formulated in the current edition of the CBE Style Manual: A Guide for Authors, Editors, and Publishers in the Biological Sciences. Copies of this manual are available in the Isché Library. For the planned graduation date, the student should check the school calendar for the final date for submission of the dissertation to the School of Graduate Studies.

Dissertation Defense – One year (three consecutive semesters) following the preliminary examination, the student is eligible to take this final examination if the dissertation is complete to the satisfaction of the Committee. The Defense may be preceded by an open seminar of the student's dissertation research. The student must petition the Dean for permission to take the examination. The examining committee is made up of no less than five graduate faculty members, one of whom must be from a Department other than the student's Department, nominated by the major professor, Head of the Department and appointed by the Dean. The Dean may serve as a member or may appoint members to the Committee. Traditionally, this examination is a test of the student's intimate knowledge of the area of the field in which the student is working. However, at the discretion of the Committee or the Dean, the examination may include questions from the major or minor fields in general. Voting is by secret ballot, and to pass the examination there may be no more than one negative vote.

Certification – If not more than one member of the examining committee dissents and if the dissertation is accepted, the candidate will be certified to the Graduate Faculty and Chancellor as having met all requirements for the degree of doctor of philosophy.

Time Limit – The School of Graduate Studies requires that all work towards a PhD degree be completed in not more than eight calendar years. Any requests for extension of this policy are subject to approval by the student's Graduate Research Committee and the Dean.

## GRADUATION FEES

Fees for graduation are normally assessed at registration for the semester in which the student intends to graduate. Diploma fees for associate's and bachelor's degrees, \$10; master's, \$15; and doctorate's, \$25. The fee for a duplicate diploma is \$5; this is assessed when a diploma is ordered and the student does not graduate as scheduled. A fee of \$15 is charged to cover the cost of thesis or dissertation binding. All dissertations must be microfilmed and a charge of \$45 is assessed for this service.

## AWARDS

The Chancellor's Award - A cash award of \$500 is presented annually. Selection of the awardee is based upon research performance as demonstrated by the quality of the dissertation and related research accomplishments while a student in the School of Graduate Studies. Selection is made by a committee of the faculty appointed by the Dean. This award was established by the Chancellor of the Health Sciences Center in 1979.



# SPECIALIZED TRACKS

## INTERDISCIPLINARY STUDIES TRACK

The Interdisciplinary program was established to provide students with a solid integrated foundation in molecular, cellular, and biological systems and the opportunity to select a mentor from a wide range of disciplines. The program is comprised of seven Basic Science Departments: Biochemistry and Molecular Biology; Cell Biology and Anatomy; Genetics; Microbiology, Immunology, and Parasitology; Pathology; Pharmacology and Experimental Therapeutics; Physiology and the Neuroscience Program.

Students participate in a one-year core curriculum and, after a series of research rotations, select a mentor/department in which they will complete their dissertation research. The core curriculum is based upon the principles of cellular and molecular biology along with the principles of organ-based biology - spanning the molecule to the organism - and will prepare students to understand and integrate biological processes at any level of organization

The following courses are required for students accepted into the Interdisciplinary Program. Students accepted into departmental programs are permitted to register in any of the interdisciplinary courses.

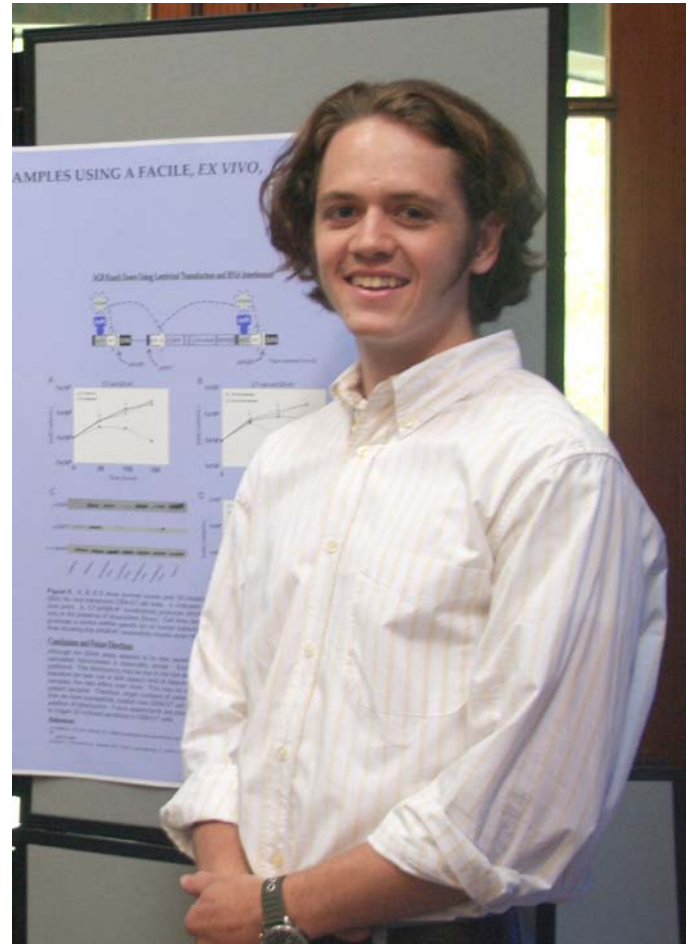
### Core Requirements

	Credits
INTER 101 Intro to Research and Resources .....	6
INTER 111 Biochemistry .....	4
<u>Cell and Molecular Biology</u>	
INTER 121 Cell Biology .....	3
INTER 122 Molecular Genetic Mechanisms .....	2
INTER 123 Control of Gene Expression .....	2
INTER 124 Cell Signaling and Cell Cycle Control .....	3
<u>Biological Systems</u>	
INTER 131 GI and Renal .....	2
INTER 132 Neural, Endocrine, Cardiovascular, Respiratory Integrative .....	5
<u>General Courses</u>	
INTER 190 Seminar .....	1
INTER 191 Journal Club .....	1
INTER 220 Ethics in Biomedical Research .....	1
INTER 260 Responsible Conduct of Research .....	1

## COMBINED GRADUATE AND PROFESSIONAL DEGREE TRACK – MD/PhD

A combined MD/PhD program is offered. This program is an option for a limited number of students with superior academic records and unusual research potential. In the course of this program, a student will pursue the medical curriculum for two years, spend three to four years as a graduate student to acquire the PhD, and finally spend two years completing the medical curriculum. Prospective students must first apply to and be accepted to the Medical School. When applying, they should state their desire to enter the MD/PhD program. The following are criteria for consideration of admission: MCAT scores, a mean of 10; GPA 3.5 (on a 4.0 scale); and GRE (Combined Verbal and Quantitative 1,200). The GRE is optional. Students must maintain a B average, or the equivalent, in Graduate School to remain in good standing in the program. Students must fulfill all the requirements of the Doctor of Medicine and the Doctor of Philosophy degrees.

If a student withdraws from or is asked to resign from either the MD or the PhD portion of the program, the student is required to reimburse the School of Medicine for any tuition received while in medical school. Credit for graduate course work will be transferred to the Medical School transcript.



## PROGRAM DESCRIPTIONS

### BIOCHEMISTRY AND MOLECULAR BIOLOGY - MS, PhD

Arthur L. Haas, PhD  
Professor and Head

The goal of graduate education in the Department of Biochemistry and Molecular Biology is to provide students with the core knowledge, analytical skills, and intellectual discipline to become a successful biomedical scientist in academia or industry. The program is flexible, to match the individual needs and interests of each student, yet sufficiently broad in scope to cover the major areas of contemporary biomedical research. Reasoning, data analysis, and hands-on laboratory research are vigorously emphasized at all stages in the program. In addition to coursework during the first year, students will participate in four research rotations through laboratories of their choice as part of BIOCH 207 in order to help them decide on a topic and mentor for their dissertation training.

During the second and third year, students enroll in several elective advanced topics courses tailored to their specific needs and interests. Students benefit from close interactions and collaborations between colleagues with strengths in cell biology, signaling, and structural biochemistry, in utilizing interdisciplinary approaches to answer outstanding questions in biology. Interests include the enzymology of cell regulatory processes including DNA repair and targeted intracellular protein degradation; cell division and the cytoskeleton; gene promoter and expression analysis; the proteomics of normal and pathological metabolic regulation; and gene expression analysis of cardiac development and the therapeutic application of cardiac stem cells. The Department offers the PhD degree alone and in combination as a MD/PhD.

The Program for obtaining the PhD can be tailored to the requirements of each individual student, but the core requirements for all students are as follows:

#### Core Requirements

	Credits
INTER 111 Biochemistry .....	4
INTER 121 Cell Biology .....	3
INTER 122 Molecular Genetic Mechanisms .....	2
INTER 123 Control of Gene Expression .....	2
INTER 124 Cell Signaling and Control of Cell Cycle .....	3
INTER 220 Ethics in Biomedical Sciences .....	1
INTER 260 Responsible Conduct of Research .....	1
BIOCH 207 Introduction to Special Methods of Research .....	12
BIOCH 298 and BIOCH 299 .....	6
BIOCH 300 and BIOCH 400 Dissertation Research .....	15
Advanced Topics Electives .....	17

### BIOMEDICAL SCIENCES – MS

(Collaborative Masters Degree Program with the University of New Orleans)

The Masters of Science, Biomedical Sciences Concentration, Collaborative Graduate Program has been established between the University of New Orleans (UNO), Department of Biology, and the Louisiana State University Health Sciences Center in New Orleans School of Graduate Studies (LSUHSC). The degree is awarded by the student's home institution, but the transcript will specify completion of the Biomedical Sciences Concentration Program.

#### Admission

Students are to be accepted into their parent institution and then apply for admission into the Collaborative Program. The student's major professor or graduate coordinator, as well as the faculty of the Department at the affiliated institution, shall approve the student's entry into the Program. Completion of the Program is required before application to the LSUHSC Medical School can be considered.

#### Continuance

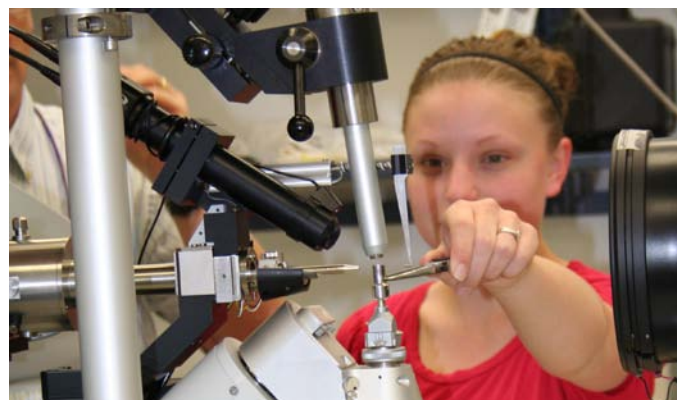
Students must maintain a B average (3.0) to avoid probation. A student on probation has one semester to rectify his grade deficiency before being dropped from the Program.

#### Curriculum

Masters level courses from the University of New Orleans and LSUHSC will be determined jointly by the departments involved from each campus. Core courses for each department have been defined and generally include a laboratory rotation course. Elective courses, chosen by the student's major professor and thesis committee, shall include at least 3 hours at the affiliated campus.

#### Thesis Committee

All faculty members serving on the thesis committee must be members of the Graduate Faculty of their own institution and will receive adjunct appointments at the student's home institution. The Committee will be chaired by the student's major professor and members will be selected by the student and major professor. At least one member will be from the affiliated institution.



## BIostatISTICS – MS, PhD

Donald E. Mercante, PhD  
Professor and Director

The School of Graduate Studies in conjunction with the School of Public Health offers programs in biostatistics leading to the MS and PhD degrees. The M.S. in Biostatistics begins with a core of advanced biostatistical methods and statistical theory and continues with electives in biostatistical methods directly applicable in public health. The Ph.D. in Biostatistics is an advanced, research-oriented degree program requiring in-depth study and research in a particular area of emphasis within biostatistics. The core curriculum includes coursework in advanced statistical methods and statistical theory. Additional coursework will include categorical data analysis, survival analysis, multivariate statistics, linear models, generalized linear models, statistical computing, design and analysis of clinical trials, and other advanced statistical methods. All students will also receive training in research ethics and hands-on experience in statistical consulting. Additionally, PhD students will gain teaching experience through a formal teaching practicum. Students will also have the opportunity to take elective courses in epidemiology and other core disciplines in public health. Advanced coursework in bioinformatics, in which students learn how to apply and develop advanced statistical methods for the analysis of micro-array, genomic, and proteomic data, will also be available. Each student will be required to write and defend a thesis/dissertation that would be publishable in the statistical literature. Entry requirements are differential and integral calculus (through calculus III) and introductory linear algebra. Students entering with a masters degree in statistics or related field may transfer up to twenty-six hours of credit at the discretion of the program director and in accordance with graduate school policy.

The minimum core requirements for the MS and PhD Programs in Biostatistics for all students are as follows. Additional requirements for each degree are specified in detail in the biostatistics student handbook.

### Core Requirements

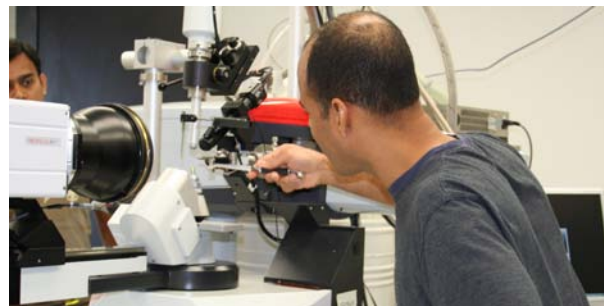
	Credits
BIOS 6223 Introduction to Theory of Probability .....	3
BIOS 6224 Introduction to Statistical Inference .....	3
BIOS 6226 Survival Analysis .....	3
BIOS 6244 Analysis of Categorical Data.....	3
BIOS 6266 Principles of Applied Statistics .....	3
BIOS 6267 Applied General Linear Models.....	3
EPID 6210 Principles of Epidemiology.....	3
BIOS 6296 Statistical Consulting in the Health Sciences .....	2
BIOS 6298 Seminar in Biostatistics .....	2-4
BIOS 6900 Thesis/Dissertation Research .....	6-12
INTER 220 Ethics in Biomedical Sciences .....	1
INTER 260 Responsible Conduct of Research.....	1

## CELL BIOLOGY AND ANATOMY – MS, PhD

Sam G. McClugage, PhD  
Professor and Head

The Department of Cell Biology and Anatomy offers programs leading to the MS and PhD Degrees. The Department has two sub-programs: Development, Cell, and Neurobiology (DCN) and Clinical Anatomy (CAP). Areas of concentration in the DCN are cellular and molecular biology, developmental biology, and neurobiology. There is considerable overlap in these fields, with, for example, some faculty working in the areas of cellular or developmental neurobiology, and others with interests in the molecular biology of reproduction and development. The goal of the program is to train promising students for careers in research and teaching. Students in the DCN program are encouraged to develop broad expertise in the disciplines of biochemistry, physiology, molecular biology, and genetics. The goal of the CAP program is to prepare students for a teaching and research position in an academic institution for health science professionals. This program is designed to train students to: 1) master and teach Gross Anatomy and related anatomical disciplines such as histology, embryology and human physiology in a contemporary health sciences curriculum, and 2) develop expertise to conduct scientific research in a competitive basic science or clinical research environment. Students in this program may also undertake research projects in the areas of developmental biology, cellular and molecular biology, or neurobiology as emphasized in the department, or research with a clinical emphasis. Departmental Graduate Admissions Committees evaluate applications for these programs. Admission is based upon the Graduate Record Examination (a minimum combined score of 1100 on verbal and quantitative portions), undergraduate grade point average (minimum of 3.0), and three letters of recommendation. The Advanced Subject GRE is recommended, and will also be taken into consideration.

Expected time for completion of the Master's degree is 2-3 years, and for the PhD 4-6 years. Students in the DCN program become involved in ongoing research projects during the first year in a laboratory rotation format, and are encouraged to identify a dissertation advisor during this time, or shortly thereafter. DCN students are required to take the Biochemistry and Cell and Molecular Biology courses offered by the new Interdisciplinary Program. Students in both programs may take any of the courses listed below. Cell Biology and Anatomy Faculty members are integrally involved with the LSUHSC Neuroscience Center of Excellence, the LSUHSC Eye Center, the Alcohol and Drug Abuse Center, the Center for Oral and Craniofacial Biology, and the Center for Molecular and Human Genetics. Interaction with members of these centers is encouraged.



The courses listed below will normally be required of students in the Development, Cell, and Neurobiology Program.

### Core Requirements

	Credits
INTER 111 Biochemistry .....	5
INTER 121 Cell Biology .....	3
INTER 122 Molecular Genetic Mechanisms .....	2
INTER 123 Control of Gene Expression .....	2
INTER 124 Cell Signaling and Cell Cycle Control .....	3
INTER 220 Ethics in Biomedical Sciences .....	1
INTER 260 Responsible Conduct in Research .....	1
ANAT 195 Medical Neuroscience .....	6
ANAT 227 Cell and Developmental Biology .....	3
ANAT 252 Developmental Neuroscience.....	3
ANAT 264 Synaptic Organization of the Brain .....	3
ANAT 270 Laboratory Rotation .....	3
ANAT 290 Seminar.....	4
ANAT 300 Thesis Research.....	1-6
ANAT 400 Dissertation Research.....	1-9

The following courses will normally be required for students in the Clinical Anatomy Program.

### Core Requirements (Concentration in Clinical Anatomy)

	Credits
ANAT 189 Human Gross Anatomy of Upper Extremity, Thorax, and Back.....	3
ANAT 190 Human Gross Anatomy of the Head and Neck .....	3
ANAT 191 Human Gross Anatomy of the Abdomen, Pelvis, Perineum, and Lower Extremity .....	3
ANAT 192 Cell Biology and Microanatomy .....	5
ANAT 193 Human Development.....	1
ANAT 194 Radiographic Anatomy.....	1
ANAT 210 Developmental Anatomy.....	3
ANAT 195 Medical Neuroscience [NRSC 100].....	6
ANAT 280 Special Topics -Teaching Methodology .....	3
ANAT 280 Special Topics - Gross Anatomy and Embryology.....	3
ANAT 280 Special Topics - Graduate Neuroanatomy.....	3
PHYS 205 Basic Physiology .....	6
INTER 220 Ethics in Biomedical Sciences .....	1
INTER 260 Responsible Conduct in Research.....	1
ANAT 290 Seminar.....	4
ANAT 300 Thesis Research.....	1-6
ANAT 400 Dissertation Research.....	1-9

## HUMAN GENETICS - MS, PhD

**Wayne Vedeckis, PhD**  
Professor and Interim Head

The goal of the graduate program in human genetics is to provide the student with the skills and expertise necessary for a successful research career through course work, seminars, and laboratory research. Core course work covers a variety of topics in human, molecular, medical and statistical genetics, and gene therapy, and can be designed for the individual needs of each student. Faculty members have a broad range of research interests including identification, characterization, and functional studies of disease genes, gene therapy, genetic epidemiology, and genetic education.

The following are the minimum core requirements for the PhD degree in Human Genetics

### Core Requirements

	Credits
GENET 231 Human Molecular Genetics .....	3
BIOS 6221 Introduction to Biostatistics .....	3
INTER 111 Biochemistry .....	4
INTER 121 Cell Biology.....	3
INTER 122 Molecular Genetic Mechanisms .....	2
INTER 123 Control of Gene Expressions.....	2
INTER 124 Cell Signaling and Cell Cycle Control .....	3
INTER 220 Ethics in the Biomedical Sciences.....	1
INTER 260 Responsible Conduct in Research.....	1
GENET 247 Proposal Writing .....	2
GENET 253 Laboratory Rotation in Molecular Genetics.....	3
GENET 271 Medical Genetics Clinic.....	3
GENET 299 Seminar.....	4
GENET 400 Dissertation Research.....	15

**MICROBIOLOGY,  
IMMUNOLOGY, and  
PARASITOLOGY- MS, PhD**

**Ronald B. Luftig, PhD  
Professor and Head**

The program is designed to provide graduate training through coursework, seminars, and laboratory research leading to the Doctor of Philosophy degree in Microbiology. The Master of Science degree program is available at the discretion of the faculty as a terminal degree. For the M.S. degree, a minimum of two years of full time study will generally be required for completing course work and a thesis. For the Ph.D. degree, it will be expected that a period of at least four years will be devoted to full time study, including dissertation research and defense. During the first two years, students complete course work that includes Fundamentals of Immunology, Medical Bacteriology, Molecular Biology of Eukaryotic Pathogens, General and Molecular Virology, as well as the Interdisciplinary courses of Biochemistry, Cell Biology, and Molecular Genetic Mechanisms. During the first year, students participate in research rotations through laboratories of their choice to aid in the selection of a mentor and research project for their dissertation. The area of thesis or dissertation research is chosen by the student in consultation with the faculty by the end of the first year. The faculty has major areas of expertise in Immunology, bacterial pathogenesis, molecular mycology, parasitology and virology.

Application is made through the School of Graduate Studies and is referred to the Department. Departmental faculty will evaluate all candidates before final acceptance by the School of Graduate Studies. Applicants should have taken courses in general and organic chemistry with laboratory, college algebra and trigonometry, a general biology course (e.g. zoology, botany, comparative anatomy) and one course in general microbiology. Microbiological subspecialty courses (e.g. bacteriology, microbiology, genetics, immunology, virology) are highly desirable. Additional inquiries regarding admission or course details should be forwarded to the following e-mail address: microgradprogram@lsuhsc.edu.

**Core Requirements**

The Program for obtaining the PhD can be tailored to the requirements of each individual student. The minimum core requirements are as follows.

	Credits
INTER 111 Biochemistry .....	4
INTER 121 Cell Biology .....	3
INTER 122 Molecular Genetic Mechanisms .....	2
INTER 123 Control of Gene Expression .....	2
INTER 220 Ethics in Biomedical Sciences .....	1
INTER 260 Responsible Conduct in Research .....	1
BIOS 6221 Introduction to Biostatistics .....	3
MICRO 225 Advanced Medical Bacteriology .....	4
MICRO 228 Laboratory Rotations in Microbiology .....	6
MICRO 231 Molecular Biology of Eukaryotic Pathogens ....	4
MICRO 276 General and Molecular Virology.....	4
MICRO 296 Fundamentals of Immunology .....	5
MICRO 298 Seminar in Microbiology.....	4
MICRO 299 Research Proposal in Microbiology.....	3
MICRO 400 Dissertation Research.....	15

**NEUROSCIENCE – MS, PhD**

**Nicolas G. Bazan, MD, PhD  
Richard Mize, PhD  
Co-Directors**

The multidisciplinary graduate program in Neuroscience is an important educational program of the LSU Neuroscience Center of Excellence that prepares students for careers in teaching and research in academic institutions, the biomedical industry, or government agencies. The training program consists of course work, seminars, and the development of independent research ability. In the first two years, students take all required basic biomedical science and Neuroscience graduate courses. Advanced courses and individual directed research are undertaken to fulfill the particular educational needs of the graduate student. At the beginning of the second year of graduate school, students are expected to choose a particular area of research and a major professor who will supervise their doctoral research.

Applications for admission to the graduate program in Neuroscience are reviewed by a faculty committee. To be considered for acceptance into the program, applications should be received by February 1<sup>st</sup> of the year in which the students intend to enroll. Usually all accepted students receive a graduate stipend. Minimum requirements for admission to the program include a degree from a university or its equivalent and achievement of a 2.5 grade point average overall and a 3.0 average in science courses as an undergraduate, on a 4.0 scale. Applicants are expected to have taken the GRE and to have obtained a minimum combined score of 1200 on the verbal and quantitative portions of the exam. An advanced GRE examination in a science area must also be taken prior to acceptance to the graduate program in neuroscience. Foreign students are required to achieve at least 550 on the TOEFL exam. In the fall of the first year all students are expected to take Investigative Neuroscience, which provides an introduction to neuroscience and a broad overview of both fundamental and important clinical areas of neuroscience. Other courses that are required for the curriculum are listed. After passing the examinations for admission into doctoral candidacy, students have the opportunity to fulfill their individual course requirements in the areas that they specifically need.

**Core Requirements**

	Credits
INTER 111 Biochemistry .....	4
INTER 122 Molecular Genetic Mechanisms .....	2
INTER 123 Control of Gene Expression .....	2
INTER 220 Ethics in Biomedical Research.....	1
INTER 260 Responsible Conduct of Research.....	1
BIOS 6221 Introduction to Biostatistics .....	3
NRSC 203 Investigative Neuroscience .....	5
NRSC 250 Molecular Neurobiology .....	4
NRSC 270 Laboratory Rotation .....	9
NRSC 290 Current Neuroscience Research .....	2
ANAT 195 Medical Neuroscience .....	6
NRSC 400 Dissertation Research .....	15

## ORAL BIOLOGY – MS

### Schools of Dentistry and Graduate Studies

This program allows students already enrolled in an advanced dental education program as well as individuals who have a specialized interest in dentistry or the allied dental sciences to earn the degree, Master of Science in Oral Biology. This program is offered through the School of Graduate Studies and administered by the School of Dentistry and the Center of Excellence in Oral and Craniofacial Biology. The Master of Science Program in Oral Biology is an option for those students with superior academic records and research potential.

Although this program will require dual enrollment in the School of Dentistry and the School of Graduate Studies, students will pay tuition to the School of Dentistry. Prospective students must first apply to and be accepted by the School of Dentistry. Students should state their desire to enter the MS/Advanced Dental Education Program, preferably at the time of application, but no later than the end of the Fall semester, first year.

In addition to the requirements for entering the Advanced Dental Education Program, the criteria for admission to the Master of Science Degree Program for the School of Graduate Studies must be met. In lieu of the baccalaureate degree requirement, students must have earned a DDS or DMD degree, or equivalent, from an accredited dental program. A minimum of two years of full-time study will generally be required for completing course work and thesis requirements for this collaborative MS/Advanced Dental Education Program.

The Program for obtaining the MS can be tailored to the requirement of each individual student. Thesis research can be done in any basic science or clinical science Department participating in the program. The thesis committee will be comprised of five graduate faculty, at least two will be from the participating MS degree program. Curriculum design and course selection must be approved by the student's committee using the following guidelines. The minimum requirement is 33 semester hours of graduate work to include the following. Descriptions for courses numbered greater than 1000 are listed in the School of Dentistry section of this publication.

## Core Requirements

Credits

<b>Advanced Dental Core Course Requirements .....</b>	<b>9</b>
ANAT 255 Advanced Head and Neck Anatomy .....	3
OBIOL 201 Statistical Methods in Health Sciences .....	3
OBIOL 202 Research Methodology .....	1
OBIOL 203 Advanced Oral Biophysiology .....	2
 <b>Basic Science Courses Minimum Requirements.....</b>	<b>9</b>
INTER 220 Ethics in Biomedical Research.....	1
INTER 260 Responsible Conduct of Research.....	1
 <b>Advanced Dental Education Specialty Courses Minimum Requirements (from below) .....</b>	<b>9</b>
ENDO 5407 Pulpal and Periodontal Biology.....	2
PROS 5505 TMJ Dysfunction, Occlusion, and Facial Pain.....	2
MICRO 241 Microbiology and Oral Disease .....	1
MICRO 242 Advanced Dental Immunology .....	1
DENT 5507 Advanced Radiology .....	1
DENT 5407 Oral Medicine and Clinical Diagnosis .....	2
OPATH 5100 Differential Diagnosis of Oral Lesions .....	2
OPATH 5501 Pediatric Oral Pathology .....	2
PHARM 5400 Advanced Dental Pharmacology .....	1
PATH 210 Topics in Pathology .....	2-6
PATH 300 Thesis Research y .....	6
<b>Minimum Total .....</b>	<b>33</b>



## PATHOLOGY - MS, PhD

Jack P. Strong, MD  
Boyd Professor and Head

The goal of the program is to provide the education and training necessary for graduates to assume positions in academic pathology departments, service clinical and forensic laboratories, or in industry related to the clinical laboratory specialties. The recommended curriculum provides the student with knowledge in the clinical sciences considered particularly relevant to their pathology specialty; general and systemic pathology, clinical pathology, biochemistry, clinical chemistry, molecular pathology and toxicology. Research activities are clinically oriented, examining the causes, mechanisms, and effects of disease. General entry requirements are those of the School of Graduate Studies.

The Program for obtaining the PhD is tailored to the requirements of each individual student, but the core requirements for all students are as follows:

### Core Requirements

	Credits
INTER 111 Biochemistry .....	4
INTER 121 Cell Biology .....	3
INTER 122 Molecular Genetic Mechanisms .....	2
INTER 123 Control of Gene Expression .....	2
INTER 124 Cell Signaling and Cell Cycle Control .....	3
INTER 131 Biological Systems .....	2
INTER 132 Biological Systems .....	5
INTER 191 Journal Club .....	1
INTER 220 Ethics in Biomedical Research .....	1
INTER 260 Responsible Conduct of Research .....	1
PATH 202 Introduction to Methods in Pathology II .....	1-6
PATH 210 Topics in Pathology .....	1-6
PATH 280 Pathology Seminar .....	1-4
PATH 291 General and Systemic Pathology I .....	4
PATH 291A General and Systemic Pathology I Laboratory .....	2
PATH 400 Dissertation Research .....	15

## PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS - MS, PhD

Kurt Varner, PhD  
Professor and Interim Head

The program is designed to provide graduate training through advanced courses, seminars, and laboratory research leading to the Doctor of Philosophy degree in Pharmacology. The Master of Science degree program is available at the discretion of the faculty as a terminal degree. The length of time required to obtain the degree varies with the nature of the research program, but, generally, will be two to three years for the MS and four to five years for the PhD. Students enrolled in the doctoral program are required to take introductory graduate courses. First year courses are Biochemistry, Cell and Molecular Biology, Biological Systems and Ethics. General Pharmacology, Principles of Pharmacology II, and Biometry are also required. In addition to the required courses, students participate in the departmental teaching program after the completion of the qualifying examination. The area of thesis or dissertation research is chosen by the student in consultation with the faculty. Students are allowed to register for graduate courses only after consultation with and approval by the course director.

The Program for obtaining the PhD can be tailored to the requirement of each individual student, but the core requirements for all students are as follows.

### Core Requirements

	Credits
INTER 111 Biochemistry .....	5
INTER 121 Cell Biology .....	3
INTER 122 Molecular Genetic Mechanisms .....	2
INTER 123 Control of Gene Expression .....	2
INTER 124 Cell Signaling and Cell Cycle Control .....	3
INTER 131 Biological Systems A .....	2
INTER 132 Biological Systems B .....	5
INTER 220 Ethics in Biomedical Sciences .....	1
INTER 260 Responsible Conduct of Research .....	1
BIOS 6221 Introduction to Biostatistics .....	3
PHARM 195 General Pharmacology .....	5
PHARM 199 Seminar .....	1
PHARM 205 Principles of Pharmacology .....	5
PHARM 222 Introduction to Faculty Research .....	1
PHARM 251 Research in Pharmacology .....	Variable
PHARM 252 Research in Pharmacology .....	Variable
PHARM 300 Thesis Research .....	Variable
PHARM 400 Dissertation Research .....	Variable



## PHYSIOLOGY – MS, PhD

Michael G. Levitzky, PhD  
Professor and Interim Head

The graduate program leading to the PhD in Physiology is designed to provide advanced education and training for a career in biomedical research and/or teaching in a university, research institution, or industry. The program is flexible and designed to meet the needs and interests of the individual student. The program leading to a PhD generally requires 4 to 5 years to complete. In the first year, student time is largely devoted to course work designated as Basic Biomedical Sciences. Students will be exposed to current departmental research programs through hands-on laboratory experiences leading to the selection of an area in which they will conduct research. Dissertation research under the mentorship of a faculty advisor should be under way early in the second year before the student has completed formal course requirements. Beginning in the second year, student will complete the Other Core Requirements and take advanced course work tailored to a student's needs. Students start participating in the teaching programs of the department to gain communication skills important for career development. As students proceed through the program, research will occupy an increasing amount of time.

The Department also has a program for the PhD component of the combined MD/PhD program. These students complete the first 2 years of curriculum in the School of Medicine before entering the PhD component. Students enrolled in the combined MD/PhD program satisfy requirements designated as Basic Biomedical Sciences by completing the first 2 years of medical school. During the summer between the first and second year of medical school, students in this program will conduct research and are expected to identify a faculty advisor before starting the PhD component of the combined program. From the start of the PhD component, students will spend most of their time conducting research under the mentorship of a faculty member. In addition, these students will take courses designated as Other Core Requirements and advanced course work tailored to their needs, and participate in the teaching programs of the department to gain communication skills important for career development.

The department also has a program leading to an MS degree, which typically requires at least 2 years to complete. Acceptance into the MS program requires acceptance into the lab of a faculty member to conduct thesis research. Students in this program take similar courses during the first year and complete the program by conducting mentored research leading to a thesis. Students completing the MS program are prepared for careers in biomedical research in academic institutions or industry, or are prepared to continue their graduate education. Qualified students will be accepted for graduate courses in physiology only after consultation with and approval by the Graduate Faculty of the Department.

## Core Requirements

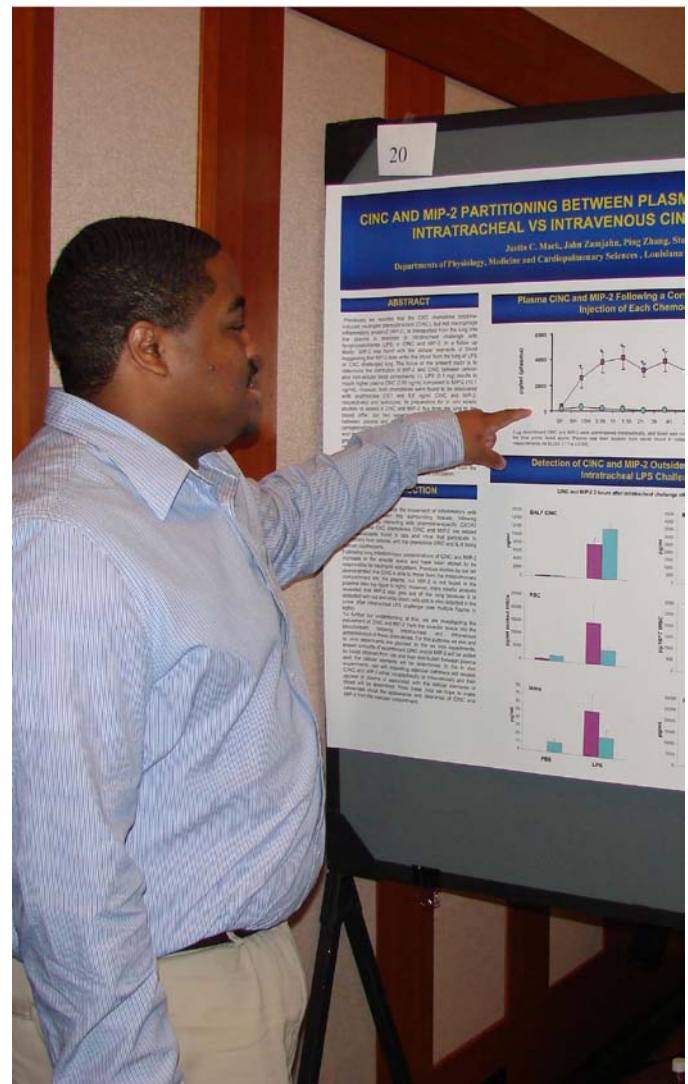
Credits

### Basic Biomedical Sciences

INTER 111 Biochemistry .....	4
INTER 121 Cell Biology .....	3
INTER 122 Molecular Genetic Mechanisms .....	2
INTER 123 Control of Gene Expression .....	2
INTER 124 Cell & Molecular Biology .....	3
INTER 131 Biological Systems A .....	2
INTER 132 Biological Systems B .....	7
INTER 220 Ethics in Biomedical Research .....	1
INTER 260 Responsible Conduct of Research .....	1

### Other Core Requirements

PHYSIO 298, 299 Seminar (4 semesters) .....	4
PHYSIO 201, 202 Research in Physiology .....	2-9
BIOS 6221 Introduction to Biostatistics .....	3
INTER 220 Ethics in the Biomedical Sciences .....	1
INTER 260 Responsible Conduct in Research .....	1
PHYSIO 400 Dissertation Research .....	Variable



## COURSE DESCRIPTIONS

### Biochemistry and Molecular Biology

#### **BIOCH 207 Introduction to Special Methods of Research**

[1-9 Credits] Theoretical discussions and laboratory work during the first year of laboratory rotations, as well as research related work for graduate students prior to passing the Qualifying Examination. Prerequisite: consent of instructor.

#### **BIOCH 208 Cell Culture Techniques**

[1 Credit] A course in contemporary cell culture techniques. Prerequisite: consent of instructor.

#### **BIOCH 221 Protein Chemistry**

[2 Credits] Didactic and discussion sessions covering advanced aspects of protein structure-function; thermodynamics of protein folding; protein evolution; bioinformatics analysis of protein superfamilies; techniques of protein expression; purification and characterization of natural and recombinant proteins. Prerequisite: INTER 111.

#### **BIOCH 223 Physical Biochemistry**

[3 Credits] Didactic and discussion sessions covering the thermodynamic and biophysical properties of biochemically relevant macromolecules and their intramolecular interactions. Prerequisite: INTER 111 and one semester of calculus. Two semesters of physical chemistry is highly recommended, otherwise, permission of the course director is required.

#### **BIOCH 260 Molecular Biology of Cancer**

[3-4 Credits] An advanced level course dealing with the biochemistry, cell biology, molecular biology, and genetics of cancer. The current scientific literature on this topic will be emphasized. Selected clinical faculty will also present relevant medical aspects of cancer. Prerequisite: INTER 111 and 121, 122, 123 and 124.

#### **BIOCH 280 and BIOCH 281 Advanced Topics in Biochemistry**

[1-4 Credits] One to four hours of lecture and discussion per week. The topics will be arranged by consultation with faculty members expert in the areas. The topics will add breadth and depth to the fundamentals taught in other courses and will be chosen on the basis of their timeliness and student and faculty interest. Biochemistry of the cell cycle, comparative biochemistry, enzymology, intermediary metabolism, vitamins and nutrition, mass spectrometry, and bioenergetics are representative topics. A given topic will recur on a cycle of two to three years. The student's transcript will indicate, in addition to the course title, the particular topic covered during the given semester. This procedure will serve to clarify the repeat appearance of Biochemistry 280 and 281 on the student's transcript.

#### **BIOCH 298 Seminar**

[1 Credit] Reports on research progress and on current literature. Six credits of seminar (either BIOCH 298 or BIOCH 299) are required for departmental program of study, but note that the School of Graduate Studies permits only four credits of seminar to be applied toward graduation.

#### **BIOCH 299 Professional Skills for Graduate Students**

[1 Credit] Didactic and discussion sessions covering different 'soft' skills required for success in academic and industry career tracks. Topics can range from manuscript writing and submission procedures, grant writing, interview skills, methods of negotiation, pedagogical metrics, and resume development. The Department requires that all students enroll for the course, unless they are enrolled in BIOCH X999 (exam only). Six credits of seminar (either BIOCH 298 or BIOCH 299) are required for departmental program of study, but note that the School of Graduate Studies permits only four credits of seminar to be applied toward graduation.

#### **BIOCH 300 Thesis Research**

[1-6 Credits] Full-time research efforts toward the thesis for MS degree students and for PhD degree students, after successful completion of the Qualifying Exam and prior to passing the Preliminary Exam. Prerequisite: consent of instructor.

#### **BIOCH 400 Dissertation Research**

[1-9 Credits] Full-time research efforts toward the thesis for PhD degree students after successful completion of the Preliminary Exam. Prerequisite: consent of instructor.

### Biostatistics

(Biostatistics course descriptions are listed under Biostatistics in the School of Public Health section of this publication.)

### Cell Biology and Anatomy

#### **ANAT 189 Human Gross Anatomy of Upper Extremity, Thorax and Back**

[3 Credits] This course is centered around dissection of the upper extremity, thorax and back of the human body. Dissection is supplemented with films, cross-sections, models and clinical correlations of these specific areas. An accompanying lecture series is designed to orient, guide and stimulate the student toward independent effort.

#### **ANAT 190 Human Gross Anatomy of the Head and Neck**

[3 Credits] This course is centered around dissection of the head and neck of the human body. Dissection is supplemented with films, cross-sections, models, and clinical correlations of these specific areas. An accompanying lecture series is designed to orient, guide, and stimulate the student toward independent effort.

#### **ANAT 191 Human Gross Anatomy of Abdomen, Pelvis, Perineum and Lower Extremity**

[3 Credits] This course is centered around dissection of the abdomen, pelvis, perineum and lower extremity of the human body. Dissection is supplemented with films, cross-sections, models, and clinical correlations of these specific areas. An accompanying lecture series is designed to orient, guide, and stimulate the student toward independent effort.

#### **ANAT 192 Cell Biology and Microscopic Anatomy**

[5 Credits] The initial portion of the course stresses organization of the cell, the biology of cellular organelles and the localization of important chemical constituents at the subcellular level. Additional presentation and discussion sessions throughout the course present the student with comprehensive information of the physiology, biochemistry, and molecular biology of cellular function. Histology lectures

and laboratories emphasize the structural and functional relationships of human tissues.

### **ANAT 193 Human Development**

[1 Credit] This lecture/ laboratory course is taken concurrently with Anatomy 210 that provides the lecture portion. Current topics are fertilization, sectioned human embryos, human fetal dissections and fetal membranes, experimental embryology, reproductive toxicology and the culture of fetal/neonatal tissues. Literature reports and discussions may substitute for laboratory exercises.

### **ANAT 194 Radiographic Anatomy**

[1 Credit] The fundamentals of radiology are presented in a series of lectures and demonstrations. Emphasis will be placed on the interpretation of normal radiographs from each body region. Presentations will be coordinated with the gross anatomy dissection schedule.

### **ANAT 195 Medical Neuroscience**

[6 Credits] An introduction to the structure and function of the nervous system, as well as its dysfunction. The course emphasizes brain anatomy, including study of brain specimens in a laboratory setting; the physiology and synaptic transmission of nerve cells; the function and mechanisms underlying sensory and motor behavior; and higher cognitive functions. Clinical correlations, including lectures on major nervous system diseases, are provided by neurology and neurosurgery faculty. This course is also taken by first-year medical students.

### **ANAT 210 Developmental Anatomy**

[3 Credits] The normal and abnormal aspects of human prenatal development are presented in a lecture series, which is coordinated, when possible, with the dissection schedule in gross anatomy. Definitive adult structures and their relations are appreciated through an understanding of their formation and relations during the embryonic period. Included are important features of fetal development, which are essential for normal birth and adaptation to the extrauterine environment.

### **ANAT 220 Advanced Special Dissection**

[1-4 Credits] Hours to be arranged. Students perform detailed dissections of specific selected regions of the body.

### **ANAT 227 Cell and Developmental Biology**

[3 Credits] Lectures and group discussions will focus on selected topics involving cell and developmental biology. Topics may include gametes and their interactions, embryogenesis, cell-cell and cell-matrix interactions, differentiation, etc. A wide range of developmental systems will be considered.

### **ANAT 252 Developmental Neuroscience**

[3 Credits] This course will focus on recent advances in developmental neuroscience. Two hour formal lectures and a one hour seminar component per week will cover neural induction, neurogenesis, cell-ECM interactions, neural crest cell migration, neurotrophins, signal transduction, apoptosis axon guidance, axon-target interactions, synaptogenesis and activity-dependent refinement of neural connections. Students will be required to critically evaluate and present current literature on these subjects and write short essays.

### **ANAT 255 Advanced Head and Neck Anatomy**

[4 Credits] One and one-half hours of lecture and two and one-half hours of laboratory. This course is designed as an advanced course in head and neck anatomy for post-graduate

students in medicine, dentistry and the School of Graduate Studies. The course will include segments on the basic gross anatomy, neuro-anatomy and neuro-physiology of the head and neck. Special emphasis on functional considerations and clinical correlations will be given in the course.

### **ANAT 256 Microanatomy and Cell Biology of the Oral Cavity**

[2 Credits] This course includes a study of the development, microanatomy, and cell biology of structures associated with the oral cavity. The lectures will include basic and current information on the development and structure of all components of teeth (enamel, dentin, cementum, and pulp), the supporting structures of teeth (periodontal ligament and alveolar bone), oral mucosa, and salivary glands. Current theories on tooth eruption will also be discussed. The laboratory will consist of demonstrations and self-study. Prerequisite: Anatomy 192.

### **ANAT 264 Synaptic Organization of the Brain**

[3 Credits] This course will provide an in-depth examination of the physiology and synaptic organization of the major structures of the brain and spinal cord. The course will consist of two 2-hour sessions per week, each week being devoted to a different CNS structure and taught by an instructor with expertise in the field. The organization of each CNS structure, including the cellular physiology, major synaptic inputs, intrinsic synaptic organization, and primary outputs of the structure will be emphasized in the lectures. As part of their grade, students are required to give oral presentations summarizing recent primary research articles.

### **ANAT 270 Laboratory Rotation**

[3 Credits] Students will work in one or more faculty laboratories to become acquainted with the various types of research conducted in the Department and with techniques used in these labs.

### **ANAT 271 Biomedical Imaging**

[3 Credits] This course will be useful for individuals from both basic science and clinical departments who would like to become educated users of image analysis software and computer equipment. The use of image analysis programs and associated computer hardware has made the non-invasive clinical diagnosis more widespread and opened up new avenues in basic research in many different fields that was not possible only a few years ago. Overall, this course does not intend for the students to be experts at either the software or hardware used in image analysis and processing or to become experts. Therefore, the prerequisites are an interest and professional need for the use of image analysis. Using these systems is the most important part of making image analysis more useful in the student's own work; therefore, small projects will form the backbone of the course. The course will bring in experts in particular fields to address special topics, as well as using faculty from a number of Departments at the LSU Health Sciences Center. Topics that will be discussed are as follows: the use of image analysis and image processing; software packages of several types, including their pitfalls and cost-to-benefit ratio; statistical methods in image processing; an introduction to the types of filters applied to images and how these are implemented; 2D and 3D image processing, including how these can be applied with specific examples; computers for image processing, which will include a discussion by technical representatives from the industry; use of image analysis in specific applications in basic and clinical science, pointing to similarities and differences; and new developments in image analysis and their impact.

### **ANAT 280 Special Topics in Cell Biology and Anatomy**

[2-4 Credits] Lectures, discussions, research, and/or laboratories will be arranged on areas not adequately covered in other scheduled courses. This course is designed to permit graduate students to explore one or more areas of particular interest in detail. Emphasis will be placed on those areas of special interest to faculty members of the Anatomy Department.

### **ANAT 290 Seminar**

[1 Credit] Students are required to attend and participate in oral presentations of research data and review of current topics of interest in Anatomy. A maximum of 4 credits toward the PhD or MS degrees may be earned. Students in the Anatomy Program are required to participate in Seminar each semester regardless of credit.

### **ANAT 300 Thesis Research**

[1-6 Credits] Laboratory research conducted by M.S. working on their thesis or PhD degree students conducting research prior to passing the Preliminary Exam.

### **ANAT 400 Dissertation Research**

[1-9 Credits] Laboratory research conducted by PhD. degree students who have passed the Preliminary Exam and been admitted to candidacy. This research is typically part of the students' Ph.D. dissertation.

## **Human Genetics**

### **GENET 231 Human Molecular Genetics**

[3 Credits] Three hours of lecture per week. An introduction to the basic principles of Mendelian genetics, quantitative and multifactorial inheritance, molecular and biochemical genetics, cytogenetics, statistical genetics, and genetic counseling. Examples from human genetics illustrate these principles; selected classical experiments from basic genetics are also presented.

### **GENET 247 Proposal Writing**

[2 Credits] This course provides students with the concepts and structure to prepare a successful proposal. Students will learn to develop a rigorous, well-defined experimental plan. The course will concentrate on NIH style proposals and format.

### **GENET 253 Laboratory Rotation in Molecular Genetics**

[3 Credits] Student works in faculty laboratory to become acquainted with research projects and techniques.

### **GENET 271 Medical Genetics Clinic**

[3 Credits] Three hours of clinic per week. Patient contact in a clinical setting provides experience in interviewing and counseling techniques, risk assessment, medical and genetic aspects of inherited disease, an understanding of the limitations, interpretations and significance of specialized laboratory and genetic procedures, and a knowledge of available health care resources for appropriate referral. Up to four semesters may be taken for credit. Prerequisite: 231.

### **GENET 299 Seminar in Human Genetics**

[1 Credit] Reports on research progress and on current literature. A total of four credits must be earned during the period of graduate work.

### **GENET 400 Dissertation Research**

[1-9 Credits]

## **Interdisciplinary Courses**

### **INTER 101 Intro to Research and Resources**

[6 Credits] This month-long course provides students with an intense introduction to the interdisciplinary program and is designed to familiarize them with the LSUHSC campus, services and department/programmatic opportunities available to them. It will also prepare students for their laboratory rotations and dissertation research by covering three general areas: laboratory safety; common lab techniques and research resources available on the campus. Students will spend two days in each department/program meeting faculty and learning about the research interests of those faculty.

### **INTER 111 Biochemistry**

[4 Credits] This course provides a comprehensive introduction to the fundamental chemical principles associated with living organisms and establishes a foundation for subsequent courses in multiple disciplines. The molecular logic underlying the organization and regulation of living systems is emphasized. Topics covered include fundamental considerations of thermodynamics, the basics of protein structure-function, enzyme specificity and catalysis, oxidative phosphorylation, and intermediary metabolism of carbohydrates, lipids, amino acids, and nucleotides. The course consists of lectures, student presentations, problems sets, and discussions of classic and recent literature in the field.

### **INTER 121 Cell Biology**

[3 Credits] This is a comprehensive cell biology course that will cover cell types, protein structure and function, cell organization (membranes, organelles, cytoskeleton), tissue organization, neural development, membrane transport of ions and small molecules, membrane/vesicular trafficking, and bioenergetics.

### **INTER 122 Molecular Biology**

[2 Credits] This is a comprehensive molecular biology course that will focus on basic molecular mechanisms and techniques, including the biochemistry of DNA and RNA structure, the organization of DNA within the cell, DNA replication, RNA transcription, RNA processing, and protein translation. Prokaryotic and eukaryotic systems will be covered.

### **INTER 123 Control of Gene Expression C**

[2 Credits] This course will focus on the regulation of gene expression at the transcriptional, post-transcriptional and translational levels of eukaryotes. Genetics and epigenetics controls will also be discussed. Prerequisites: INTER 121 and 122.

### **INTER 124 Cell Signaling and Control of Cell Cycle**

[3 Credits] This course will cover major signaling mechanisms relating to cell movement/morphogenesis, division and death. The fundamental characteristics of major classes of signaling molecules, including GTPases and protein kinases, will be discussed from structural, regulatory and (patho)physiological viewpoints.

### **INTER 131 Biological Systems (GI and Renal)**

[2 Credits] Development of organs, and function of tissues and organs that comprise the gastrointestinal and renal systems will be presented; mechanisms of control and integration of the various functions will be discussed. An introduction to the pathophysiology, genetic basis, and therapeutics of some diseases will be included.

### **INTER 132 Biological Systems (Neural, Endocrine, Cardiovascular, Respiratory, Integrative)**

[5 Credits] Development of organs, and function of tissues and organs that comprise the neurological, endocrine, cardiovascular, respiratory systems will be presented; mechanisms of control and integration of the various functions will be discussed. An introduction to the pathophysiology, genetic basis and therapeutics of some diseases will be included as will an integrated approach to the effects of chronic stress on cell, organ and whole organism function.

### **INTER 180 Science Teaching**

[1 Credit] Learn teaching techniques for elementary school science curriculum and instruction. The course will include assisting a teacher in applying basic science concepts and applications in the instruction of New Orleans public elementary school students. Up to four semesters may be taken for credit. This course may be repeated a maximum of four times for credit. Prerequisite: Permission of the instructor.

### **INTER 190 Seminar**

[1 Credit] Biological Systems

### **INTER 191 Journal Club**

[1 Credit] Faculty presentations followed by student presentations on current literature and how to make scientific presentations.

### **INTER 220 Ethics in Biomedical Sciences**

[1 Credit] This lecture and discussion course will introduce first year graduate students to the principles of ethics in biomedical research and the contemporary practice of medicine in the research setting. The course will cover basic principles of bioethics and diverse applications of these principles in research and medical practice.

### **INTER 260 Responsible Conduct of Research**

[1 Credit] This course illustrates the issues and dilemmas encountered by scientists conducting research. Using both presentations and case studies designed to foster class discussion, students will be required to use critical thinking as they integrate personal and professional ethical standards and apply them to the cases. Cases of scientific misconduct will be presented just as they appear in the NIH Guide and the headlines of the news. Students will work in small groups throughout the course. These small groups will also work together to prepare IRB protocols which will be peer-reviewed by faculty and by the rest of the class. These protocols will include human subjects, exempt protocols and use of animals. Prerequisite: INTER 220

### **INTER 420 Comprehensive Pain Management**

[3 Credits] This course introduces healthcare professionals to basic and clinical issues of pain and analgesia. The course will review anatomy and physiology, pharmacology, measurement of pain in humans, and other issues. Application of these principles to specific pain conditions will also be considered.

## **Microbiology, Immunology and Parasitology**

### **MICRO 221 Medical Microbiology**

[5 Credits] A comprehensive course covering the principles of bacteriology, mycology, virology, parasitology, immunology, and the application of these principles to the diagnosis, prevention, and treatment of infectious diseases. In illustration of these principles, discussion of a series of clinical correlations is included in the lecture time.

### **MICRO 222 Medical Immunology**

[2 Credits] A comprehensive course covering the principles of immunology and the application of these principles to the diagnosis and control of immunologic and infectious diseases (the Immunology portion of Micro 221).

### **MICRO 225 Advanced Medical Bacteriology**

[2-4 Credits] An advanced study of bacteria pathogenic to man, their cultural and antigenic characteristics, their pathogenic mechanisms, the immune responses of the human host to their invasion, the epidemiology of the diseases they produce, and their antibiotic and chemotherapeutic sensitivity.

### **MICRO 226 Preparation for Instruction in Microbiology**

[3 Credits] Students will be required to demonstrate proficiency in diagnostic and clinical microbiology and immunology and to develop instructional presentations in these topics. Students will be evaluated by both written examinations and on the quality of their presentations. Registration is by permission only.

### **MICRO 228 Laboratory Rotations in Microbiology**

[1-6 Credits] This course allows students to participate in ongoing research in two or three laboratories during a semester. Registration is by permission only.

### **MICRO 229 Analysis of Research Literature**

[1 Credit] Student will present research articles and critically evaluate the methods, approaches, and interpretations of the research. Students will be graded Pass or Fail.

### **MICRO 230 Oral Immunology**

[2 Credits] Fundamentals of immunology with special reference to the biology, in both health and disease, of the oral cavity. Host microbial interactions important in caries and periodontal diseases are examined in detail. Experiments in immunology are designed to illustrate basic principles of immunobiology.

### **MICRO 231 Molecular Biology of Eukaryotic Pathogens**

[4 Credits] This course focuses on recent approaches in studying eukaryotic pathogens. Course includes molecular genetics of model systems and how these apply to current research problems in infectious diseases. Representative eukaryotic pathogens will be studied. Course will emphasize essential elements of experimental design, analysis of results, and scientific logic.

### **MICRO 263 Tropical Medicine**

[1- 6 Credits] Opportunities for supervised training in research, clinical tropical medicine, epidemiology, field and laboratory investigation, and public health in Latin America are available in limited numbers. Applications should be submitted eight to 12 months in advance of the training period. Graduate students with appropriate interests will be considered. Applicants should begin the study of Spanish before or immediately after approval of their applications.

### **MICRO 276 General and Molecular Virology**

[3-5 Credits] An introduction to the cellular and molecular biology of bacterial and animal viruses. Particular emphasis is given to virus cell interactions at the molecular level, including the immune response to viral infections, as well as to current research on mechanisms of viral replication and its effects on biochemical regulatory mechanisms in host cells.

### **MICRO 277 Advanced Virology**

[3-6 Credits] Advanced Topics in Virology. Registration only by permission of the course director.

### **MICRO 280 Techniques in Microbiology**

[1-6 Credits] Permission required. A laboratory course designed to familiarize the student with modern technology of molecular biology, including analytical and preparative centrifugation, electrophoresis, spectrophotometry, column chromatography, etc. Additional techniques commonly used in immunology, bacteriology, and virology laboratories are also included. Emphasis will be on applications to simple problems conducted at the laboratory bench.

### **MICRO 281 Selected Topics in Microbiology**

Topic and credit by arrangement

### **MICRO 296 Fundamentals of Immunology**

[3-5 Credits] Permission required. Fundamentals of immunology, including immunochemistry and cellular aspects of the immune response, with illustrative reference to immunological factors in human health and disease.

### **MICRO 297 Advanced Immunology**

[3-6 Credits] Advanced Topics in Immunology. Registration only by permission of the course director.

### **MICRO 298 Seminar in Microbiology**

[1 Credit] Departmental student seminar series.

### **MICRO 299 Research Proposal in Microbiology**

[3 Credits] A required course for all doctoral candidates in which the student prepares, in National Institutes of Health grant format, a written proposal on the candidates dissertation research. The student presents and defends his proposal to his/her research committee as a basis for the Preliminary Examination.

### **MICRO 300 Thesis Research**

[1-9 Credits] Research related work for PhD degree students prior to passing Preliminary Exam or for MS degree students working on thesis.

### **MICRO 400 Dissertation Research**

[1-9 Credits] Research related work for PhD candidates.

## **Neuroscience**

### **ANAT 195 Medical Neuroscience**

[6 Credits] An introduction to the structure and function of the nervous system, as well as its dysfunction. The course emphasizes brain anatomy, including study of brain specimens in a laboratory setting; the physiology and synaptic transmission of nerve cells; the function and mechanisms underlying sensory and motor behavior; and higher cognitive functions. Clinical correlations, including lectures on major nervous system diseases, are provided by neurology and neurosurgery faculty. This course is also taken by first-year medical students.

### **NRSC 203 Investigative Neuroscience**

[5 Credits] An introduction to cellular and synaptic neurophysiology. The course covers a wide range of topics addressing both normal and pathophysiologic processes at the cellular and systems level.

### **NRSC 250 Molecular Neurobiology**

[4 Credits] Covers the molecular, cellular, and biochemical pathways relevant to the nervous system.

### **NRSC 264 Synaptic Organization of the Brain**

[3 Credits] This course will provide an in-depth examination of the physiology and synaptic organization of the major structures of the brain and spinal cord. The course will consist of two 2-hour sessions per week, each week being devoted to a different CNS structure and taught by an instructor with expertise in the field. The organization of each CNS structure, including the cellular physiology, major synaptic inputs, intrinsic synaptic organization, and primary outputs of the structure will be emphasized in the lectures. As part of their grade, students are required to give oral presentations summarizing recent primary research articles.

### **NRSC 270 Laboratory Rotation**

[4 Credits] For the first two semesters (Fall and Spring) students enroll for four credits] and take two eight week rotations (each semester) to familiarize themselves with specific laboratory techniques, use of laboratory equipment, and data analysis and presentation. With the help of the laboratory supervisor, the student initially writes a paragraph on the project to be undertaken, and at the end of the rotation is expected to write a two-page paper on the project, comprising an Introduction, Materials and Methods, Results, and Conclusions sections. The student is expected to contact the investigator(s) well ahead of time to obtain permission and to make all necessary arrangements for the rotation. Scheduling of times is highly flexible and arranged by mutual agreement between the student and the investigator. A maximum of eight credits may be used toward a degree.

### **NRSC 280 Special Topics**

[1-4 Credits]

### **NRSC 290 Current Neuroscience Research**

[2 Credit] Students present a 20-30 minute summary of their neuroscience research projects to a general audience. Students also write a one-page summary of presentations in that seminar on a biweekly basis. The goal is to hone presentation skills and broaden the students' general neuroscience knowledge.

### **NRSC 298 Seminar**

[1 Credit] This is the Neuroscience Center's series of seminars, and its attendance is required of all students in the Program. A maximum of 4 credit hours, generally over the student's first two years, may be earned toward the doctorate.

### **NRSC 400 Dissertation Research**

[1-9 Credits] Registration by permission of the Director of the Interdisciplinary Neuroscience Training Program.

## **Oral Biology**

### **OBIOL 201 Statistical Methods in Health Sciences**

[3 Credits] This course is designed to present statistical techniques for analysis of dental data. It prepares the advanced education student for: analyzing research results; presenting analyses to an audience; and understanding of analyses that appear in dental literature. This course is equivalent to BIOM 5419 and BIOM 221.

### **OBIOL 202 Research Methodology**

[1 Credit] This course is designed to enhance the advanced education dental student's comprehension of the research process from initiation of a research project to presentation of findings. Traditional as well as innovative approaches to oral health research are presented.

### **OBIOL 203 Advanced Oral Biophysiology**

[2 Credits] The objective of this course is to provide the student with a contemporary view of cell biology and relate this to developmental, structural, functional, and pathologic events associated with the craniofacial complex.

## **Pathology**

### **PATH 201 Introduction to Methods in Pathology I**

[1-3 Credits] A survey course on the principles of research, experimental design, biostatistics, laboratory safety and the theoretical background of the analytical methods and procedures encountered in research and clinical pathology laboratories.

### **PATH 202 Introduction to Methods in Pathology II**

[1-6 Credits] Laboratory work in an area of the Department's research or service laboratories designed to introduce the student to the research and service activities under the direction of an expert in the use of the methodology.

### **PATH 210 Topics in Pathology**

[2-6 Credits] The course is intended to permit students to explore in detail, primarily through laboratory work, some areas of particular interest in pathology, for example clinical chemistry, medical informatics, molecular pathology, toxicology, research in atherosclerosis and cardiovascular disease or cancer epidemiology. The specialty area studied will be indicated on the student transcript in addition to the course title.

### **PATH 280 Pathology Seminar**

[1 Credit] Topics of general interest in pathology, including reports on current literature are discussed. A maximum of four credits only may be earned during the period of graduate work.

### **PATH 291 General and Systemic Pathology I**

[4 Credits] Four hours of lecture. This course introduces students to the study and language of human disease, its causes, and mechanisms and effects on the body by in-depth discussion of the general principles and reactions to different types of injury shared by most tissues.

### **PATH 291A General and Systemic Pathology I Laboratory**

[2 Credits] Six hours of laboratory. A laboratory course that enables the student to study gross organs and microscopic slides of tissues containing characteristic features of the disease processes studied in Pathology 291. Prerequisite: concurrent registration in Pathology 291.

### **PATH 292 General and Systemic Pathology II**

[4 Credits] Four hours of lecture. This course introduces the student to the characteristic effects of common types of injury and of diseases on specific organ systems. The major disease processes are studied in terms of etiology, pathogenesis, and lesions. Prerequisite: Pathology 291A

### **PATH 292A General and Systemic Pathology II Laboratory**

[2 Credits] Six hours of laboratory. A laboratory course that enables the student to study gross organs and microscopic slides of tissues containing the characteristic features of the disease processes studied in Pathology 292. Prerequisite: Pathology 291A and concurrent registration in Pathology 292.

### **PATH 293 Clinical Pathology**

[4 Credits] Four hours of lecture. This course introduces the students to general concepts in clinical pathology and to the diagnostic and prognostic application of laboratory testing to patients with various diseases of metabolism and of the hematopoietic, genitourinary, gastrointestinal, cardiovascular, and endocrine systems studied in Pathology 292 and 292A. Prerequisite: Pathology 291A and 292.

### **PATH 293A Clinical Pathology Laboratory**

[2 Credits] Six hours of laboratory. A laboratory course designed to enable students through laboratory exercises, case studies, and microscopic examination of blood and urine specimens to evaluate the significance of clinical laboratory test results in the management of disease. Prerequisites: Pathology 291, 291A, 292, 292A and concurrent registration in Pathology 293.

### **PATH 296 Toxicology**

[2 Credits] Two hours lecture/tutorial per week. A basic introduction to the general principles of toxicology and their application to clinical toxicology and pharmacology. Consideration of specific toxic and therapeutic agents will include discussions of composition of the agent, mode of action and pathologic sequelae. Prerequisites: a degree in Medical Technology and concurrent registration in Pathology 296A.

### **PATH 296A Toxicology Laboratory**

[4 Credits] 20 hours laboratory per week. A laboratory course designed to provide the student with knowledge in the laboratory diagnosis of disorders caused by toxic and therapeutic agents, including the underlying principles of methodological approaches and consideration of the pathologic sequelae of specific agents. Prerequisites: a degree in Medical Technology, Pathology 294 and concurrent registration in Pathology 296.

**PATH 300 Thesis Research**

[1-6 Credits]

**PATH 400 Dissertation Research**

[1-9 Credits]

**Pharmacology and Experimental Therapeutics**

**PHARM 195 General Pharmacology**

[5 Credits] Course consists of lectures, laboratory exercises, conferences, and demonstrations leading to a broad general understanding of the effects of drugs.

**PHARM 202 History of Pharmacology**

[2 Credits] Two hours of faculty/student presentations and discussions on the history of pharmacology and experimental therapeutics, with an emphasis on classical experiments.

**PHARM 203 Methods in Pharmacology**

[1-3 Credits] Course provides instruction in classical methods used in investigating the action of drugs. Hours by arrangement.

**PHARM 204 Current Concepts in Pharmacology**

[2 Credits] Two hours of faculty/student presentations and discussions on recent advances in the field of pharmacology. All areas of pharmacological research will be included, with an emphasis on the implications of recent research findings.

**PHARM 205 Principles of Pharmacology**

[5 Credits] This course is designed to introduce basic concepts in pharmacology to beginning students. The course will introduce students to pharmacokinetic and pharmacodynamic principles, drug metabolism, and a comprehensive discourse on drug receptor interactions. The application of these principles to specific endeavors will also be discussed.

**PHARM 206 Principles of Pharmacology II: Integrative and Systems Pharmacology**

[3 Credits] The course utilizes an experimental approach to understanding the development of therapeutic agents for the treatment of diseases. Lectures will provide the pathophysiological basis of diseases and the rationale for developing specific therapeutic agents.

**PHARM 207 Drug Receptor Interactions**

[2 Credits] Lecture, discussion, and laboratory exercise related to drug receptor theory.

**PHARM 211 Renal Pharmacology**

[2 Credits] Lecture, discussion, and laboratory exercises covering diuretics and factors affecting renal blood flow and electrolyte excretion.

**PHARM 250 Scientific Presentations, Verbal and Written**

[3 Credits] This course will provide instruction and practical experience in data communication skills. The course will focus on writing skills, conference presentations, and didactic lecture techniques. Students will critique papers, write abstracts, prepare posters, present 15 and 30 minute data-oriented talks and a 45 minute lecture. Attendance and participation is mandatory. Course limited to 8 students. Prerequisite: Permission of instructor.

**PHARM 221 Advanced Topics in Pharmacology**

[1-4 Credits] Lecture/laboratory hours to be arranged depending on topic. This course is designed for advanced studies of special groups of drugs.

**PHARM 222 Advanced Topics in Pharmacology**

[1-4 Credits] Lecture/laboratory hours to be arranged depending on topic. This course is designed for advanced studies of special groups of drugs.

**PHARM 223 Advanced Topics in Pharmacology**

[1-4 Credits] Lecture/laboratory hours to be arranged depending on topic. This course is designed for advanced studies of special groups of drugs.

**PHARM 224 Advanced Topics in Pharmacology**

[1-4 Credits] Lecture/laboratory hours to be arranged depending on topic. This course is designed for advanced studies of special groups of drugs.

**PHARM 225 Sensory Pharmacology**

[2 Credits] Lecture and discussion of drugs acting on the neural pathways involved in perception of sensory information. Drugs used in therapeutics, diagnoses and research will be included. A paper written on a subject involving a sensory system(s) and a drug/drug class or related topic is required for successful completion of the course.

**PHARM 231 Drug Abuse**

[3 Credits] This course is designed to provide the student with a basic understanding of behavioral and pharmacological principles underlying various problems of drug abuse. The course will expose the student to both basic science and clinical issues as they relate to drug abuse and dependence.

**PHARM 232 Autonomic Pharmacology**

[2-3 Credits] Lecture, discussion, and laboratory exercises designed to provide the student with the basics of peripheral autonomic functions and their regulation by CNS mechanisms. Course will also cover advanced mechanisms including newer receptor sub-types and co-transmitters.

**PHARM 233 Neuropharmacology**

[2-3 Credits] Lectures and discussions will be on chemical transmitters in the central nervous system with special emphasis on drug modifications of transmitter action and neuronal function.

**PHARM 234 Psychopharmacology**

[3 Credits] Lecture and laboratory designed to provide the student with an understanding of the effects of drugs on behavior. Special emphasis is given to pharmacological methods useful in the elucidation of normal and abnormal behaviors.

**PHARM 236 Gastrointestinal Pharmacology**

[2 Credits] Lecture and reading assignments designed to provide students with a basic understanding of drugs affecting selected aspects of gastrointestinal function through central nervous system and peripheral mechanisms.

**PHARM 237 Biochemical Pharmacology**

[2 Credits] Lecture and discussion designed to provide the student with the basics of drug metabolism and the use of biochemical techniques in pharmacology.

**PHARM 238 Cardiovascular Pharmacology**

[2-3 Credits] The study of drugs used to treat cardiovascular disorders with the primary emphasis on their fundamental mechanisms of action.

**PHARM 240 Behavioral Pharmacology**

[3 Credits] Basic principles of the experimental analysis of behavior, including operant and classical conditioning are discussed. The utility of using scheduled controlled behavior to investigate drug effects is the primary focus of the course. Behavioral mechanisms of drug action are discussed within the context of a variety of environmental situations.

**PHARM 251 Research in Pharmacology**

[1-6 Credits] This course offers an in-depth experience in research development and design. Projects are limited in scope. Students develop their findings under the guidance and direction of faculty preceptors.

**PHARM 252 Research in Pharmacology**

[1-6 Credits] This course offers an in-depth experience in research development and design. Projects are limited in scope. Students develop their findings under the guidance and direction of faculty preceptors.

**PHARM 253 Research in Pharmacology**

[1-6 Credits] This course offers an in-depth experience in research development and design. Projects are limited in scope. Students develop their findings under the guidance and direction of faculty preceptors.

**PHARM 254 Research in Pharmacology**

[1-6 Credits] This course offers an in-depth experience in research development and design. Projects are limited in scope. Students develop their findings under the guidance and direction of faculty preceptors.

**PHARM 280 Advanced Topics in Cell Signaling and Integrated Pharmacological Science**

[3 Credits] The objective of this course is to provide a forum for discussing emerging topics in the field of cell signaling in the context of integrated experimental approaches that include model organisms, human disease and molecular therapeutics. Students will be introduced to significant discoveries and encouraged to develop the necessary analytical skills to identify important questions and define experiments to determine their answers. This course is intended for advanced graduate students and postgraduate students and will be coordinated with Special Seminar Series organized through the Department.

**PHARM 298-299 Seminar**

[1 Credit] Topic to be arranged

**PHARM 5400 Advanced Dental Pharmacology**

[1 Credit] This course provides the student with advanced instruction in dental pharmacology. Recent advances in pharmacologic agents used in dentistry, functional considerations, and clinical correlations are emphasized.

**PHARM 300 Thesis Research**

[1-6 Credits]

**PHARM 400 Dissertation Research**

[1-9 Credits]

## Physiology

**PHYSIO 201 Research in Physiology**

[1-9 Credits] A research course designed to acquaint new graduate students with a research laboratory. This represents research credit before the qualifying process.

**PHYSIO 202 Research in Physiology**

[1-9 Credits] A research course designed to acquaint new graduate students with a research laboratory. This represents research credit before the qualifying process.

**PHYSIO 203 Research in Physiology**

[1-9 Credits] A research course designed to acquaint new graduate students with a research laboratory. This represents research credit before the qualifying process.

**PHYSIO 204 Research in Physiology**

[1-9 Credits] A research course designed to acquaint new graduate students with a research laboratory. This represents research credit before the qualifying process.

**PHYSIO 205 Basic Physiology (Lecture)**

[6 Credits] Lecture. Function of tissues, organs, and organ systems; mechanisms of control and integration of the various functions. An introduction to the pathophysiology of some diseases will be included.

**PHYSIO 206 Basic Physiology (Lab)**

[3 Credits] Laboratory experiments that emphasize precision in observation, analysis and interpretation of data. The topics are correlated with Basic Physiology Lectures (Physiology 205). Registration in Physiology 205 is required for registration in Physiology 206.

**PHYSIO 212 Cardiovascular Physiology**

[3 Credits] This course covers normal function and pathophysiology of the heart and circulation. Emphasis will be placed on using the literature to gain a greater depth of understanding of cardiovascular function. Students will write a small grant proposal as part of the course requirements.

**PHYSIO 216 Endocrinology**

[3 Credits] The focus of this course is the in depth understanding of the neuroendocrine mechanisms that regulate organ function. The format of the session will be active discussion of selected current topics covering novel aspects related to hormone secretion, signaling and cellular effects and their regulation. Reading assignments will be made based on recent review articles and these will be used to expand basic endocrine physiology concepts. Final grade will be based on two essay question-based exams and on an oral presentation of a topic selected by the student based on her/his particular research or discipline interests. (This is the same course as Biochemistry 216.)

**PHYSIO 217 History and Philosophy of Science**

[2 Credits] The history, methodologies, and philosophy of science are considered in a study discussion course.

**PHYSIO 220A (120A or 320) Medical Spanish**

[2 Credits] This course focuses on teaching basic terminology and phraseology used during the medical interview and physical exam. The course provides the opportunity for students to learn more about the Hispanic culture. Lectures are combined with mock interviews and exams among the students or with invited "patients." Basic knowledge of the Spanish language assessed by the course director is required for participation. The elective prepares students with basic communication skills necessary to interview Spanish-speaking patients. This elective is open to all LSUHSC-NO students.

**PHYSIO 250 Scientific Writing for Graduate Students**

[2 Credits] Two hours of lecture discussion per week. Topics covered include grammar, usage, and writing style; writing and submitting articles to scientific journals; writing research proposals, grant applications, dissertations, abstracts and test questions; and preparing curriculum vitae. Students must contribute portions of their ongoing writing projects for use in class discussions.

**PHYSIO 280 Special Topics in Physiology**

[1-4 Credits] Lecture/laboratory time distribution to be independently arranged for each course as appropriate. An opportunity to explore, in an organized format and under supervision, specialized areas or specific subjects not adequately covered in other scheduled courses. By permission of the Head of the Department of Physiology only.

**PHYSIO 289 Special Topics in Physiology**

[1-4 Credits] Lecture/laboratory time distribution to be independently arranged for each course as appropriate. An opportunity to explore, in an organized format and under supervision, specialized areas or specific subjects not adequately covered in other scheduled courses. By permission of the Head of the Department of Physiology only.

**PHYSIO 298 Seminar**

[1 Credit] A maximum of two credits towards the MS or four credits towards the PhD may be earned.

**PHYSIO 299 Seminar**

[1 Credit] A maximum of two credits towards the MS or four credits towards the PhD may be earned.

**PHYSIO 300 Thesis Research**

[1-6 Credits] Research related work for PhD degree students prior to passing Preliminary Exam or for MS degree students working on thesis.

**PHYSIO 400 Dissertation Research**

[1-9 Credits]

## FACULTY ROSTER

### Emeriti

BARKER, LOUIS, PhD, Tulane University, 1968  
*Emeritus Professor of Pharmacology and Experimental Therapeutics*

BEELER, MYRTON F., MD, New York Medical College, 1949  
*Emeritus Professor of Pathology*

CARVEL, ROSA I., DDS, Loyola University (Louisiana), 1967  
*Emeritus Professor of Oral Pathology*

DASCOMB, HARRY E., MD, University of Rochester, 1943  
*Emeritus Professor of Medicine*

DAVIS, GEORGE D., PhD, Yale University, 1951  
*Emeritus Professor of Physiology*

DESSAUER, HERBERT C., PhD, LSU Medical Center School of Graduate Studies, 1952  
*Emeritus Professor of Biochemistry and Molecular Biology*

DYER, ROBERT F., PhD, University of Pittsburgh, 1966  
*Emeritus Professor of Cell Biology and Anatomy*

GALLAHER, WILLIAM R., PhD, Harvard University, 1971  
*Emeritus Professor of Microbiology, Immunology, and Parasitology*

GASSER, RAYMOND F., PhD, University of Alabama, 1965  
*Emeritus Professor of Cell Biology and Anatomy*

GUZMAN, MIGUEL A., PhD, North Carolina State University, 1961  
*Emeritus Professor of Biometry and Genetics and Pathology*

HORNICK, CONRAD A., PhD, University of Hawaii, 1980  
*Emeritus Professor of Physiology and Pathology*

KASTEN, FREDERIC, PhD, University of Texas, 1954  
*Emeritus Professor of Cell Biology and Anatomy*

KEATS, BRONYA, PhD, Australian National University (Australia), 1976  
*Emeritus Professor of Human Genetics*

KAUFMAN, HERBERT E., MD, Harvard University, 1956  
*Emeritus Professor of Ophthalmology, and Pharmacology and Experimental Therapeutics*

LAYMAN, DON L., PhD, George Washington University, 1970  
*Emeritus Associate Professor of Cell Biology and Anatomy*

LILES, SAMUEL L., PhD, LSU Medical School of Graduate Studies, 1968  
*Emeritus Professor of Physiology and Neuroscience*

MALCOM, GRAY, PhD, LSU Medical Center School of Graduate Studies, 1978  
*Emeritus Professor of Pathology*

MAYO, JOHN, PhD, University of New Mexico, 1970  
*Emeritus Professor of Microbiology, Immunology, and Parasitology*

MENERAY, MICHELE A., PhD, Colorado State University, 1979  
*Emeritus Professor of Physiology and Neuroscience*

MILLER, HARVEY, PhD, Hahnemann Medical College, 1961  
*Emeritus Professor of Physiology*

MILLER, JOSEPH H., PhD, New York University, 1953  
*Emeritus Professor of Microbiology, Immunology, and Parasitology*

MORGAN, LEE R., JR., PhD, Tulane University, 1960  
*Emeritus Professor of Pharmacology and Experimental Therapeutics*

NAKAMOTO, TETSUO, DDS, Nihon University (Japan), 1964, PhD, Massachusetts Institute of Technology, 1978  
*Emeritus Professor of Physiology*

NANCE, F. CARTER, MD, University of Tennessee, 1959  
*Emeritus Professor of Physiology, and Surgery*

NARAYANAN, CHANDRASEKARAPURANH, PhD, University of Kansas, 1963  
*Emeritus Professor of Cell Biology and Anatomy*

OESCHGER, MAX P., PhD, Johns Hopkins University, 1964  
*Emeritus Associate Professor of Microbiology, Immunology, and Parasitology*

PARKINS, CHARLES W., MD, University of Rochester Medical School, 1963  
*Emeritus Professor of Otorhinolaryngology*

ROHEIM, PAUL, MD, Medical College of Budapest Hungary, 1951  
*Emeritus Professor of Physiology*

SPENCE, H. Adele, PhD, LSU Medical Center, 1971  
*Emeritus Professor of Microbiology, Immunology, and Parasitology*

SPITZER, JOHN, MD, University of Munich, 1950  
*Emeritus Boyd Professor and Head of Physiology*

SPITZER, JUDY, PhD, Hahnemann Medical College, 1963  
*Emeritus Professor of Physiology*

TOTH, LOUIS A., PhD, University of Rochester, 1936  
*Emeritus Professor of Physiology*

WARREN, LIONEL G., ScD, Johns Hopkins University, 1957  
*Emeritus Professor of Microbiology, Immunology, and Parasitology*

WILSON, LAWRENCE A., PhD, University of North Carolina at Chapel Hill, 1969  
*Emeritus Professor of Microbiology, Immunology, and Parasitology*

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### Full Membership

AIYAR, ASHOK, PhD, Case Western Reserve University, 1994  
*Associate Professor, Microbiology, Immunology and Parasitology*

ALAHARI, SURESH, PhD, Drexel University, 1994  
*Associate Professor of Biochemistry and Molecular Biology*

ALAM, JAWED, PhD, Purdue University, 1983  
*Associate Professor of Biochemistry and Molecular Biology*

AMEDEE, ANGELA M., PhD, LSU Health Sciences Center, School of Graduate Studies, 1992  
*Assistant Professor of Microbiology, Immunology, and Parasitology*

BACKES, WAYNE L., PhD, West Virginia University, 1979  
*Professor of Pharmacology and Experimental Therapeutics*

BAGBY, GREGORY J., PhD, Washington State University, 1976  
*Professor of Physiology and Medicine*

BARBEE, JAMES G., MD, Tulane University, 1978  
*Professor of Pharmacology and Experimental Therapeutics, Psychiatry and Neuroscience*

BAZAN, HAYDEE E. P., PhD, Universidad Nacional del Sur (Argentina), 1975  
*Professor of Biochemistry and Molecular Biology, Ophthalmology and Neuroscience*

- BAZAN, NICOLAS G., PhD, University of Tucuman (Argentina), 1971  
*Professor of Ophthalmology, Biochemistry, and Molecular Biology, Neurology and Neuroscience*
- BLOCK, MICHAEL S., DMD, Harvard University, 1979  
*Professor of Oral and Maxillofacial Surgery*
- CAIRO, JIMMY M., PhD, LSU Medical Center School of Graduate Studies, 1986  
*Dean of the School of Allied Health Professions, Professor of Cardiopulmonary Science and Physiology*
- CANAVIER, CARMEN, PhD, Rice University, 1991  
*Associate Professor of Ophthalmology*
- CARR, RONALD F., DDS, Loyola University (Louisiana), 1964  
*Professor of Oral Pathology and Pathology*
- CATLING, ANDREW, PhD, University of Glasgow, 1992  
*Assistant Professor of Pharmacology*
- CHEN, CHU, PhD, Tulane University, 1993  
*Assistant Professor of Otorhinolaryngology*
- CHEN, VIVIEN W., PhD, University of Oklahoma 1978, *Professor of Pathology and Public Health*
- CHICHE, GERALD, DDS, University of Paris (France), 1977  
*Professor and Head of Prosthodontics*
- CLAYCOMB, WILLIAM C., PhD, Indiana University, 1969  
*Professor of Biochemistry and Molecular Biology*
- COOK, JULIA, PhD, North Carolina State, 1986  
*Associate Professor of Biochemistry and Molecular Biology*
- CORMIER, STEPHANIA, LSU Medical Center School of Graduate Studies, 1997  
*Assistant Professor of Pharmacology and Experimental Therapeutics*
- CRANFORD, JERRY L., PhD, Vanderbilt University, 1968  
*Professor and Head of Communication Disorders*
- CUTLER, JIM E., PhD, Tulane University, 1972  
*Professor of Pediatrics and Microbiology*
- De BENEDETTI, ARRIGO, PhD, SUNY, Albany, 1985  
*Associate Professor of Biochemistry and Molecular Biology,*
- DELCARPIO, JOSEPH B., PhD, LSU Medical Center School of Graduate Studies, 1986  
*Professor of Cell Biology and Anatomy*
- DIAZ, JAMES, MD, Tulane School of Medicine, 1990; DrPH Tulane University, 1995  
*Professor, School of Public Health*
- ERICKSON, JEFFREY D., PhD, George Washington University, 1993  
*Associate Professor of Neuroscience, and Pharmacology and Experimental Therapeutics*
- EVERSON, JANE MCVICKER, PhD, Virginia Commonwealth University, 1989  
*Associate Professor of Interdisciplinary Human Studies*
- FERRIS, MICHAEL J., PhD, Montana State University, 1996  
*Assistant Professor of Pediatrics and Microbiology*
- FIDEL, PAUL L., PhD, University of Oklahoma, 1988  
*Professor of Microbiology, Immunology, and Parasitology*
- FONTHAM, ELIZABETH T., Dr PH, Tulane University, 1983  
*Professor and Dean, School of Public Health*
- GAUMER, H. RICHARD R., PhD, University of North Carolina, 1971  
*Associate Professor of Pathology*
- GRABCZYK, EDWARD L., PhD, Harvard University, 1992  
*Assistant Professor of Genetics*
- GREEN, JEFFREY D., PhD, State University of New York, 1981  
*Professor of Cell Biology and Anatomy*
- GREGORY, PAULA, PhD, Tulane University, 1989  
*Associate Professor of Genetics*
- HAAS, ARTHUR, PhD, Northwestern University Medical School, 1979  
*Professor and Head of Biochemistry and Molecular Biology*
- HAGENSEE, MICHAEL E., PhD, Baylor College, 1986, MD, Baylor College of Medicine, 1988,  
*Associate Professor of Microbiology, Immunology, and Parasitology and Medicine*
- HARRISON-BERNARD, LISA, PhD, Tulane University, 1990  
*Associate Professor of Physiology*
- HEMPE, JAMES, PhD, University of Missouri, 1987  
*Assistant Professor of Pediatrics*
- HILL, JAMES M., PhD, Baylor College of Medicine, 1971  
*Professor of Microbiology, Immunology, and Parasitology; Ophthalmology; and Pharmacology and Experimental Therapeutics*
- HOBDEN, JEFFERY A., LSU Medical Center School of Graduate Studies, 1992  
*Assistant Professor of Microbiology, Immunology, and Parasitology*
- HOCHSTEDLER, J. L., DDS, University of Tennessee, 1976  
*Assistant Professor of Prosthodontics*
- HOLLENBACH, ANDREW, PhD, Johns Hopkins University, 1994  
*Assistant Professor of Genetics*
- HOVLAND, ERIC J., DDS, Baltimore College of Dental Surgery, 1972  
*Dean, LSU School of Dentistry; Professor of Endodontics*
- JACOB, JEAN T., PhD, Tulane University, 1988  
*Professor of Ophthalmology*
- JEANSONNE, BILLIE GAIL, DDS; Loyola University (Louisiana), 1968  
*Associate Professor of Endodontics*
- JOHNSTON, KENNETH H., PhD, McMaster University (Canada), 1972  
*Professor of Microbiology, Immunology, and Parasitology*
- KAPUSTA, DANIEL R, PhD, LSU Medical Center School of Graduate Studies, 1986  
*Professor of Pharmacology and Experimental Therapeutics*
- KENT, JOHN N., DDS, University of Nebraska, 1963  
*Boyd Professor and Head of Oral and Maxillofacial Surgery*
- KLYCE, STEPHEN D., PhD, Yale University, 1971  
*Professor of Ophthalmology*
- KRATZ, KENNETH E., PhD, Kansas State University, 1975  
*Professor of Cell Biology and Anatomy and Neuroscience*
- KOZLOWSKI, PAMELA, PhD, University of Alabama at Birmingham, 1994  
*Associate Professor of Microbiology, Immunology and Parasitology*
- LALLIER, THOMAS E., PhD, University of California (Irvine), 1990  
*Associate Professor of Cell Biology and Anatomy*
- LAMOTTE, LYNN, PhD, Texas, &, University, 1969  
*Professor of Biostatistics*
- LAN, MICHAEL S., PhD, Duke University, 1986  
*Associate Professor of Pediatrics and Genetics*
- LAWRENCE, LOUANN, DrPH, University of Texas School of Public Health, 1994  
*Associate Professor of Medical Technology*

- LEIERER, STEPHEN J., PhD, Florida State University, 1993  
*Assistant Professor of Rehabilitation Counseling*
- LEVITZKY, MICHAEL G., PhD, Albany Medical College, 1975  
*Professor and Interim Head of Physiology*
- LIU, WANGUO, PhD, Wayne State University, 1993  
*Associate Professor of Genetics*
- LUFTIG, RONALD B., PhD, University of Chicago, 1967  
*Professor and Head of Microbiology, Immunology, and Parasitology*
- LUKIW, WALTER, PhD, University of Toronto, 1979  
*Associate Professor of Ophthalmology and Neuroscience*
- MALLOY, RANDOLPH, DDS, PhD, LSU Medical Center School of Graduate Studies, 1975  
*Associate Professor of Oral and Maxillofacial Surgery*
- MANDAL, DIPTASRI, PhD, LSU Medical Center School of Graduate Studies, 1992  
*Assistant Professor of Genetics*
- MARTIN, DAVID, MD, Harvard Medical School, 1969  
*Professor and Chief, Section of Infectious Disease, Dept. of Medicine*
- MARTINEZ, I. RICARDO, JR., MD, LSU School of Medicine in New Orleans, 1965, PhD, Boston University, 1971  
*Associate Professor of Cell Biology and Anatomy, and Dermatology*
- MC CLUGAGE, SAMUEL G. JR., PhD, University of Cincinnati, 1970  
*Professor and Head of Cell Biology and Anatomy*
- MC DONOUGH, KATHLEEN H., PhD, University of Missouri, 1977  
*Professor of Physiology*
- MENDEZ, ARTURO J., DDS, National Autonomous University of Mexico (Mexico), 1974  
*Professor of Prosthodontics*
- MERCANTE, DONALD E., PhD, Virginia Polytechnic Institute, 1990  
*Associate Professor, School of Public Health*
- MIZE, R. RANNEY, PhD, University of Chicago, 1975  
*Professor of Cell Biology and Anatomy*
- MOERSCHBAECHER, JOSEPH M., III, PhD, American University, 1976  
*Dean, School of Graduate Studies, Professor of Pharmacology and Experimental Therapeutics*
- MOHAMED, SHAWKY E., DDS, University of Iowa, 1970  
*Professor of Prosthodontics*
- MOLINA, PATRICIA, MD, Universidad Francisco Marroquin, 1984, PhD, LSU Medical Center, 1990  
*Professor of Physiology*
- MUSSELMAN, ROBERT J., DDS, Indiana University, 1964  
*Professor of Pediatric Dentistry*
- NELSON, STEVE, MD, McGill University, 1978  
*Professor of Medicine and Physiology, Dean, School of Medicine*
- NEWMAN, WILLIAM P., III, MD, LSU School of Medicine in New Orleans, 1967  
*Professor of Pathology and Medical Technology*
- PAUL, DENNIS J., PhD, University of British Columbia, 1988  
*Associate Professor of Pharmacology and Experimental Therapeutics*
- PINCUS, SETH, MD, New York University, 1973  
*Professor/Vice Chairman of Pediatrics and Professor of Microbiology*
- PORCHE, DEMETRIUS, DNS, LSU Health Sciences Center, New Orleans, 1995  
*Dean of Nursing, and Professor, School of Public Health*
- PORTER, JOHNNY R., PhD, LSU Medical Center School of Graduate Studies, 1973  
*Professor of Physiology, Medicine, Neuroscience, and Pharmacology*
- POTTER, BARRY J., PhD, University of London, 1975  
*Associate Professor of Physiology*
- QUAYLE, ALISON J., PhD, University of Edinburgh Medical School (Scotland), 1988  
*Associate Professor of Microbiology, Immunology, and Parasitology*
- RAGAN, FRANCIS A., JR., PhD, University of Alabama, 1977  
*Associate Professor of Pathology*
- RAMSAY, ALISTAIR, PhD, University of Otago, New Zealand, 1985  
*Professor of Medicine and Gene Therapy*
- REID, DENNIS H., PhD, Florida State University, 1975  
*Associate Professor of Interdisciplinary Human Studies*
- REISER, JAKOB, PhD, University of Basel, 1976  
*Associate Professor of Medicine and Microbiology*
- RUIZ, BERNARDO, MD, Universidad del Valle School of Medicine (Columbia), 1983, PhD, LSU Medical Center School of Graduate Studies, 1995  
*Associate Professor of Pathology*
- SARKAR, NIKHIL K., PhD, Northwestern University, 1973  
*Professor of Biomaterials*
- SARPHIE, THEODORE G., PhD, University of Mississippi, 1972  
*Associate Professor of Cell Biology and Anatomy*
- SCHEER, W. DOUGLAS, PhD, LSU Medical Center School of Graduate Studies, 1976  
*Professor of Pathology, Genetics, and Medical Technology*
- SHELLITO, JUDD, MD, University of California, 1974  
*Professor of Medicine*
- SCRIBNER, RICHARD, MD, University of Southern California, Los Angeles, 1984  
*Assistant Professor, School of Public Health.*
- SHEPHERD, RAYMOND E., PhD, Washington State University, 1974  
*Professor of Physiology*
- SONGU-MIZE, EMEL, PhD, University of Pennsylvania, 1979  
*Professor of Pharmacology and Experimental Therapeutics*
- STRONG, JACK P., MD, LSU School of Medicine in New Orleans, 1951  
*Professor and Head of Pathology*
- STURTEVANT, JOY, PhD, Duke University, 1985  
*Assistant Professor of Microbiology*
- SWARTZ, WILLIAM J., PhD, Loyola University (Illinois), 1971  
*Professor of Cell Biology and Anatomy*
- THOMPSON, JAMES J., PhD, University of Iowa, 1970  
*Professor of Microbiology, Immunology, and Parasitology*
- THUNTHY, KAVAS H., BDS, University of Bombay (India), 1969  
*Professor of Oral Diagnosis/Medicine/Radiology*
- TRACY, RICHARD E., MD, University of Chicago, 1961, PhD, University of Chicago, 1961  
*Professor of Pathology*
- VARNER, KURT J., PhD, Michigan State University, 1987  
*Professor and Interim Head of Pharmacology and Experimental Therapeutics*
- VEDECKIS, WAYNE V., PhD, Northwestern University, 1974  
*Professor of Biochemistry and Molecular Biology*

- VENUTI, JUDITH, PhD, State University of New York at Buffalo, 1986  
*Associate Professor of Cell Biology and Anatomy*
- VOLAUFOVA, JULIA, PhD, Comenius University Bratislava, 1984  
*Professor, School of Public Health*
- WEINBERG, ROGER, PhD, University of Texas, 1954, PhD, University of Michigan, 1970  
*Professor of Biometry and Genetics*
- WEIR, JIM C., DDS, University of Tennessee, 1974  
*Professor of Oral Pathology*
- WEYAND, THEODORE G., PhD, University of Connecticut, 1983  
*Associate Professor of Cell Biology and Anatomy and Neuroscience Center*
- WHITWORTH, RICHARD H., JR., PhD, West Virginia University, 1981  
*Associate Professor of Cell Biology and Anatomy*
- WINSAUER, PETER J., PhD, American University, 1989  
*Professor of Pharmacology and Experimental Therapeutics*
- WOJCIK, EDWARD, PhD, University of Michigan at Ann Arbor, 1994  
*Assistant Professor of Biochemistry and Molecular Biology*
- WOLTERING, EUGENE, MD, Ohio State University College of Medicine, 1975  
*Professor of Surgery*
- WORTHYLAKE, REBECCA, PhD, University of Utah, 1998  
*Assistant Professor of Pharmacology and Experimental Therapeutics*
- WU, GUANGYU, PhD, Peking Medical College, 1992  
*Assistant Professor of Pharmacology*
- DESAI, SHYAMAL D., PhD, University of Bombay, India, 1991  
*Assistant Professor of Biochemistry and Molecular Biology*
- DICKINSON, BONNY, PhD, Tulane University, 1995  
*Assistant Professor of Pediatrics*
- DOLAN, JOHN, RhD, Southern Illinois University, 1983  
*Professor of Rehabilitation Counseling*
- EASON, JANE, PhD, University of Florida, 1996  
*Associate Professor of Physical Therapy*
- FARRIS, HAMILTON, PhD, Cornell University, 2000  
*Associate Professor of Neuroscience*
- FOX, DEBORAH S., PhD, University of Cincinnati  
*Assistant Professor of Pediatrics*
- GASPARINI, SONIA, PhD, University of Milan, Italy, 1998  
*Assistant Professor of Neuroscience*
- GOULD, HARRY, M. D., PHD, LSU Medical School, 1990  
*Associate Professor of Neurology*
- HONG, SONG, PhD, University of Georgia, 1996  
*Assistant Professor of Neuroscience and Ophthalmology*
- HUNT, JOHN P., MD, University of North Carolina, 1998  
*Associate Professor of Surgery*
- IWAKUMA, TOMOO, PhD, Kyushu University, 1997  
*Assistant Professor of Genetics*
- KELLY, BEN, PhD, Imperial College London, 1994  
*Assistant Professor of Microbiology, Immunology, and Parasitology*
- KIM, JONG, PhD, East Tennessee State University, 1994  
*Assistant Professor of Pathology*
- KIM, SUNYOUNG, PhD, University of Michigan, 1994  
*Professor of Biochemistry and Molecular Biology*
- KOOCHKPOUR, SHAHRIAR MD, Shiraz Medical School, 1990, PhD, King's College School of Medicine, 1995  
*Assistant Professor of Microbiology, Immunology and Parasitology*

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## Associate Membership

- BARKEMEYER, BRIAN M., MD, Louisiana State University School of Medicine, 1987  
*Associate Professor of Pediatrics*
- BLACKWELL, TERRY EdD, University of Northern Colorado, 1980  
*Clinical Associate Professor of Rehabilitation Counseling*
- BOULARES, HAMID, PhD, University of Connecticut, 1997  
*Assistant Professor of Pharmacology*
- BRANNON, ROBERT B., MSD, Indiana University, 1973  
*Associate Professor of Oral Pathology*
- BRESLIN, JEROME, PhD, University of California, Davis, 2002  
*Associate Professor of Physiology*
- CHIU, THANG K., PhD, University of California, 2001  
*Assistant Professor of Biochemistry and Molecular Biology*
- CORK, JOHN, PhD, University of Leeds, 1980  
*Associate Professor of Cell Biology and Anatomy*
- COULTER, W. ALAN, PhD, University of Texas, 1991  
*Assistant Professor of Interdisciplinary Human Studies*
- CUI, YAN, PhD, University of Alberta, Canada, 1995  
*Assistant Professor of Genetics*
- DAVILA, EDUARDO, PhD, Mayo Clinic Graduate School of Medicine, 2002  
*Assistant Professor of Pediatrics*
- LAZARTIGUES, ERIC, PhD, University Paul Sabatier - Doctoral School of Toulouse, 1999  
*Assistant Professor of Pharmacology*
- LEIGH, JANET, MD, University of Pennsylvania, 1991  
*Associate Professor of General Dentistry*
- MARIER, JOANNE, JD, Tulane University, 1981  
*Associate Professor of Clinical Physical Therapy*
- MCCARTHY, HENRY, PhD, University of Kansas, 1977  
*Professor of Rehabilitation Counseling*
- MUKHERJEE, PRANAB, PhD, University of Calcutta, 1974  
*Associate Professor of Neuroscience*
- NICHOLS, CHARLES PhD, Carnegie Mellon University, 1997  
*Assistant Professor of Pharmacology*
- OUHTIT, ALLAL, PhD, University of Claude Bernard, 1995  
*Assistant Professor, Pathology*
- PALMER, GLEN, PhD, University of Leicester, United Kingdom, 2001  
*Assistant Professor, Microbiology, Immunology, and Parasitology*
- PEDERSEN, KIM BRINT, PhD, LSU Health Sciences Center in New Orleans, 2003  
*Assistant Professor of Biochemistry and Molecular Biology*
- PELLETT, ANDREW, PhD, LSU Medical Center School of Graduate Studies, 1991  
*Associate Professor of Cardiopulmonary Science*
- REED, JAMES, PhD, University of Nevada, Reno, 1995  
*Assistant Professor of Pharmacology*

- SAKAMURO, DAITOKU, PhD, Osaka University, 1991  
*Assistant Professor, Pathology*
- SHETTY, KISHORE, University of Bombay, DDS, 1994  
*Assistant Professor of General Dentistry*
- SIMONSEN, NEAL R., PhD, University of North Carolina, Chapel Hill, 1993  
*Assistant Professor, School of Public Health*
- STRICKLIN, SARINTHA, PhD, University of New Orleans, 1997  
*Associate Professor of Interdisciplinary Human Studies*
- SU, JOSEPH, PhD, University of North Carolina at Chapel Hill, 1998  
*Assistant Professor, School of Public Health*
- TAYLOR, EVE, PhD, Tulane University, 1984  
Professor, and Head of Occupational Therapy
- THEALL, KATHERINE, PhD, Tulane University, 2005  
*Assistant Professor, School of Public Health*
- THOMPSON, HILARY, PhD, Louisiana State University, Baton Rouge, 1986  
*Assistant Professor, Genetics and School of Public Health*
- TURNER, ROBERT G., PhD, University of Florida, 1975  
*Professor of Communication Disorders*
- WANG, GUOSHUN, PhD, Peking University of China, 1992  
*Assistant Professor of Medicine and Genetics*
- WANG, PING, PhD, Cornell University, 1999  
*Assistant Professor of Pediatrics and Microbiology*
- WEISS, LARRY, MD, Hahnemann Medical College, 1979  
*Clinical Professor of Medicine and Public Health*
- WESSELY, OLIVER, PhD, University of Vienna, 1992  
*Assistant Professor of Cell Biology and Anatomy*
- WILSON, PHILIP G., PhD, University of Illinois at Urbana-Champaign, 1991  
*Associate Professor of Interdisciplinary Human Studies*
- WINKLER, MARK M., PhD, Northwestern University, 1991  
*Associate Professor of Operative Dentistry and Biomaterials*
- WORTHYLAKE, DAVID, PhD, University of Utah, 1998  
*Assistant Professor of Biochemistry*
- XU, XIAOMING, PhD, University of New Orleans, 1996  
*Assistant Professor of Operative Dentistry and Biomaterials*
- ZHANG, PING, PhD, Third Medical University, 1990  
*Associate Professor, Department of Medicine*
- KNIGHT, CHERYL, PhD, Western Michigan University, 1994  
*Assistant Professor, School of Allied Health Professions*
- LAN, MICHAEL S., PhD, Duke University, 1986  
*Associate Professor of Pediatrics/Genetics*
- LEMEN, LISA C., PhD, University of Texas HSC, 1998  
*Assistant Professor of Radiology*
- MARCHESELLI, VICTOR, PhD, University of New Orleans, 2003  
*Associate Professor of Ophthalmology and Neuroscience*
- ROBERTS, ELLIOTT, MA, George Washington University, 1963  
*Professor, School of Public Health*
- SPRIGGS, LOUAINIE, PhD, Tulane University, 1990  
*Associate Professor of Cell Biology and Anatomy*
- VASTARDIS, SOTIRIOS, DDS, University of Athens (Greece), 1995  
*Assistant Professor of Periodontics*
- VELASCO-GONZALEZ, CRUZ, PhD, Tulane University, 2000  
*Assistant Professor, School of Public Health*
- XIA, HOUHUI, PhD, University of California, PhD, 1997  
*Assistant Professor of Cell Biology and Anatomy*

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## Affiliate Membership

- ARMBRUSTER, PAUL C., DDS, LSU School of Dentistry  
*Assistant Professor of Orthodontics and Dentofacial Orthopedics*
- BEDIMO, ARIANE LISANN, PhD, Tulane University  
*Assistant Professor of Research, School of Public Health*
- BRESLIN, MARY B., PhD, Louisiana State University, 1998,  
*Assistant Professor of Pediatrics and Biochemistry*
- FIRMANI, MARCIA, PhD, University of California, Berkeley, 2002  
*Assistant Professor of Clinical Laboratory Sciences*
- GORDON, WILLIAM, PhD, University of South Florida, 1977  
*Associate Professor of Ophthalmology and Neuroscience*
- HORSWELL, RONALD, PhD, LSU, Baton Rouge, 1990  
*Assistant Professor, School of Public Health*

## RECAPITULATION OF FACULTY

Below are listed the nine Graduate Programs of the Health Sciences Center in which degrees may be earned through the School of Graduate Studies and the respective graduate faculty of each in alphabetical order by rank.

### Biochemistry and Molecular Biology

PROFESSOR: Claycomb, Haas, Vedeckis  
ASSOCIATE PROFESSOR: Alahari, Kim  
ASSISTANT PROFESSOR: Ouhtit, Pedersen, Wojcik, Worthylake

### Biostatistics

PROFESSOR: LaMotte, Volaufova  
ASSOCIATE PROFESSOR: Mercante, Thompson  
ASSISTANT PROFESSOR: Velasco, Horswell

### Cell Biology and Anatomy

PROFESSOR: Delcarpio, Gasser, Green, Kratz, McClugage, Mize, Swartz, Weyand  
ASSOCIATE PROFESSOR: Cork, Lallier, Sarphie, Spriggs, Venuti, Whitworth  
ASSISTANT PROFESSOR: Oliver, Wessely, Xiu

### Genetics

PROFESSOR: Ramsay  
ASSOCIATE PROFESSOR: Gregory, Lan, Reiser  
ASSISTANT PROFESSOR: Cui, Grabczyk, Hollenbach, Mandal, Wang, Wesley

### Microbiology, Immunology, and Parasitology

PROFESSOR: Cutler, Fidel, Johnston, Luftig, Pincus, Ramsay, Thompson  
ASSOCIATE PROFESSOR: Aiyar, Amedee, Hagensee, Kozlowski, Quayle, Sturtevant  
ASSISTANT PROFESSOR: Davila, Dickinson, Ferris, Foster, Fox, Hobden, Kelly, Koochekpour, Palmer, Wang, Zea

### Neuroscience

PROFESSOR: Bazan, H., Bazan, N.  
ASSOCIATE PROFESSOR: Anand, Canavier, Erickson, Hong  
ASSISTANT PROFESSOR: Chen, Lukiw

### Oral Biology

PROFESSOR: Block, Chiche, Fidel, Hovland, Jeansonne, Kent, Mendez, Mercante, Mohamed, Porter, Sarkar, Thunthy, Weir  
ASSOCIATE PROFESSOR: Alahari, Brannon, Lallier, Leigh, Malloy, Sturtevant, Vastardis, Winkler, Xu  
ASSISTANT PROFESSOR: Armbruster, Hochstedler, Worthylake

### Pathology

PROFESSOR: Chen, Newman, Scheer, Strong  
ASSOCIATE PROFESSOR: Gaumer, Ragan, Ruiz  
ASSISTANT PROFESSOR: Kim, Ouhtit, Sakamuro

### Pharmacology and Experimental Therapeutics

PROFESSOR: Backes, Barbee, Kapusta, Lucchesi, Moerschbaecher, Porter, Songu-Mize, Varner, Winsauer  
ASSOCIATE PROFESSOR: Erickson, Kirkendol, Paul, Wu  
ASSISTANT PROFESSOR: Boulares, Catling, Cormier, Lazartigues, Matrougui, Nichols, Reddix, WorthyLake

### Physiology

PROFESSOR: Bagby, Levitzky, McDonough, Molina, Porter, Shepherd  
ASSOCIATE PROFESSOR: Harrison-Bernard, Potter  
ASSISTANT PROFESSOR: Breslin

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