

# Graduate Student Manual

## Department of Biochemistry and Molecular Biology

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### I. DEPARTMENT GRADUATE PROGRAM

**A. Philosophy/Goals.** The Department of Biochemistry and Molecular Biology strives to provide you with a scientifically stimulating environment and an education that will enable you to design and execute a research program and to communicate the results thereof. Experimentation in the laboratory and a full understanding of the concepts and principles of biochemistry and molecular biology are stressed throughout the graduate program. Successful attainment of these departmental goals should allow you to pursue a career in any aspect of the biochemical sciences in academia or industry. The Department sponsors the Master of Science and the Doctor of Philosophy degrees. Your research, leading to a Master's thesis or a Doctoral dissertation, will occupy the majority of your effort during the course of your studies. You will have a wide variety of areas from which to select a research focus, commensurate with the interests and skills of the faculty.

**B. Requirements and Responsibilities.** The general academic **requirements** for graduation from the LSU Health Sciences Center are presented in the LSU

Sciences Center Catalog/Bulletin. These requirements include the minimum residence period, minimum semester hours, and required examinations. Additional conditions for receiving a postgraduate degree in the Department of Biochemistry and Molecular Biology are fully described in the "Program of Study for the PhD Degree" and the "Program of Study for the MS Degree" (Appendices [I](#) and [II](#) ) prepared by the Department. The requirements specified in each "Program of Study" are binding. The curriculum, however, is dynamic and changes are instituted after careful consideration by the faculty, and any changes are implemented in a timely fashion. Whenever questions about requirements and curriculum arise, the "Program of Study" for your chosen degree represents the bylaws of the Department.

## II. ORIENTATION

**A. Signing On.** You should visit the Biochemistry and Molecular Biology Business Office, located in Room 7C1 (7th floor) of the Medical Education Building (M.E.B.), 1901 Perdido Street, at least one week prior to registration to complete the proper forms for matriculation. These include your appointment forms, biographical data forms, and state and federal tax forms. You may contact the Assistant Business Manager (568-4778) to obtain these forms. [NOTE: You can not be paid until these forms are completed and on file.]

**B. Registration.** As a graduate student in the Department, you will be counseled by the Graduate Student Coordinator on which courses to take until you choose a major professor and establish your Examining Committee. Depending upon which courses are offered at the time of your registration, you will probably be advised to take the courses listed below during your first fall semester.

Course	Course Number	Credits
Introduction to Special Methods of Research	207	2
Fundamental Biochemistry	201	5
Seminar	298	1

[NOTE: A minimum of nine credits are required to be considered a full-time student during the fall and spring semesters. Six credits are required for full-time status during the summer semester.]

The complete programs of study for the PhD degree and for the MS degree in the Department of Biochemistry and Molecular Biology are included in Appendices at the end of this document.

**C. Graduate Student Advisor.** All first-year students are advised by the Graduate Student Advisor of the Department. The advisor, currently Dr. Iris Lindberg, will counsel you on the required courses until you choose a Major Professor and an Examining Committee. You should contact Dr. Lindberg (Room 7131, Medical Education Building, 568-4799) to arrange a meeting at the earliest possible date to establish your first year curriculum.

**D. Financial Support.** Depending upon the availability of funds, a stipend and a waiver of tuition will be provided to all graduate students in good standing with the Department of Biochemistry and Molecular Biology. The faculty suggests that you apply to agencies such as the Cancer Association of Greater New Orleans and the National Science Foundation for all available fellowships and grants. The Graduate Student Advisor or your major professor will assist you with these applications.

### **III. COURSE OF STUDY**

#### **A. Year One**

**A.1. Laboratory Rotations.** A major portion of your course work in the first year will consist of spending a period of time (ranging from six to ten weeks) in each of at least three different laboratories in the Department to gain first-hand knowledge of the research projects and techniques used. Rotations should be completed in two to three semesters after matriculation. These rotations constitute the requirements for credit in Introduction to Special Methods of Research (207). Rotating students are expected to be in the lab when not in class during standard working hours and as necessary to perform their experiments. At the end of the rotation, the mentor will provide the student and the Graduate Coordinator with a letter summarizing the student's progress and abilities. Letter grades are given for the laboratory rotation. You should devote at least one half of your time in the first year to your laboratory rotations. Each faculty person will provide a short written evaluation of your performance during the laboratory rotation, and a copy of this will be included in your student files in the Department. While the primary objective of the laboratory rotation period is to introduce you to specialized procedures, it will also aid you in selecting a major professor. The director of each laboratory through which you rotate will provide guidance during your time in his or her laboratory. You should consult with the Graduate Student Advisor, other graduate students, and the faculty for guidance in choosing your rotations.

**A.2. Course Work.** The general and specific course requirements are listed in the programs of study. During the fall semester, academic performance in Fundamental Biochemistry should have a high priority. A minimum grade of "B" in the Fundamental Biochemistry course is required (see [Appendix I](#), "Program of Study for the PhD Degree" for details). Your performance and grade in this course will have significant weight in determining your continuation in the program. During the spring semester, you should take Molecular Biology (240, 5 credits), Introduction to Special Methods of Research (207, 3–6 credits),

Advanced Topics in Biochemistry (2 credits), additional electives, and Student Seminar (299, 1 credit). You should attain a minimum grade of "B" in Molecular Biology. You should contact the Graduate Student Advisor for direction in selecting your courses prior to registration. During the third (summer) semester, you should complete your laboratory rotations and begin research on your dissertation project. Credit for this can be obtained by registering for Introduction to Special Methods of Research. The course of your summer studies should be decided in conjunction with the Graduate Student Advisor (or your major professor, if applicable).

**A.3. Major Professor Selection.** The laboratory rotations are designed to help you choose your Major Professor. You should make every effort to select your Major Professor during the first year. Selection of your Major Professor is a mutual decision between you and the faculty member and is a most important decision by both parties in determining the future course of your graduate studies. Selection of a Major Professor should be given careful deliberation, as this faculty member will guide you in your studies and research in graduate school. The faculty realize that accepting a student represents a major commitment in time, effort, and financial resources (laboratory supplies, equipment, and stipend). You should determine whether the faculty person is willing to assume the responsibility for accepting you, and whether the laboratory will have finances for supplies and stipend support. You should also consider whether previous students have completed their degree in a reasonable amount of time. A decision to enter a laboratory requires the consent of the faculty person.

## **B. Year Two**

**B.1. Research.** Your research activities should occupy the majority of your time in this year. You should have chosen a Major Professor and organized your Examining Committee by this time.

**B.2. Teaching.** The faculty consider teaching to be an important part of graduate student training. As a rule, after your first year, you will be expected to participate as a teaching assistant in nursing, dental, or medical school courses offered by the Department in each of your subsequent years. Teaching assignments will be made before the beginning of each academic year. During your second and third years of graduate studies, you will be responsible for lecture attendance, supervised presentation of a portion of the lecture material, administration of examinations, grading of quizzes, participation in review and discussion sessions, and tutoring as assigned by the course director. An evaluation of your teaching performance will be provided to the department head by the course director of each of the courses in which you assist.

**B.3. Course Work.** Because research will occupy the majority of your time in later years, you should make every attempt to complete as much of your required course work as possible by the end of your second year. Molecular structure and function of the cell (Biochemistry, Physiology, or Anatomy 251,3 credits) is a required course that is offered every other year in the spring semester. A minimum grade of "B" is required.

**B.4. Examining Committee.** The Examining Committee will assume responsibility for the direction of your studies and research and will administer your Qualifying Examination. The establishment of this committee is an important step toward focusing your studies and research endeavors. The committee is made up of at least three faculty members with a primary appointment in the Department of Biochemistry and Molecular Biology, your Major Professor and at least one faculty member from outside the Department who is knowledgeable in your research area. Experts from outside the University may be invited to participate. In taking over responsibility from the Graduate Student Advisor, the Examining Committee and Major Professor will direct your academic and research efforts. Although continuity of this committee is desirable, the composition of the Examining Committee may be altered during your course of study to reflect changes in your research or Major Professor. The Examining Committee is chosen by your Major Professor with the approval of the Department Head.

**B.5. Qualifying Examination.** All students must have attempted their Qualifying Exam by the end of the fourth semester following matriculation (exclusive of summer semesters) or be terminated from the program. If the student receives a conditional pass on the Qualifying Exam, he/she must complete the proscribed remediation within the time frame stipulated by the examining committee. Under extraordinary circumstances such as illness or family emergency, the Department Head may grant an extension at the written request of the student.

This examination is administered by the student's Examining Committee (see III.B.4.). A written research proposal delineating your dissertation research must be prepared according to form PHS 398 guidelines for grant applications to the National Institutes of Health (NIH). The proposal should include specific aims, background information, working hypotheses, experiments designed to test the hypotheses, and pertinent references. [It is not necessary to complete the Budget, Resources and Environment, and Other Support pages.] In addition to being tested on the specific proposal, the student may also be examined (written and/or orally) on related scientific disciplines to ensure breadth of knowledge. Standard forms for the Qualifying Examination are available from the Office of the Department Head or the Graduate Advisor. The "Request for Qualifying Examination" must be completed and signed by the Department Head at least two weeks before the Examination, once its date has been set. In addition, you must deliver one copy of the proposal to each member of your Examining Committee at least two weeks prior to the Examination. You must pass this examination (i.e., by a majority vote of the Examining Committee members) in order to continue in the program. The signed "Report of Qualifying Examination" must be returned to the Department Head after the Examination.

## QUALIFYING EXAM CHECKLIST

- Prepare a research proposal in standard NIH format using PHS 398 directions.
- Prepare a title and abstract and attach these to the front of the qualifying exam proposal.
- Submit the proposal to the committee at least two weeks prior to the exam.
- Prepare a Request for Qualifying Exam using the standard Graduate School form (1 page); it must be signed by Department Head at least two weeks prior to the exam.
- Have a room reserved for the Examination (contact the business office at 568-4733).
- Prepare a brief (10–15 min) presentation with slides or overheads to be given at the Examination.
- Prepare a Curriculum Vitae for Qualifying Exam (2 pages) using the standard Graduate School form and bring this to the Examination.
- Prepare a list of all courses taken and grades received and bring this to the Examination.
- Prepare a Report of Qualifying Examination using the standard Graduate School form (2 pages) and bring this to the Examination.
  - (a) Each member of the Examining Committee must indicate his or her vote (pass/fail) and sign the Report.
  - (b) The committee may also enter recommendations (courses to be taken and other remediation and/or training) on this form.
- Prepare to offer an oral defense of the research proposal and, as appropriate, other material.
- Although it is neither necessary nor required for you to bring coffee or refreshments to the examination, you may elect to do so.
- Transmit the signed "Report of the Qualifying Examination" to the Department Head.

**B.6. Preliminary Examination.** All students must have attempted their Preliminary Exam at least by the end of the fifth semester following matriculation (exclusive of summer semesters) or be terminated from the program. If the student receives a conditional pass on the Qualifying Exam, he/she must complete the proscribed remediation within the time frame stipulated by the examining committee. Under extraordinary circumstances such as illness or family emergency, the Department Head may grant an extension at the written request of the student.

This Examination is administered by the student's Examining Committee (see III.B.4.). For the purpose of the Preliminary Examination, the Major Professor will designate one of the other committee members as chair, subject to approval by the Department Head. The chair will be responsible for providing a written summary of the examination and future course of study to the student, Major Professor, and Department Head (for inclusion in the student's file). A research proposal in an area clearly different from that of the student's proposed dissertation research must be prepared according to form PHS 398 guideline, with the exception that a limit of 12.5 pages (as opposed to 25) is to be used. The purpose of this proposal is to provide the student with an opportunity to gain breadth of knowledge and to demonstrate independence in designing a research protocol. The topic is to be chosen by the student and then approved by the Examining Committee members. The proposal should include a title, an abstract, specific aims, background information, working hypotheses, experiments designed to test the hypotheses, and pertinent references. [It is not necessary to complete the Budget, Resources and Environment, and Other Support pages.] In addition to being tested on the specific proposal, the student may also be examined (written and/or orally) on related scientific disciplines. The procedure for requesting the Preliminary Examination is much the same as you followed in requesting your Qualifying Examination. The proper forms are available from the Office of the Department Head, the Graduate Advisor, or the Graduate School. You should complete one copy of the "Request for Preliminary Examination" with the help of your Major Professor or Examining Committee. The "Request for Preliminary Examination" must be submitted to the Department Head at least two weeks before the Examination, once its date has been set. In addition, you must deliver one copy of the proposal to each member of your Examining Committee at least two weeks prior to the Examination. The Department Head will forward the form to the Graduate School for the Dean's approval. You must pass this examination in order to continue in the PhD program. More than one negative vote constitutes failure.

## **PRELIMINARY EXAM CHECKLIST**

- Prepare a Notification of Preliminary Examination using the standard Graduate School form (1 page).
- Submit the Notification of Preliminary Examination form to the chair of your Examining Committee and a copy of your proposal to each of the committee members at least two weeks prior to the Examination.
- Prepare a Request for Preliminary Exam using the standard Graduate School form (1 page); it must be signed by the Department Head and the Dean of the Graduate School at least two weeks prior to the Examination.
- Have a room reserved for the Examination (contact the business office at 568-4733).
- Prepare a brief (10–15 min) presentation with slides or overheads to be given at the Examination.
- Prepare a Report of Preliminary Examination using the standard Graduate School form (2 pages) and bring this to the Examination.
  - (a) Each member of the Examining Committee must indicate his or her vote (pass/fail) and sign the Report.
  - (b) The committee may also enter recommendations (courses to be taken and other remediation and/or training) on this form.
  - (c) The Report must then be signed by the Department Head and the Dean of the Graduate School.
- Prepare to defend orally the research proposal and other material as appropriate for the examination.
- Although it is neither necessary nor required for you to bring coffee or refreshments to the examination, you may elect to do so.

**B.7. Work in Progress Session.** You are required to present at least one work-in-progress session per year to the Department. The requirement begins during the second year and continues until graduation.

### **C. Years of Completion**

**C.1. Research.** Although you will still have teaching responsibilities, you should concentrate extensively on your dissertation or thesis research during the final years of your tenure with the Department.

**C.2. Teaching.** As a rule, you will be expected to participate as a teaching assistant in one course each year. During the fourth year of your graduate study, you may serve as a supervisor of teaching assistants in their second or third year of graduate study.

**C.3. Course Work.** Course work during these years usually consists of Seminar (298, 299) and those courses necessary to fulfill the requirements for graduation.

**C.4. Departmental Seminar.** All PhD degree candidates are required to present a Departmental Seminar within one year after passing their preliminary examination. Contact the Seminar Coordinator (Dr. Don Scott at 568-4055) to schedule your seminar for a date/time that will be compatible with your Examining Committee members' schedules and that will not conflict with other Departmental activities.

**C.5. Annual Evaluation.** After passing the Preliminary Examination, all PhD degree candidates are required to meet at least once a year with their Examining Committee and Major Professor to assess progress.

**C.6. Thesis/Dissertation.** Your research findings will be presented in your thesis or dissertation, which will form the basis of your Final Examination. Your Major Professor and Examining Committee should assist you in determining when the experimental work is complete and in organizing and correcting early drafts of the document. Details regarding its format should be obtained from the Graduate School and your Major Professor. The findings in this document must represent original and important contributions to the field of study. Evidence for this is usually provided by the required publication of at least some of the findings as a full paper. You are also encouraged to present your findings at national or international meetings.

**C.7. Final Examination.** You become eligible to take the Final Examination one academic year after having passed the Preliminary Examination. Most students, however, require two years to complete their dissertation research. Students that require more than three years to complete their dissertation research must obtain approval of an extension from their Examining Committee. The "Request for Dissertation/Thesis Defense and Final Examination" form is available from the Office of the Department Head, the Graduate Advisor, or the Graduate School. It must be completed and received by the Graduate School at least two weeks prior to the defense date. A copy of the final thesis or dissertation must also be provided to each member of your Examining Committee by this time. The Final Examination includes an oral defense of your dissertation before your Examining

Committee and an oral presentation of your dissertation at a Health Sciences Center Seminar. Your Examining Committee will vote by ballot, and there must be no more than one negative vote for you to pass the Final Examination. After you have passed the Final Examination, you must then submit copies of the approved dissertation to the Graduate School (original and one copy), the Department (one copy), your Major Professor (one copy), and any member of your Examining Committee who requests a copy.

## **CHECKLIST FOR DISSERTATION/THESIS DEFENSE AND FINAL EXAMINATION**

- Fill out a Request for Dissertation/Thesis Defense and Final Examination (1 page) using the standard Graduate School form; this must be signed by Department Head and Dean of the Graduate School two weeks prior to the examination
- Make copies of the final form of the dissertation/thesis, and distribute one copy to each member of your committee
- Contact the Seminar Coordinator (Dr. Don Scott, 568-4055) to schedule your seminar for a date/time that will be compatible with your Examining Committee members' schedules and that will not conflict with other Departmental activities.
- Provide the title of your seminar. The Department will distribute the seminar notices, and the laboratory will provide refreshments after the seminar.
- Have a room reserved for before or after the seminar, as deemed appropriate by the Examining Committee (contact the business office at 568-4733).
- Prepare to give a 50-minute seminar with slides to the Examining Committee, members of the Department, and other interested individuals.
- Prepare a Dissertation/Thesis Defense Final Examination Report using the standard Graduate School form (1 page) and bring it to the Examination; it will be signed by the committee members, Department Head, and Dean of the Graduate School.
- After these activities have been successfully completed, a revised and final version of the dissertation/thesis must be approved by the Examining Committee.

## IV. USEFUL INFORMATION

**A. Departmental Administration.** The Department is administered by **Dr. Arthur Haas**, Head.

**B. Dismissal Procedure.** A student may be dismissed from the Department if his or her grade point average falls below 3.00. A student may also be dismissed from the Department upon receiving a grade of less than B in either Fundamental Biochemistry or Molecular Biology. Students with serious academic problems may be eliminated from the rolls of the Department at the end of any semester. The decision to terminate a student's association with the Department is made by a vote of the faculty and approval by the Department Head. Any student who is terminated has the option of appealing the decision of the faculty to the Department Head. This appeal, listing all of the facts that the student feels are pertinent to the situation, should be submitted to the Department Head as soon as possible after notification of the decision to terminate.

**C. Faculty Roster and Research Interests.** The faculty maintain diverse research programs. Each faculty member and a brief synopsis of his or her training and research are listed in **Appendix III**. However, as the research interests of the faculty are dynamic, you should contact the laboratory director for current information on the research in that lab.

**D. LSU Health Sciences Center Catalog.** The catalog contains the official statements of the Health Sciences Center. However, most departments, including this one, require the completion of tasks in addition to those required by the School of Graduate Studies of the Health Sciences Center. No department can sponsor a degree candidate who does not complete the requirements of the School of Graduate Studies as stated in the **Catalog**.

**E. Outside Employment.** The Department prohibits students from pursuing employment or an academic degree outside the Department. However, a student in dire need may petition the faculty to be allowed to work outside. The petition will be considered by the faculty, and the student will be notified of the decision reached by the faculty.

**F. Prior Approval for Travel.** Any study-related travel for which you plan to be reimbursed must have prior approval by the Business Office before you depart. You must adhere to all state travel regulations. As with the purchasing regulations, it is imperative that you consult the departmental Business Office as soon as you begin planning your trip. All airline tickets must be purchased through Navigant International Travel Services. Contact numbers are available in the business office.

**G. Program of Study.** The Program of Study for the PhD Degree (**Appendix I**) and the Program of Study for the MS Degree (**Appendix II**) were prepared by the Department to elucidate the requirements of the Department for the convenience of the faculty and students. These programs have been accepted by the faculty of the Department and will be

used as a guide by your advisor throughout your tenure in the Department.

**H. Purchasing Regulations.** As a state institution, Louisiana State University Health Sciences Center and all departments thereof must adhere strictly to state purchasing laws. These laws are complex, are frequently revised, and should not be interpreted by anyone not familiar with them; therefore, the Department recommends that all purchases be approved by the appropriate faculty advisor or Major Professor and the Business Office. The personnel of the Business Office are available to explain the correct policies to you. Students should discuss the proper purchasing procedures with the laboratory head before making any purchases.

**I. Shop Facilities.** The electronics and fabrication shops maintained by the Department are capable of performing most routine maintenance and repairs on research equipment used in the Department. The facility is also capable of manufacturing many different types of specialized research equipment including horizontal and vertical electrophoresis units, gradient makers, and blotting (Western and Southern) equipment. The laboratory head should guide you in making appropriate use of the departmental shops. This facility is managed by Mr. Scott Neville, an Instructor in the Department.

**J. Waiver of a Requirement.** Whereas exceptions to Departmental policies are usually disallowed, some students may have reasonable justification to request the waiver of a requirement. For example, students who have graduate school credits with a grade of B or better in subjects from other universities may request that these credits be substituted for parallel or similar LSHSC courses and counted toward graduation as requirements or electives, as appropriate. The faculty of the Department must first approve a request for a waiver, and approved requests will be forwarded to the Dean of the School of Graduate Studies by the Department Head. The final decision on course waivers and Health Sciences Center requirements will be made by the Dean of the School of Graduate Studies through the Department. To request a waiver, you should petition the faculty in writing. Include all pertinent information (justification for the waiver, proposed benefits, etc.) in your petition and forward it to the Department Head.

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## **APPENDIX I**

### Program of Study for the PhD Degree

**A. Prerequisites.** General chemistry, organic chemistry, physical chemistry, mathematics (through calculus), and one year of biology are required. If necessary, these courses may be completed during the first year of graduate study.

**B. Course Requirements.** A total of 60 credits, which include the following courses, are required. [NOTE: Withdrawal from a required course will be allowed only under extremely extenuating circumstances and must be approved on a case-by-case basis by the faculty.]

Fundamental Biochemistry (201; 5 credits): A minimum grade of "B" is required.

Molecular Biology (240; 5 credits): A minimum grade of "B" is required.

Molecular Structure and Function of the Cell (Anatomy, Biochemistry, or Physiology 251; 3 credits): A minimum grade of "B" in the interdepartmental course is required.

Introduction to Special Methods of Research (207; 12 credits): Laboratory research carried out during the first 2 years. A grade of "C" is unsatisfactory and may lead to dismissal from the program.

Seminar (298 and 299; 6 credits): The Department requires 6 credits of seminar although the Graduate School permits only 4 of these to be applied toward graduation.

Dissertation Research (400; 15 credits): This may also be divided into 9 credits of Dissertation Research (400) and 6 credits of Thesis Research (300). Although students generally receive more credits, only 15 may be applied toward graduation.

Electives (18 credits): These should be selected to provide a broad scientific background and should be chosen in consultation with the Graduate Student Advisor and/or your Examining Committee and Major Professor. At least 8 credits of electives must be taken from Departments other than the Department of Biochemistry and Molecular Biology. Possible

elective courses (or courses in minor fields of study) include, by Department, the following.

**Biometry**

Biometric Methods in the Health Sciences I. 221, 3cr

**Microbiology, Immunology, and Parasitology**

General and Molecular Virology 276, 3-5cr

Fundamentals of Immunology 296, 3-5cr

Techniques in Microbiology 280, 1-6cr

**Pharmacology and Experimental Therapeutics**

Principles of Pharmacology 205, 5cr

Neuropharmacology 233, 2-3cr

**Physiology**

Molecular Structure and Function of the Cell 251, 2-3cr

History and Philosophy of Science 217, 1-2cr

Scientific Writing for Graduate Students 250, 2cr

**Interdepartmental**

Computer Science 202, 2cr

Endocrinology 216, 3cr

Neuroscience 210/220, 6/2cr

Molecular Neurobiology 250, 4cr

**C. Major Professor Selection.** Each student shall select a Major Professor by 1 July after completion of the first year of graduate school. Any student who fails to identify a Major Professor by this date may be terminated from the Graduate Program. Special circumstances may be considered by the Graduate Advisor and the Department Head.

**D. Teaching.** The faculty considers teaching an important part of academic training. As a rule, after their first year, students will be expected to participate as teaching assistants in nursing, dental, or medical school courses offered by the Department. Teaching assignments will be made before the beginning of each academic year. During the second and third years, students may be responsible for lecture attendance, supervised presentation of a portion of lecture material, administration of exams, grading of quizzes, participation in review and discussion sessions, and tutoring assigned by the course director. During the fourth year students may also serve as supervisors of second or third year teaching assistants. The student's performance in each course as a teaching assistant will be evaluated by the faculty involved in teaching the course. A summary of the student's evaluation, prepared by the course director, will be presented to the entire faculty and placed in the student's permanent file.

**E. Qualifying Examination.** All students must have attempted their Qualifying Exam by the end of the fourth semester following matriculation (exclusive of summer semesters) or be terminated from the program. If the student receives a conditional pass on the Qualifying Exam, he/she must complete the proscribed remediation within the time frame stipulated by the examining committee. Under extraordinary circumstances such as illness or family emergency, the Department Head may grant an extension at the written request of the student.

This Examination is administered by the student's Examining Committee, which is composed of five (or more) members and includes at least three faculty members with a primary appointment in the Department of Biochemistry and Molecular Biology, your Major Professor and at least one faculty member from outside the Department who is knowledgeable in your research area. A written research proposal which delineates the area in which the student wishes to perform his/her dissertation research must be prepared. This proposal should be prepared according to form PHS 398 guidelines for grant applications to the National Institutes of Health (NIH) and distributed to all members of the committee at least two weeks prior to the examination. The proposal should include a title, an abstract, specific aims, background information, working hypotheses, experiments designed to test the hypotheses, and pertinent references. [It is not necessary to complete the Budget, Resources and Environment, and Other Support pages.] In addition to being tested on the specific proposal, the student may also be examined (written and/or orally) on related scientific disciplines to ensure breadth of knowledge. To pass the Qualifying Examination, the student must receive positive ("Pass") ballots from a majority of the committee members.

**F. Preliminary Examination.** All students must have attempted their Preliminary Exam by the end of the fifth semester following matriculation, exclusive of summer semesters. If the student receives a conditional pass on the Preliminary Exam, he/she must complete the proscribed remediation within the time frame stipulated by the examining committee. Under extraordinary circumstances such as illness or family emergency, the Department Head may grant an extension at the written request of the student.

This Examination is administered by the student's Examining Committee, which is composed of at least five members and includes at least three faculty members with a primary appointment in the Department of Biochemistry and Molecular Biology, your Major Professor and at least one faculty member from outside the

Department who is knowledgeable in your research area. A research proposal, limited to one-half the standard NIH (PHS 398) length, must be distributed to all members of the committee at least two weeks prior to the Examination. The research topic must be different from that of the student's proposed dissertation research. The topic is to be chosen by the student and then approved by the Examining Committee. The purpose of this proposal is to provide the student with an opportunity to gain breadth of knowledge and to demonstrate independence in conceiving and designing a research project. The proposal should include a title, an abstract, specific aims, background information, working hypotheses, experiments designed to test the hypotheses, and pertinent references. [It is not necessary to complete the Budget, Resources and Environment, and Other Support pages.] In addition to being tested on the specific proposal, the student may also be examined (written and/or orally) on related scientific disciplines. In order to pass the Preliminary Examination, the student can receive no more than one negative ("Fail") ballot from the committee members. After passing the preliminary examination, the student becomes a candidate for the PhD degree.

**G. Departmental Seminar.** All PhD degree candidates are required to present a Departmental Seminar within one year after passing their preliminary examination.

**H. Final Examination.** After preparing a dissertation based on original, meritorious research, the PhD candidate will present a seminar to the members of the Department of Biochemistry and Molecular Biology and all other interested parties. The candidate will also defend the dissertation to the Examining Committee in a session preceding or following the presentation.

**I. Other Requirements.** The student is required to have at least one full-length, peer-reviewed paper published or in press prior to approval by the five-member committee that the requirements for the PhD degree have been fulfilled.

**J. Committee Meeting Requirements.** All students must hold at least one committee meeting per year following successful completion of the Preliminary Examination. Committee meetings will preferably coincide with their annual Work In Progress seminar. Committee members will be provided with a written summary of progress to date at least one week prior to the committee meeting. Failure to hold an annual committee meeting will result in an independent evaluation of progress by the Department Head or his/her designees and possible termination from the program.

**K. Additional Comments.** Laboratory research and investigation are vigorously emphasized at all stages of the program. To provide broader experience, rotation through at least three laboratories during the first year is required. Registration in Introduction to Special Methods of Research (207) is necessary to obtain academic credit for laboratory rotations. It is expected that one of the rotations will be through the laboratory of the Major Professor. Rotating students are expected to be in the lab when not in class during standard working hours and as necessary to perform their experiments. At the end of the rotation, the mentor will provide the student and the Graduate Coordinator with a letter summarizing the student's progress and abilities.

Until the Major Professor has been identified, research and didactic activities can be coordinated by the Graduate Student Advisor and other appropriate faculty. The Qualifying Examination should be taken about one month after the third semester of study (excluding summer sessions), although it may be taken earlier. All students must have attempted their Qualifying Exam by the end of the fourth semester following matriculation (exclusive of summer semesters) or be terminated from the program. The student's Major Professor or Examining Committee may require that additional subjects and/or examinations be taken during the course of study. In so far as possible, required and elective course work should be completed during the first two years of graduate study, and advanced years should be spent predominantly in the research laboratory. Continuation in the laboratory of the Major Professor is determined by mutual agreement of both the student and the Major Professor at all stages of study. Unforeseen circumstances (lack of adequate research grant support, transfer to another institution, etc.) may necessitate a change in Major Professor.

[Approved by the Biochemistry and Molecular Biology Faculty on 30 July 1987, 12 August 1987, 2 June 1988, 3 February 1989, 25 April 1990, 9 April 1991; 11 March 1992; May 12, 1993, June 9, 1994, 3 February 1997, 17 June 1997, 13 August 1997, 7 September, 2004.]

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## APPENDIX II

### Program of Study for the MS Degree

**A. Prerequisites.** General chemistry, organic chemistry, physical chemistry, mathematics (through calculus), and one year of biology are required. If necessary, these courses may be completed during the first year of graduate study.

**B. Course Requirements.** A total of 30 credits, which include the following courses, are required. [NOTE: Withdrawal from a required course will be allowed only under extremely extenuating circumstances and must be approved on a case-by-case basis by the faculty.]

1. Fundamental Biochemistry (201; 5 credits): A minimum grade of "B" is required.
2. Molecular Biology (240; 5 credits): A minimum grade of "B" is required.
3. Introduction to Special Methods of Research (207; 8 credits): Laboratory research carried out during the first year. A grade of "C" is unsatisfactory and may lead to dismissal from the program.
4. Seminar (298 and 299; 3 credits): The Department requires 3 credits of seminar although the Graduate School permits only 2 of these to be applied toward graduation.
5. Thesis Research (300; 6 credits): Although students generally receive more credits, only 6 may be applied toward graduation.
6. Electives (6 credits): These should be selected to provide a broad scientific background and should be chosen in consultation with the Graduate Student Advisor and/or your Examining Committee and Major Professor.

**C. Teaching.** The faculty considers teaching an important part of academic training. As a rule, after their first year, students will be expected to participate as teaching assistants in nursing, dental, or medical school courses offered by the Department. Teaching assignments will be made before the beginning of each academic year. Students may be responsible for lecture attendance, supervised presentation of a portion of lecture material, administration of exams, grading of quizzes, participation in review and discussion sessions, and tutoring assigned by the course director. The performance of the teaching assistants will be evaluated by the faculty involved in teaching the course. A summary of this evaluation will be prepared by the course director. The student's evaluation will be

presented to the entire faculty and placed in the student's permanent file.

**D. Qualifying Examination (for the MS degree).** The Qualifying Examination is taken about one month after the successful completion of two complete semesters (excluding summer sessions) by a three-member Examining Committee. An extension in time for this examination requires the permission of the student's committee. The qualifying examination may include oral and written components at the discretion of committee members. A short written summary of the research conducted during the first year must be distributed to the committee prior to the examination. Topics of the examination will include general biochemistry (and relevant scientific disciplines) and research completed in Introduction to Special Methods of Research (207). Direction for the student's further study will be formulated according to the findings of this examination. The student must pass this examination prior to registration for Thesis Research (300).

**E. Thesis.** A formal thesis must be submitted to and approved by a three-member committee. This committee is to be composed of two faculty members from the Department of Biochemistry and Molecular Biology (one of whom is the Major Professor) and one faculty member from another department. The committee may consist of more than three members.

**F. Examination.** When the thesis is nearly completed, each candidate is required to pass a comprehensive examination which may be written, oral, or both. It is expected that the requirements for the Master's degree will be completed within two calendar years after matriculation.

[Approved by the Biochemistry and Molecular Biology Faculty on 30 July 1987, 12 August 1987, 2 June 1988, February 1990, and 13 August 1997, October 2004]

### APPENDIX III

#### The Faculty and Their Research Interests The Department of Biochemistry and Molecular Biology Louisiana State University Health Sciences Center

##### PRIMARY APPOINTMENTS:

**Suresh K. Alahari**, Associate Professor; PhD, Drexel University, 1994. Biochemistry of cell adhesion.

**William C. Claycomb**, Professor; PhD, Indiana University, 1969. Biochemistry of cell proliferation and cell differentiation.

**James R. Gnarra**, Associate Professor; PhD, University of Virginia, 1987. Molecular genetics of cancer; tumor-suppressor genes; mouse models of tumorigenesis; gene therapy.

**Arthur L. Haas**, Professor & Chairman; PhD, Northwestern University School of Medicine, 1979. Ubiquitination; the roles of ubiquitin and ISG15 conjugation in cellular regulation.

**John W. Haycock**, Professor; PhD, University of California at Irvine, 1975. Neurobiology; neurotransmitter release; regulation of catecholamine function; intracellular signaling pathways and protein phosphorylation; monoaminergic markers in postmortem human brain

**Jack D. Herbert**, Associate Professor; PhD, Louisiana State University Medical Center, 1967. Amino acid metabolism; assimilation of dietary amino acids, disposal of excess nitrogen; excretion of ammonia and uric acid; gout.

**Jay D. Hunt, III**, Assistant Professor, PhD, University of Tennessee-Memphis, 1990. Genetics of non-small cell lung carcinoma; tumor suppressor genes; genetic instability in cancer.

**S. Michal Jazwinski**, Professor; PhD, Stanford University, 1975. Molecular and cell biology of DNA replication in budding yeast; regulation of DNA replication; molecular and genetic analysis of cell division cycle control and cellular aging in yeast; longevity assurance genes and senescence genes.

**Iris Lindberg**, Professor; PhD, University of Wisconsin at Madison, 1980. Peptide biosynthesis in neuroendocrine tissues and brain; opioid peptides.

**Robert Roskoski, Jr.**, Professor; MD, 1964, PhD, 1968; University of Chicago. Regulation of tyrosine hydroxylase activity by phosphorylation; enzymology of farnesyl-protein transferase and Ras modification.

**Donald K. Scott**, Assistant Professor, PhD, Saint Louis University, 1991. Regulation of gene expression by glucose.

**Wayne V. Vedeckis**, Professor; PhD, Northwestern University, 1974. Steroid hormone actions; structure, function, and genomic interactions of

glucocorticoid receptor proteins; steroid hormone regulation of mRNA stability.

**David Worthylake**, Assistant Professor, PhD, University of North Carolina, 1998. Structural biology. X-ray crystallographic studies of proteins and protein-protein interaction.

#### **AUXILIARY APPOINTMENTS:**

**Jawed Alam**, Assistant Professor, PhD, Purdue, 1983. Receptor-mediated transport of heme to liver and heme-dependent regulation of gene expression.

**Haydee E. P. Bazan**, Professor of Ophthalmology, and Biochemistry and Molecular Biology; PhD, National University of the South (Argentina), 1975. Retina and cornea biochemistry; neural control of the synthesis and turnover of membrane lipids including phosphoinositides; dynamics of membrane phospholipids in photoreceptor cells.

**Nicolas G. Bazan**, Professor of Ophthalmology, Neurology, and Biochemistry and Molecular Biology; MD, 1965, D. Med. Sc., 1970, Tucuman University (Argentina). Neurochemistry; membrane phospholipids in experimental models of retinal degenerative diseases, epilepsy, and stroke; biosynthesis of prostaglandins and of other eicosanoids; metabolism of docosahexanoic and arachidonic acids.

**Mary Breslin**, Assistant Professor of Pediatrics. PhD, LSU Health Sciences Center, 1999. Small cell lung cancer; elucidate the role of a novel zinc finger transcriptional repressor protein, insulinoma associate-1 (IA-1) in SCLC in gene expression.

**Julie Brown**, Research Assistant Professor. PhD, University of Virginia, 1989. Mechanism for HIV tat protein repression of transcription. Interactions of the tat protein with other effector proteins.

**J. Craig Cohen**, Professor of Medicine, and Biochemistry and Molecular Biology; PhD, 1972, University of Mississippi Medical Center. Molecular virology of RNA tumor viruses; organization and regulation of genes involved in carcinogenesis.

**Julia Cook**, Assistant Professor, PhD, North Carolina State University, 1986. Neural-specific gene regulation; applications of gene transfer to human disease; antisense and triplex technologies.

**John Doucet**, Assistant Professor, PhD, LSU Health Sciences Center, 1992. Genetic diseases in Louisiana populations; Acadian Usher syndrome; neurobiology of vision and hearing; genetic epidemiology of diseases; molecular anthropology of Louisiana populations

**Augusto C. Ochoa**, Associate Professor, MD, Universidad de Antioquia, 1981. Alterations of signal transduction in T cells of cancer patients and the development of immunotherapy in cancer.

**Madhwa H. G. Raj**, Professor of Obstetrics and Gynecology, and Biochemistry and Molecular Biology; PhD, Indian Institute of Science (India), 1969. Follicular and corpus luteum function, testicular Sertoli cell function, biochemistry of membrane receptors to gonadotropins, and contraceptive development.

**Bo Xu**, Assistant Professor of Genetics, PhD, Peking Union Medical College, Beijing, China, 1998. Mechanisms that control cellular responses to DNA damaging agents, cancer initiation, progression and what determines the sensitivity of tumors to therapeutic interventions.

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## **APPENDIX IV**

### **Grant / Fellowship Routing Procedures**

The Biochemistry Business Office is available to help graduate students and post-doctoral fellows with grant and fellowship applications.

The first rule of grant/fellowship application is simple:

#### **PLAN AHEAD!**

All grant and fellowship applications **MUST** be in the Biochemistry Business Office at least 10 working days before the agency deadline to ensure that the grant will be sent to the agency on time. Note: All fellowship and grant applications must be routed through the biochemistry business office whether the individual or the institution receives the award payment.

Do not type anything on the original application form until you have reviewed the application with the Business Office Staff and make several photocopies of the forms for rough drafts. Consult with one of the business staff before completing the institutional address, any administrative names, or the budget section. The office may need a copy of the guidelines from the funding agency to route with your application; check with the staff about this with each application.

The following summary was taken from the LSU Health Sciences Center Manual for Sponsored Projects, which outlines the routing process and the required materials at each phase.

**A. Checklist (Route Sheet)**--All proposals for extramural support, regardless of source, must be accompanied by an original "LSUHSC Proposal Checklist". This form assures that the appropriate officials review and approve each proposal in accordance with LSUHSC and granting agency regulations. These forms are available in the Biochemistry and Molecular Biology Business Office.

**B. Review and Approval**--Each proposal must be reviewed and approved by each of the following persons:

- 1.** The Department Head (Dr. Haas) reviews the application and signs accordingly.
- 2.** Radiation Safety Officer signs for isotope approval and biohazards (recombinant DNA, carcinogens, etc.). This step in the routing requires a copy of the "Materials and Methods" section of your proposal.
- 3.** If you are using animals or human subjects in your research, you will need to apply for approval. This includes Institutional Review Board Training. You should see the Biochemistry Business Office well in advance for the complete training and approval procedures.

4. Once the proposal is complete, the business office will forward the proposal to the Office of Research at 433 Bolivar Street or 1100 Florida Avenue for administrative approval.

5. The final step in the routing is the review of the budget by the Office of Sponsored Projects in the Resource Center (433 Bolivar Street). After their approval, Dr. Joseph Moerschbaeher, Vice-Chancellor for Academic Affairs, usually signs as the official university representative.

C. After all approvals and institutional signatures are obtained, the business office will return the proposal to you.

D. It is your responsibility to be sure all corrections are made on your final copy and to make the required number of copies of the entire completed and approved application. One complete copy must be given to the Biochemistry Business Office for the Departmental files. Check your application guidelines for the number of copies to be submitted to the granting agency. Be sure to keep copies for your own use and reference.

E. You are responsible for mailing the completed application, the required number of copies, and any necessary supporting documents. If the cost of the postage is to be covered by a faculty member's grant or by the Department, the Biochemistry Business Office Staff will be glad to explain the proper procedure to you.

The previous information can best be summarized with a simple statement:

**When in doubt, call the business office!**

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**APPENDIX V**  
Accident With Injury Procedures

**A. All Cases of Injury**—Students and all LSUHSC personnel should contact:

**Environmental Health and Safety**  
Office Hours: 7:30 a.m. - 4:30 p.m.  
Monday thru Friday

Located in the Residence Hall, 2nd Floor  
1900 Perdido New Orleans, Louisiana 70112  
Phone (504) 568-6585 Fax (504) 568-5185

Website: <http://www.is.lsuhs.edu/safety/default.htm>

An up to date manual containing LSUHSC safety information and procedures is available on the web at [http://www.is.lsuhs.edu/safety/EHS\\_SafetyManual.doc](http://www.is.lsuhs.edu/safety/EHS_SafetyManual.doc)

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## A P P E N D I X V I

### Glossary of Terms

**Examining Committee** - committee of at least five faculty members (four from the Department of Biochemistry and Molecular Biology and at least one from outside the Department but knowledgeable in the student's research area) responsible for administering the qualifying examination.

**Final Examination** - comprehensive examination taken as soon as one academic year or as late as three academic years after successful completion of the Preliminary Examination; includes the oral dissertation defense

**Graduate School** - term used to designate the division of the LSU Health Sciences Center School of Graduate Studies; usually refers to the Office of the Dean of the School of Graduate Studies

**Graduate Student Advisor** - Currently Dr. Iris Lindberg, The advisor is a member of the Department of Biochemistry and Molecular Biology, which advises first year students on their plan of study

**Laboratory Rotation** - period of time ranging from six to ten weeks in which the student participates in research in a laboratory with the purpose of learning experimental methodologies with experts in the field and determining a Major Professor; each student is required to make at least three such rotations before choosing a Major Professor

**LSU Health Sciences Center Catalog/Bulletin** - publication distributed by the LSU Health Sciences Center, which outlines the available courses offered by each department and states the minimum qualifications for a degree granted by the Health Sciences Center

**Major Professor** - faculty member of the Department who has reached a mutual agreement with the student to direct that student's research and offer advise on course scheduling until the completion of studies or until the student or the faculty member decide to terminate the association

**Medical Center** - term used to designate the LSU Health Sciences Center, a division of the Louisiana State University System; includes the Schools of Allied Health, Dentistry, Graduate Studies, Medicine, and Nursing

**Orientation** - program allowing each new graduate student to meet with each faculty member of the Department to discuss the research being done in that faculty's laboratory; useful in determining laboratories through which the student is interested in rotating

**Preliminary Examination** - comprehensive examination taken in accordance with the rules and regulations stipulated in this manual, which consists of oral and written components; successful completion of this examination is required prior to registration for Dissertation Research (Biochemistry and Molecular Biology 400); a

research proposal focusing on an area of experimentation unrelated to the proposed dissertation problem is defended

**Program of Study** - document prepared by the faculty of the Department describing courses required and suggested for completion of degree requirements

**Qualifying Examination** - comprehensive examination taken in accordance with the rules and regulations stipulated in this manual, which consists of oral and written components; a research proposal focusing on the student's proposed dissertation problem is defended; used to evaluate the student for continuation in the graduate program of the Department.