



UT Health

San Antonio

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Physiology & Pharmacology

Handbook of the  
**Graduate Program in Physiology and Pharmacology**  
Integrated Biomedical Sciences  
Graduate School of Biomedical Sciences  
The University of Texas Health, San Antonio

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## Program Overview

The graduate program leading to the Ph.D. degree in Integrated Biomedical Sciences (IBMS) with a concentration in Physiology and Pharmacology is designed to provide a strong background in research methodology and experimental design necessary for a professional career in academia, industry, or government. Generally, five years are required to complete the requirements for the Ph.D. degree.

Students are expected to complete the required coursework and the qualifying examination by the end of their second year. Following successful completion of all required courses, successful completion of the qualifying exam and satisfactory research progress, students are admitted to candidacy for the Ph.D. degree. During the third year, students are expected to develop a dissertation research proposal and present it in a seminar to students and faculty in the Physiology and Pharmacology (P&P) Discipline. Students are encouraged to make presentations of their research data at national scientific meetings.

### Disclaimer

This Handbook is designed to guide a student through their academic progression at the University of Texas Health, San Antonio (UTHSA). Further details of the basic procedures and regulations of the Graduate School of Biomedical Sciences (GSBS) at UTHSA are found in the UTHSA catalog which can be viewed online at <http://catalog.uthscsa.edu/>.

The provisions of this Handbook do not constitute a contract, expressed or implied, between any applicant, student, or faculty member of the P&P Discipline (and their affiliated Departments), the GSBS, or UTHSA. UTHSA reserves the right to alter course offerings at any time or change the curriculum or any other procedures

leading to the awarding of a degree and any other requirements affecting students. Changes will be effective whenever the proper authorities so determine and will apply to both prospective students and those already enrolled. The Handbook will be revised annually and published online via the P&P Discipline website.

### **Commonly Used Abbreviations**

SOC	Student Oversight Committee
Dean	Dean of the Graduate School of Biomedical Sciences
DSC	Dissertation Supervising Committee
Faculty	Unless otherwise noted, the Graduate Faculty of the Physiology and Pharmacology Discipline
GFC	Graduate Faculty Council
COGS	Committee on Graduate Studies
GSBS	Graduate School of Biomedical Sciences
IBMS	Integrated Biomedical Sciences
UTHSA	University of Texas Health, San Antonio
P&P	Physiology and Pharmacology

### **Student Oversight Committee**

The P&P Discipline SOC administers the graduate program in P&P. The SOC is responsible for coordinating activities in the P&P Discipline. Responsibilities include, but are not limited to, defining the curriculum, establishing procedures, evaluating students, and other pertinent policy matters.

The SOC is composed of 5 voting members made up of P&P Discipline graduate faculty. SOC members are elected by the P&P Discipline Executive Committee to serve three year terms.

Terms of SOC members will be staggered so as to provide continuity in membership, such that no more than two members will rotate off at any one time. The SOC Chair may serve up to two consecutive terms. The SOC Chair will be replaced by a current member of the SOC, again, to ensure continuity.

The Chair of the SOC is designated as the Graduate Advisor and is responsible for making decisions in accordance with established program policy. It is the responsibility of the Chair to keep the committee informed of the status of all P&P Discipline graduate students. The Chair should seek a majority vote of the committee prior to any of the following: recommending dismissal of a student from the program to the Committee on Graduate Studies (COGS), granting unprecedented course substitutions, establishing new policies, approving/denying petitions, recommending a change in Supervising Professor to COGS, or waiving any program requirements.

### **Program Faculty and Membership**

It is understood that faculty membership in the P&P Discipline of the IBMS Graduate Program carries with it the agreement to contribute meaningfully to graduate education in the form of mentoring dissertation research, serving on research guidance committees, teaching in graduate courses, attending student seminars or other student presentations and/or participating in faculty committees relevant to the graduate program.

Each faculty member who wishes to participate in any of these activities must be a member of the IBMS graduate program. Faculty who wish to become approved members of the graduate program must submit a request to the GSBS. The form and guidelines can be found on the [GSBS website](#).

## Graduate Student Academic Standards

Students in the P&P Discipline are expected to maintain a satisfactory grade in Seminar, Research, Dissertation and Special Topics and at least a letter grade of “B” in all other graduate courses.

GSBS guidelines state that a student must maintain a cumulative GPA of 3.0. A student whose cumulative GPA falls below 3.0 is automatically placed on probation by the Dean and warned that continuation in the graduate program is in jeopardy. While on probation, the student must maintain at least a “B” average in all subsequent semesters for which he/she is registered. Failure to achieve a 3.0 in coursework for any semester could result in the student being considered for dismissal from the Graduate School by COGS and/or the Dean. A student will remain on probation as long as the cumulative GPA remains below 3.0. A student may not withdraw from any courses while on academic probation. **Students on probation are not eligible for Ph.D. candidacy.**

If a letter grade of C or U is received in any course required by the P&P Discipline plan of study, the student will be referred to the SOC for consideration. Generally, the student will be required to repeat the course. A letter grade of C in two or more graduate courses or a letter grade of D in any graduate course could result in the SOC recommending that the student be dismissed from the graduate program. The SOC will decide on the appropriate course of action following a review of each case.

### Appeal Process

A student may appeal to the SOC to reconsider any policy decision that may affect the student’s progress or tenure in the P&P graduate program. In those cases where dismissal is recommended to the Dean, the student may appeal to the SOC to reconsider its recommendation for dismissal.

## Course Work and Laboratory Rotations

### Required Courses

All students enrolled in the Ph.D. program in P&P are required to take the following courses:

IBMS	5000	Fundamentals of Biomedical Sciences (required for all IBMS students)
CSAT	6005	Rigor and Reproducibility
IBMS	5008	IBMS Laboratory Rotations
PHAR	5013	Principles of Pharmacology and Physiology
PHAR	5014	<del>Integrative Physiology and Therapeutics</del> New Integrative Physiology Course, coming soon! New Drug Discovery and Development Course, coming soon!
PHAR	5020	Basics of Research Design
TSCI	5070	Responsible Conduct of Research
CSBL	5095	Experimental Design & Analysis (Statistics)
PHAR	5092-8PP	Research Practicum
*IBMS	6090-8PP	Departmental Seminar (Physiology and/or Pharmacology departmental seminars)
IBMS	7010-8PP	Student Journal Club and Research Presentations
IBMS	7001-8PP	Qualifying Exam
IBMS	6097-8PP	Research
IBMS	7099-8PP	Dissertation

\* In lieu of attending Physiology and/or Pharmacology departmental seminars, attendance at seminars offered by other departments or centers is permitted (and will count toward the grade in this course) in cases where the seminar is especially relevant to the student's dissertation research (e.g. cancer biology, aging).

**Electives (must take at least 4 hours and can include any courses offered at the UTHSA)**

**Frequent options include:**

INTD	5040	Fundamentals of Neuroscience I: Molecular, Cellular, Developmental
INTD	5043	Fundamentals of Neuroscience II: Systems
INTD	7074	Topics in Translational Medical Product Development
PHAR	5091	Micro electives (Seminar/Journal Club-style specialized courses)
	5091-1	Monoaminergic Neurotransmission and Transporters
	5091-2	Drug Discovery: Nuts & Bolts
	5091-3	Historical Perspectives of Receptor Theory
	5091-6	Serotonin - Soup to Nuts
	5091-8	Neural Substrates of Regulated Behaviors
	5091-10	Appetite Control: Adiposity Hormones & Neuropeptides
	5091-11	Fundamentals of Behavioral Pharmacology
	5091-18	G protein-coupled receptor heteromers: Pharmacological and physiological relevance
PHYL	5041	Excitable Membranes
BIOC	5091	Special Topics in Biochemistry
BIOC	6035	Biochemistry of Multimolecular Complexes
BIOC	6010	Gene Expression
BIOC	6043	Structure and Function of Membrane Proteins
BIOC	6033	Cellular Signaling Mechanisms
CSBL	6048	Biology of Aging
CSBL	6021	Animal Models
CSBL	6064	Genetics
CSBL	6020	Concepts in Vertebrate Development
PHAR	7003	Electrophysiology in Neuroscience Research
PHAR	6027	Fundamentals of Neurotics
PHAR	7002	Bridging the Gap from Bench to Bedside: Pharmacology Clinical Practicum

**Contact hours and details of syllabus for courses/electives can be found at:**

<http://gsbssyllabus.uthscsa.edu/>.

**The following modules from PHAR 5014 will be offered as electives for other Disciplines:**

PHAR	5021	Autonomic Control and Therapeutics (0.5 SCH)
PHAR	5018	Cardiovascular, Renal and Respiratory Physiology and Therapeutics (2.5 SCH)
PHAR	5019	Metabolism, Hormones, GI Physiology and Therapeutics (2.0 SCH)

**Exemptions**

An exemption from any of the courses listed above may be requested if the student has taken similar courses and received at least a letter grade of "B". The student should petition the SOC as soon as possible after admission to the graduate program for exemption from a given course.

## Typical Course Schedule

### Year 1:

#### Fall semester

IBMS 5000	Fundamentals of Biomedical Sciences (required for all IBMS students)	8.0 SCH
TSCI 5070	Responsible Conduct of Research	2.0 SCH
IBMS 5008	Laboratory Rotations (3 rotations, 5 weeks each)	3.0 SCH
		<b>TOTAL 13.0 SCH</b>

#### Spring semester

PHAR 5013	Principles of Pharmacology and Physiology	3.0 SCH
CSBL 5095	Experimental Design and Data Analysis (Statistics)	3.0 SCH
IBMS 7010-8PP	Student Journal Club and Research Presentations	1.0 SCH
IBMS 6090-8PP	Pharmacology and/or Physiology Departmental Seminars	1.5 SCH
IBMS 6097-8PP	Research	Variable
*ELECTIVE COURSES FROM P&P or OTHER DISCIPLINES		Variable
		<b>TOTAL 12.0 SCH</b>

### Year 2:

#### Fall semester

PHAR 5020	Basics of Research Design	2.0 SCH
PHAR 5014	Integrated Physiology and Therapeutics (to be replaced by new courses, expected to roll out in 2019)	4.5 SCH
PHAR 5092-8PP	Research Practicum – P&P	1.0 SCH
CSAT 6005	Rigor & Reproducibility	1.0 SCH
IBMS 7010-8PP	Student Journal Club and Research Presentations	1.0 SCH
IBMS 6090-8PP	Pharmacology and/or Physiology Departmental Seminars	1.5 SCH
IBMS 6097-8PP	Research	Variable
*ELECTIVE COURSES FROM P&P or OTHER DISCIPLINES		Variable
		<b>TOTAL 12.0 SCH</b>

#### Spring semester

IBMS 7010-8PP	Student Journal Club and Research Presentations	1.0 SCH
IBMS 6090-8PP	Pharmacology and/or Physiology Departmental Seminars	1.5 SCH
IBMS 7001-8PP	Qualifying Exam	1.0 SCH
IBMS 6097-8PP	Research	Variable
*ELECTIVE COURSES FROM P&P or OTHER DISCIPLINES		Variable
		<b>TOTAL 12.0 SCH</b>

#### Years 3 through completion ~ each semester:

IBMS 7010-8PP	Student Journal Club and Research Presentations	1.0 SCH
IBMS 6090-8PP	Pharmacology and/or Physiology Departmental Seminars	1.5 SCH
IBMS 6097-8PP	Research	Variable
**IBMS 7099-8PP	Dissertation	Variable
*ELECTIVE COURSES FROM P&P or OTHER DISCIPLINES		Variable
		<b>TOTAL 12.0 SCH</b>

\*Since different electives vary in credit hours, research credit hours for a given semester should be adjusted in order to maintain a total of 12 credit hours for the semester.

\*\*A minimum of 2 semesters of IBMS 7099-8PP (Dissertation) is required for graduation. A student may begin enrolling in IBMS 7099-8PP once the Dissertation Research Proposal and the Dissertation Supervising

Committee membership are approved by the GSBS Dean. Final hours (3.0 SCH) may be applicable for the final semester.

### **Full-Time Status**

The minimum full-time course load for each semester is 12 credit hours. Graduate students are required to maintain full-time status until the completion of their graduate studies.

A student in the last semester of study may enroll in “Final Hours” which allows him/her to enroll in 3 credit hours of Dissertation. See page 16 for more information on Final Hours.

### **Adding/Dropping Courses**

Students may add/drop courses during the official add/drop days as designated by the Registrar’s Office each semester. Student are not permitted to add/drop courses after the census date. The academic calendar for the Graduate School can be found on the UTHSA website: <https://students.uthscsa.edu/registrar/2013/04/academic-calendar/>.

100% of tuition and fees will be refunded for courses dropped prior to the census day of the term provided the student remains enrolled in the institution for that term. No refunds will be made for courses dropped following the census day of the term unless the student withdraws from the university. The Fee Refund Schedule will be used to determine refund eligibility. For more information, contact the Bursar’s Office or visit their website: <http://uthscsa.edu/business/bursar4students/>.

### **Laboratory Rotations**

Laboratory rotations should be completed as required by the IBMS program. Students are evaluated by the faculty mentor supervising their rotation and given a grade of satisfactory (S) or unsatisfactory (U). Criteria used in the evaluation are:

1. Time commitment
2. Ownership and follow-through
3. Evaluation of the literature
4. Experimental skills (design, execution and data interpretation)
5. Teamwork
6. Initiative
7. Communication skills
8. Rotation report
9. Ethical conduct during the lab rotation

Criteria are scored on a scale of 1 (worst) to 9 best. Post-rotation evaluations are available to all IBMS faculty.

### **Stipend Support**

The GSBS offers financial assistance in the form of teaching and research assistantships to full-time students admitted to the IBMS doctoral program. The annual salary is \$30,000. Tuition and fees will also be paid for the student. This financial support is provided by the GSBS in year one and by the Supervising Professors beginning in year two, through completion of the program. In consultation with the Supervising Professor, students may also apply for stipend support from training grants associated with specific areas of research.

### **Selection of the Supervising Professor**

After completing the required IBMS lab rotations, students are required to select a faculty member who will serve as the Supervising Professor for their dissertation research. This faculty member must be a member of the

graduate faculty, and of the P&P Discipline, and will be with whom the student works during the Research Practicum during their first year (see description below).

The student is required to obtain initial approval from the SOC for the proposed dissertation Supervising Professor. Approval is then routed through IMPACT for approval by the Discipline Director, COGS Chair, and Dean. The Supervising Professor must have an active research lab, be willing to serve as the student's dissertation supervisor, and must have funds to support the student's stipend and research activities beginning in the Fall semester of the second year in the program and continuing for the entire time required to complete the dissertation project (usually 3-4 years). SOC will not approve a Supervising Professor who does not have the funds to support the student's research and stipend and/or has not been approved as a member of the graduate faculty. Before choosing faculty members for rotations, the student should confirm with the faculty member their capacity to serve as a dissertation Supervising Professor.

## **Research Practicum (PHAR 5092)**

Students must complete a research practicum under the mentorship of their chosen Supervising Professor. In the unusual event that the student has not yet identified a Supervising Professor by the beginning of the Spring semester of their first year, the student may request an additional rotation(s) that exceeds the minimum number required, in which case a delay in the selection of a Discipline and Supervising Professor may be allowed.

The research practicum should begin in the Spring of the student's first year, and run through the summer of that year. Successful completion of the research practicum is one of the requirements for admission to candidacy. **A report by the Supervising Professor that the student has clearly demonstrated the potential for productive and independent investigation is a requirement for admission into candidacy.**

At the beginning of the research practicum, the Supervising Professor will discuss the criteria (see below) that will be used to evaluate the performance of the student. The P&P Discipline Program Coordinator will provide a written copy, and/or a link to the student Handbook, to all students as well as Supervising Professors at the beginning of the practicum.

At the conclusion of the research practicum, students are required to write a report (see section D) and to present a talk, which will be included as part of Student Journal Club and Research Presentations (7010-8PP).

### **Research Practicum Project and Criteria**

#### **A. Objective**

The objective of the research practicum is to:

1. Give students an opportunity to develop research, writing, oral presentation, and critical thinking skills.
2. Permit faculty to evaluate the laboratory skills and potential research aptitude of the student.

#### **B. Project**

The design of the research project is the responsibility of the Supervising Professor and should be established prior to accepting a student in the laboratory. It is critical that the Supervising Professor develop a concise and well-defined project for the student's research practicum. The project should satisfy the following criteria:

1. The project should be hypothesis-driven.
2. The methodology required to complete the project should currently be in use in the laboratory.
3. There should be a reasonable expectation of some success within the allotted time.



### **C. Evaluation**

The student will be evaluated on the following criteria:

1. Technical competence.
2. Motivation.
3. Understanding of the techniques and instrumentation used in the research.
4. Understanding of scientific concepts and principles pertinent to the project.
5. Ability to read and critically evaluate literature.
6. Ability to work, think, and write independently.

The Supervising Professor should meet regularly with the student to discuss the student's performance based on the above criteria. At the end of the research practicum, an evaluation form (page A-1) will be sent to the Supervising Professor, who will give the student an A (excellent), B (average) or C (unsatisfactory) grade for each criterion.

The Supervising Professor must meet with the student to discuss the evaluation and have the student sign the evaluation form to indicate that he/she has had the opportunity to review and discuss the evaluation with the Supervising Professor. The evaluation is then submitted to the P&P Discipline Program Coordinator to be reviewed by the SOC. These evaluations are then placed in the student's file and are available for review by the faculty.

### **D. Written Report**

The written report is to be given to the Supervising Professor no later than the third Friday of August (i.e. around the conclusion of the student's first year in the program). The written report is to follow the format of a short research communication (about 10-12, double-spaced, typewritten pages) consisting of the following parts:

1. Title
2. Abstract
3. Introduction
4. Methods
5. Results
6. Discussion
7. Summary and Conclusions
8. References

Each student should prepare two copies of the written report; one copy is to be given to the P&P Discipline Program Coordinator to be kept as a file copy and the other copy is to be graded by the Supervising Professor.

### **E. Post-Practicum Talk**

The post-practicum talk will be included as part of 7010-8PP, Student Journal Club and Research Presentations. Here students are required to give a seminar length presentation (~45 minute, plus 10 minutes for questions) research update to members of the P&P Discipline, describing their research project. The talk should include a statement of the hypothesis tested, specific objectives, methodology employed, present the results obtained, draw conclusions and suggest future avenues of investigation. Students are strongly encouraged to consult with their Supervising Professor for advice on the preparation and organization of the oral presentation. Students

are encouraged to practice their talks with their Supervising Professor, and lab mates, prior to the formal presentation. Those in attendance will be asked to complete the Seminar Speaker Critique form (page A-2) to provide constructive feedback to the student speakers. In addition, the presentations will be video-recorded. The recordings will be provided to the Supervising Professor for him/her to review and discuss with the student along with the speaker critique forms.

## **F. Grade**

Students receive a letter grade (A, B, or C as defined earlier) for PHAR 5092 Research Practicum that is based equally upon the evaluation of the student's performance in the laboratory and on the written report/talk.

## **Qualifying Examination (IBMS 7001-8PP)**

Passing the Qualifying Examination (QE) is one of the steps required for advancement to candidacy. The examination includes both a written and an oral component. The other steps are satisfactory completion of all required courses (average GPA of at least 3.0) and certification by the Supervising Professor that the student has demonstrated the potential for productive and independent investigation in the laboratory.

The objectives of the QE are to evaluate the research potential of the student, to evaluate the student's progress towards becoming a scientist, and to evaluate the student's understanding of and ability to integrate physiological and pharmacological principles.

### **Composition of the QE Committee**

The QE Committee is responsible for overseeing and administering the QE. The QE committee will comprise four graduate faculty members from the P&P Discipline and one graduate faculty member whose primary affiliation is with another Discipline within the IBMS Program. The QE committee will be chosen by the P&P Discipline SOC. One member of the SOC will be selected to serve as Chair of the QE. In the case of M.D./Ph.D. or D.D.S./Ph.D. students, one committee member with equivalent degree should be included whenever possible. The composition of the QE committee is partly guided by the subject matter of the specific aims of the student's proposal, so as to assemble faculty with appropriate expertise. The student's Supervising Professor may not serve on the QE Committee, either as a standing or *ad hoc* member. However, the Supervising Professor must attend the QE as a silent observer, such that the Supervising Professor can debrief the student following the oral examination. This is especially important in the case where a re-examination is required.

### **Responsibilities of the QE Committee**

- Determine the initial feasibility of the proposal based on the student's specific aims page.
- Determine if the written proposal provides an adequate basis for an oral examination.
- Provide the student with written comments/recommendations (in the event that the initial written proposal is not deemed suitable for defense).
- Provide the student, SOC Chair and Program Coordinator written verification (email) that the student has passed the written exam and may proceed to the oral examination.
- Conduct the oral examination.
- Determine whether or not the student has satisfactorily defended their written proposal.
- Sign the "Form 32: Petition for Admission to Candidacy" via IMPACT website or, in the event that the defense has been deemed unsatisfactory, provide the student with feedback that outlines specific aspects of the student's performance that need improvement in a second examination.

### **Responsibilities of the Student**

- Write and submit to the QE Committee a specific aims page.

- Write and submit to the QE Committee an original proposal.
- Present a copy of the proposal to the Program Coordinator when the QE Committee has approved the proposal.
- Inform the SOC Chair and Program Coordinator of the date of the oral examination.
- Defend the proposal to the QE Committee in an oral examination.
- Consult with the Supervising Professor regarding the commitment of time to the QE, and insure that all other research and academic responsibilities are met.

### **Scheduling/Timeline**

The QE will be given to doctoral students during the second semester of the second academic year and is expected to be completed by **June 1** of that year. The qualifying exam includes both a written component and an oral examination. To pass the QE, the student must meet benchmark deadlines (described below) throughout this examination process, including those for the specific aims page, the full written proposal, and the oral examination. Requested corrections to specific aims or written proposal must be accomplished within two weeks of receiving feedback from the QE committee. Delays are grounds for failing the exam. Any deviation from this schedule must be approved in advance by the QE Committee and the SOC Chair.

A specific aims page (due **February 1**) is submitted to the SOC Chair. QE committee members and Chair are then selected and approved by the SOC. The QE committee will then provide feedback regarding whether the specific aims: (1) indicate an appropriate proposal for defense, (2) require changes that can be included within the full QE proposal, or (3) require significant changes such that the specific aims must be resubmitted to the Chair of the QE committee within two weeks. Once the QE committee has approved the specific aims, the student will prepare a full written research proposal, which must be submitted to the Chair of the QE Committee **no later than April 15, 5:00pm CT**. Except under special circumstances, approved by the SOC, the oral presentation and examination must be completed by **June 1** of the second academic year. The student is responsible for scheduling all activities related to the examination, including the oral examination, and should contact the QE committee after submitting the written proposal to arrange a date for the oral examination. The student can gain assistance in scheduling from the Program Coordinator.

If the written proposal is deemed insufficient or unsatisfactory, the QE Committee will provide generalized feedback to the student to facilitate editing/rewriting. The revised proposal will be re-submitted as soon as possible, but no later than two weeks after feedback from the QE Committee Chair is received by the student. Only one revision/resubmission will be accepted within the examination process.

Contingent upon the decision of the QE Committee, you will be asked to:

- Revise your written proposal and resubmit.
- Schedule your oral exam. The oral examination must be completed by June 1. Remember this is the LATEST date. Your goal should be to successfully put the QE behind you as soon as possible.

### **Timeline**

1. January (2<sup>nd</sup> year): Choose a topic for the proposal
2. February 1: Specific Aims page is due
3. February and March: Prepare written proposal
4. April 15: Written proposal is due
5. June 1: Oral examination must be complete
6. August 30: Should a retest be necessary, both components of the examination (written and oral) must be completed by August 30. If a student fails to successfully complete the QE by this deadline, their progress will be reviewed by the SOC with the possibility of suspension of stipend or recommendation of dismissal from the program.

## Format of the Qualifying Examination

The examination will consist of a written research proposal of no more than 10 total pages (references excluded; details are given below), in conjunction with an oral examination phase.

The **written research proposal** will be used to measure the student's *independent* thinking and writing abilities. Thus, *significant and specific* help from faculty and peers should be restricted. The student is free to discuss their ideas with peers, faculty and their Supervising Professor, and to receive generalized criticisms from these sources during the development of the proposal, and *is encouraged to do so*. It is permissible for the student to choose a topic in the area in which he/she plans to do their dissertation studies; however, the final proposal must be an independent product of the student and may not share one or more Specific Aims with any grant written by the Supervising Professor. Supervising Professors and students should be guided by the idea that the proposal is the student's, not the Supervising Professor's, and the student will have to defend it during the examination period. The proposal must include hypothesis-guided experiments. The experiments should be designed to produce results, which clearly support or reject the associated hypotheses. It is not acceptable to propose experiments that are likely to yield equivocal results that will not discriminate between the truth and fallacy of the hypothesis. Developing methodology (e.g., inventing an assay or making a transgenic mouse) will not be sufficient. The proposal should describe studies that one person could complete in 2-3 years.

In general, the line of questioning during the **oral examination phase** will be derived from the subject matter of the written research proposal, but the questions may be broad in scope, to allow the committee to evaluate fully the student's knowledge of basic physiological and pharmacological principles. The Supervising Professor must be present as a silent observer during the oral examination phase.

The student should prepare an oral presentation of their QE proposal of approximately 20 minutes in duration. During the oral examination phase the QE committee will ask questions. Typically questions will be asked during the presentation (i.e. the student will be interrupted), but in some instances questioning will be left until completion of the oral presentation. The format will be at the discretion of the QE committee. The student should consult with the Chair of the QE committee if they choose to know the format of the oral examination prior to the examination. At the conclusion of the oral examination, the student will be asked to leave the room while the QE committee discuss and evaluate the student's performance. The student's Supervising Professor will be present for this closed evaluation phase (during which the pass/fail decision is discussed and rendered). At the request of the QE Committee, the Supervising Professor will be asked to comment on the student's performance in the laboratory, and the student's potential for productive and independent investigation in the laboratory. If a retake is required, it will be at the discretion of the QE committee to decide if a retake of the oral component and/or written component is required.

## Format of the Written Research Proposal

The proposal will be written as a single-spaced document that is a **maximum of 10 pages** (exclusive of references) and includes the following sections (modified from NIH pre-doctoral NRSA guidelines). Use Arial or Helvetica font with a minimum of 11 point text and 12 point line spacing. Margins should be 0.5 inches on all sides. You may include figures plus figure legends in the text, but these count toward the page limits. They should be clearly visible and readable. If you need to reproduce a figure from the literature, make sure it is labeled as "reproduced from...". The font of figure legends may be less than 11 point, provided text remains clearly legible.

### Title

- Provide a title that adequately describes the nature of the proposed research.

### Specific Aims

- State the problem/s that will be addressed.
- State the goals and overarching hypothesis of the proposed research.
- List the specific objectives or aims of the research proposed, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, or challenge an existing paradigm or clinical practice.
  - List the experiments conducted and approaches that will be used within each aim described above.
- Indicate the impact of the proposed research on the scientific field, and how it will benefit society.
- Specific Aims are limited to one page.
- A useful guide (there are many to be found online): <http://www.biosciencewriters.com/NIH-Grant-Applications-The-Anatomy-of-a-Specific-Aims-Page.aspx>

### Research Strategy

Organize the Research Strategy in the specified order using the instructions provided below.

Start each section with the appropriate section heading: Significance, Approach. Cite published experimental details in the Research Strategy section and provide the full reference in the Bibliography and References Cited section. Preliminary data are not explicitly required but may be used to strengthen the proposal.

#### *(a) Significance*

- Explain the importance of the problem or critical barrier to progress in the field that the proposed project addresses.
- Explain how the proposed project will improve scientific knowledge, technical capability, and/or clinical practice in one or more broad fields.
- Describe how the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field will be changed if the proposed aims are achieved.
- Explicitly address the biomedical relevance of the proposed research, and its relation to human physiology or disease.

#### *(b) Approach*

- Describe the overall strategy, experimental procedures, methodology, and analyses including statistical tests, to be used to accomplish the specific aims of the project. Include how the data will be collected, analyzed, and interpreted.
- Discuss potential problems, alternative strategies, and benchmarks for success anticipated to achieve the aims.
- If the project is in the early stages of development, describe any strategy to establish feasibility, and address the management of any high-risk aspects of the proposed work.
- Point out any procedures, situations, or materials that may be hazardous to personnel and precautions to be exercised.

If a proposal has multiple Specific Aims (the usual case), then the student may address Significance and Approach for each Specific Aim individually or may address Significance and Approach for all of the Specific Aims collectively.

### Bibliography and References Cited

List complete citations with all authors and titles. No page limit.

#### **Pass/Fail and re-examination:**

The student will pass the QE Examination if no more than two members of the QE Committee dissents. Conditional pass and pass with remediation will not be allowed; however, one re-examination may be allowed at

the discretion of the committee for students that fail. A re-examination of the QE shall be conducted by the QE Committee as comprised at the time of the initial examination. Reexamination must be completed by August 30.

The Chair of the QE Committee will report, by memorandum, the outcome of the qualifying examination to the Chair of the SOC and Program Coordinator.

Failure of the QE Examination and re-examination will result in SOC recommendation to Dean of the Graduate School that the student be dismissed from the Ph.D. program.

## **Admission to Candidacy**

### **Requirement for Admission to Candidacy**

During Year 2 Spring semester, and after passing the QE, a student must petition, via the P&P Discipline Director, approval by the IBMS COGS for Admission to Candidacy for the Ph.D. degree. The approval process is accomplished via the Ph.D. Candidacy Form located on the IMPACT website. See Program Coordinator for instructions regarding submitting the petition. Approval by COGS for Admission to Candidacy is based on 3 criteria:

1. Successful completion of the QE (evidenced by approval indicated by members of the student's QE committee).
2. A positive endorsement of the student's potential for performing successful independent research (indicated by online approval by the Supervising Professor).
3. Verification of satisfactory academic standing, including maintaining a 3.0 grade point average in course work. Students cannot advance to candidacy while on academic probation.

When all criteria are met, IBMS COGS will recommend to the Dean of the GSBS that a student be admitted to candidacy. Admission to Candidacy requires final approval by the Dean. If approved, the student receives an official notification of admission to candidacy from the Dean of the Graduate School (GSBS Form 35).

## **Dissertation Research and Supervising Committee**

### **Dissertation Supervising Committee membership**

Immediately following approval for Admission to Candidacy, and in consultation with their Supervising Professor, a student is to form a temporary Dissertation Supervising Committee (DSC). This committee, whose membership must be approved by the P&P Discipline SOC will provide the expertise necessary to ensure appropriate scientific and academic guidance to a student, and to aid in furthering the development of the dissertation research project. The minimum composition of the DSC should reflect the following:

1. The student's Supervising Professor.
2. Two members from the P&P Graduate Faculty.
3. One member from the IBMS Graduate Faculty with a primary affiliation outside the P&P Discipline.
4. One member from an institution of higher education or research institute approved by the student's Discipline and holding no faculty appointment at the UTHSA.

A student is expected to request approval from the P&P Discipline SOC for the membership of the temporary DSC **prior to the last day of the Year 2 Spring semester**. The student should select membership of the temporary DSC in consultation with their Supervising Professor. In most cases, the temporary DSC will become the permanent DSC, pending approval by the SOC following the dissertation proposal defense (see below).

Students can email the selection of members, along with a brief explanation of choices, to the P&P Discipline SOC Chair and Program Coordinator for approval. See Program Coordinator for appropriate form.

Students must complete their dissertation proposal defense **before the end of the Fall semester of the third year**. A list of the proposed permanent DSC membership (typically the same as the temporary DSC, though changes can be made at the discretion of the Supervising Professor), along with the CV of the outside (UTHSA) faculty member, should be submitted to the P&P Discipline SOC Chair and Program Coordinator along with the final written dissertation proposal **no less than 2 weeks prior to the student's scheduled oral defense**. It is **essential that the student has approval of the written dissertation proposal from the temporary dissertation committee PRIOR to scheduling the dissertation proposal defense, and submitting the written proposal to the SOC**. See Program Coordinator for appropriate forms. The membership of the permanent DSC must be approved by the P&P Discipline SOC, and by the Dean of the GSBS. Subsequent modifications to the permanent DSC must also be approved by the P&P Discipline SOC, and by the Dean of the GSBS.

### **Responsibilities of the Supervising Professor and Dissertation Supervising Committee**

A student is expected to meet with their DSC at least once each semester, **beginning the Fall of the student's 3<sup>rd</sup> year**. The DSC has the responsibility of reading and approving the dissertation proposal, supervising the research, evaluating the student's progress, reading and approving the written dissertation, and conducting the final oral defense.

Research progress is evaluated at the semi-annual meetings of the student with the DSC. After each committee meeting, each member of the DSC evaluates both the oral presentation and the progress of the student. The student should ask each member of the DSC to complete the Progress Evaluation Form (see Program Coordinator for form). Once the student has the form from each member, they submit them to the Program Coordinator. The Program Coordinator will forward them to the Dean's office. Upon completion of a student's dissertation defense, the DSC is also responsible for certifying to COGS and the GSBS that a student has carried out meritorious research of the caliber appropriate for a Ph.D. dissertation.

### **Responsibilities of the Student**

It is the student's responsibility to schedule a committee meeting each semester, provide each committee member with the appropriate form, collect the forms following the meeting, and submit them to the Program Coordinator. Failure to coordinate the committee meeting and/or submit the committee report forms by the deadline provided each semester by the Program Coordinator will result in the student receiving an "Incomplete" grade for IBMS 6097-8PP Research/IBMS 7099-8PP Dissertation.

Major changes in the research status of the candidate, such as the selection of a new Supervising Professor, new DSC member(s) or a substantive change in research direction, must be submitted to the P&P Discipline SOC for approval.

### **Preparation of the Dissertation Proposal**

Approval of the Dissertation Research Proposal should be obtained **before the end of the Year 3 Fall semester**. The student should prepare their dissertation proposal in the format of a National Research Service Award (NRSA) grant proposal and submit the proposal to their DSC for approval. The format for a modified NRSA is presented below, with additional information available on the NIH website:

<https://researchtraining.nih.gov/programs/fellowships/F31#>.

Format of the dissertation proposal should follow NIH guidelines, i.e. use Arial or Helvetica font with a minimum of 11 point text and 12 point line spacing. Margins should be 0.5 inches on all sides. Figures and figure legends can (and should) be included in the text, but these count toward the page limits. They should be clearly visible

and readable. If you need to reproduce a figure from the literature, make sure it is labeled as “reproduced from...” The font of figure legends may be less than 11 point, provided the text remains clearly legible.

Students should include sufficient information in their proposal to permit an effective review without reviewers needing to refer to the literature. Brevity and clarity in the presentation are considered indicative of a student’s approach and ability to conduct a superior project. The entire proposal is **not to exceed 6 pages (exclusive of the Title, Specific Aims, and Literature Cited) including all tables and figures**. The format for the proposal is as follows:

1. Title: Provide a clear and informative title
2. Specific Aims Page: State the specific purposes of the research proposal and the hypotheses to be tested.
3. Background and Significance: Briefly describe the background to the proposal. State concisely the importance of the research described in this application by relating the specific aims to broad, long-term objectives.
4. Research Design and Methods: Provide an outline of:
  - Research design and the procedures to be used to accomplish the specific aims, including justification for sample sizes;
  - Tentative sequence for the investigation;
  - Statistical procedures by which the data will be analyzed.
5. Potential experimental difficulties should be discussed along with alternative approaches that could achieve the desired aims.

Students are required to meet with their DSC at least once prior to the oral dissertation proposal (this can be during the required semester meeting with the DSC, or in addition), so that they can discuss and provide feedback regarding student’s proposal. *Once the DSC approves the written proposal*, the student will present the proposal to the SOC as an hour-long public seminar (inclusive of question and answer period). **At least two weeks prior to the oral dissertation proposal**, the student will provide an electronic version of the DSC approved written proposal to the Program Coordinator who will distribute it to the P&P Discipline SOC. The student should see the Program Coordinator for specific administrative details of the oral dissertation proposal.

After the oral dissertation proposal and meeting with the P&P Discipline SOC, the student must submit the Dissertation Proposal and Supervisory Committee Approval form via IMPACT to the Dean of the GSBS requesting approval of both the membership of the student’s DSC (including the official naming of the Supervising Professor), and an electronic version of the Dissertation Proposal. These processes occurs concurrently. See Program Coordinator for instructions on submitting this form via IMPACT.

### **Registration for Dissertation**

Students on the Ph.D. degree track may register for the Dissertation course (IBMS 7099-8PP) after the following actions have been taken:

- Approval of Admission to Candidacy for the Ph.D. degree by the Dean of the GSBS
- Approval of the dissertation research proposal by the P&P SOC Discipline and the Dean of the GSBS
- Approval of the membership of the candidate’s DSC by the P&P Discipline SOC, and the Dean of the GSBS

**A minimum of 2 semesters of IBMS 7099-8PP (Dissertation) is required for graduation. A student may begin enrolling in IBMS 7099-8PP once the above requirements have been met.**



## Final Hours and Graduation Application

A student must be registered for final hours during the semester in which they graduate. If a student is registering for only final credit hours in preparation of a dissertation defense and registers for no other courses, they are exempt from the minimum tuition requirement and pay only tuition based upon the number of credit hours for which they register. Such registration shall be considered a full-time course load. The minimum number of final credit hours for the Ph.D. degree is three. A student may register for final credit hours only once. If a student enrolls in final hours but does not graduate, they must enroll in a full 12 credit hour course load each semester until they graduate. A student registered for final hours is expected to continue to attend departmental seminars for their own professional development.

International students must obtain approval from the Office of International Services (OIS) before registering for less than a full-time course load by completing and submitting a Request for Authorization to Reduce Course Load form (available in OIS). Please consult with the Program Coordinator for more details.

Students are required to apply for graduation with the Office of the Registrar during the semester prior to their oral defense. Please contact the Office of the Registrar for specific deadlines, or visit their website: <https://students.uthscsa.edu/registrar/>. Submission of the Application for Graduation will prompt an audit of the student's academic record to ensure they are eligible to graduate, and have completed all requirements to receive their degree.

## Preparation of the Dissertation

When data collection is complete or close to completion, the student will request permission from the DSC to stop collecting data for the dissertation and begin writing. The student should follow the formatting guidelines set forth by the GSBS. The process for writing and defending your dissertation may be found on the GSBS [website](#). The student should coordinate closely with the Program Coordinator to ensure all administrative guidelines and deadlines are met.

## Final Oral Exam

When the DSC judges the dissertation to be suitable for defense, the student shall submit a Request for Final Defense & Oral Examination Form ([GSBS Form 40](#)) signed by all committee members to the Chair of COGS for their signature. The signed request form, together with 3 copies of the abstract and the student's curriculum vita, **must be submitted to the office of the GSBS at least two weeks prior to the scheduled date of the final oral examination.** In addition, one copy of the entire dissertation must be electronically submitted to the GSBS for formatting to be checked. Please see the GSBS website for all related Graduation information and pertinent timelines: [http://gsbs.uthscsa.edu/current\\_students/graduation-information](http://gsbs.uthscsa.edu/current_students/graduation-information).

## Granting of the Degree

If the P&P Discipline SOC approves the recommendation of the DSC, then the Chair of the P&P Discipline SOC signs and submits the Report on Final Oral Examination ([GSBS Form 43](#)) and the Dissertation Approval Page signed by each of the DSC members to the Dean of the GSBS. The student will then electronically submit the final version of the dissertation to the Dean's Office.

The Chair of the P&P Discipline SOC reviews the academic performance of the candidate as well as their performance on the final oral examination. The Chair of the P&P SOC certifies that the candidate has satisfied all of the requirements for the degree of Doctor of Philosophy and recommends to the Graduate Faculty Council (GFC) that the candidate be granted the degree. If the GFC approves the recommendation, then the Dean of the GSBS will notify the President of UTHSA that the candidate has fulfilled all requirements of the GSBS for the Ph.D. degree. Upon the candidate's certification by the President, the degree is conferred by the University of

Texas System Board of Regents. If the GFC does not approve the recommendation, it will refer the matter to COGS with a recommendation for remedial action.

### **Procedures for Dissertation Binding**

In the preparation of dissertations, students should follow the *Instructions for Preparation and Submission of Electronic Theses, Dissertations, and Dissertation Abstracts*, which can be found on the [GSBS website](#).

In addition to the electronic version of the dissertation required by the GSBS, the student should print three paper copies. The Department of the Supervising Professor will cover the cost of having these bound. One copy will be retained by the Department, one copy will be given to the student, and the third copy will be given to the Supervising Professor. If the student desires additional bound copies, they will be responsible for the costs of copying and binding. The binding process can take several months.

Please refer to the above-mentioned GSBS website for more specifics on binding, publishing, and optional copyrighting of the dissertation.

### **Clearance Procedures**

It is the responsibility of the student to coordinate with the Supervising Professor to determine the last date of employment as a graduate student. Once a date of termination is agreed upon, the Supervising Professor should notify the Program Coordinator and Department Administrator. The student is required to checkout with the Department on their last date of employment (turn in keys, lab coat, ID badge, etc.).

## **Miscellaneous**

### **Time to Degree**

A minimum of 72 semester credit hours is required for a Ph.D. degree. It is expected that full-time Ph.D. candidates will complete the requirements for the Ph.D. degree within a maximum of six years or within 130 credit hours. If a student is unable to complete the requirements for the degree within this time period, the student and the Supervising Professor may petition the P&P Discipline SOC for an extension. The SOC will make a determination based upon evidence of adequate progress that would justify an extension. The P&P Discipline and/or the Supervising Professor has no obligation to financially support a graduate student for more than six years. In addition, students enrolled for more than 130 credit hours may be required to pay nonresident tuition for all subsequent semesters.

### **Health Insurance**

All students are required to maintain health insurance. A student health plan is available for purchase. Fees for this plan will be assessed on the student's tuition statement. Students are required to "declare" their health insurance provider during course registration each semester. Students should contact the [Office of Student Life](#) with any questions or concerns related to health insurance.

### **Travel Support for Graduate Students**

Whenever possible, the Department of Cellular and Integrative Physiology will provide travel awards to eligible students to present their research at national and international scientific conferences. When awards are available, the Program Coordinator will make an announcement detailing application requirements, deadlines, and award amount.

To be eligible for the travel award, a student must be:

1. A P&P Discipline student, or a non-P&P Discipline student working in the lab of a Department of Cellular and Integrative Physiology primary faculty member.

2. In good academic standing.
3. Presenting author on a scientific abstract at the meeting for which you are requesting the award.

These travel awards are given in honor of Vernon S. Bishop, Ph.D., Chairman of the Department of Physiology from 1992-2003.

*Travel support for graduate students can also be obtained through the GSBS Dean's office:*  
[http://gsbs.uthscsa.edu/current\\_students/scholarships1](http://gsbs.uthscsa.edu/current_students/scholarships1).

### **M.D./Ph.D. & D.D.S./Ph.D. Programs and Information:**

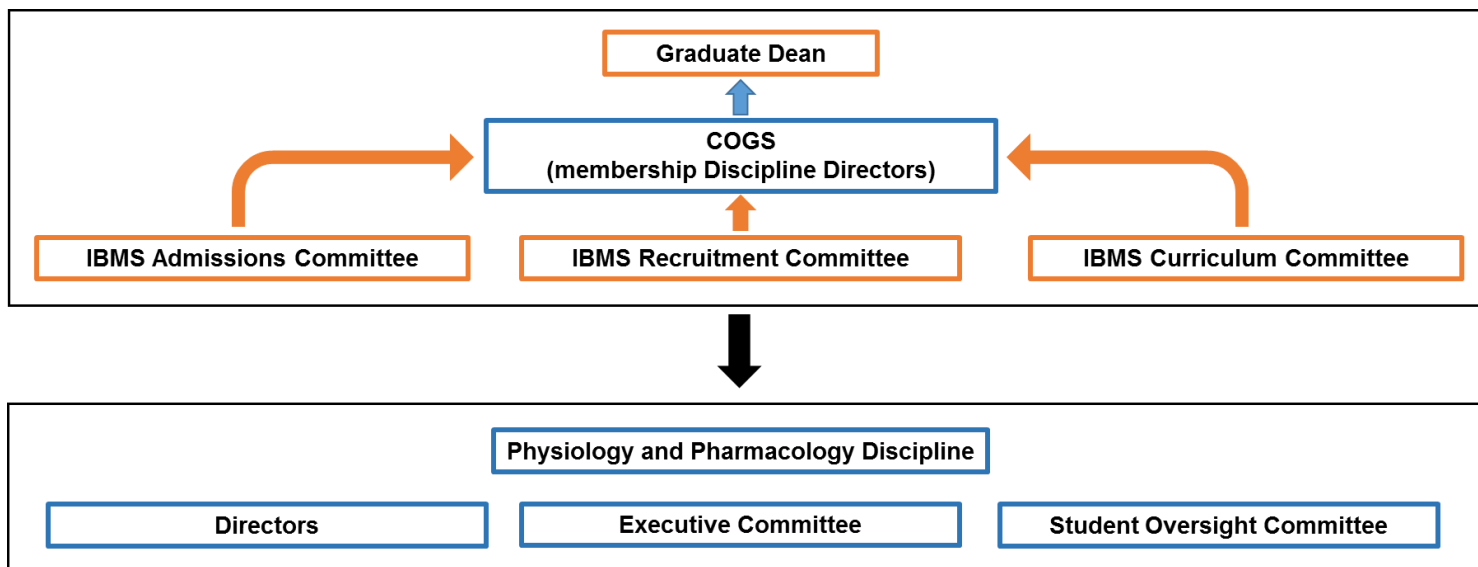
M.D./Ph.D. Program - This dual degree program is a seven-to nine-year program, in which students complete two years in the School of Medicine, then embark full-time on their Ph.D. dissertation research for three to five years and then students will finish their final two years in the School of Medicine. See link for program information: [http://gsbs.uthscsa.edu/graduate\\_programs/stxmstp](http://gsbs.uthscsa.edu/graduate_programs/stxmstp).

D.D.S./Ph.D. Program - The Doctor of Dental Surgery (D.D.S.) and Doctor of Philosophy (Ph.D.) program gives students the opportunity to obtain a D.D.S. degree and Ph.D. with a focus in an area related to Craniofacial oral-biology. See link for program information: <https://www.uthscsa.edu/academics/dental/programs/phd-in-dentistry>.

See Program Coordinator for the P&P Discipline curriculum and timelines, which relates to your degree.

# Appendices

## Appendix I - Structure of the IBMS Program



## Appendix II – Physiology and Pharmacology Discipline Committee Memberships

### Discipline Directors

Lynette Daws, Ph.D., Department of Cellular & Integrative Physiology  
([daws@uthscsa.edu](mailto:daws@uthscsa.edu))

Gregory Collins, Ph.D., Department of Pharmacology  
([collinsg@uthscsa.edu](mailto:collinsg@uthscsa.edu))

### Program Coordinator

Tanya Davila  
([DavilaT3@uthscsa.edu](mailto:DavilaT3@uthscsa.edu))

### Physiology and Pharmacology Discipline Executive Committee

Lynette Daws, Ph.D., Department of Cellular & Integrative Physiology – Chair

Gregory Collins, Ph.D., Department of Pharmacology

Lisa Gerak, Ph.D., Department of Pharmacology

Susan Mooberry, Ph.D., Department of Pharmacology

Jason Pugh, Ph.D., Department of Cellular & Integrative Physiology

Student Oversight Committee

Lynette Daws, Ph.D., Department of Cellular & Integrative Physiology – Chair

Gregory Collins, Ph.D., Department of Pharmacology

Lisa Gerak, Ph.D., Department of Pharmacology

Jean Bopassa, Ph.D., Department of Cellular & Integrative Physiology

April Risinger, Ph.D. Department of Pharmacology

Other useful information can be found in the [IBMS Handbook of Policies and Procedures](#)