

STUDENT HANDBOOK

**PHYSIOLOGY GRADUATE TRAINING
PROGRAM**

2013-2014

Revised 7/13

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GRADUATE STUDY IN PHYSIOLOGY

I. Introduction

The goal of this interdisciplinary, interdepartmental Physiology Graduate Training Program is to train the next generation of biologists how molecules, cells and organ systems interact. Powerful new tools in modern biology make it possible to link the cellular and molecular with integrative levels in physiological systems, such as the cardiovascular, respiratory, renal, endocrine, musculoskeletal, gastrointestinal, neurophysiological and metabolic systems.

This handbook provides basic information about the Physiology Graduate Training Program in Physiology for graduate students, their advisors and major professors. Students are responsible for knowing the requirements of the program as described in this document.

II. 2013-2014 Important Dates

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|--|------------------------------|
| Fall semester | |
| Classes and laboratory rotations begin | September 3 (T) |
| Labor Day | September 2 (M) |
| Rosh Hashanah* | September 4 (W) |
| Yom Kippur* | September 13 (F) |
| Eid-al-Adha * | October 14-18 (M-R) |
| Thanksgiving recess | November 28-December 1 (R-N) |
| Last class day | December 13 (F) |
| Exams begin | December 15(N) |
| Exams end | December 21 (S) |
| Commencement | December 22 (N) |
| | |
| Spring semester | |
| Martin Luther King, Jr., Day | January 20 (M) |
| Classes begin | January 21 (T) |
| Spring recess | March 15-23 (S-N) |
| Classes Resume | March 24 (M) |
| Good Friday* | April 18 (F) |
| Passover* | April 22 (T) |
| Last class day | May 9 (F) |
| Exams begin | May 11 (N) |
| Commencement weekend | May 16-18 (F-N) |
| Exams end | May 17 (S) |
| Exams end | May 18 (S) |
| | |

* In accordance with Faculty Document 488a, faculty are asked not to schedule mandatory exercises on these dates.

Days: T Tuesday; R Thursday; S Saturday; N Sunday

III. Weekly Seminar Course in Physiology 901

A seminar course will give students the opportunity to learn to speak, to learn about research in physiology, and to learn about what others in the program are doing. Students are required to present one seminar in this series annually and to attend the seminar course regularly. Faculty in the Physiology Graduate Training Program will also be asked to give seminars about their research. All faculty, students and postdocs are encouraged to attend the seminars.

IV. Timeline for progress to the PhD

The following is a typical schedule of progression through the graduate program. Individuals will determine their personal timeline in conjunction with their thesis advisor and committee.

Year 1

Fall

Laboratory rotations

Coursework

Cellular and Molecular Neuroscience (Neuroscience 610)

Professional Development (Neuroscience 700)

Ethics (Obs&Gyn 955), if it is presented in the fall

Elective

Seminar course (Physiology 901)

Spring

Begin research in thesis lab

Coursework

Human physiology (Physiology 435)

Physiology 533 (presented only every other spring)

Physiology 675

Ethics (Obs&Gyn 955), if it is presented in the spring)

Seminar course (Physiology 901)

Summer

Continue thesis research

Year 2

Fall

Continue thesis research

Coursework

Elective(s)

Teaching assistant

Seminar course (Physiology 901)

Spring

Continue thesis research

Coursework

Physiology 533 (if it was not taken in Year 1)

Seminar course (Physiology 901)

Summer

Continue thesis research
Preliminary Exam Part A

Year 3

Continue thesis research
Preliminary Exam Part B
Seminar course (Physiology 901)

Beyond Year 3

Continue thesis research
Meet annually with thesis committee
Prepare and defend thesis
Seminar course (Physiology 901)

V. Student Advising

First Year Committee

Each student will meet with the First Year Committee upon their arrival to discuss laboratory rotations, course requirements, and other issues pertaining to their graduate studies.

Thesis Advisor

Each graduate student must select a major professor or thesis advisor by the end of the first semester of the first year. The duties of the thesis advisor are to supervise and support the student's research, provide advice regarding selection of courses, and act as a channel of communication within the Program. The thesis advisor serves as chairperson of the thesis proposal committee (Preliminary Examination Part B) and also of the final oral examination committee.

Thesis Committee

By the end of the spring semester of the first year, each student should select a thesis committee in consultation with his or her thesis advisor. The committee comprises five faculty members, one of whom is the thesis advisor, and another who is outside the major area of the student's research. The candidate meets with the committee annually for the first two years and once a year thereafter to evaluate progress and future research plans. It is the responsibility of the student to arrange these meetings. Students should report to the Program Administrator when each meeting has taken place.

Grievance Procedures

If grievances arise students should consult members of their Thesis Committee or with the Director of the Training Program.

Information on the University's appeal and grievance procedures may be found on the University's website at:

<http://www.wisc.edu/grad/education/acadpolicy/guidelines.html#97>.

VI. Laboratory Rotations

Students supported by the program will complete 3-4 laboratory rotations in faculty labs in order to gain familiarity with different experimental approaches and to facilitate selection of a thesis advisor. Students should communicate with faculty prior to their arrival in the fall to arrange their rotations so that the first rotation commences within the first few weeks of the semester. It is anticipated that students will have completed their rotations and identified their thesis lab by the end of the first semester of the first year. If a student is unable to meet this deadline, the First Year Committee should be consulted. Students who are admitted directly do not participate in laboratory rotations.

VII. Curriculum

The curriculum is designed to provide depth and breadth in physiology, as well as experience in critical reading and presentation of the literature. Students are required to take Physiology 901 every semester. Courses are selected with the help of the First Year Committee, the Program Director, and the Thesis Committee, who may waive the requirement for one or more core courses and who may also recommend courses to fill in gaps in a student's background. The Graduate School requires students to take a minimum of 32 graduate level course credits (numbered >300 and including research credits) in order to qualify for the Ph.D. degree. The decision about what electives to take should be made in consultation with the thesis advisor and members of the Thesis Committee.

| Core Courses | |
|---|--|
| Physiology 901 | Student Seminar, 1 credit every semester |
| Neuroscience 610 | Cellular and molecular neuroscience, 4 credits |
| Physiology 435 | Human Physiology, 5 credits |
| Physiology 533 | Molecular Physiology, 2 credits |
| Physiology 675 | Cell Signaling in Cardiac Disease, 2 credits |
| Statistics 541 or 571 or Oncology 675 | Statistics, 3, 4, or 2 credits |
| Neuroscience 700, Obs&Gyn 955 or equivalent | Professional Development, Ethics 1 credit |

| Electives Available to Physiology Graduate Students | |
|--|---|
| Animal Sciences 875 | Reproductive Patterns, Endocrine Physiology, Pregnancy, Parturition and Lactation 1-4 credits |
| Biochemistry 550 | Topics in Medical Biochemistry, 2 credits |
| Biochemistry 602 | Biochemistry Mechanisms-Regulation/Cell, 2 credits |
| Biochemistry 630 | Cellular Signal Transduction Mechanisms, 3 credits |
| Biomedical Engineering 505 | Biofluidics, 3 credits |
| Biochemistry 665 | Biophysical Chemistry, 4 credits |
| Kinesiology 773 | Cardiorespiratory Adaptations to Exercise and Environment, 3 credits |
| Kinesiology 774 | Metabolic Responses to Exercise and Environmental Stress, 2 credits |
| Kinesiology 779 | Human Muscle Function in Health and Disease, 2 credits |
| Math 801 | Topics in Applied Math, 3 credits |

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|--------------------------|---|
| <u>Neuroscience 611</u> | Systems Neuroscience |
| Neuroscience 625 | Brain Cell Culture and Imaging: Lab Course, 2 credits |
| Neuroscience 675 | Special Topics, 3 credits |
| Neuroscience 765 | Developmental Neurobiology |
| Nutritional Sciences 875 | Intermediary Metabolism of Macronutrients |
| <u>Oncology 675</u> | Statistical Problems in Genetics and Molecular Biology, 2 credits |
| Oncology 675 | Readings in Cancer Biology, 2 credits |
| <u>Pathology 750</u> | Cellular & Molecular Biology/Pathology, 3 credits |
| PBS 500 | Molecular Biology Techniques |
| Pharmacology 711 | Neurotransmitter Receptor/Ion Channels, 2 credits |
| Physiology 610 | Cell and Molecular Neuroscience, 4 credits |
| Physiology 675 | Signaling in cardiac diseases, 2 credits |
| Psychology 556 | Hormones and Behavior, 3 credits |
| Psychology 610 | Stat. Analysis & Psychology Experiments, 3 credits |
| <u>Zoology 570</u> | Cell Biology, 3 credits |

A GPA of 3.0 (on a 4.0 scale excluding research credit) for graduate level courses (generally courses numbered 300 and above) must be maintained. The Graduate School may put a student on probation if minimum standards are not met. Incomplete grades remaining beyond the next semester are considered unsatisfactory.

Research Credits

Along with formal coursework, students register for research credits.

VIII. Teaching

Communication is an essential component of academic training. The Physiology Graduate Training Program thus requires students to develop teaching skills. In addition to presenting seminars annually in Physiology 901, students are required to teach for a minimum of one semester. Generally students serve as Teaching Assistants in Physiology 335, Physiology 435 or Organismal Biology, part of the campus Biocore program. Students may also participate in the Educator Emphasis program if they wish.

Educator Emphasis

The Educator Emphasis prepares students for teaching careers in colleges and universities while ensuring that they also have the rigorous training in research. Faculty from across the campus, including in the School of Education, will develop specific curricula designed to meet the needs and interests of individual students. This additional training may range from a few selected courses on teaching methods to a minor or master's degree in Education.

All students in this program will be provided an opportunity to lecture in an undergraduate physiology course with the guidance of a faculty teaching mentor.

For more information on the Educator Emphasis program, please contact Dr. Kevin Strang, Department of Neuroscience, office (608) 262-8298, (608) 265-5512 Fax, email kstrang@facstaff.wisc.edu.

IX. Qualifying Exams

Courses, teaching requirements and laboratory rotations should be completed within the first 2 years following admission. Once course work is completed, students take a two-part qualifying examination at the end of their second year of study.

Preliminary Exam Part A

Part A of the preliminary examination is generally taken in the summer after the second year will be prepared by the Prelim Committee. Students will be asked to answer one question at the cellular and molecular and one question at the systems level, chosen from four questions in various topic areas; the written answers will be due one week (seven days) later. The preliminary examination tests the student's ability to assess experimental design, interpret published literature, evaluate published conclusions, and synthesize new experimental directions.

Preliminary Exam Part B

Part B of the qualifying examination is a thesis research proposal that is presented to the student's thesis advisory committee. Part B is usually completed within 6 months of finishing Part A. This written document is based upon a thorough review of relevant literature to establish the basis for the problem to be studied, and includes a proposed plan of study and the student's preliminary results demonstrating feasibility of the work and plausibility of the hypotheses. Students should consult with their major advisor as to the format and presentation of the proposal to the committee, but the proposal will generally be in the format of an NIH post-doctoral fellowship application.

Preliminary warrants must be issued by the Graduate School before Part A of the examination can be taken. These warrants assure the student and the Program that all Graduate School requirements for the degree, except for successful completion of the examination, have been met. Any 'I' or 'P' grades must be cleared before the warrant is issued. Application to the Graduate School for the warrants should be filed with the Program Graduate Admissions Coordinator within one month of taking the preliminary exam Part B. Any deficiencies can then be detected and corrected.

Once Parts A and B are successfully completed, the student becomes a "dissertator" and is engaged in full-time research, culminating in presentation and defense of the doctoral thesis.

X. Dissertator Status

After completing the core curriculum and recommended electives, and both preliminary exam part A and preliminary exam part B, the signed warrant is returned to the Graduate School. The student is officially admitted to candidacy for the Ph.D. degree and has then achieved "dissertator status." All requirements for dissertator status must be met prior to the first day of classes to be considered a dissertator for that semester.

As a Dissertator, each student registers for three credits per semester until the research thesis is filed in the Memorial Library. The Graduate School imposes a large fine

if a three credit course load is not maintained while a dissertator. The three credit rule does not allow courses not related to research. Specific information on the calculation of this assessment can be obtained from the Graduate School Ph.D. Office.

XI. Ph.D. Thesis

A thesis describing the results of original laboratory research is required for a Ph.D. degree. The thesis presents evidence of general laboratory proficiency, mastery of a field and the ability to conduct independent laboratory investigation, along with a high degree of literary skill. The Graduate School Office provides technical details about the preparation of a thesis and abstract.

A final thesis defense and oral examination is required after all other requirements for the Ph.D. degree are completed. At least six weeks before the oral examination, the student will need to contact the Program Administrator to receive a warrant that verifies that all other requirements have been met. The oral examination begins with an open research seminar and is followed by a defense of the thesis before the Thesis Committee. The time and place of the examination are set by the student and the major professor, who acts as chairperson of the examining committee. Students are advised to meet with their thesis committees to obtain approval to write the thesis and set a date for the defense.

XII. Evaluation of Student Progress

Student progress is evaluated not only by the formal preliminary examinations, but also by annual meetings of the student's Thesis Committee. A student may be dismissed from the program for failing to make satisfactory progress. Unsatisfactory progress includes failure to pass the preliminary examination in a timely fashion, failure to fulfill course requirements, or poor research productivity.

XIII. Stipend, Tuition and Fees

The cost of tuition is paid by the Physiology Graduate Training Program or by the major professor. In 2013 students received stipends of \$25,000 (pre-tax) to cover the cost of living expenses. After registering each semester, each student receives a bill for "segregated fees" reflecting the cost of educational services such as libraries, DoIT, recreational facilities, and student organizations. Segregated fees are \$539 for non-dissertators and \$204 for dissertators.

XIV. People Contacts

Program Director:
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Trainers:

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Troy Hornberger
Xin Huang
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Mathew Jones
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