

Ph.D. Program in Neuroscience  
BHSI  
University of Georgia  
November 2008

## I. Program overview

The Doctoral Program in Neuroscience is an interdisciplinary, degree-conferring component of the Graduate School and a Division of the Biomedical and Health Science Institute (BHSI). The objective of the Doctoral Program in Neuroscience is the education and training of doctoral graduate students for research and teaching in various areas in the field of Neuroscience. The Program has four content areas, which include: 1. Cellular/Molecular Neurobiology, 2. Neurophysiology and Neuropharmacology. 3. Behavioral/Systems Neuroscience, and 4. Cognitive/Clinical Neuroscience. Students may elect to concentrate on one area or may choose a program that encompasses more than one specialty or interdisciplinary interest (see Appendix I for a list of relevant courses and examples of possible curricula students may elect to pursue). Currently, the program does not offer a Master's degree. Students are admitted to the program with the expectation that they will fulfill Graduate School and Program requirements for a Ph.D.

Although the Neuroscience Program sets certain minimum requirements for its doctoral students, the primary responsibility for an individual student's Program of Study rests with the student's Advisory Committee (see Graduate School *Bulletin* for explanation of Program of Study and Advisory Committee). Each student's course of study is expected to provide the best possible education and training consistent with his/her abilities, interests, and needs. Students are expected to form their Advisory Committees by the end of their second semester.

After the Major Advisor of the Advisory Committee has been designated, the department with which the Major Advisor is affiliated typically serves as the student's "home department". In addition to providing office space and laboratory facilities to the student, participating home departments are expected to permit Neuroscience students to apply for departmental resources (e.g. Teaching Assistantships, Fellowships, etc.) where appropriate. Faculty agreeing to serve as Major Advisors for Neuroscience students are expected to consult with their Department Heads to coordinate office and laboratory facilities as well as other potential forms of support. Major advisors are also expected to either provide or actively seek support in the form of Research Assistantships through various extramural funding mechanisms (e.g. NIH or NSF research grants).

In order to become competent in several research areas and methods in Neuroscience, each student is required to rotate between at least three different laboratories (i.e. with three different faculty members) during their first year of study. These rotations may be in the form of laboratory classes taken for course credit (e.g.

PSYC 8330, C BIO 8920L, BIOL 7040; see Appendix I for other examples). Alternatively, the rotations may be more informal and arranged by the Graduate Coordinator and “host” laboratories.

Graduates of the Neuroscience Program are expected to demonstrate a high level of competence in their area of specialization. They are expected to have sufficient knowledge and understanding of problems and approaches, both in other areas within neuroscience and in the other biological sciences, so that they can communicate and work with scientists in related disciplines. To accomplish this goal, students may use the core courses of their home department that serve as requirements for the master's degree program, if applicable. However, students must be aware that these requirements may serve as a framework only and that the Neuroscience Program does not offer the Master's degree. Alternatively, students may, in consultation with their advisory committee, select their own core course curriculum to meet the objective of gaining the appropriate general background in neuroscience. Ultimately, the student's entire curriculum must be approved by the Advisory Committee in his or her Program of Study (see below). In addition to courses offered by UGA, students may take courses in any institution in the University System of Georgia or Emory University and directly apply them to the Program of Study. Students are also encouraged to obtain college teaching experience.

Neuroscience students must present their dissertation proposals and defenses in a public forum and are expected to attend dissertation defenses by other students in the program. Students are responsible for notifying the graduate school and the program secretary in writing two weeks in advance of the scheduled defense with the title, time, date and place of the dissertation prospectus presentation and dissertation defense so the it may be properly advertised. These are research presentations that constitute an important part of the education of every student. Similarly, students are expected to take an active part in other seminars sponsored by the Neuroscience Program, which may include “brown bag” seminars, lectures by invited speakers, and other on-campus research presentations.

## **II. Selection of the Major Advisor and Dissertation Advisory Committee**

### *Major Professor and Advisory Committees*

Each incoming doctoral student in the Neuroscience Program will be advised by a sponsoring faculty member or the Graduate Coordinator, who will counsel the student about course work and other matters related to the Program during the student's first few months of residence.

Each new doctoral student, whether beginning graduate school or transferring from another institution, must have a Major Professor and a Doctoral Advisory Committee appointed before the end of the first year of residence. The Doctoral Advisory Committee is chaired by the Major Professor, who must be a member of the Graduate Faculty, and has at least two additional faculty members, including adjunct

faculty, that are affiliated with the Neuroscience Division of BHSI (see <http://www.biomed.uga.edu/divisions/neuroscience/>). Additional faculty from other departments at the University of Georgia who are not members of the BHSI or who are from other institutions may serve as additional members of a doctoral advisory committee. Rules and policies regarding the Advisory Committees and their duties and responsibilities may be found in the Graduate School *Bulletin*. The student, in consultation with the Major Professor, will submit a list of the proposed members of the Advisory Committee(s) to the Graduate Coordinator for approval. The approved list is forwarded to Graduate School upon the recommendation of the Graduate Coordinator.

A student has the option of seeking a new Major Professor if the student's interests develop in a direction such that another member of the faculty would be more appropriate. Similarly, the student, with the concurrence of the Major Professor, may request a change in the membership of the Doctoral or Master's Advisory Committee. Changes and substitutions in the makeup of the Advisory Committees may be requested without prejudice and should follow the same procedures used in making the initial appointments. Faculty members who have been replaced on a committee should be notified of the change by the student.

A faculty member may resign as Major Professor or from an Advisory Committee by writing a letter to the student concerned in which the reasons for the resignation are given. Copies of this letter will be sent to the Program Chair and the Graduate Coordinator. A student is expected to replace a Major Professor or committee member who has resigned within one academic semester.

### **III. Program Components and Degree Requirements**

This document supplements the Graduate School *Bulletin* by providing information and requirements specific to students in the Neuroscience (see <http://www.uga.edu/gradschool/bulletin/> for the *Bulletin*). *It is the responsibility of each student to maintain her/his good standing regarding the requirements in both documents.* The versions of the two documents that were in effect when a student first enrolled serve as a contract that obligates the student only to requirements that were in effect when he/she was admitted; if a student quits graduate studies and later is re-admitted, he/she may be required to meet the more recent requirements.

#### *Admission Requirements*

Applications are reviewed by the Neuroscience Admissions Committee on a yearly cycle. Complete applications are due by December 31 and admissions decisions are made by the following March or April. Incoming students are admitted for the Fall Semester only. Current University of Georgia students enrolled in other graduate degree programs may apply to the Neuroscience Program at any time, and their applications will be reviewed by the Admissions Committee on a rolling, ad-hoc basis and may be admitted at any time during the academic year. Such students are

not eligible for Graduate Teaching Assistantships.

Applicants must meet the minimum requirements for admission to the Graduate School. Acceptance of applicants for admission to the Neuroscience Program requires majority approval of the Admissions Committee. The Admissions Committee will also typically identify a potential sponsor who may serve as the initial Major Advisor for the student based on a match of research interests.

Refer to the following site for Graduate School admissions requirements:  
[http://www.uga.edu/gradschool/index\\_admitted.html](http://www.uga.edu/gradschool/index_admitted.html).

### *Registration*

A full time course load is defined by the Graduate School as nine hours per semester. Students with a graduate assistantship or teaching assistantship (.33-.5 time) are required to register for a minimum of 12 semester hours. Semester hours may be comprised of lecture courses, seminars, and research credit hours.

In accordance with Graduate School rules, a student who has not been enrolled at the University of Georgia for 12 months (the *Bulletin* states this as "more than three semesters, including the summer semester") will be required to apply for readmission before resuming her/his work in the program. Students must register for a minimum of three hours to maintain their enrollment in the program.

Neuroscience students who have not been enrolled for 12 or more months at the University of Georgia must request and receive reinstatement in the Neuroscience Program before they may return to complete a degree. If there are extenuating circumstances that cause a student to need to seek readmission according to the above, it may be appropriate to petition the Doctoral Advisory Committee for a leave-of-absence; this will not alleviate the necessity to apply for readmission (a Graduate School requirement) but will establish a formal understanding in your favor that accounts for the interruption of your studies. Also see registration requirements in the later section, "Admission to Candidacy".

### *Assistantships*

Depending on availability from the Graduate School, Graduate School Assistantships are awarded each year on a competitive basis following a highly qualified student's nomination by the Neuroscience Admissions Committee. Selections are based on the applicant's academic record, test scores, recommendations, and other pertinent information. The Graduate School Assistantship is awarded for the first two years of a student's academic study (including the first summer). Students must continue to be a full-time student taking at least twelve hours of graduate credit per semester (fall and spring) and nine hours of graduate credit summer semester. After the two year Graduate School Assistantship expires, it is expected that students will obtain financial support through Departmental Teaching Assistantships or Research Assistantships provided through

extramural grants awards to Major Advisors. Teaching Assistantships typically support students for the academic year only. It is the responsibility of students to apply for competitive Teaching Assistantships within their home department according to the conditions set forth by that department.

### *General Requirements*

The general requirements for the Ph.D. are described in the Graduate School *Bulletin*. The Program of Study must include a total 20 hours, 16 of which must be comprised of 8000-9000 level courses not including credit for research, dissertation writing, and directed study. A final typed program of study will be submitted to the Graduate School prior to notification of the comprehensive examination. This program of study must be submitted on the proper form for approval by the advisory committee, the graduate coordinator, and the dean of the Graduate School. The final program of study must show all graduate courses relevant to the doctoral program and not just courses satisfying the minimum degree requirement. To be eligible for graduation, a student must maintain a 3.0 (B) average on the graduate transcript and a 3.0 (B) average on the program of study.

In addition, the Neuroscience Program has established the following specific requirements. These courses may be included in the 20 hours of credit required by the Graduate School:

1. Neurophysiology (3 h): VPHY 8400 Neurophysiology
2. Neuroanatomy (3 h): PSYC 8300 Neuroanatomy for Behavioral Scientists
3. Ethics (3 h): BHSI 8000 Bioethics
4. Research skills, which may include statistics and laboratory techniques selected from the following list of courses (6h): STAT 6210 and STAT 6220 Statistical Methods I & II; PSYC 6410 Statistics in Psychological Research and PSYC 6430 Applied Regression Methods in Psychology or PSYC 6440 Experimental Design in Psychology; VPHY 6930 Research Methods; PSYC 8330 Laboratory Apprenticeship in Biopsychology; CBIO 8920L Cellular Biology Research Techniques; BIOL (CBIO) (VPAT) 5040/7040 Electron Microscopy; CBIO 8050-8050L Techniques in Modern Microscopy.

Substitutions may be applied to these course requirements if they are not available within a reasonable time frame as advised and approved by the Advisory Committee.

### *Examples of Elective Courses Organized by Content Area*

Area A: Cellular/Molecular Biology:  
BCMB 6000 General Biochemistry and Molecular Biology

BCMB 6010 and BCMB 6020 Biochemistry and Molecular Biology I & II  
BCMB 8010 and BCMB 8020 Advanced Biochemistry and Molecular Biology I & II

Area B: Physiology & Pharmacology:

VPHY 6090 and VPHY 6100 Comparative Mammalian Physiology

VPHY 8460 Molecular Pharmacology

PHRM 6400 Human Physiology I

PHRM 6410 and PHRM 6420 Pharmacology I & II

PHRM 8430 Advanced Neuropharmacology

CBIO 6730 Endocrinology

Area C: Behavioral/Systems Neuroscience:

PSYC 6130 Biological Foundations of Behavior

PSYC 6160 Sensory Psychology

PSYC 8900 Psychopharmacology Seminar

CMSD 6800 Neural Bases of Speech, Language, and Hearing

Area D: Cognitive/Clinical Neuroscience:

PSYC 7780 Animal Cognition

PSYC 8550 Neuropsychological Assessment

PSYC 6110 Basic Learning Processes

EPSY 8340 Child Neuropsychology

NEUR 9000 Research 10-30h

NEUR 9300 Dissertation 6h

The remainder of the Ph.D. program will consist of the written and oral comprehensive examinations, the dissertation requirements as described in the *Bulletin* of the Graduate School and in the "Format and Policy for Thesis and Dissertation" section below, and a Program of Study developed by the student's Advisory Committee in accordance with Graduate School and Program requirements.

#### *Written Comprehensive Exams*

The Written Comprehensive Examination will be completed not later than during the first Fall or Spring Semester immediately following whichever comes first: (1) the passage of three calendar years from the beginning of the semester in which the student first enrolled as a regular student, or (b) the completion of 72 credit hours of course work. In the case of a student who enters the Neuroscience Program after earning a masters degree elsewhere, the previously mentioned contingencies will instead be: (a) the passage of two calendar years from the beginning of the semester in which the student first enrolled as a regular student in the program or (b) the completion of 48 credit hours of graduate course work.

Exceptions to the above policy on when the Written Comprehensive Examination is to be taken may be granted by the approval all members of the

student's Doctoral Advisory Committee. The committee may consider appropriate reasons to extend the deadlines for taking the Written Comprehensive Examination (such as, but not limited to, delay in progress due to ill health or extreme hardship).

#### *Format and Evaluation.*

In accordance with the policy of the Graduate School, the format and evaluation of the Written Comprehensive Examination is determined by each student's Doctoral Advisory Committee. The written comprehensive examination may follow one of two models: a traditional exam format or the submission of a scholarly literature review paper for publication.

For the traditional written examination, the Major Advisor is responsible for scheduling a secure room and computer for a four day period so that the student may take the exam. Members of the student's committee must submit to the Major Advisor questions that may be answered within a three hour period. Questions must be submitted one week prior to the exam, and the Major Advisor administers the exam by giving the student one set of questions each day. If the student's committee is comprised of only three members, then the student must identify another temporary member for the sole purpose of providing questions for the Comprehensive Examination with the Major Advisor's consent. This faculty member must be affiliated with the Neuroscience Program as described above. Students will select only four committee members to write questions if the standing committee exceeds this number. Written exams are closed book. Electronic files should be submitted to the Major Advisor or Program Assistant each day after written responses are complete. Committees members then grade responses to their questions with grades of pass or fail. The student must receive "passes" on at least 2/3 of all questions in order to pass the overall written examination. Although the Graduate School recognizes only grades of Pass or Fail on the Written Comprehensive Examination (the grade being reported at the time the grade on the Oral Comprehensive Examination is reported), for purposes of internal evaluations, the Advisory Committee initially shall give an overall grade for the Written Comprehensive Examination as either Pass, Conditional Pass, Fail With Option to Retake, or Fail Without Option to Retake. Conditions associated with a Conditional Pass will be specified by the Advisory Committee. A grade of Fail Without Option to Retake shall constitute a recommendation to the program faculty to dismiss the student from the program.

For the manuscript submission model, the student will gain the doctoral advisory committee's approval for a topic of a substantive review paper. This paper will be submitted to the committee for review in accord with the timeline given above. The committee will critique the manuscript in accord with a high standard for publication in a peer-reviewed journal, such as Trends in Neuroscience. In this process, the Major Advisor will serve as the editor, relaying the reviewer's comments to the author so that the manuscript can be revised. When the committee approves the manuscript the student is expected to submit it for publication, with the student as

first author. The manuscript will be graded by the Advisory Committee as described above.

### *Oral Comprehensive Examination*

*Scheduling.* Oral Comprehensive Examinations shall be scheduled not later than the end of the next academic semester (summers may be exempted) following the semester in which the Written Comprehensive Examination is passed.

Exceptions may be granted with the approval of a majority of the members of the Doctoral Advisory Committee.

### *Format and Evaluation*

By Graduate School policy, the Oral Comprehensive Examination is open to all members of the University Faculty; it is administered by the Advisory Committee. It is an inclusive oral examination intended to assess the student's mastery of the field(s) of study in which the doctoral degree is being sought. An examination of the student's Dissertation Prospectus may precede or follow the Oral Comprehensive Examination, but may not be substituted for this examination. Evaluation is done by the Advisory Committee (including additional temporary members, if necessary, to bring the full committee to four) using the categories Pass or Fail. Each member of the committee provides one question to start, followed by general questioning. Seventy-five percent of the dissertation committee must approve a "Pass". Note that a unanimous decision is required for committees comprised of three members. Only the permanent members of the Doctoral Advisory Committee vote. Therefore, the permanent members will carry forward the decision of the examination committee as a whole.

### *Admission to Candidacy*

The student is responsible for initiating an application for admission to candidacy so that it is filed with the dean of the Graduate School at least one full semester before the date of graduation. This application is a certification by the student's major department that the student has demonstrated ability to do acceptable graduate work in the chosen field of study and that:

- all prerequisites set as a condition to admission have been satisfactorily completed;
- research skills requirements, if applicable, have been met;
- the final program of study has been approved by the advisory committee, the graduate coordinator, and the dean of the Graduate School;
- an average of 3.0 (B) has been maintained on all graduate courses taken and on all completed courses on the program of study (no course with a grade below C may be placed on the final program of study);
- written and oral comprehensive examinations have been passed and reported to the Graduate School;
- the advisory committee, including any necessary changes in the

membership, is confirmed and all its members have been notified of their appointment;

- a dissertation prospectus has been approved (see below);
- and the residence requirement has been met.

After admission to candidacy, a student must register for a combined total of ten hours of dissertation or other appropriate graduate credit during the completion of the degree program. Students planning to graduate the same semester they enter candidacy must be admitted to candidacy by the published deadline for candidacy during that semester and register for ten hours. The student must also meet all other deadlines for graduation in that semester. A student must register for a minimum of three hours of credit in any semester when using University facilities, and/or faculty or staff time.

#### **IV. Dissertation Requirements and Defense**

##### *Dissertation Prospectus*

The Major Professor and the Advisory Committee guide the student in planning the dissertation. The student prepares a prospectus consisting of an introduction and a methods section with a critical review of the most relevant literature and submits it to the Major Professor for consideration. The literature review will be included as an Appendix. Typically, students will have published one or more research articles by the time they submit the prospectus, and such articles should be included as introductory chapters of the prospectus. When the Major Professor certifies that the Dissertation Prospectus is satisfactory, it is submitted to the other members of the Advisory Committee for their review and comments. Formal approval of the Dissertation Prospectus is given by the Advisory Committee following a public presentation of the proposed research to the faculty and the students of the Neuroscience and Behavior Program. A favorable vote by 75% of the members of the Advisory Committee is required for approval.

##### *Dissertation Approval and Defense*

The completed Dissertation is first submitted to the Major Professor. After the Major Professor approves the Dissertation, it is submitted to the other members of the Advisory Committee, a final oral defense is scheduled, and the Graduate School is so notified. The Graduate School will announce the time and place of the defense of the dissertation to the University community. The student will notify the Graduate Coordinator of the title, date, time and place of the defense two weeks in advance of the defense.

The written assent of 75% of the members of the Doctoral Advisory Committee is required before the Dissertation is approved for final defense. If the committee declines to approve the Dissertation as ready for defense, the Major Professor will notify the student and the Graduate School. The defense of the Dissertation is chaired by the Major Professor. Seventy-five percent of the members of the Advisory

Committee must approve the defense and so certify in writing.

According to the Graduate School *Bulletin*, the Advisory Committee is allowed three weeks to read and evaluate the completed Dissertation. The defense of the Dissertation must be scheduled so that the results of the defense can be reported a minimum of one week prior to graduation. This means that the completed Dissertation will have to be submitted to the committee at least 30 days before the expected date of graduation.

#### *Format and Policy for Dissertations*

The style of the Dissertation Prospectus and Dissertation must be consistent with that of peer-reviewed journals in the field of neuroscience, except as altered to comply with Graduate School policy. Dissertations will typically be comprised of collations of published or submitted journal articles together with introductory and discussion chapters, in accord with Graduate School rules. All the publications included in the dissertation should be the student's own work, as implied by the student being first author.

A review of the literature, intended (a) to represent the critical issues related to the research and (b) to include the most relevant previous research, will be included as an appendix. Additional appendices of experimental detail are permissible, but the main body must be able to stand alone as a manuscript for at least one empirical article ready for journal submission.

#### **V. Annual Evaluation of Academic Performance**

The performance and conduct of each student in the Neuroscience Program shall be reviewed in a meeting of the Division Chair and Graduate Coordinator annually. Highly important in these annual evaluations is whether the student has met critical deadlines that are indicative of satisfactory progress. Additional performance, ethical, or other relevant considerations may determine whether a student's standing is satisfactory for continuation in the Program. The Major Professor for each student will make a recommendation to the Division Chair and Graduate Coordinator that the student's performance, progress, or both are judged to be Satisfactory or Unsatisfactory. The student's case will be considered by the Division Chair and Graduate Coordinator.

A letter will be sent to each student regarding judgment of Satisfactory or Unsatisfactory progress annually. If the student's progress has been judged Unsatisfactory, the letter will specify (a) the reasons for the Unsatisfactory judgment and (b) the conditions which the student must meet to change the judgment. Failure to meet the specified conditions in the specified time limit will be considered grounds for recommending that the student be dismissed from the Neuroscience Program.