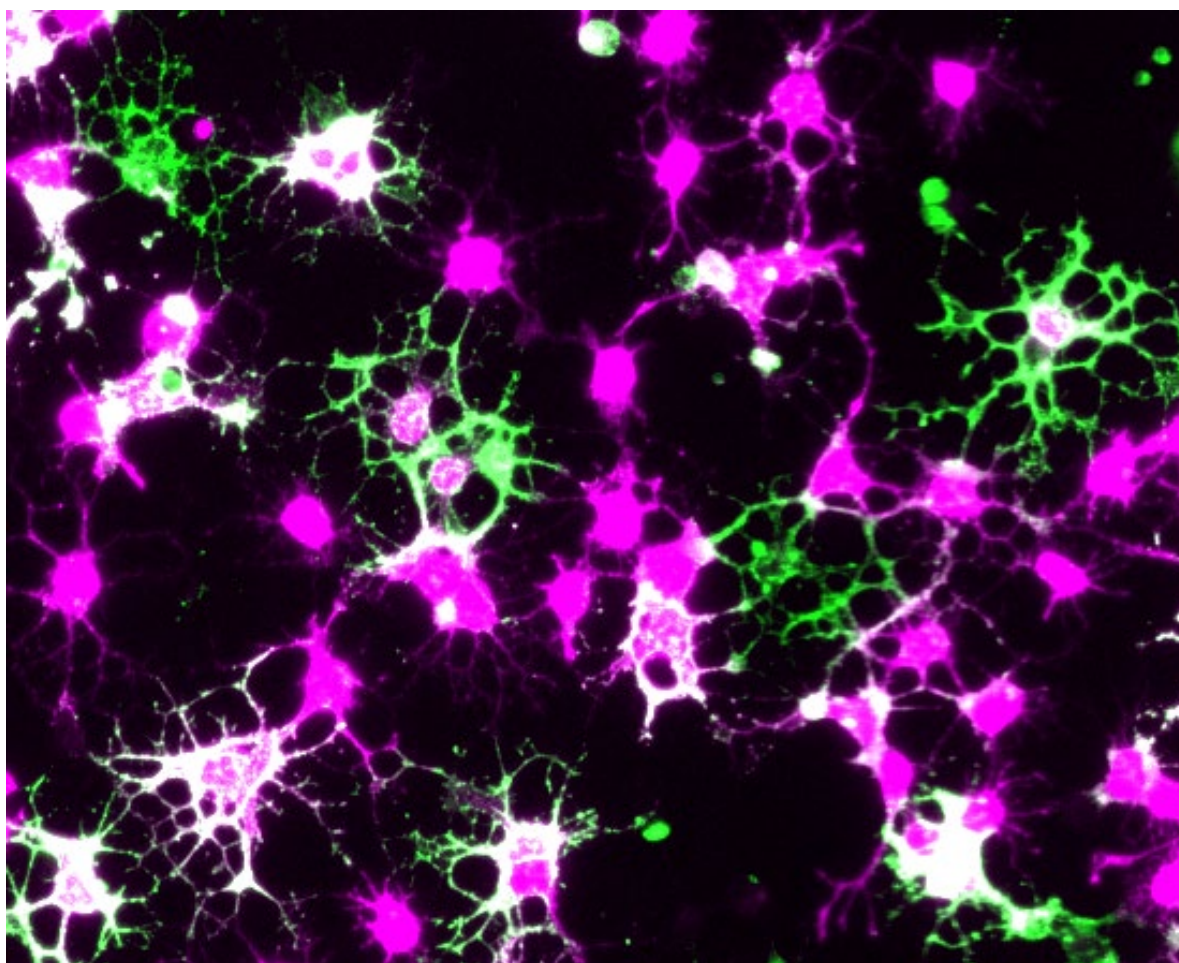


UNIVERSITY  
OF MIAMI



# Neuroscience Graduate Student Handbook



## NEUROSCIENCE GRADUATE PROGRAM OVERVIEW

The Neuroscience Graduate Program was approved as a PhD-granting program in 1992. It is interdisciplinary and interdepartmental, and designed to guide trainees towards acquiring the research skills and the intellectual rigor needed to become independent professional neuroscientists. The Program achieves these goals through coursework, seminars and journal clubs, dissertation research committee guidance, and outstanding research faculty. The Program also provides two annual forums for students to showcase their research: a poster session on Neuroscience Research Day and an annual retreat with talks by students and faculty.

The faculty of the Neuroscience Program consists of more than 80 neuroscientists drawn from the Miller School of Medicine, the College of Arts and Sciences, and the Rosenstiel School of Marine and Atmospheric Science. The research interests of these faculty include the following and more:

- Cellular mechanisms of neurological diseases such as Parkinson's, Alzheimer's, and ALS.
- How addiction to nicotine, alcohol and other drugs is acquired and can be controlled.
- Limiting and repairing damage to brain and spinal cord following traumatic injury, ischemia, or stroke.
- Molecular mechanisms of ion channels and neurotransmitter receptors, and transporters.
- Sensory transduction and neural mechanisms in the visual, auditory, olfactory, and gustatory systems.
- Mechanisms of learning and memory.
- Development of the nervous system, with emphasis on axon growth and synaptogenesis.
- Neurogenesis during development and in the adult.
- Cellular mechanisms pertinent to neurons and glia in central and peripheral nervous systems.

## GRADUATE SCHOOL REQUIREMENTS

For details of general requirements for the PhD degree, consult the Graduate School Bulletin and Handbook. To be eligible to receive the PhD, students are required to complete a minimum of 60 credit hours.

PIBS and other courses, plus NEU courses	36 credits minimum
Research Credits	24 credits minimum
For graduation	60 credits minimum

All requirements must be fulfilled within 8 years of initial enrollment in the Graduate School. Students must maintain an overall average GPA of 3.0 or better. In each NEU course, a grade of B or better is required.

If a student decides not to continue work toward the PhD, (s)he should consult with the Mentor and Program Director. The Neuroscience Graduate Program does not usually grant a Master's degree, and will only do so under special circumstances at the discretion of the Steering Committee.

## CURRICULUM Required Courses

Code	Pre-Requisites	Course Title	Credit Hours
NEU 700	--	Seminars in Neuroscience	1
NEU 721	--	Principles of Membrane Physiology and Biophysics I	2
NEU 722	NEU 721	Principles of Membrane Physiology and Biophysics II	2
NEU 731**		Advanced Topics in Neuroscience	1
NEU 761	NEU 721	NEU I - Molecular and Cellular Neuroscience	2
NEU 762	NEU 721, 722, 761	NEU II - Systems Neuroscience	4
NEU 763	--	Developmental Neuroscience	2
NEU 797		Neuroanatomy	3

\*\* Not available every semester. Announcements for the course will be emailed to student as it becomes available.

MD/PhD students may waive Neuroanatomy. MD/PhD students may also request permission from the Program Director and Course Director to take certain required courses out of sequence.

### Research Credit

Students will enroll for research credits as determined by the Neuroscience Program and Graduate School. No fewer than 24 research credit hours must be accumulated by the end of training.

One of these courses every Semester, Year 2 onwards		Credit Hours
NEU 830	Doctoral Dissertation – Pre Candidacy	Typically 3/per semester
NEU 840	Doctoral Dissertation – Post Candidacy	Typically 3/per semester
NEU 850	Research in Residence – Post-Defense	1 (if necessary)

## STUDY PLAN

The following is a sample curriculum plan. Students may discuss their individualized plan with the Neuroscience Graduate Program Director to make adjustments as needed.

<b>Year One: Spring Semester</b>		<b>Credit Hours</b>
PIBS 700	Journal Club	1
PIBS 731	Laboratory Research	1/rotation
PIBS 783	Professional Development: Skills for Success II	1
PIBS 705	Biostatistics I	3
NEU 721	Principles of Membrane Physiology and Biophysics I (Spring A)	2
NEU 763	Developmental Neuroscience (Spring A)	2
NEU 761	NEU I - Molecular and Cellular Neuroscience (Spring B)	2
NEU 722	Principles of Membrane Physiology and Biophysics II (Spring B)	2
Total Credit Hours		14

<b>Year One: Summer Semester</b>		<b>Credit Hours</b>
PIBS/NEU 830	Doctoral Dissertation	1
Total Credit Hours		1

<b>Year Two: Fall Semester</b>		<b>Credit Hours</b>
NEU 700	Seminars in Neuroscience (every semester starting in year two)	1
NEU 797	Neuroanatomy	3
NEU 762	NEU II - Systems Neuroscience	4
NEU 830	Doctoral Dissertation	1-12
Total Credit Hours		Variable

<b>Year Two: Spring Semester</b>		<b>Credit Hours</b>
NEU 700	Seminars in Neuroscience	1
NEU 830	Doctoral Dissertation	1-12
Total Credit Hours		Variable

<b>Year Two: Summer Semester</b>		<b>Credit Hours</b>
NEU 840	Doctoral Dissertation	1
Total Credit Hours		1

<b>Every Semester from Year 3 Fall through Graduation</b>		<b>Credit Hours</b>
NEU 700	Seminars in Neuroscience	1
NEU 840	Doctoral Dissertation (Post-Candidacy/Pre-Defense)	1-12
Total Credit Hours		Varies

## COURSE DESCRIPTIONS

Students are expected to have a general knowledge of biochemistry and molecular biology from the required PIBS courses before registering for NEU courses.

### NEU 721 Principles of Membrane Physiology and Biophysics I

Chemical and physical structure of membranes, model systems, permeability and transport, membrane potential, ionic channels, excitability in nerve and muscle, ionophores, active transport, and membrane receptors. (2 credits)

### NEU 722 Principles of Membrane Physiology and Biophysics II

Osmosis and cell volume, permeability and compartmentation, cable properties, Hodgkin-Huxley formalism, Na, K, and Ca ion channels, regulation of cellular Na, Ca activities, single-channel analysis, chemical synapses, membrane receptors, cell junctions, excitation and E-C coupling in muscle. Prerequisite: NEU 721. (2 credits)

### NEU 761 Neuroscience I – Molecular and Cellular Neuroscience

An eight-week introduction to the cellular and molecular biology of the nervous system. The course is an intensive, interactive discussion of experimental method, data analysis regarding neurons, synapses, sensory cells, glia and learning/memory. (2 credits)

### NEU 762 Systems Neuroscience

Sensory, motor and integrative neuroscience at the level of functional systems. The course concentrates on the experimental basis for our understanding of nervous system function using didactic lectures and student discussions of research literature. Students are expected to have a working knowledge of synaptic transmission, excitable cell membranes, and ion channels from previous coursework in NEU 721/722 and NEU 761. [Prerequisites: NEU 721/22 and NEU 761, or in exceptional cases, permission of instructors]. (4 credits)

### NEU 763 Developmental Neuroscience

This course will explore nervous system development from early neural induction and neurogenesis to the construction of neural circuits. Cellular and molecular mechanisms of neurulation and CNS patterning, neural progenitor migration, neural crest and ectodermal placodes, programmed cell death, construction of neural circuits and axon guidance, and synaptogenesis will be covered. (2 credits)

### NEU 797 Neuroanatomy

Functional neuroanatomy for neuroscience research. Emphasis is on gross anatomy, identification of pathways and circuits, and a description of the physiological functions of neuroanatomical systems. Each lecture will contain some clinical examples and/or case histories, and a laboratory segment for study of human and sheep brains. Brain models and online tools including 3-dimensional rotations are included. (3 credits)

### NEU 731 Advanced Topics in Neuroscience

A seminar course with guided readings and discussions based on research literature. The course is taught by faculty in areas related to their research topics. The course may include writing assignments or homework exercises. All NEU program students are required to pass this course at least once before requesting sufficiency. Not available every semester. Announcements for this course are sent by email to all NEU students. (1 credit)

### NEU 750 Modeling CNS Injury and Repair (elective)

An overview of a number of complex modeling systems using in CNS Injury and Repair biomedical research. The course examines models, such as spinal cord injury, traumatic brain injury, ischemic/stroke injury, experimental autoimmune encephalomyelitis (EAE) model of multiple sclerosis, axon regeneration in retinal nerve and spinal cord, and drosophila models of degeneration. The course will consist of both lectures and hands-on laboratory components. Not available every academic year. (1 credit)

NEU 700 Seminars in Neuroscience

Required each Fall and Spring for all NEU students, emphasizes student research presentations (30 min each for 2<sup>nd</sup> year students; 60 min each for 3<sup>rd</sup> year on). Attendance at neuroscience related seminars is also required. (1 credit)

NEU 830 Doctoral Dissertation – Pre Candidacy

Dissertation Research before requesting Admission to Candidacy (i.e. before Qualifying Exam). No more than 6 (six) of these credits may be taken prior to completion of the Qualifying Exam. (variable credits)

NEU 840 Doctoral Dissertation – Post Candidacy

Dissertation Research after Admission to Candidacy. (variable credits)

NEU 850 Research in Residence – Defense Semester

Dissertation Research after the student has defended their dissertation but is preparing dissertation for final submission to Graduate School, or has accumulated the permissible total in doctoral research credits.

## STEPS TO CANDIDACY

The Neuroscience Program expects each student to pass a Qualifying Exam (QE) after completing NEU Core courses, and to orally defend an original research proposal. The two examinations are held concurrently and must be completed by August 1<sup>st</sup> of the second year in graduate school. MD/PhD students may schedule their exam between the end of year 1 and August 1 of year 2 of graduate study. Passing grades for each, the QE and the proposal defense, are required before the student can be admitted to candidacy for the PhD degree.

<b>Qualifying Examination timetable and deadlines</b>	
<b>By February 15 of 2nd Year*</b>	Discuss committee composition with Mentor (and with Program Director as necessary). Ask faculty members if they are willing/able to serve. Email Program Coordinator requesting approval of Dissertation Committee (see below)
<b>2-4 Weeks After request (above)</b>	Receive approval/modification from Steering Committee (SC).
<b>By April 15 of 2<sup>nd</sup> Year</b>	Poll Dissertation Committee members + SC representative + Program Director to schedule QE. Reserve conference room for QE. Email Program Coordinator date/time/location of QE.
<b>3 Weeks before QE</b>	Upload proposal to SafeAssign on Blackboard. Send SafeAssign report and proposal to Program Coordinator and Director.
<b>2 Weeks before QE</b>	Receive approval or request for corrections from Program Coordinator/Director. Then send proposal to your Qualifying Exam Committee
<b>By July 31 of 2nd Year *</b>	Qualifying Exam & Proposal Defense
<b>By 2 Weeks after QE</b>	Receive Meeting Report and SACS assessment form from Program Coordinator.

\* MD/PhD students typically take their Qualifying Examination by late Fall/early spring of 2<sup>nd</sup> year in order to complete research by 4<sup>th</sup> year and return to MS-3 in a timely fashion.

### Step 1. Formation of Dissertation Committee

The dissertation committee consists of the following faculty:

- Advisor (Mentor). Must be Neuroscience Program Graduate Faculty member
- Three additional members. One of these people will be the committee chair
- The Committee Chair and at least one addition member must be Neuroscience Program faculty
- At least one committee member must be from a department other than Mentor's
- If a student has a Mentor and Co-Mentor, three additional members are still required
- MD/PhD students must have at least one member of the MD-PhD Committee (can be Mentor/Co-Mentor)
- The Chair of the Dissertation Committee may not be the Mentor

**The Neuroscience Program discourages the participation of the Mentor's long-term, active collaborators on a student's dissertation committee.**

Early during the second Year of graduate studies, each student works with his/her mentor to identify faculty members best suited to promote the student's scientific and professional development. The student should discuss his/her general research directions with each potential committee. The student then must request approval of his/her dissertation committee by providing the title and brief summary of the anticipated research project and the rationale for choosing each dissertation committee member. The Neuroscience Program Steering Committee has the responsibility of evaluating the proposed committee and approving it or requesting needed adjustments.

In addition to members of Dissertation Committee requested by the student, the **Qualifying Exam Committee** will include the Program Director and one additional Steering Committee member. The Program Director attends all qualifying exams to ensure consistency within the program but is a non-voting participant. The additional Steering Committee member is selected by the Steering Committee to serve as a voting QE Committee member. The Program Director and additional Steering Committee member attend only the Qualifying Exam, not subsequent progress meetings.

*The mentor is a non-voting member for the Qualifying Exam and Proposal Defense. (S)he may remain to present perspectives and comments on the student following the examination, but should leave the room before the rest of*

*the committee discusses and votes on the final assessment. The student must exit immediately following the examination.*

All committee members must be physically present for the qualifying exam and proposal defense. Students must select committee members who are willing and able to meet this requirement and confirm their willingness to attend in person. Videoconferencing and teleconferencing are not acceptable.

## **Step 2. Research Proposal**

The research proposal is based on the student's projected dissertation research (approximately 2 years). It is written in the format of an NIH fellowship application and includes diagrams and figures to support the proposal. The written proposal must be ENTIRELY the work of the student. Students should seek guidance regarding the overall research direction and ask questions of faculty members (or other students) concerning specific experimental methods. The hypotheses and experimental design must be conceived and written by the student being examined. For example, using all or part of the mentor's grant applications as a guide is not acceptable.

The student will upload the proposal to SafeAssign in Blackboard (access will be provided by the Neuroscience Program Coordinator). The proposal along with its SafeAssign report is then submitted by the student to the Neuroscience Graduate Program Office at least **3 weeks** before the scheduled exam date. After the Program Director has examined both documents, the student will be informed whether he/she may send the proposal to the Qualifying Exam Committee or if changes are necessary. The Committee must receive the proposal document no less than **2 weeks** prior to the scheduled oral defense/examination.

### Written Proposal Format

- Overall Page Limit: 9 pages, not including cover page or references
- Font: 11 point Arial or Helvetica font single spaced (≤15 characters per inch incl. spacing; 6 lines per inch)
- Margins: 0.5 inch on all sides using standard paper size (8.5" X 11).
- **Cover Page** should include Name, Title of Proposal, Date/Time/Place of the examination. Also list the names of Qualifying Exam Committee members.
- **Abstract:** (30 lines maximum) stating the main scientific question or problem to be addressed, hypotheses and brief outline of proposed experiments to test them.
- **Specific Aims (1 page only):** Clearly state the questions and hypotheses. Outline your proposed strategy for addressing them.
- **Critical Review of the Literature (2 pages):** Briefly describe historical background on the chosen research topic. Emphasize what current research has made clear, and explicitly identify the gap of knowledge you propose to address. Focus on how key relevant publications have added to the big picture and what the limitations of each technique, model system or research strategy in these publications has been. You don't need to get into the technicalities of earlier papers; instead discuss where the findings are incomplete, and how your proposed research will fill part of that gap or extend the understanding of the topic. If applicable, you should discuss why a different technology, or animal model, or culture system etc. that you plan to use will help you "*go where no one has gone before*". Develop your hypothesis and state the evidence and logic for it.
- **Research Strategy (6 pages):**
  - Significance (typically 0.5 to 1 page)
    - Explain the importance of the problem or the critical barrier to progress in the field that the proposal 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, or preventive interventions that drive this field will be changed if the proposed aims are achieved
  - Approach
    - Describe the strategy, methodologies, and analyses you plan to use to accomplish the specific aims.



- Explain how the data will be collected, analyzed, and interpreted as well as any resource sharing plans as appropriate.
- Include figures, tables, charts and diagrams based on preliminary results (yours and your lab's with attribution). These should demonstrate the general feasibility of the approach.
  - Discuss how data will be analyzed and benchmarks for success. Also discuss potential problems and alternative strategies, anticipated to achieve the aims.
  - If the project is in the early stages of development, describe how you plan to establish feasibility. Establish benchmarks and timeline to manage riskier aspects of the proposed work.
- **Bibliography of References Cited (not included in page limit):**  
Include bibliographic citations with names of all authors, title of article and journal, volume number, page numbers, and year of publication.

*All data figures included in the presentation should be reflected in the written proposal.*

### **Step 3. Qualifying Examination**

The oral examination will include: (A) the student's defense of the written research proposal, and (B) an evaluation of the student's general neuroscience knowledge. The exam will last 2-4 hours. The student must receive a Pass grade on each, part A and B of the examination. The grade of the research proposal (A) will be based on both the written proposal and its oral defense.

*The student should be prepared to answer questions from committee members at any point during the examination; committee members need not wait until the student has finished presenting.*

If the Qualifying Exam Committee regards the student's performance as unsatisfactory, the student will be required to retake the corresponding portion of the exam. If the proposal is not satisfactory, the student will be asked to revise the proposal and/or defend it at a repeat oral, usually within two months. In general, the student will be allowed only one opportunity to retake the double exam.

If the Qualifying Exam Committee does not reach a consensus regarding one or both grades, the Chair will provide a written summary of the exam proceedings, including dissenting views, and the decision on the student's status will be made by a majority vote of the Steering Committee following a discussion.

#### Policy on Faculty Assistance

The qualifying exam is designed to measure a student's ability to design, analyze, and interpret scientific experiments to test a specific hypothesis. As such, the proposal should reflect the thought processes of the student taking the exam. However, it is recognized that second-year students will not have, nor be able to quickly acquire, all the relevant expertise in the fields covered by their proposals. Therefore, it is the policy of the Steering Committee that ongoing discussions with faculty members concerning experimental techniques and the design of experiments are proper and desirable. In these discussions both students and faculty should exercise judgment and in general, students should seek out the help they need. More specifically, prior to scheduling the qualifying exam, students should request specific feedback from their mentor on all aspects of the proposal including experimental design, data presentation and actual writing of the document. The most effective way to do this is by starting early with the process and by discussing the proposal with their mentor early during development of the proposal, rather than just immediately prior to the qualifying exam.

### **Step 4. Admission to Candidacy**

Neuroscience Program students must pass both parts A and B (above) of the Qualifying Exam, in order to be admitted to candidacy for a doctoral degree. Students must file for admission to candidacy at the Graduate School within 3 months of passing the Qualifying Exam and Defense Proposal. Students are responsible for contacting the Program Coordinator to initiate the required forms. Per Graduate School requirement students must be admitted to candidacy for the PhD at least one semester prior to the one in which the degree will be awarded.

## PROGRESS ON DISSERTATION RESEARCH

### Timing of Dissertation Committee Progress Meetings

Meetings of the dissertation committee are expected to occur **every 6 months** (or every 4 months if a student has been in the PhD Program longer than 5 years). **It is the responsibility of the student to schedule timely committee meetings and notify the Neuroscience Program office at least two weeks before the meetings.** If a progress meeting needs to be delayed more than one month (e.g. for medical reasons), the student should seek permission from the Program Director based on a clear, objective reason. "I don't have enough data" is **not** a valid reason. Students are instructed to begin scheduling 2-3 months in advance to accommodate committee members' travel and professional calendars. In addition to this regular schedule, meetings should be held 1) if there is a major redefinition of the research project, or 2) when the student is ready to draft the dissertation (i.e. request Sufficiency)

### Progress Meeting Document

Before each progress meeting, students must prepare a Progress Report document showing experimental progress and plans. Two-to-three weeks before each meeting, students must submit to their mentor, a draft of the progress meeting document. The student should incorporate mentor's suggestions. *The mentor must sign off on the quality of the document.* The student sends the Mentor-approved document to all committee members at least one week before the progress meeting is to take place. Students must also bring primary data to the meeting (e.g. lab notebooks, electronic files) for review. The meeting includes an oral presentation by the student, a discussion of progress and plans, and a summary discussion in the absence of the student.

### Progress Report Format

- **Cover Page** should include Name, Title of Project, Date/Time/Place of the meeting and the number of the progress meeting (1<sup>st</sup>, 2<sup>nd</sup> etc.). List names of Dissertation Committee members.
- **Specific Aims:** Restate the aims as originally approved or as modified based on the outcomes of your experiments, or based on committee recommendations. If Aims have been modified, explicitly state revisions to the experimental approach. List the status of each aim (e.g. in progress, completed, submitted for publication, pending initiation etc.).
- **Responses to Committee Recommendations:** List recommendations from your last committee memo and describe point-by-point, actions you have taken in response. These could include new experiments/data analyses / statistics specifically requested as well as your efforts to improve writing, displays, presentations etc. in response to committee guidance.
- **Academic Progress:**
  - Course work: list any elective or off-site courses/training since your QE
  - Awards: list any awards (e.g. Lois Pope, and extramural fellowships) since starting graduate school
  - Publications: list all abstracts and publications (submitted, under revision, in press, published)
- **Research Progress:**
  - Abstract: Focus on work conducted since last meeting. Include rationales, data and interpretations.
  - Progress on Aims: For each Aim, use the following sequence.
    - **Summarize** (1-2 sentences) what has been presented in previous meetings.
    - State the **rationale** for experiments conducted since the last meeting.
    - Describe **experimental design and results**, and a provisional conclusion (if Aim is still in progress).
    - Describe planned future experiments in this Aim.
- **References Cited**

*All data figures included in the presentation should be also appear in the progress report.*

## Post-Meeting Report

After each meeting, a memo will be written to the student that 1) summarizes deliberations and recommendations of the committee, and 2) sets a date or deadline for the next meeting. This memo is drafted by the Chair, and circulated via email to Committee members for revision. The Committee Chair will send a final consensus report to the Neuroscience Program, copying the rest of the committee (but not the student). The Program Director and Program Coordinator will send the report to the student.

## SUFFICIENCY MEETING

### Timing of Sufficiency Meeting

When all proposed Specific Aims for the dissertation have been successfully completed, and the student has at least one first-authored peer reviewed research paper (not review article) published (or accepted for publication), the student consults with Mentor to plan and schedule a “Sufficiency Meeting” of the Dissertation Committee. During the meeting, the student will present an overview of the entire dissertation. Committee members will discuss the scope and depth of the student's work and will decide whether to grant permission to write the dissertation.

### Sufficiency Document Format

The Student submits a Sufficiency Document to all committee members at least 1 week before the meeting.

- **Cover Page** should include Name, Title of Project, Date/Time/Place of the Sufficiency meeting. List names of Dissertation Committee members.
- **Background (1-2 paragraphs):** Describe the historical background and the gap in knowledge that your dissertation addresses.
- **Hypothesis and Specific Aims:** List Aims as approved by committee at Proposal Defense or progress meeting(s). Under each aim, briefly describe the experimental strategy that was used to accomplish the aim.
- **Major Findings (approximately 2 pages):** Indicate whether your work has been published or submitted. Describe rationale, results, and interpretations for major findings.
- **Outline of Dissertation:** List each Chapter (Introduction & Background, Hypothesis & Specific Aims, Methods etc.). Use bulleted / numbered format to describe subsections in each chapter.
- **All Data Figures:** Show each data figure as you propose to include it in your dissertation. Annotations on images and graphs should be complete and should follow Graduate School formatting requirements (see <https://grad.miami.edu/electronic-thesis-and-dissertation/index.html>). Each figure should have a complete legend, including for all parts of a multi-panel figure. Previous Neuroscience Program dissertations have included 12-25 data figures.

### Criteria for Obtaining Sufficiency

The Dissertation Committee will evaluate if the student has satisfactorily completed the proposed experimental work including any previously approved modifications. Permission to write the dissertation requires a consensus of the Committee (1 member may dissent). **The mentor is a voting member in determining sufficiency. Co-mentors (if applicable) will share one vote on the committee.** Students must have at least one accepted or published first-authored research article in a peer-reviewed journal prior to requesting Sufficiency. Note that one published paper is necessary but may not be sufficient in this context.

*The Neuroscience Program strongly encourages each student to publish at least one additional paper in a high quality journal prior to requesting Sufficiency.*

### After Sufficiency Is Granted

Once permission to write is granted, the Student will have 4 months to complete and defend the dissertation. Students should carefully follow all formatting guidelines found at the Graduate School website, and speak with their Dissertation Editor if necessary. The 4-month period for dissertation completion may be extended only with the approval of the Mentor and dissertation committee, as well as the Neuroscience Steering Committee.

The Dissertation Committee Chair will provide the Steering Committee with a written statement outlining the rationale for the extension request for approval.

### Guidelines for External Examiner

The Neuroscience Program expects each student to have an External Examiner: a Neuroscientist from another University or Research Institute (i.e. outside UM) for their dissertation defense. This requirement enhances the standard and caliber of doctoral research and ensures that dissertations are judged impartially. After Sufficiency has been granted, the mentor and/or dissertation committee will identify a suitable external examiner with expertise in the field of the dissertation research, submit the name to the Program Director for approval, and then contact the expert regarding their willingness to serve. To ensure impartiality, the external examiner must not have an active collaboration with Mentor on studies related to the Student's dissertation work in the past 3 years, nor have worked with or supervised the Student in the past 3 years. The external examiner must complete the external examiner application form and submit it to the program, along with a current CV at least 4 weeks prior to the tentative defense and oral examination. The Mentor will schedule and financially support the External Examiner's visit, including travel costs and honorarium. The dissertation committee chair will send the written dissertation to the External Examiner at least 4 weeks in advance of the defense as detailed below.

### DISSERTATION AND DEFENSE

- The PhD Candidate should consult with Mentor to (1) set a tentative date for the defense and (2) obtain preliminary approval on the dissertation.
- Candidate must provide a complete dissertation to the Committee at least 6 weeks before the tentative date for the defense.
- The Committee Chair should poll all members and alert the Candidate within 2 weeks if the dissertation is acceptable to send to the External Examiner (at least 4 weeks prior to tentative oral examination).
- The External Examiner will have 2 weeks to read the dissertation and email the Neuroscience Program, Mentor and Candidate that s/he has no concerns that are serious enough to prevent the Candidate from proceeding with the defense.
- The Candidate will have 2 weeks to finalize scheduling the dissertation defense and alert the Graduate School.
- If the Committee or External Examiner finds that major changes are needed with the written document or anticipates that it will take additional time to review the written document, then the Committee Chair should immediately contact the Neuroscience Program. The oral examination must be rescheduled, and the PhD candidate should work to make the necessary corrections before rescheduling the oral examination. The Candidate should work with the Program Coordinator for logistical support of the defense and examination.

### Timeline for submission of draft dissertation to final document

6 Weeks Pre defense	4 Weeks Pre defense	2 Weeks Pre defense	Defense & oral examination	Weeks 2-6 Post defense
Candidate submits draft Dissertation to Committee	If "acceptable", the dissertation draft is sent to External Examiner	If dissertation draft is "acceptable" to the External Examiner, defense and oral examination are scheduled. Student alerts Grad School.	Defense seminar and oral examination	Candidate completes edits requested by Committee, obtains final signatures, and submits all documents to the Graduate School. Student's stipend ends.

To be "acceptable", the dissertation must be written in a scientifically sound and scholarly manner, include all text sections, figures and figure legends and appropriate citations, and be fully formatted per Graduate School requirements. The committee will provide the doctoral Candidate with specific suggestions to improve the written dissertation. "Acceptable" means that only minor revisions are required to improve the document,

which could be completed in a few weeks. **The mentor will participate as a voting member in determining the acceptability of the dissertation. Co-mentors will share one vote.**

If the written dissertation is deemed “unacceptable”, the Committee will make specific recommendations to the doctoral Candidate regarding rewriting and/or further experimentation and contact the External Examiner to revise the tentative date of the defense. If rewriting is required, the Candidate must resubmit the written dissertation within 2 months. If further experimentation is required, the Committee will set a deadline.

### **After the Defense**

The doctoral Candidate will work to make any additional corrections and edits that the Committee requests and return the finalized dissertation to the Mentor and Committee Chair for final approval and signatures. The dissertation must then be submitted to the Graduate School with careful attention to formatting requirements ([www.miami.edu/etd](http://www.miami.edu/etd)). Graduate School editors can be consulted for help with meeting these requirements. Students should pay attention to the defense and submission deadlines posted at this site for each semester.

To receive the PhD degree, a doctoral candidate must submit a formal application to the Graduate School. Several required forms and a checklist for Electronic Theses and Dissertations (ETD) are available at: <https://grad.miami.edu/electronic-thesis-and-dissertation/index.html>

The doctoral Candidate has a maximum of 6 weeks of stipend support following their successful oral examination

### **Publication of Dissertation**

All dissertations submitted to the Graduate School are published by ProQuest/University Microfilms, Inc. In addition to copies of dissertations required by the Graduate School, an electronic copy should be provided to the Neuroscience Program Office.

### **Degree Time Limit**

All work towards the dissertation must be completed within 8 years of admission to graduate work. Exceptions may be granted by the Dean of the Graduate School at the request of the Graduate Program Director.

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## SEMINARS & RESEARCH FORUMS

### NEU 700: Seminars in Neuroscience

All Neuroscience Graduate Program students register each Fall and Spring in a research discussion course and present their own research seminar annually to an audience of their peers. All students are expected to participate weekly by asking questions and discussing the research findings at the presentations.

### Neuroscience related Seminars

Research seminars are an important medium through which students learn to design compelling experiments, interpret findings, and improve presentation skills.

The **Neuroscience Center Seminar Series** brings prominent Neuroscience researchers to UM one Friday each month from Sept to May. Attendance at these forums is required.

Students are also strongly encouraged to attend other neuroscience-related seminars in various departments, particularly those in their Mentor's home department.

- The Gail F. Beach Lecture Series is held once a month
- Weekly neuroscience-related seminars are held in Ophthalmology, Physiology and Biophysics, Molecular and Cellular Pharmacology, Cell Biology, Human Genetics, Miami Project to cure Paralysis and other departments.

A complete list of neuroscience related seminars and events is produced by Ms. Maria Chagoyen ([mchagoyen@med.miami.edu](mailto:mchagoyen@med.miami.edu)). Please let Maria know if you wish to receive the weekly announcement.

### Richard P. Bunge Memorial Lecture

Richard P. Bunge, MD, was at the forefront of research efforts to understand and improve the processes of repair in the nervous system. He trained some of the first PhD students in the Program. In honor of Dr. Bunge, a prominent neuroscientist, is invited to speak usually in the field of neural regeneration/development.

### Neuroscience Research Day

Neuroscience Research Day is a one-day conference held at the Miller School of Medicine, designed to showcase and promote neuroscience in south Florida. It is an opportunity for sharing ideas and other neuroscientists. Graduate students, postdoctoral associates, faculty and staff from UM, and other South Florida universities, are invited to present posters, discuss their research projects, and attend a lecture given by an internationally-renowned neurobiologist. Neuroscience Research Day is a high point in the academic year. **Students in the graduate Neuroscience program (post-QE to Sufficiency) are expected to present a poster annually.**

### Neuroscience Retreat

The retreat is held each spring to give Neuroscience students, faculty and post-doctoral associates the opportunity to hear about each other's work and exchange scientific ideas in an informal atmosphere. Most students are required to give a research talk at the retreat; the format may vary from year to year. Attendance at the retreat is required for all program students unless they have been excused by the Program Director for a valid educational/professional conflict (e.g. a conference).

### Research Seminars

Experience with presenting research seminars is a valuable part of each student's graduate training. Students are expected to present a full-length (i.e. 50 min) departmental research seminar each academic year, beginning the year after they pass their QE. The best forum for these presentations is an established seminar series within the mentor's and the student's primary department. Students are expected to schedule their annual seminar presentations and should inform the Neuroscience Program Coordinator and provide the announcement /flyer once the presentation is scheduled.

## ETHICAL CONDUCT IN TAKING EXAMINATIONS AND WRITING PAPERS

(Thanks to A.H. Caswell for a draft document)

The purpose of examinations is to evaluate the knowledge and grasp of a subject by a student. Similarly, papers are assigned to evaluate the ability of the student to assimilate ideas and write clearly about them. Any action with the intended effect of subverting these goals constitutes unethical behavior. In particular, the following are unacceptable unless they have been explicitly allowed by faculty:

1. Obtaining or observing the answers of others or donating the answers to others during an examination.
2. Obtaining a copy of the examination before it has been distributed by the examiner.
3. Altering the answer after the examination is finished.
4. Performing the examination outside the assigned time.
5. Consulting notes, reference sources or other material, both hard-copy and online, which would not normally be permitted in that course or examination.
6. Altering the answers of others, misleading others or denying them access to allowed material or sources.
7. Collaboration. In particular, in “take home” examinations students may not consult with each other or with others concerning answers or sources, unless collaboration is explicitly permitted. Students who live together should take reasonable steps to avoid unintended communication of information.
8. Abstracting answers or ideas from others. It is the obligation of the student to reveal any potential conflict of interest that might arise when discussing science with faculty, post docs, or other students an examination is in progress.
9. Plagiarism is defined as “the appropriation or imitation of the language, ideas and thoughts of another author, and representation of them as one’s original work”. The paraphrasing of the observations and ideas of others is a normal part of scientific communication, but the original contribution of the sources must be properly acknowledged, by explicit reference. Direct quotations are acceptable, but must be both cited and placed within quotation marks. Such direct quotations are not normally found in scientific writing, and certainly never are extensive. Note that changing the order of words from a source or altering a few words within a sentence does not make them “your” words. The best practice is to do your reading (from multiple sources), and then compose your own sentences without consulting your sources.

## FINANCIAL SUPPORT

Students who are in good academic standing are supported financially throughout their graduate studies. Financial support includes:

- An annual stipend of \$29,500 (for 2018-2019)
- Full tuition waiver (Note that students are expected to pay all fees)
- 100% of individual student health insurance premium

## EXTRAMURAL FELLOWSHIPS

The Neuroscience Program strongly encourages students to work with their mentors to apply for extramural fellowships. NIH NRSA fellowships are particularly encouraged. Students who successfully obtain external fellowships receive a **\$2,000 yearly supplement** to their stipend for the duration of the fellowship, as long as the award matches at least the NIH or AHA pre-doctoral stipend.

## COMMUNICATIONS

Email is the most important avenue of communication between the graduate students and the Neuroscience Program. Email accounts are provided to all students. Students are responsible for checking email at least daily so that the Mentor, Program and University have a reliable means of communication with students.

## VACATION AND LEAVE

Similar to UMMSM employees, graduate students receive the following as paid holidays: New Year's Day, M. L. King's Birthday, Memorial Day, Independence Day, Labor Day, Thanksgiving Holidays, December Holidays, New Year's Eve.

PhD students may receive stipend support for vacation days, normally no more than 14 calendar days. The exact number and timing of vacation days is negotiated between student and mentor or for 1<sup>st</sup> year PIBS students, the PIBS Program Director.

PhD students may also receive stipend support for up to 15 calendar days of sick leave per year.

**Parental leave** requires that the student apply for a paid leave of absence. The leave of absence form should be submitted to the graduate school several months before the intended leave. *The mentor must pay the first month of leave and OGPS will assume responsibility for 2 additional months. A student may only be on paid leave for a total of three months. Any leave in excess of three months will be unpaid.*

The time spent on leave of absence due to parental accommodation will not count against the student's academic time-to-completion. During the graduate tenure, a given student can only benefit **once** from this policy. On a case by case basis, the Graduate School *may* consider two doctoral students for co-parenting the same child and the conditions of the accommodation will vary. Requests can be directed to the Program Director.

Any other cases for parental leave not mentioned above should be directed for consultation by the Dean of the Graduate School.



## **DISMISSAL AND APPEALS POLICY**

Students can be dismissed by the Program for academic or professional reasons. Decisions on dismissal are made by majority vote of the Steering Committee. To appeal a major programmatic decision (e.g., dismissal, denial of degree, termination of stipend), students should first present their reasons for appealing to the Graduate Program Director and Steering Committee. This appeal will be given a fair and impartial hearing followed by a decision made by majority vote. If the student remains dissatisfied with the result of this appeal, the student may appeal the program decision, in writing, to the Program Director, within 30 days of the program's final decision. Decisions by the Program Director are appealable to the Dean of the Graduate School through the filing of a formal Graduate School Grievance. You can access the Grievance Policy using the following link (scroll down):

<http://bulletin.miami.edu/general-university-information/graduate-policies-and-procedures/academic-policies/>

In the event a student is dismissed from a mentor's lab due to irreconcilable differences, the GPD may request in writing for OGPS to provide emergency stipend coverage for up to six weeks (or a maximum of two months if a second rotation is necessary to find a new mentor). OGPS will review the request and make determinations on a case-by-case basis. Emergency support is contingent upon funding availability and not guaranteed. If the student is still unable to find a mentor after being placed on emergency support, he/she will be dismissed from the program due to lack of funding.

## **CHANGING DISSERTATION LABORATORIES**

1. If you decide that you need to change dissertation laboratories, your first step is to talk with your mentor to determine if you can resolve the issue(s).
2. If this does not resolve the issue(s), set up a meeting with the Neuroscience Graduate Program Director, your mentor and yourself.
3. If, following that meeting, you still wish to change to another dissertation laboratory:
  - a. Arrange wrap-up of experiment(s)/data with your current mentor.
  - b. Identify a new mentor and obtain approval from the new mentor to join that laboratory.
  - c. Inform your current dissertation committee of a potential change in dissertation mentor.
4. Submit a request with justification to change your dissertation mentor to the Neuroscience Graduate Program Steering Committee.
5. If the mentor change is approved, form a new dissertation committee with your new mentor's approval.
  - a. Inform your current dissertation committee that you will be forming a new dissertation committee.
  - b. Once formed, submit justification of the new dissertation committee composition to the Neuroscience Graduate Program Steering Committee for approval.

## CONTACT INFORMATION

Email address to send documents or to contact the Neuroscience Program:

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