cnup

# *Guidelines and Regulations for*

# *Doctoral Study in the*

# *CNUP Training Program*

*AY2024/25*

*2024/25 CNUP Students:*

Ellen Annas
Megan Arnold (mstp)
Jude Baroudi
Mariah Berchulski
Reece Budinich
James DeMarsh
Kimia Ghafari
Alexandra Gilsrud
Victoria (Tori) Keefauver
Malaika Mahmood
Matthew Maier
Nora Miller
Mazen Mohamed
Neha Mokhasi
Pururav Ramakrishna
Ana Rios Sigler
Madeleine Ross
Brooke Schatz
Kelsey Shimoda
Hossein Tahmasebi Dehkordi
Hannah White

# Table of Contents

1. OVERALL OBJECTIVES OF THE GRADUATE PROGRAM ..... 1

2. PURPOSE OF THIS DOCUMENT ..... 1
2.1. Changes to the Guidelines ..... 1

3. ADVISORS ..... 2
3.1. Co-Directors of the Graduate Program ..... 2
3.2. Research Advisor ..... 2
3.2.1 Workload and Vacation ..... 3
3.2.2 Financial Support ..... 3

4. GRADUATE PROGRAM ..... 3
4.1. Overview of Requirements ..... 3
4.2. Yearly Sequence of Requirements and Expectations ..... 4
4.2.1. Entering Students: ..... 4
4.2.2. First Year: ..... 4
4.2.3. Second Year: ..... 5
4.2.4. Third Year: ..... 5
4.2.5. Subsequent Years: ..... 5
4.3. MD/PhD (MSTP) Students ..... 5

5. COMPONENTS OF THE PLAN OF STUDY ..... 6
5.1. Research Rotations ..... 6
5.1.1. Rotation Report: ..... 7
5.2. Core Curriculum in Neuroscience ..... 7
5.3. Electives and Tutorials ..... 7
5.4. Statistics ..... 8
5.5. Grant Writing: The Next Three Years: Developing Your Research ..... 8
Program ..... 8
5.6. Journal Club ..... 8
5.7. Seminar Series ..... 8
5.8. Ethics and Professional Development ..... 9
5.9. Annual CNUP Retreat ..... 9

6. TEACHING BY GRADUATE STUDENTS ..... 9

7. EVALUATION OF GRADUATE STUDENTS ..... 10
7.1. Yearly Progress Reports ..... 10

7.2. Annual Student Evaluations ..... 10
7.3. Mid-year Evaluation of First-Year Students ..... 11
7.4. Program Probation ..... 11
7.5. University Probation ..... 11
7.6. Termination of a Student from the Graduate Program ..... 11
7.7. Terminal Master's Degree ..... 12
7.8. Grievance Situations ..... 12

8. SPECIAL STATUS ..... 13
8.1. Leave of Absence ..... 13
8.2. Parental leave ..... 13

9. EXAMINATIONS ..... 13
9.1. First Year Preliminary Exam (Reprint Exam) ..... 13
9.2. Second Year Research Evaluation ..... 14
9.3. Comprehensive Examination ..... 15
9.3.1. Committee: ..... 16
9.3.2. Initial Proposal and Meeting: ..... 16
9.3.3. Written Exam: ..... 16
9.3.4. Oral Exam: ..... 17
9.3.5. Evaluation: ..... 17
9.4. Doctoral Dissertation ..... 18
9.4.1. Dissertation Committee: ..... 18
9.4.2. Dissertation Proposal and Overview Meeting: ..... 19
9.4.3. Admission to Candidacy for the Ph.D. Degree: ..... 20
9.4.4. Data Meetings: ..... 20
9.4.5. Dissertation: ..... 20
9.4.6. Application for Graduation: ..... 20
9.4.7. Announcement of Thesis Defense: ..... 20
9.4.8. Final Oral Examination: ..... 21

10. ACADEMIC AND RESEARCH INTEGRITY ..... 21
10.1 Academic Integrity Policy ..... 21
10.2 Research Integrity Policy ..... 21
10.2.1 Guidelines for Reporting and Evaluating Research Misconduct by CNUP Faculty and Students 21
10.2.2 Guidelines for Assessment and Investigation of Research Misconduct by CNUP Students 22
10.2.3 Guidelines for Assessment and Investigation of Research Misconduct by CNUP Faculty 22

11. DIVERSITY ISSUES AND PERSONAL INTEGRITY[1] ..... 23
11.1 Diversity, Equity, and Inclusion (DEI) ..... 23
11.2 Mistreatment Policy ..... 24
11.3 Guidelines for Reporting Mistreatment ..... 24
11.3.1 Title IX Issues ..... 24
11.3.2 Reporting ..... 25
11.3.3 Non-Reporting Resources for Sexual Misconduct or Other Mistreatment ..... 26
11.4 Guidelines for Response to Mistreatment ..... 26

Calendar of Milestones and Deadlines for PhD Students ..... 29
I. First Year ..... 29
II. Second Year ..... 29
III. Third Year ..... 29
IV. Subsequent Years ..... 29

Appendix A. Comps Exam Overview and FAQ ..... 30

Appendix B. Dissertation Committee Requirements by School ..... 32

## 1. OVERALL OBJECTIVES OF THE GRADUATE PROGRAM

The predoctoral training program of the Center for Neuroscience at the University of Pittsburgh (CNUP) has been designed to accomplish the following objectives:

- To develop competence in conducting laboratory research; to plan, execute, report, and defend original research in the field of neuroscience.

- To develop general excellence in neuroscience and specific expertise in one or more areas of neuroscience such as cognitive neuroscience, developmental neurobiology, homeostatic regulatory systems, membrane biophysics, modeling of neural circuits, molecular neurobiology, neuroanatomy, neurochemistry, neuroendocrinology, neuropharmacology, and neurophysiology.

- To develop a general professional excellence in oral and written expression, in the critical analysis of primary scientific articles, and in teaching.

- To develop fundamental skills in scientific reasoning required to define important research questions and to devise innovative strategies as a means for adapting to the continually evolving landscape of neuroscience and neuroscience research.

In formulating the graduate training program, the faculty has been guided by several principles. *First*, the program should aid each student in the development of an individualized training program based on the student's background and interests. *Second*, research experience should form the core of each student's training and as such should not be postponed by a lengthy period of time devoted exclusively to course work. *Third*, students should be able to complete the program in four to six years. *Fourth*, students should be evaluated in terms of those competencies that are important to a research scientist: designing, conducting, and evaluating research, both their own and that of others. Thus, the progress that a student makes in the program is considered primarily in terms of the student's performance as an investigator.

## 2. PURPOSE OF THIS DOCUMENT

"*Guidelines and Regulations for Doctoral Study in the CNUP Graduate Training Program*" is a document written by the CNUP graduate training faculty in consultation with the graduate students. The Guidelines are meant to supplement the ***Regulations Governing Graduate Study at the University of Pittsburgh*** and thereby provide a complete handbook for students that detail the Program's rules, expectations, and recommendations for each aspect of the graduate program. Questions regarding specific issues of the graduate program should be directed to the Co-Directors of the CNUP Graduate Program (see below).

### 2.1. Changes to the Guidelines

Each graduate student will be given a copy of the *Guidelines* when they enter the program. To ensure that students are given an up-to-date version of the *Guidelines*, a new edition will be dated and printed at the beginning of each fall term. Each summer, the Co-Directors of the CNUP Graduate Program will oversee the editing of the *Guidelines*. Student input will be solicited. Major changes will be circulated among the faculty and students for comment. It is expected that this annual revising of the *Guidelines* will not result in any substantive change in the graduate program. Rather, this process is expected to update or clarify aspects of the previous edition. Major substantive alterations in the *Guidelines* (e.g., a change in the format of the Comprehensive Exam) would require additional discussion by the faculty and students before being implemented. Last year, a substantive change to the Guidelines was made with approval from the CNUP community, specifically the addition of Section 11. Diversity Issues and Personal Integrity.

During their progression through the Program, each student should refer to the *Guidelines* that were current when they entered the Program.

## 3. ADVISORS

To aid the student in satisfying the objectives outlined in this document, the faculty has created separate mechanisms for providing academic and research advice. Upon entering the Program, each student selects a research mentor to supervise their first laboratory rotation. Advice on academic issues and other issues relating to graduate education will be handled formally by the Co-Directors of the Graduate Program who will also serve as general advisors to the student during their first year. Students are also encouraged to establish an informal research advisory committee consisting of their research mentor and two other members of the CNUP training faculty.

### 3.1. Co-Directors of the Graduate Program

The Co-Directors of the CNUP Graduate Program (currently, Drs. Oliver Schluter and Rob Turner) have the primary responsibility for ensuring that the graduate program is running effectively. Students who have questions related to required coursework, curriculum development, or completion of Program milestones should consult with either of the Co-Directors on these matters. The Co-Directors are responsible for approving student registration, approving the composition of student evaluation committees (i.e., Reprint Exam, Second Year Research Evaluation, Comprehensive Exam, and Dissertation committees), and may at their discretion approve minor modifications in Program academic requirements for students on an individual basis. When conflicts arise between a graduate student and the CNUP program or the student's mentor, the Graduate Program Co-Directors will serve as advocates for the student to ensure that the student is treated fairly, within the CNUP guidelines.

The Co-Directors of the CNUP Graduate Program are also responsible for the annual evaluation of each student (See Yearly Evaluations – Section 7) and they therefore serve as Co-Chairs of the CNUP Student Evaluations Committee. This committee consists of five members of the training faculty in addition to the Co-Directors of the Graduate Program. The major function of this committee is to facilitate the students' progress through the Program by providing them with thorough yearly evaluations and advice regarding their development. This committee also serves as an advisory committee for the Co-Directors of the Graduate Program.

The Co-Directors of the CNUP Graduate Program are assisted by the CNUP administrative staff. These staff (Patti Argenzio and Jeanne Weiss) are responsible for maintaining student folders, notifying students of upcoming deadlines, scheduling exams and committee meetings, and monitoring the status of students.

### 3.2. Research Advisor

At all times during their graduate training, students will be engaged in laboratory research. While a student is working within a faculty member's laboratory, that faculty member will serve as the student's research advisor. Research advisors are limited to CNUP training faculty members. Students seeking *specialized training* may work with graduate faculty members outside the CNUP only during the second and third rotation periods, provided they receive prior approval from a CNUP Co-Director.

Students and their research advisors should discuss the nature of their interactions so that each has a full understanding of what they should, and should not, expect from one another. The students should understand that different faculty members have different styles of interacting with students. New students are

encouraged to consult with the Co-Directors of the CNUP Graduate Program and with senior students to obtain additional perspectives concerning the mentoring styles of different faculty members.

### 3.2.1 Workload and Vacation

CNUP graduate students are financially supported for full-time and year-round work, whether that support derives from institutional funds, faculty research grants, training grants, or individual student fellowships. Upon selecting a thesis laboratory, students and mentors should discuss mutual expectations for daily and weekly student research time spent in the laboratory and time spent in other research-related tasks. Every project will have different requirements, and student progress will be intimately related to time and effort expended. Regarding vacation time and occasional days off, students are eligible for all faculty and staff university holidays. In addition, students are encouraged to take a somewhat longer vacation break (typically two weeks per year) after discussion with and approval by their laboratory research mentor.

### 3.2.2 Financial Support

The first year of financial support for Ph.D. students (i.e., before students commit to a particular laboratory for their dissertation research) will be provided by the CNUP. This support will include a stipend, institutional fees (tuition) and individual medical insurance. While our program is committed to ensuring that all students receive full stipend support throughout their graduate career, it is the student's responsibility to select a CNUP-approved dissertation mentor who agrees to support the student's continued graduate training. Students may also be eligible for support in later years through training grants and other institutional programs. In addition, students are encouraged to apply for individual predoctoral fellowships (see 5.5 Grant Writing Course).

## 4. GRADUATE PROGRAM

The following sections outline the academic courses, the research experiences, and the oral and written examinations (herein referred to as "milestones") that the student must successfully complete prior to being awarded the doctoral degree. A calendar listing the deadlines associated with these milestones is included at the end of this document. These requirements are described in terms of the academic and research accomplishments expected during each year of the student's progress through the Program. Anticipated deviations from the outlined sequence and time schedule must be approved in advance by the Co-Directors of the Graduate Program.

### 4.1. Overview of Requirements

The Ph.D. program in Neuroscience has a 23-credit course requirement covering fundamental material. This requirement is fulfilled by core courses in cellular and molecular biology, systems neuroscience, and by 9 credits of elective courses (https://www.cnup.pitt.edu/phd-program-training/current-students/curriculum).

*Core Courses:*

- **Cellular and Molecular Neurobiology 1 and 2** (Fall Term, Year 1)
- **Systems Neurobiology** (Spring Term, Year 1)

*Elective Courses:*

- **9 Credits Elective Courses**, consult the CNUP website for pre-approved electives https://www.cnup.pitt.edu/phd-program-training/current-students/curriculum)

- See https://psmobile.pitt.edu/app/catalog/classSearch for the University's Schedule of Classes.

*Additional Requirements:*

- **Scientific Ethics and Professional Development I and II** (Fall and Spring Terms, Year 1)
- completion of an *advanced graduate level* course in **Statistics** (which may require completion of two graduate-level courses, the first being a less advanced introductory course)
- completion of a **CNUP grant writing** course (3 Credits)
- attending **CNUP Journal Club** every Fall and Spring term through advancement to candidacy (i.e., until approval of the dissertation proposal)
- attending **Research Seminars** on a regular basis each year (requires documentation)
- obtaining **Research Experience** in at least two separate laboratories
- serving as a **Teaching Assistant** for at least one term (or course)
- MSTP and PhD students registered in the School of Medicine must obtain 40 hours of **Dissertation Credit** after advancement to candidacy and prior to the date of their graduation.

Graduate students must receive a grade of at least a B to pass a course and must maintain a cumulative grade point average (QPA) of at least 3.0.

Students are expected to attend all sessions scheduled for each of the required CNUP courses (e.g. Cell and Molecular Neuroscience 1 and 2, Systems Neurobiology, Scientific Ethics and Professional Development I and II, Statistics, Grant Writing). Consideration will be given to students attending scientific conferences or illness. Course Directors will be notified prior to missing a scheduled class whenever possible.

Students are required to pass four milestones en route to the doctoral degree: the Preliminary (Reprint) Exam, the Comprehensive Exam, Admission to Candidacy, and successful defense of their dissertation/thesis.

Students should refer to https://catalog.upp.pitt.edu/content.php?catoid=224&navoid=22992 for additional details concerning University requirements.

## 4.2. Yearly Sequence of Requirements and Expectations

### 4.2.1. Entering Students:

Entering students should schedule an introductory meeting with one of the Co-Directors of the Graduate Program to discuss issues related to being a graduate student. The purpose of this meeting is to answer questions that the student may have and to assist the student in getting settled in the program. Prior to the beginning of the student's first term, the student, with the aid of the Co-Directors, outlines a plan of study for the first two years.

### 4.2.2. First Year:

The major objectives of the first year are to select a laboratory for dissertation research, complete the core course curriculum, and obtain sufficient experience through courses and research to pass the preliminary or "Reprint" Exam.

It is required that students participate in the following activities during the Fall and Spring terms of their first year: (a) laboratory research, typically consisting of semester-long laboratory rotations in at least two different laboratories (see section 5.1 on Research Rotations), (b) two courses of the core curriculum in neuroscience (Cellular and Molecular Neurobiology 1 and 2, and Systems Neurobiology, (c) Scientific Ethics and Professional Development I and II, (d) Basic Understanding of EDI as it Relates to Graduate Education, (e) journal club, and (f) research seminar. During the first year, students typically register for 3-6 research credits of Directed Study (MSNBIO 2690 or NROSCI 2902) per term.

Following the spring term of the first year of study, each student takes the Preliminary (Reprint) Exam (see Section 9.1).

During the summer term following the first year, students are expected to focus on research. In addition, students may choose to take a graduate-level statistics course during the summer to fulfill the first part of their statistics requirement (see Section 5.4).

By the end of the first year, students should have selected a dissertation advisor. This must be done by the end of August of the first year unless students receive special permission from the Co-Directors of the graduate program, in writing, to extend this for an additional rotation period.

**4.2.3. Second Year:**
The major objective of the second year is to begin work towards a dissertation project.

During the Fall and Spring terms students will generally participate in (a) the Grant Writing course, (b) research (registering for 6-9 credits, MSNBIO 2690 or NROSCI 2990), (c) elective coursework, (d) statistics, (e) journal club, and (f) research seminar. A list of current elective course offerings can be obtained from one of the CNUP administrative offices.

It is expected that most students will complete the Program's teaching requirement during their second year (see Section 6), as well as their statistics requirement (see Section 5.4).

The Second Year Research Evaluation (at the end of the second year) includes an oral and written research presentation by each student to a committee assembled for this purpose (see section 9.2).

Establish Comprehensive Exam Committee by August 1st (see section 9.3.1).

**4.2.4. Third Year:**
The Comprehensive Exam (see section 9.3) must be completed by February 28 of the third year. In addition, the dissertation committee must be approved and hold its initial meeting within 6 months after the student passes the Comprehensive Exam.

In this and subsequent years, graduate students are expected to be involved in research, to participate in a journal club and research seminars, and to take additional courses as necessary.

**4.2.5. Subsequent Years:**
The major objective of the remainder of a student's graduate program is to have their doctoral dissertation proposal approved, and to complete the doctoral dissertation (see Section 9.4). Students continue to attend Research Seminar for each Fall and Spring term they are enrolled in the Program. Participation in the CNUP sponsored journal club becomes optional, though encouraged, once a student is admitted to candidacy. Please check with a CNUP Administrator regarding PhD credit requirements for the school you are enrolled in.

## 4.3. MD/PhD (MSTP) Students

MD/PhD students are expected to follow an accelerated schedule designed to aid the student in completing the PhD within 4 years. The requirements for MD/PhD students are similar to those of PhD students, except for the following: 1) MD/PhD students are **not** required to take the two core neuroscience courses (Cellular and Molecular Neurobiology 1 and 2 and Systems Neurobiology); 2) MD/PhD students must complete a minimum of 6, rather than 9, hours of elective coursework; 3) MD/PhD students will satisfy their grant writing and statistics course requirements through their medical school curriculum; and 4) teaching (TA service) is optional for MD/PhD students.

Research requirements for MD/PhD students are the same as those for PhD students. MD/PhD students complete their first laboratory rotation during the summer prior to beginning medical school, and

their second laboratory rotation during the summer between the first and second year of medical school. MD/PhD students must select their dissertation advisor before entering the CNUP graduate program.

## 5. COMPONENTS OF THE PLAN OF STUDY

In developing a plan of study, students are expected to strike a balance between breadth in neuroscience and depth in their area of specialization. Students are encouraged to be innovative in designing their graduate training experience. Thus, courses are defined as any accredited interaction between a student and one or more faculty members. This includes formal lecture courses (usually but not always at the graduate level), seminars, or tutorials at the University of Pittsburgh, CMU, or at other universities, research institutes, or special study programs. Credit for coursework outside of the University of Pittsburgh is subject to the approval of the program Co-Directors.

### 5.1. Research Rotations

CNUP rotations are based on the term system and are structured to offer substantial, hands-on scientific research experiences rather than brief observation periods. Each student is required to spend at least one term conducting research in a laboratory other than the laboratory in which they do their dissertation research. This will typically be done as research rotations during the first year. Students who do not rotate through a second lab in the first year and spend all their research training in their dissertation laboratory must perform a 15-week rotation in another lab before they can graduate from the CNUP program. The first year is divided into two research rotation periods with additional rotation periods during the summer before or the summer after. Rotations officially begin on the first day of classes and end on the last day of classes each term (see the University calendar for specific dates). Students are required to begin their first research rotation no later than the first day of the Fall Term but can begin earlier in the summer by mutual agreement with the research mentor. The first rotation must be with a member of the CNUP Graduate Training Faculty. This research rotation is set up by arrangement between the student and the specific training faculty member, who serves as the student's research mentor during that rotation period. The student will need to fill out a "Research Rotation Form" listing the research mentor and submit the form to a CNUP administrative office within one week of beginning the research rotation.

Students who recognize that their rotation is a poor fit should contact the Graduate Co-Directors to explain the problem and gain assistance in transferring to a new laboratory. Potential reasons for transfer may include mistreatment (see Section 11), neglect, misunderstanding the nature of the research in that laboratory, a wish to not work directly with animals, etc. Faculty may also request student transfer from the lab when they consider their rotation performance to be suboptimal due to lack of attendance or lack of evidence of knowledge transfer. If a student simply realizes they are unlikely to choose a rotation lab for thesis work, they should remain in the lab until the end of the rotation period, endeavoring to learn all they can from the experience. Half-way through each term (approximately 8 weeks from the start), students and faculty will receive email from the Graduate Co-Directors asking whether all is going well with the rotation or whether there are issues needing resolution. This will serve as another checkpoint when students or faculty can ask for assistance to resolve problems or request student transfer to another lab. It should be understood, however, that 8-week rotations are not ideal for gaining real research experience.

One week after the last examination in the Cellular & Molecular Neurobiology or Systems Neurobiology courses, the student must submit a rotation report to their research advisor and to a CNUP office (see description of the Rotation Report below, section 5.1.1). The research mentor will submit an evaluation of the student's performance during the rotation. Rotations are graded satisfactory/unsatisfactory. Unsatisfactory rotations will not count toward the required two and will result in the student being placed on probation.

At the end of the student's first rotation, the student will typically move to a second laboratory to complete a second research rotation. At the end of the second research rotation, the student may elect to remain in the same laboratory, return to the initial laboratory, or move to a third laboratory for an additional research rotation. Rotation reports are required only for the first two rotation periods; if a student chooses to do a third rotation, a report is not required. It is expected that the rotations selected by each student will reflect a goal directed effort to identify a suitable laboratory for doctoral dissertation research. It is also important to understand that some mentors may not be able to accommodate rotation requests. Students are therefore encouraged to take a proactive approach in planning rotations and to approach potential mentors well in advance of the desired rotation period.

Students are expected to complete a minimum of two laboratory rotations prior to declaring a thesis laboratory. In rare instances, a student may petition the Co-Directors for permission to take a 4th rotation. During that rotation you will be placed on academic probation. By the 6-week point of that rotation, your rotation advisor will submit an evaluation of your rotation to the Co-Directors and a recommendation as to whether you can continue your dissertation research in their laboratory. If you match with their laboratory and have passed your preliminary evaluation, your probation status will be removed, and you will return to being a student in good standing. However, if the 4th rotation does not work out, your performance will be considered unsatisfactory, and you will be subject to dismissal from the CNUP PhD training program as determined by decision of the CNUP Evaluations Committee and hence the University of Pittsburgh.

**5.1.1. Rotation Report:**
The main goal of the rotation report is to produce a scholarly account of the research activities undertaken by the student during that rotation period. In general, the report should include 5-8 pages of double-spaced text and any useful figures. It should utilize the standard format of scientific journals (i.e., Introduction, Methods, Results, Discussion). Even if experiments were not completed as planned or data were not obtained, the report should include discussion of how the rotation experience contributed to the student's pursuit of educational and technical training objectives. Copies of the report must be given to the research mentor and to a CNUP administrative office. Rotation mentors are expected to provide the Program Co-Directors with a written evaluation of the student's research work, and to comment on the student's written rotation report. **Fall and spring rotation reports are due** one week after the last examination in the Cellular & Molecular Neurobiology and Systems Neurobiology courses, respectively.

## 5.2. Core Curriculum in Neuroscience

The core curriculum consists of two courses designed to be taken during the first year. The first core course, Cellular & Molecular Neurobiology 1 and 2 (MSNBIO/NROSCI 2100/2101), deals with issues of cellular and molecular biology and is offered during the Fall term. The second core course is Systems Neurobiology (MSNBIO or NROSCI 2102). It focuses on the functional anatomy of the mammalian brain and is offered during the Spring term.

## 5.3. Electives and Tutorials

Students must also take elective courses in order to further their expertise in neuroscience. A listing of courses identified by the CNUP Curriculum and Education Programs Committee that satisfy the elective requirement is available from the Graduate Administrators. Students may also establish tutorials in specialized areas for which formal courses are not available. In such cases, a student (or group of students) identifies a faculty member willing to serve as a tutor and develops a syllabus, including a mechanism by which competency in the area will be assessed. The syllabus must be approved in advance by one of the Graduate Program Co-Directors, with potential additional input from the CNUP Curriculum Committee as deemed necessary. The subject matter of these tutorials usually will be "academic" in nature, i.e., with a focus on the reading of primary and secondary literature. It also may involve learning new laboratory techniques. Journal clubs cannot be used to satisfy the elective requirement.

### 5.4. Statistics

Students are expected to obtain a background in statistical and quantitative analysis of data that is appropriate to their area of research and sufficient to enable critical evaluation of scientific literature. A list of pre-approved courses is available from program administrators. We encourage all students to take additional higher-level statistics course for elective credit, but this is not required.

### 5.5. The Next Three Years: Developing Your Own Research Program

All students are required to complete the CNUP grant-writing course during their second year in the program. The grant writing course gives students an opportunity to develop their scientific writing skills and, more importantly, to develop their ability to design a hypothesis-based research project. The grant writing course is one of several experiences (others including the comprehensive exam and the dissertation proposal) that are designed to help the student develop the writing skills necessary for success as an independent scientist. It is expected that this requirement will be fulfilled by taking MSNBIO 2627 The Next Three Years: How to Develop your Own Research Program, a 3-credit course currently offered in the Fall term. This course will expose students to the processes of grant writing and grant reviewing. Students will review grants previously submitted and will generate written and oral reviews of those grants. They will also write a 6-page NRSA predoctoral-style proposal based on a novel research project of their own design. These proposals will be reviewed and critiqued by other students and faculty in the course. For MSTP students, the grant writing course requirement is fulfilled by a similar course offered through the MSTP program.

### 5.6. Journal Club

Each student is required to attend a weekly journal club sponsored by the program (MSNBIO 2650 or NROSCI 2007) each Fall and Spring term through their admission to candidacy (see section 9.4.3, honors/satisfactory/unsatisfactory). Participation thereafter is encouraged but not required. The goal of this experience is to provide students with a multidisciplinary perspective on the critical analysis of the neuroscience literature. Each term, students will be divided into groups of approximately 14, and each group will be assigned a faculty supervisor and a weekly meeting time. Each student is required to present a paper in journal club at least once each term, and it is expected that the more senior students will make their presentations earlier in the term whereas the more junior students will make their presentations later in the term. At the initial meeting each term, each student will sign up for a week that they will be responsible for selecting and presenting the journal article. The presenting student also has the option of having their research mentor or another "expert" faculty member attend their journal club presentation in order to provide particular expertise for the paper. Both students and faculty supervisors will critique presentations. Presentations that are not considered acceptable by the faculty supervisors must be repeated. In addition to presenting a paper once during the term, each student is required to read the selected paper each week and be prepared to discuss it. Weekly attendance and active participation in journal club is required. More than one absence will result in the student failing this course and will require the student to enroll in this course for an additional semester after they advance to candidacy.

### 5.7. Seminar Series

Each student is required to attend research seminars on a regular basis. Each Fall and Spring term that the student is enrolled in the graduate program, they must register for Seminar Series (MSNBIO 2660 or NROSCI 2106, pass/fail). This "course" requires that the student attend at least 10 relevant research seminars during the term. Students must send an e-mail message summarizing their attendance record to the seminar coordinator of the course for which they registered, typically once at the end of each term. Acceptable

seminars are at least 45 min long and involve a formal presentation of data in one of the departmental seminar series. Journal clubs, dissertation defenses, or informal presentations of data in laboratory meetings or student-sponsored meetings (e.g., "Brain Bag") cannot be used to satisfy this requirement. Seminars presented at meetings off campus also do not count towards satisfying the requirement. This includes the annual CNUP and CNBC retreats, Society for Neuroscience meeting, off-campus workshops, etc.

### 5.8. Ethics and Professional Development

All students are required to complete formal training in research and personal ethics during their first year in the program. It is expected that this requirement will be fulfilled by taking a 2-credit course in Scientific Ethics and Professional Development I and II. This course includes structured and semi-structured discussions on diversity training, ethical dilemmas scientists encounter in their professional lives, and presentations by individual faculty on their personal training histories (traditional and non-traditional), career challenges, positive influences, scientific thought processes, and research questions of deepest significance. MSTP students are required to join this class in the fall *after* the diversity training sessions conducted in cooperation with the Office of Equity, Diversity, and Inclusion.

All students are required to show ethically appropriate behavior in the conduct of research and mastery of safe laboratory practices. These competencies extend to the treatment of laboratory animals, collection of data, publication of data, and use of references to previous literature. Further, all documents submitted to satisfy curriculum or research requirements of the Program should be free of plagiarism and conform to the rules defined in the University of Pittsburgh Honor Code (www.pitt.edu/~graduate/aistudcode1.html). All students must attend mandated training sessions relevant to their research, as dictated by Environmental Health & Safety. All students are also required to familiarize themselves with the NIH "*Guide for the Care and Use of Laboratory Animals*," the *Handbook for the Use of Animals in Research, Testing, and Teaching at the University of Pittsburgh*, and *Guidelines for Ethical Practices in Research* (University of Pittsburgh, 2011). All students using animals in their research must attend the appropriate training session(s) conducted by the Division of Laboratory Animal Resources. Publications detailing requirements in each of these areas are available on web sites and can be obtained from the appropriate campus regulatory agencies. In addition, students should familiarize themselves with acceptable publication practices described by the Society for Neuroscience.

### 5.9. Annual CNUP Retreat

The yearly CNUP retreat occurs at the beginning of each Fall term, typically during the second weekend in September. The CNUP retreat is organized and implemented by a select committee comprising CNUP graduate students, faculty, and staff. The CNUP retreat includes an outstanding scientific program, entertaining recreational opportunities, and an environment that fosters both social and professional interactions. There is no charge for graduate students to attend this event. **All CNUP graduate students are strongly encouraged to attend**. In addition, graduate students are encouraged to present their research in poster format at the retreat poster session at least twice during their time in the graduate program. These can be the same posters used for other scientific meetings occurring within the last 12 months (e.g. posters used for the Society for Neuroscience meeting), or they can be new.

## 6. TEACHING BY GRADUATE STUDENTS

Teaching is an important component of the graduate training program. It provides experience in classroom instruction as well as an opportunity to obtain a broader perspective on neuroscience content and pedagogy. In general, second-year students serve as graduate teaching assistants (TAs) to members of the training faculty for one term, or one full course. As such they are typically responsible for conducting

recitation sections, teaching laboratory exercises, holding office hours to answer questions of class members, and helping to prepare, proctor, and grade exams.

Some students may elect to become more involved in teaching. To facilitate this, certain faculty allow graduate students to give classroom lectures in their undergraduate courses. Students wishing to obtain this enriched teaching experience should contact a Graduate Administrator.

## 7. EVALUATION OF GRADUATE STUDENTS

### 7.1. Yearly Progress Reports

By June 15th of each year, students must submit an NIH-style biographical sketch and a progress report summarizing their activities during the past year and their plans for future study. Students who have a thesis defense date scheduled on or before August 31st are exempt from submitting a progress report and from annual evaluation. The progress report will serve as the focal document for the annual student evaluation by the CNUP Student Evaluations Committee, although reports from the student's research advisor, committee chairpersons, course instructors, teaching supervisors, etc. will also be incorporated into the evaluation. Therefore, the progress report should incorporate everything the student wishes the faculty to know at the time of the evaluation. It should be organized as follows:

a) a statement of prior year's goals and the extent to which they have been achieved,
b) a list of the courses taken and the grades attained,
c) a description of research efforts including clearly stated scientific rationales and goals,
d) a list of Program "milestones" completed,
e) the date of the last or upcoming thesis committee meeting, for students with an approved dissertation proposal
f) a list of any awards or honors attained,
g) a list of manuscripts and abstracts published or submitted,
h) a list of attendance and presentations at scientific conferences,
i) a statement of specific objectives for the coming academic year, and
j) current emergency contact information.

The length of the progress report can vary from 2 to 10 pages (double-spaced). Detailed reports from first- and second-year students are particularly important, because the faculty generally know less about them than about more senior students.

These reports should be submitted to the CNUP Graduate Administrators (Patti Argenzio, (argenzio@pitt.edu or Jeanne Weiss, (jwa56@pitt.edu) before June 15th. Failure to submit an annual progress report will result automatically in placement of the student on CNUP probation.

### 7.2. Annual Student Evaluations

The progress of each student is discussed by the CNUP Student Evaluations Committee each summer. Results of these evaluations are reported to each student in a letter from the Co-Directors of the Graduate Program, typically before the end of August. This letter may be supplemented by a discussion between the student and a member of the committee to clarify the letter, if necessary, or to discuss additional aspects of the student's progress. Students are also encouraged to discuss this evaluation with their research advisor. In evaluating students, the committee considers performance in laboratory research, course work, teaching, journal club, mastery of the relevant scientific literature, performance on any major examinations that have

been taken during the past year, and contributions to the community at large. Copies of the yearly evaluation letter are sent to the student's research advisor and become a part of the student's file.

### 7.3. Mid-year Evaluation of First-Year Students

The progress of *first-year* students in laboratory research (including their first rotation report) and core coursework is reviewed by the CNUP Student Evaluations Committee in January or early February of their first year. The purpose of this mid-year evaluation is to provide early feedback to new students on their progress thus far, while also identifying any problems that might have arisen so they can be corrected promptly. Students will be given a written summary of the committee's perception of their progress following the committee meeting.

More senior students who have experienced difficulties during the previous year may also be re-evaluated at mid-year. As part of this evaluation, the student will be required to provide the Committee with a written report addressing problems areas.

### 7.4. Program Probation

Students experiencing difficulties or delays in meeting program requirements (either academic or research-related) may be placed on *Program Probation*. A student who fails one of the "milestone" examinations (see Section 9) is automatically placed on probation until the requirement is successfully completed. A student may also be placed on program probation for continued inadequate performance in the laboratory or failure to complete program milestones in a timely fashion. Students who begin a fourth research rotation before selecting their dissertation laboratory will be placed on automatic program probation. Students who are placed on program probation will be informed regarding what is necessary to be removed from probation and will remain on probation until they have satisfied those requirements and have been notified of this by the program Co-directors. Note that CNUP "Program Probation" is distinct from "University Probation" (see-Section 7.5) in that it does not preclude financial support from the University.

### 7.5. University Probation

The University requires that all graduate students maintain a minimum QPA of 3.0 or above to take the preliminary ("Reprint") exam, the comprehensive examination, to be admitted to candidacy for the Ph.D. degree, and to graduate. Students whose QPA falls below 3.0 must be put on "University probation" and cannot be awarded financial assistance from the University (e.g., teaching assistantship) until they have re-established a QPA of 3.0 or higher.

### 7.6. Termination of a Student from the Graduate Program

Students may be terminated from the Graduate Program for failure to pass two required core courses or one of these courses on successive occasions, failure to pass the Reprint Exam, Comprehensive Exam, or to advance an acceptable dissertation proposal, failure to make adequate progress in laboratory research (including unsatisfactory performance in the Second Year Research Evaluation), or for breaches in ethical conduct such as plagiarism. Except for instances involving breaches in legal or ethical behavior, students will not be terminated from the Program without first being notified in writing that they have been placed on probation. This written communication will include a detailed description of the reason(s) for placing the student on probation, and the goals that the student must accomplish to regain good standing in the Program. Students will typically have one term to resolve their problems and be removed from probation; failure to do so will lead them to be terminated from the Program.

When a student who is not on probation fails one of the major examinations listed above, the student will be placed on probation and given a second opportunity to pass the examination. The student will receive a written communication from the committee that evaluated their exam performance, detailing the deficiencies and what must be accomplished to remove the deficiencies. The second examination must be taken within three months of the first examination, unless otherwise approved by the Program Co-Directors. Failure to resolve issues of concern on the second examination will result in termination from the Program. When a student who is already on probation fails one of the major examinations, they may or may not be given a second opportunity to pass that examination, at the discretion of the CNUP Student Evaluations Committee.

When a student is informed that their laboratory research progress has been judged unsatisfactory, the student will be placed on probation and given one term to improve laboratory skills and productivity before being reevaluated. A second determination that laboratory performance is substandard, at this time or during any subsequent evaluation, will result in the student's termination from the program.

In all cases, the termination of a student requires a decision by the CNUP Student Evaluations Committee and acceptance of a recommendation for dismissal by the Directors of the CNUP. Termination decisions cannot be made by an individual faculty member or examination committee. Terminations are final.

### 7.7. Terminal Master's Degree

If students leave the program (voluntarily or otherwise) after having completed a set of minimum requirements (described below), they may petition the CNUP Graduate Student Evaluations Committee to receive a terminal Master's degree. Students wishing to receive such a degree must fill out an "Application for Graduation" form as mandated by the University. The requirements for a Master's degree include: passing the two required core neuroscience courses, passing at least one elective course, passing the Preliminary (Reprint) Exam, regularly attending Scientific Ethics and Professional Development I and II, completing at least two terms of CNUP graduate journal club, completing least two terms of research seminar, and completing at least four terms (including summers) of laboratory work.

Students must also submit and defend a Master's thesis and publicly present their Master's research. The student should assemble a Master's thesis committee consisting of at least three members of the CNUP training faculty, including the students' research advisor. The thesis committee must be approved by the Program Co-Directors. The nature and scope of the thesis must be approved during an initial meeting of the student with the committee. The student should anticipate this meeting by distributing a document that proposes the body of work that will form the basis for the Master's thesis. The thesis should be based on the research that has been the focus of the student's work in the training program and should represent at least one "publishable unit" that has been or could be submitted to a neuroscience journal. See the University's on-line Style and Form Manual for the Master's thesis format.

Students wishing to obtain a Master's degree *en route* to the PhD, and working under the direction of a faculty member in the Department of Neuroscience, may apply for the degree through the School of Arts and Sciences. The requirements for the degree are the same as stated above for a terminal Master's degree. Note that the Master's degree is not required before completing the PhD.

### 7.8. Grievance Situations

A student may appeal, in writing, within ten business days after of notice of interim suspension or termination of appointment, to the dean, and the dean or their designee(s) will review the matter and make a finding of resolution on behalf of the school. In the event the dean was consulted as part of the termination or suspension process, the appeal shall be forwarded to the Vice Provost for Graduate Studies and they or their designee(s) shall review the matter and make a final determination as to the resolution of the appeal.

## 8. SPECIAL STATUS

### 8.1. Leave of Absence

Students may request a leave of absence (LOA) from the Program. Such requests should be made in writing to the Co-directors of the Graduate Program. Requests should include the reason for the request and the duration of the requested leave. The student should describe how the LOA will be used to resolve issues leading up to it. If the student has already chosen their dissertation laboratory, the LOA request should confirm that the faculty mentor agrees to allow the student to return to their laboratory at the end of the specified LOA, and the faculty mentor should co-sign the letter. Leaves of absence are subject to the approval of the Associate Dean for Graduate Studies of the appropriate school (as determined by the affiliation of the student's research mentor). Students considering taking a leave of absence should consult the Regulations Governing Graduate Study at the University of Pittsburgh regarding policies on leaves of absence, as well as discuss the matter with one of the Graduate Program Co-directors.

### 8.2. Parental leave

The CNUP adheres to the University of Pittsburgh's Graduate and Professional Student Parental Accommodation Academic Regulations. These regulations are designed to assist graduate students immediately following the birth or adoption of a young child. The goal of the guidelines is to make it possible for a student to maintain registered full-time student status, along with all the benefits of such status, while facilitating the return to full participation in courses, research, and teaching.

**Eligibility**: The Parental Accommodation Academic Regulations apply only to full-time students enrolled in graduate programs who are in good academic standing and who are making satisfactory progress toward completion of a graduate degree. These guidelines do not cover students in professional programs. Students must have completed at least one full-time semester of their degree program to become eligible for coverage under these guidelines. The guidelines cover the situation of students who experience a childbirth, who adopt a child who is unable to be enrolled in full-day public school due to age or other developmental reasons, or who is a partner of someone who has experienced a childbirth or an adoption for whom the student has parental responsibilities. These eligibility requirements cover all provisions of the guidelines.

## 9. EXAMINATIONS

**Note:** Specific forms are required in association with some of the milestone exams. The relevant forms, and their filing procedures, should be obtained from the appropriate CNUP Graduate Office.

### 9.1. First Year Preliminary Exam (Reprint Exam)

During the first year, students are expected to obtain experience in the critical evaluation of original research reports. This training is provided by a program of supervised reading with their rotation research mentors. **Students are strongly encouraged to seek their research mentors' counsel in preparing for this exam**. It is required that the preliminary or "Reprint" Exam will be taken by May 31$^{st}$ of the first year. By May 1$^{st}$, the student must submit the completed Reprint Examination Form identifying the proposed committee members and the date on which the exam is scheduled. Students wishing to postpone this exam past May 31$^{st}$ of the first year must receive **prior approval** from the Co-Directors of the Graduate Program.

The Preliminary Exam primarily serves to set a standard of competency in the critical evaluation of research articles and in oral expression, a standard that students are expected to attain early in their graduate career. In addition, it helps the faculty to identify areas of weakness in these critical skills.

To begin the process, the student writes a brief description of the general area in which they would like to be examined and selects a Reprint Exam committee comprising three CNUP graduate training faculty members. A fourth member of the committee from outside the CNUP training faculty may be added for a particular area of expertise. Typically, the student's current or previous research rotation mentor serves as the chairperson of this committee. The composition of the committee must be approved by the Program Co-Directors. Two weeks before the exam students will propose 3 papers for their exam. The committee will consider the student's suggestions, but the final selection is at the committee's discretion and may be a paper that was not proposed by the student.

At the examination, the student presents background material and discusses the paper's major points, analyzing the rigor of the prior research as defined by NIH (https://nexus.od.nih.gov/all/2016/01/28/scientific-premise-in-nih-grant-applications/), the methodology chosen, the validity of the evidence obtained, and the conclusions drawn from the analysis. **In addition, the student must address the following points:**

1) What is the stated or implied **hypothesis** that is being tested in the paper? If there is no apparent hypothesis why did the authors think that this series of experiments would advance the field?
2) If present, was the hypothesis tested conclusively? If not, what could the authors have done to test their hypothesis?
3) Did the experiments meet the standards of "Rigor and Reproducibility" as described by NIH (point III). In particular, address the appropriateness of the statistics used, whether the number of samples was justified, whether the analysis was unbiased, and whether sex as a variable was assessed.

Thirty minutes are provided for this presentation. The student then is questioned on the presentation and other relevant issues. At the conclusion of the presentation, the committee selects one of two options: pass or fail. If the student fails, then the exam may be taken a second time provided that the student was not already on probation. If the student is already on probation, then failure may, at the discretion of the CNUP Student Evaluations Committee, result in termination of the student from the program. If a student fails this exam, the mentor or chair of the committee must submit a written report to both the student and the CNUP detailing the shortcomings of the student's performance. Failing the Reprint Exam, or any other program milestone, results in the student being placed on probation. A failed Reprint Examination must be retaken within three months unless otherwise approved by the Program Co-Directors; the exam will follow the same procedure and format as the first exam but with a new article selected by the exam committee. It is expected that the exam committee will remain the same, though students may petition the CNUP Student Evaluations Committee to request that one member of the committee be changed.

### 9.2. Second Year Research Evaluation

A formal evaluation of research progress is conducted at the end of the second year as **part of the Annual Progress Report that is submitted by June 15 to the Program Administrators.** The Annual Progress Report will be like what you wrote last year, including the eight required sections listed in the guidelines. The primary difference is that you are expected to be a bit more introspective, describing not only what you have done, but where you are going in terms of your research. Think of this report as a roadmap for the next 6-12 months. You do not need to include everything you have done in the last two years, only those aspects of your work that inform the next steps in your career. Your plans for the future can be described in Section "i" of this report.

Please include the names of your Second-Year Research Committee and the date of your Research Evaluation Meeting in your Annual Progress Report. This committee consists of your research mentor who serves as committee chair and two additional CNUP faculty members. The composition of the committee must be approved by the Program Co-Directors. Your annual report should be approximately 8-10 double-

spaced pages of text, plus figures and tables describing the results of experiments. It is the student's responsibility to circulate their research progress report to the committee a minimum of a week prior to the meeting, and the meeting must be held before July 31st. Please note that no extensions will be granted for this deadline because of the importance of the committee's report for the annual review by the Student Evaluations Committee, which typically happens the following week (see section 7.2).

At the Second Year Research Evaluation Meeting, students will present a 20 to 30-minute oral overview of their research and answer questions pertaining to their research project. The student is expected to be knowledgeable in the area in which he/she is working and to be able to defend specific aspects of their research project.

Based on your written report and your presentation, your research committee will determine whether you are making adequate research progress. The committee chair provides a written evaluation of the student's progress (i.e., either acceptable or unacceptable) to one of the CNUP Administrators, Patti Argenzio (argenzio@pitt.edu) or Jeanne Weiss (jwa56@pitt.edu). If the student's research progress is viewed as unacceptable, they will be given one term to improve research progress to an acceptable level. In this instance the student will be provided with a written evaluation identifying the areas of concern and stipulating what must be accomplished to resolve concerns. If a student is already on probation, they may be terminated from the Program. Dismissal would be contingent upon a review of the issues by the CNUP Student Evaluations Committee and acceptance of a recommendation for dismissal by the Directors of the CNUP.

### 9.3. Comprehensive Examination

The Comprehensive Examination is the major requirement that a student must pass before being admitted to candidacy for the doctoral degree. This exam provides the student with an opportunity to master a literature that is relevant to their research interests and ultimately to demonstrate that the needed competency has been achieved. The format of the exam is also designed to provide training in the preparation and defense of grant proposals. For additional information on the Comps and for FAQs, please see Appendix A.

The specific educational goals of the Comprehensive Exam are to test the student's ability to:

- independently evaluate and critique a body of neuroscience literature,
- integrate the acquired information into broad conceptual schemes,
- develop testable hypotheses,
- devise experimental approaches and thereby evaluate hypotheses,
- demonstrate the communication skills required to present and defend scientific ideas in oral and written formats.

The topic of the Comprehensive examination is expected to overlap with the student's research interests and general dissertation goals. In addition, it is expected that the proposed plan be original in its conception and scholarly in its execution. This means that the research proposal submitted for the comprehensive examination must be demonstrably different from work that has been previously designed and discussed or written up in any form by either the student or the research mentor.

Students should begin planning for the Comprehensive Exam near the end of the second year. The Exam must be completed no later than February 28th of the student's third year in the graduate program, and students are strongly encouraged to do this earlier, if possible. Any requests for a delay in this schedule must be made in writing to the Co-directors of the Graduate Program; such requests should include a reason for the delay, as well as the time when the student proposes to take the exam. Note that the student must have their Comprehensive Exam committee approved by the Co-directors of the Graduate Program no later than August 1st of their second year; by that time students must also have decided upon a tentative Exam date. Failure to do so may result in a delayed re-appointment and an interruption in graduate stipend payments.

**9.3.1. Committee:**
The Comprehensive Exam committee is selected by the student but must be approved by the Co-Directors of the Graduate Program. This committee must be established by the end of the second year (August 1). The committee consists of at least four members and must contain at least four members of the CNUP graduate training faculty. The research advisor is generally a member of the committee but cannot serve as its chairperson. Prior to its first meeting the student should select a chairperson and must notify the appropriate CNUP Grad Program administrator (currently Patti Argenzio or Jeanne Weiss) with the date of the first scheduled committee meeting and the name of the faculty committee chairperson.

**9.3.2. Initial Proposal and Meeting:**
One week before the first committee meeting, students submit to their committee three research projects in the form of an NIH Specific Aims page (1 page per project) on which they would like to base their comprehensive exam. Although some overlap is permitted, the projects should not overlap excessively with the product of the Grant Writing course, the work the student is currently performing in the lab, or grants submitted by their mentor. The proposed Specific Aims should reflect an informed analysis of the relevant literature and should be supported by essential citations. Each of the three overview/Specific Aims sets should include one or two paragraphs of relevant background and rationale, should clearly state the hypotheses to be tested, and should briefly indicate proposed experimental approaches (e.g., a few sentences or bullet points per Aim; the typical Comprehensive Exam will include 2-3 Specific Aims).

At this meeting or a subsequent follow-up meeting (in person or via email), the committee will approve one of the student's original or revised topics and set of Specific Aims. The committee may decide to modify one of those topics or assign a different related topic. The committee will ensure that the approved Specific Aims are significantly different from the specific aims developed for the grant writing course and do not overlap excessively with the student's current research. This difference should be sufficient to demonstrate the student's continued intellectual growth and increased knowledge in their chosen field of study. If the committee considers all three projects to be inadequate, the student will be given a specific time, typically one month, for returning to the committee with revised projects. If a student is unable to gain committee approval of their Specific Aims after 3 rounds during which proposed Aims are reviewed and revised, the student will be considered to have failed the Comprehensive Exam.

**9.3.3. Written Exam:**
After receiving approval of their Specific Aims, students have 5 weeks to write a "grant application" based on these Aims. Thus, students will need to evaluate the literature in the selected area, formulate and/or revise their hypotheses, and devise experimental strategies to test these hypotheses. The written report should follow the basic form of an **NIH RO1** application and should follow the directions contained in the most recent version of the NIH SF424 form (http://grants.nih.gov/grants/funding/424/#inst). The proposal should be a realistic program for 3 years of research. It will include all the following sections of an NIH R01 research grant proposal:
**Specific Aims (p I-110 SF 424):** This section will include a statement of the hypotheses to be tested and the goal or objectives of the proposal (**1 page**).
**Research Strategy (p I-110 & 111 SF 424):** The Research Strategy **(12 pages total**) is the main portion of the application. It will contain three sections: **a**) **Significance**, **b**) **Innovation** and **c**) **Approach**.

The **Significance** section will explain the importance of the proposed work and should outline how it will move the field forward. You can also use this section to outline the potential of your studies for advancing the objectives of NIH (e.g., curing cancer; in most cases this section will be less than 1 page).

The **Innovation** section will describe novel theoretical concepts, approaches, or methodologies to be used, or developed, during your project (typically ½ page).

The **Approach** section will comprise most of the application. NIH is purposely vague on the exact format for this portion of the application. Different investigators use different formats tailored to their research program. Students are encouraged to look at actual grant applications submitted by their advisor or other committee members to get a sense of what is included in this portion of the application.

What follows is a suggested **Approach** format that can be used or modified to suit your needs:

Divide your **Approach** into separate sections for each of your Specific Aims.

For each Specific Aim it is typical to begin with a **Rationale (or Background**) section that contains a description of the hypothesis to be tested, and background information placing this hypothesis in the context of the field and why these experiments are being performed.

This is usually followed by a **Research Design** section, where the experiments to be conducted are outlined and described. It is sufficient to cite published work for all but the most novel methods or parameters that are specific to your study. Be sure to include an estimate of the number of subjects to be used (animal or human) and the statistical analysis that will be employed.

At the end of each Aim it is customary to include an **Interpretation of Results/Potential Pitfalls** section. This is the section where you discuss potential outcomes and how they will advance your Specific Aims. In this section you must convince the reviewer that these experiments must be done. You can also use this section to discuss potential problems and how you will deal with them. But if you cannot convince them of the significance, dealing with potential pitfalls is less important. Thus, it is recommended that more time and space is spent putting your potential results in the context of the field, than considering everything that can go wrong.

In addition, a brief "**Preliminary Results**" component may be included if it would help convince a grant reviewer that your proposed studies are feasible and likely to generate interpretable results. For this purpose, you may briefly describe feasible data, based on relevant literature, that would be important to have in hand as a basis for pursuing the proposed research. Some investigators place all Preliminary Results at the beginning of the Approach section, while others make it a separate section for each Aim. The use of scientific diagrams, data figures, charts, and tables is encouraged. However, they should be of adequate size such that axis labels (6 pt font) and legends (8-10 pt font) are legible.

The final section is the Bibliography and References Cited (SF 424, I-62). This will contain full citations of all referenced literature and will be included at the end of your Research Strategy (no space limit).

While working on the written portion of the Exam, it is appropriate for students to discuss their ideas with their committee members as well as with other faculty and students. However, such interactions should be restricted to seeking technical information or information on the strengths and weaknesses of experimental approaches (i.e., information that could be obtained from the literature and/or online with the proper search terms) and should not include a discussion of the feasibility of specific proposed experiments. Students must obtain committee approval for any significant revisions to their approved Specific Aims, whereas modified hypotheses or experimental approaches do not require such approval. Modifications to the Specific Aims will not extend the 5-week writing period. Students are not allowed to receive assistance with written drafts of their Exam or guidance in the construction of the proposal.

**9.3.4. Oral Exam:**

Approximately one week after the student submits the written Exam ("grant application") to their committee, there will be an oral examination that must be held at an on-campus location. The oral exam consists of a public presentation of the proposal (lasting ~ 45 minutes) followed by a private oral exam administered by the committee. At the oral examination students will be expected to defend their hypotheses and to address questions concerning all background information relevant to the topic, significance, and design of the experiments they proposed. It is expected that the entire oral exam (presentation and defense) will last 2-3 hours. At least one week before the presentation students are required to provide the title of their presentation and the time and place to one of the CNUP administrative offices for distribution.

**9.3.5. Evaluation:**

At the end of the oral exam, the student will be excused from the room and the committee will evaluate the student's performance on the written and oral portions of the Exam. The student will then be immediately informed of the decision of the committee. The possible outcomes are pass, partial pass, or fail.

Students may receive a partial pass if they were deficient in some but not most of the areas on which they were examined. Significant problems associated with either the written or oral portion of the exam, or both, that are not so severe as to result in a failing score may result in a "partial pass". If the committee decides on a partial pass, they must define those areas of the performance that were deficient and provide specific criteria that must be met for the student to pass. For example, the committee might decide that experimental descriptions were poor throughout the written portion of the exam, and thus the student must submit revised descriptions of the proposed experiments. As another example, the committee might decide that some of the

student's oral answers were unacceptable, and thus the student must retake the oral portion of the exam. Whatever the reason for the partial pass, the committee must present the student with a detailed written description of what needs to be done to satisfactorily complete the exam. A copy of this written description must also be submitted by the committee chairperson to one of the CNUP Administrators (i.e., Patti Argenzio or Jeanne Weiss) so that a copy can be placed into the student's file. Partial passes must be remedied within 2 weeks of the initial oral exam, or the student will be considered to have failed the exam.

If in the unanimous opinion of the evaluating faculty the student has demonstrated significant and pervasive deficiencies that cannot be rectified by limited improvements to the oral or written aspects of the examination, then the outcome will be "fail". In cases where the decision of the examining committee is not unanimous, a written report of the committee's evaluation is referred to the Program Co-Directors for further consideration. Students who fail the Comprehensive Exam (including failure due to an inability to advance an approved set of Specific Aims, see section 9.3.2) will be allowed to take the exam a second time provided they are not already on probation. The second exam must be initiated (i.e., new Specific Aims advanced) within 1 month of the initial failure.

The Comprehensive Exam must be passed before a student can apply for admission to candidacy for the Ph.D. Once this examination has been passed, the program notifies the appropriate Dean of Graduate Studies of that fact.

## 9.4. Doctoral Dissertation

The dissertation is the culmination of graduate study. The dissertation is intended to embody an extended original investigation of a problem of significance in the field of neuroscience. It must add to the general store of knowledge and to understanding in this field. Before the dissertation proposal meeting, the student will give their dissertation committee members a copy of the Specific Aims page generated in their second-year grant writing course and the Specific Aims page from their Comprehensive Exam, so that the dissertation committee is better prepared to help the student identify a dissertation project that ensures the student's continued intellectual growth and scientific development. The dissertation project may be related to work proposed as part of the Grant Writing course or the Comprehensive Exam. However, the dissertation project must extend substantially beyond those prior projects. It must also serve to demonstrate each of the competencies described at the outset of these guidelines.

### 9.4.1. Dissertation Committee:

After successful completion of the Comprehensive Examination, the student and their research advisor propose a doctoral committee for approval by the Co-Directors of the Graduate Program no later than August 31st of the third year. The committee consists of at least 5 members. All committee members must be members of the Graduate Faculty at either the University of Pittsburgh or Carnegie Mellon University. Graduate Faculty status "signifies that a faculty member possesses the expertise in research and the experience in supervising graduate students to be qualified to direct doctoral dissertations and serve as a member of doctoral candidates' examining committees." To check the status of faculty at Pitt, please visit this website and click on the dashboard: https://www.provost.pitt.edu/graduate-faculty-roster. It is possible that faculty not listed will have this status in time to serve on your committee, and so check with the graduate co-directors about this and about the status of CMU faculty. At least 4 of them (including the research advisor) must be members of the CNUP Graduate Training Faculty. According to University Regulations, the research advisor must be a member of the Dissertation committee; Within the CNUP, however, while the research advisor retains their status as an advisor to the student and their committee, the research advisor does not chair the committee's meetings. The student should select one of the other committee members from within the CNUP to serve as the chairperson. **Appendix B** contains additional requirements for the dissertation committee that must be followed. Please check these carefully. The committee must then be approved by the graduate co-directors *before* any meetings.

For the final thesis defense, an outside examiner who is not a faculty member at the University of Pittsburgh or Carnegie Mellon University is added to the original 5-member committee. The outside examiner should be an expert in the area of the thesis but have no connection to the project itself and no collaborations

with the student's mentor. After being selected by the student in consultation with the committee, the outside examiner should be approved by the graduate co-directors. Scheduling senior scientists can often be difficult, so it is best to make the selection as early as possible. The invitation is extended to the outside examiner by the student's mentor. An invitation to give a seminar during the visit should also be extended. Once the outside examiner has accepted the invitation to participate on the committee, the mentor must inform the appropriate Program administrator who will make the travel arrangements and schedule the seminar.

The student's dissertation committee must be approved and hold its initial meeting within six months following successful completion of the comprehensive examination, i.e., August 31st of the third year. The initial function of the committee will vary according to the needs of the student. Thus, advancing a mature proposal is not a prerequisite of forming a committee and having this first meeting. In cases where the student is still collecting proof-of-principle data essential for documenting the feasibility of proposed experiments, the committee should meet to provide council and critical feedback. Nevertheless, it is the responsibility of the student in consultation with the mentor to respond to the advice of the committee in a timely manner to generate an approved dissertation proposal. In cases where the preliminary database is more mature, the committee functions to pass judgment on the feasibility and scope of the proposed experimental plan and to provide the necessary approval to advance the student to candidacy. In either event, the student must meet with an approved committee within six months of completing the comprehensive examination and work diligently with the committee to obtain approval for an experimental plan. Ideally, approval should be obtained by December 31st of the third year.

**9.4.2. Dissertation Proposal and Overview Meeting:**
Before the first dissertation meeting the student will provide each committee member with a copy of the Specific Aims pages from the grant writing course and the Comprehensive Exam. A dissertation proposal and an overview meeting are University requirements, but their function is not in any way analogous to an examination. Instead, they provide an opportunity for students to organize their thoughts concerning the anticipated dissertation, to obtain advice concerning these thoughts, and ultimately to receive some assurance that the broad outlines of the research are acceptable to the faculty. Thus, the proposal should **not** be prepared and distributed when the research is nearing completion, but rather at a much earlier stage.

Delaying submission of a dissertation proposal for committee approval beyond December 31st of the *fourth* year requires written permission from the Program Co-Directors. The student must understand that delaying the submission of a dissertation proposal past this date will necessarily extend the program beyond five years. Students may revise their original proposal or submit an entirely new proposal when subsequent events warrant it. However, such revisions must be reviewed and approved by their committee.

The format for the dissertation proposal is comprised of a written and oral portion. The written portion should be in the format of the Specific Aims page of an NIH R01 application (1 page, single spaced, ½ inch margins on all sides). No additional written materials are required. The written portion of the proposal should be sent to the dissertation committee at least one week prior to the oral presentation.

The oral presentation should be in the form of a PowerPoint presentation (or equivalent format). The oral presentation should include the background/rationale for the proposed studies (including preliminary data if warranted), an outline of the experimental design and a plan for interpretation of results (including statistics to be used). Also be sure to address the issues of "Rigor and Reproducibility" as outlined in NIH guidelines). The oral presentation should be no longer than 60 minutes. Following the oral presentation, the dissertation committee will discuss with the student the proposed research design to determine if the proposed body of work is feasible and whether it represents novel work that will make a significant contribution to the student's field of research.

If both the written and oral portions of the dissertation proposal are determined to be adequate (by unanimous vote of the dissertation committee), this outcome will be reported to the Associate Dean for Graduate Studies. A brief written summary of this meeting will be prepared by the committee's chairperson and provided to a CNUP administrative office.

If the committee does not approve the student's proposal (either the written and/or oral portion), they will identify the deficiencies and provide this critique to the student in writing. This critique will also be sent to the CNUP administrative offices. The student will then be given a fixed amount of time (determined by the committee) to submit and defend a revised proposal. Failure to obtain approval of the committee a second time will be reviewed by both Graduate Program Co-Directors of the CNUP who will determine the best course for proceeding. This could include mediation by the co-Directors with the student and the dissertation committee, placing the student on probation with the option of a third attempt at developing an acceptable proposal or dismissal from the CNUP graduate program.

**9.4.3. Admission to Candidacy for the Ph.D. Degree:**
After receiving approval of their dissertation proposal the student files an application for admission to candidacy. This application must be approved by the Co-Directors of the CNUP Graduate Program and the Associate Dean for Graduate Studies of the school in which the student's mentor is appointed (i.e., FAS when the appointment is in the Department of Neuroscience, SOM when it is not). It is a University requirement that this be done at least eight months prior to the dissertation defense.

**9.4.4. Data Meetings:**
Students should schedule periodic meetings with their committee to discuss the progress of experiments and to review new data. Specifically, students are strongly encouraged to meet with their committee at least twice each year, but, at a minimum, must meet with their committee at least once each year. Students are responsible for obtaining a brief report of each meeting from the committee chair and submitting it to a Graduate Administrator so that it can be added to their file.

**9.4.5. Dissertation:**
The format for the written dissertation is as specified in Electronic Theses & Dissertation Format Guidelines. In addition to meeting these requirements, the student is encouraged to approximate the guidelines for the journal or journals in which the research results are to be published. The exceptions to this rule are (a) the introduction to the dissertation should include a more thorough review of the literature than usually is the case for a research article, (b) the methods section should include all necessary information concerning the conduct of the research, including procedural information already published, (c) the student may wish to include within the results section (or in an appendix) some data which, because they are confirmatory or incomplete, will not be published, and (d) there must be a general discussion section that is more broad than a discussion section associated with a single manuscript.

Manuscripts (including articles in any state of the publication process, e.g., published, submitted for publication, or completed but not yet submitted) authored or co-authored by the student and based on research conducted for the dissertation study may be included in the dissertation. To logically integrate this work into a dissertation, the student is required to write extensive introduction and discussion sections that give an overview of the objective or objectives of the research and draw general conclusions from the assembled data. If a manuscript is co-authored, the contribution of the student must be clearly delineated in the preface so that the committee can ascertain that the student's own work satisfies the requirements of a dissertation. The Style and Form Manual gives instructions on incorporating manuscripts into the dissertation.

A completed dissertation must be submitted to all committee members **at least two weeks** prior to the defense. The student can expect their advisor to read the dissertation prior to its submission, and submission of the dissertation implies that the student's advisor has approved the dissertation as ready for distribution to the committee.

**9.4.6. Application for Graduation:**
Candidates for graduation must file an official application for graduation in the Office of the Associate Dean for Graduate Studies in the first month of the term in which graduation is expected.

**9.4.7. Announcement of Thesis Defense:**

One month before the final examination, the student provides the CNUP administrative office with the title of the dissertation and the time and place for its defense. This information is to be published in the *University Times* and *The Neurotransmitter*, and is sent to all appropriate departments of the University. Note that all CNUP dissertation defenses must be held at an on-campus location since it is assumed that all graduate students, postgraduate fellows, and faculty within the CNUP will attend the defense.

**9.4.8. Final Oral Examination:**
The chairperson of the doctoral committee will oversee the examination. The student begins by making a public presentation of the research project. Approximately 45 minutes are allotted for this presentation. After a brief period for questions and discussion from the public, the candidate, the doctoral committee, and any faculty who wish to attend move to a conference room to complete the oral examination. The research advisor does not participate in this examination and must remain silent throughout the process. When the questioning is complete, the candidate leaves the room while the committee evaluates the dissertation and its defense. The research advisor (and other faculty members in attendance who are not members of the examining committee) may be asked to leave for a portion of the committee's deliberation. The committee selects one of the following options: pass, revision of the written document and/or additional oral questioning at a later time or fail. If the committee requires revision of the written document and/or additional oral questioning, these requirements must be completed within a 3-month period. If the student fails the thesis defense, the student may take the exam again within 3 months. Failure to pass the thesis defense on a second occasion may result in the student being terminated from the program. At the conclusion of the defense, the student is provided with a verbal summary of the committee's deliberations. In addition, a report signed by all members of the doctoral committee, including the research advisor, is sent to the Associate Dean for Graduate Studies. When the decision of the committee is not unanimous, the matter is resolved by the Dean.

## 10. ACADEMIC AND RESEARCH INTEGRITY

### 10.1 Academic Integrity Policy
Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community and the profession. Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Faculty have the responsibility to be honest and to conduct themselves in an ethical manner while training students engaged in laboratory research or classroom activities. Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These general procedures can be found in Guidelines on Academic Integrity at https://www.provost.pitt.edu/faculty/academic-integrity-freedom/academic-integrity-guidelines. Individual schools have their own academic integrity policies that may supersede those of the CNUP. Students should review these school-specific guidelines.

### 10.2 Research Integrity Policy

The University of Pittsburgh seeks excellence in the discovery and dissemination of knowledge. Excellence in scholarship requires all members of the University community to adhere strictly to the highest standards of integrity regarding research, instruction, and evaluation. Research misconduct carries potential for serious harm to the University community, to advancement of scientific knowledge, and to society. The University's Research Integrity Policy is available online at https://www.orp.pitt.edu/research-integrity.

#### 10.2.1 Guidelines for Reporting and Evaluating Research Misconduct by CNUP Faculty and Students
Research integrity is the foundation of scientific investigation and therefore, research misconduct is taken very seriously by the CNUP. The guidelines presented here pertain to research misconduct by CNUP faculty or students. Misconduct by postdocs or technicians is addressed under the purview of the appropriate school (e.g. School of Medicine, Dietrich School of Arts and Sciences) or through the Office of Research Integrity in the University's Office of Research Protections (https://www.orp.pitt.edu/research-integrity). Below is an outline of procedures that will be followed in the case of a CNUP research misconduct report. The methods

that will be used to evaluate the extent of the misconduct (if any) and how remedies addressing the misconduct will be determined are also described.

### 10.2.2 Guidelines for Assessment and Investigation of Research Misconduct by CNUP Students

1) Suspicion or evidence of research misconduct by students can be reported to the CNUP Center Directors or the Co-Directors of the Graduate Program. Conversations with the Center Directors or Co-Directors of the Graduate Program will be confidential and can be used to determine if the misconduct rises to the level that requires a formal assessment by the CNUP (below) and/or the Office of Research Integrity at the University of Pittsburgh.
2) Alternatively, research misconduct can be directly communicated to the University of Pittsburgh Office of Research Integrity (ORI; http://rcco.pitt.edu/rcco-offices/research-integrity). ORI will determine the need for further investigation, whether notification of the funding organization supporting the research (intramural and/or extramural) is required, and the range of potential sanctions and remedies for each case. The CNUP retains the right to investigate any report of misconduct regardless of the finding of the ORI.
3) If reported misconduct involves a CNUP graduate student and the CNUP determines that further investigation is warranted, the CNUP will:
    a. Assemble an ad hoc Review Committee that includes the CNUP Center Directors, the Co-Directors of the Graduate Program, and two senior graduate students chosen by the committee. The committee will be chaired by the CNUP Director that is not from the same school (SOM or A&S) as the student that is being investigated. Any committee member that has a reasonable conflict of interest (social or professional) regarding the student in question will be excused from the committee. Any faculty member that steps down due to a conflict of interest will be replaced by a senior faculty member from the same school (e.g., SOM or A&S).
    b. If the Office of Research Integrity is involved, the committee will review any pertinent documents provided by this office.
    c. The committee will meet with the student under investigation to obtain information pertaining to the reported research misconduct. This may be followed by an interview with the student's mentor(s) and separately, with graduate students, staff, and postdocs that might have been affected by the alleged misconduct. The student under investigation, the mentor(s) or affected students and postdocs may decline to be interviewed by the committee.
    d. Based on the information gathered, the committee will make recommendations in writing for further actions (if needed). These will be the basis for a final decision by the Center Directors. Recommendations may include, but are not limited to, placing the student on probation, removal from the dissertation laboratory, or dismissal from the CNUP graduate program.
    e. If the student is allowed to remain in the program and sanctions are imposed, a plan will be formulated for follow-up monitoring to ensure that the sanctions are followed and that the student is receiving appropriate supervision to prevent additional instances of research misconduct.
    f. The Center Directors will notify the student and the mentor of the final decision in writing. The mentor can share this decision with the affected CNUP students in their laboratory or request that the Center Directors communicate directly with those affected. It will be up to the mentor to notify affected technicians or postdocs in their laboratory.
    g. All communication between the CNUP Review Committee and the parties involved (students, staff, mentor(s), and postdocs) will remain confidential as required by University of Pittsburgh guidelines.

Final decisions can be appealed to the appropriate Associate Dean of Graduate Studies (School of Medicine or Dietrich School of Arts and Sciences) and/or the Vice Provost for Graduate Studies. Students enrolled in the Dietrich School are also encouraged to contact their Graduate Student Ombudsman (https://www.asgraduate.pitt.edu/student-life/ombudsperson).

### 10.2.3 Guidelines for Assessment and Investigation of Research Misconduct by CNUP Faculty

1) Suspicions or evidence of research misconduct by CNUP Training Faculty can be reported to the CNUP Center Directors or the Co-Directors of the Graduate Program. Conversations with the Center Directors or Co-Directors of the Graduate Program will be confidential and can be used to determine if the misconduct rises to the level that requires a formal assessment by the CNUP (below) and/or the ORI at the University of Pittsburgh (http://rcco.pitt.edu/rcco-offices/research-integrity).
2) Alternatively, research misconduct can be directly communicated to the ORI (http://rcco.pitt.edu/rcco-offices/research-integrity). This office will determine the need for further investigation, whether notification of the funding organization supporting the research (intramural and/or extramural) is required, and the range of potential sanctions and remedies for each case. The CNUP retains the right to investigate any report of misconduct regardless of the finding of the ORI.
3) If the reported misconduct involves a CNUP Training Faculty Member and the CNUP determines that further investigation is warranted, the CNUP will:
    a. Assemble an ad hoc Review Committee that includes the Directors of the CNUP, the co-Directors of the CNUP Graduate Program, and two senior training faculty members chosen by the committee. The committee will be chaired by the CNUP Director that is not from the same school (SOM or A&S) as the faculty member that is being investigated. Any committee member that has a reasonable conflict of interest (social or professional) regarding the faculty in question will be excused from the committee. Any faculty member that steps down due to a conflict of interest will be replaced by a senior faculty member from the same school (e.g., SOM or A&S). One of the Directors of the CNUP will notify the faculty member's chair of the pending investigation.
    b. If the ORI is involved, the committee will review any pertinent documents provided by this office.
    c. The committee will meet with the faculty member under investigation to obtain information pertaining to the reported research misconduct. This may be followed by interviews with other faculty and students that the committee deems essential to understanding what infraction may have occurred.
    d. Based on the information gathered, the Review Committee will make recommendations in writing for further action (if needed) and these will be the basis for a final decision by the Center Directors. Recommendations may include, but are not limited to, faculty oversight of their activities related to the CNUP, prohibition of individually mentoring students for some period of time, exclusion from certain CNUP activities, or removal from the CNUP Training Faculty.
    e. If the faculty member is allowed to remain in the CNUP and sanctions are imposed, a plan will be formulated for follow-up monitoring to ensure that sanctions are followed and that the faculty member is receiving appropriate supervision to prevent additional instances of research misconduct.
    f. The Center Directors will notify the faculty member and their chair, in writing, regarding any actions taken. The Center Directors will also notify any CNUP students that are allowed to remain under the mentorship of that faculty member of any actions that are taken or will provide temporary support to allow students to move to another dissertation laboratory if that is their choice.
    g. All communications between the Review Committee and the parties involved (faculty, students, staff, and postdocs) will remain confidential as required by University of Pittsburgh guidelines.

## 11. DIVERSITY ISSUES AND PERSONAL INTEGRITY[1]

### 11.1 Diversity, Equity, and Inclusion (DEI)

[1] A substantial portion of Section 11 was modified from material provided by the CNUP Student-Organized Diversity and Inclusion Committee.

The CNUP adheres to DEI principles comparable to those established by the University of Pittsburgh. As such, we value equality of opportunity, human dignity, and racial, ethnic, and cultural diversity. Accordingly, the CNUP prohibits and will not engage in discrimination or harassment based on race, color, religion, national origin, political affiliation, ancestry, sex, age, marital status, familial status, sexual orientation, gender identity and expression, genetic information, disability, or status as a veteran. The CNUP also prohibits and will not engage in retaliation against any person who makes a claim of discrimination or harassment on DEI issues and who provides substantiating information in a subsequent investigation. The CNUP will endeavor always to hire and advance the participation of individuals from diverse backgrounds within our faculty, trainees, and staff. Finally, the CNUP will continue to take affirmative steps to support and advance these values consistent with our research and educational missions.

### 11.2 Mistreatment Policy

Excellence in research discovery and the scholarly dissemination of knowledge can only be achieved within an environment that embraces inclusion of all groups and mutual respect between engaged parties. Such excellence requires members of the CNUP community to adhere strictly to the highest standards of academic and personal integrity in research, instruction, training, and evaluation. Mistreatment of graduate students by faculty, postdoctoral researchers, staff, or other students seriously challenges students' mental well-being, may harm their career potential, and could violate their civil rights. Likewise, mistreatment committed by students harms the well-being of other CNUP community members, including undergraduate students working in CNUP labs. Incidents of mistreatment may include, but are not limited to, Title IX infringements (see section 11.3.1), assault, any discrimination violating civil rights, public humiliation, threatening behavior, psychological cruelty, bullying, verbal abuse, providing lower evaluations because of factors other than performance, denial of disability accommodations, ethical misconduct, experimental sabotage, or slander. The CNUP prohibits such mistreatment, and leadership will take corrective actions upon receipt of internal mistreatment reports or those adjudicated by University offices. CNUP leadership strongly encourages all community members to report instances of mistreatment they experience or witness. The CNUP prohibits and will not engage in retaliation against any person who reports mistreatment, and reports may also be made anonymously. Failure to report mistreatment prevents corrective actions from being taken and may enable further acts of mistreatment by the same individuals. Those who experience or observe mistreatment but decide not to report it should exercise caution when talking about it with others and should request confidentiality. Those receiving such information second hand should keep it private. Maintaining confidentiality in such situations promotes CNUP's efforts to cultivate a community of mutual respect, in which civil rights are protected and due process is preserved.

### 11.3 Guidelines for Reporting Mistreatment

#### 11.3.1 Title IX Issues

The Title IX landmark federal civil rights legislation prohibits sex discrimination in education. Examples of **Title IX infractions** include, but are not limited to, sexual violence, sexual harassment, gender discrimination, creating a hostile environment based on sex or gender, and retaliation. The Office of Civil Rights and Title IX Compliance protects all members of the community: students, staff, and faculty from such infractions. For more information about Title IX issues, please visit the website.
https://www.diversity.pitt.edu/civil-rights-title-ix-compliance.

Anyone in the CNUP community who experiences a Title IX infraction has the right to report it. Reports can be made in several ways, but before speaking with someone, complainants should understand that all university faculty and staff, except for specific counselors and medical professionals, are designated as "responsible employees." They are legally mandated to report incidents of sexual misconduct disclosed to them to The Office of Civil Rights and Title IX Compliance, and those reports may lead to an investigation. See policy under **Responsible Employee Program and Reporting.** Complainants should report to university employees they trust and feel comfortable with. They should also understand that most of these people must report any Title IX issue in addition to providing aid to the complainant.

### 11.3.2 Reporting

**11.3.2.1** Students may wish to discuss any incidents or concerns of mistreatment with their **primary mentor**, i.e., the **lab primary investigator (PI)**. Mentors should address specific problems that may be occurring within the lab, facilitate contact with the Graduate Co-Directors, and/or help students understand their institutional reporting options. Students may also consult with any other faculty member.

**11.3.2.2** Students may wish to consult the **CNUP Graduate Program Co-Directors** and/or Center Co-Directors when they encounter bias or harassment. Co-Directors can especially assist when problems involve PI mentors or are not resolved satisfactorily by discussions with mentors. Co-Directors are prepared to provide advice, serve as mediators between involved parties, and provide guidance on institutional reporting options. Importantly, they will also help students who require adjustments to their graduate school path (e.g. changing labs, altering courses, ending rotations early, etc.) due to bias or harassment.

**11.3.2.3 Institutional Reporting** resources are available to all CNUP community members when experiencing or witnessing instances of mistreatment. They can serve as the first place to report or represent the next stage in reporting beyond mentors or Co-Directors. They can especially assist when problems involve mentors or Co-Directors or are not resolved satisfactorily by discussions with those individuals. Institutional reporting is also important when incidents involve persons outside the CNUP and/or should be officially documented for permanent records or disciplinary actions.

**Pitt Concern Connection (PCC)** is an "all in one" reporting hub for any type of mistreatment incident or concern: https://www.report.pitt.edu. It includes an online report form, a question form, and phone and text lines.

**Reports and questions can be submitted anonymously**. If reports are anonymous, University officials will be limited in their ability to follow-up and respond appropriately. Anonymous reporting, however, still provides important documentation that may bolster future claims of a cumulative nature.

**Specific University of Pittsburgh Offices**: Direct contact with the University offices handling specific types of complaints is often advocated, especially for time-sensitive situations. Identifying information will be important, and these are the offices most PCC reports will be directed to.

- The **Title IX Office** covers sex- and gender-based discrimination and sexual harassment or assault. The same office also handles harassment or discrimination claims that violate **civil rights**. Contact the titleixcoordinator@pitt.edu or 412-648-7860 or file a report online. https://www.report.pitt.edu

- The **Office for Equity, Diversity, and Inclusion (OEDI)** covers many forms of mistreatment and violations of civil rights. Contact an OEDI staff member or file a report online. https://www.diversity.pitt.edu/about

- **Disability Resources and Services** provides disability accommodations and handles discrimination complaints. You may contact DRS directly or file a report online. https://www.diversity.pitt.edu/disability-access/disability-resources-and-services

- The **Office of the Learning Environment (OLE)** in the School of Medicine (SOM) serves graduate students in SOM departments and medical students. The OLE can assist with any incident in which at least one party is a member of the SOM. Reports, which may be anonymous, can be filed through the Pitt Med **Professionalism Accolade and Incident Reporting (PAIR) system** or by contacting the OLE. https://www.ole.pitt.edu/pair

- A **SOM Ombuds Office** is available to graduate students registered in the SOM. https://www.medschool.pitt.edu/ombuds-office

- An **Ombudsperson for the Dietrich School of Arts and Sciences (A&S) Graduate Studies** serves graduate students in A&S departments or can assist with any incident in which one party is a member of A&S. https://www.asgraduate.pitt.edu/student-life/ombudsperson

- Should mistreatment incidents involve members of **Carnegie Mellon University (CMU)**, official reports can be filed through one of two CMU offices.
  **Title IX issues** https://www.cmu.edu/title-ix/
  **Carnegie Mellon University Ethics Reporting Hotline** Call toll free 1-877-700-7050 or report via the Internet: www.reportit.net (Username: tartans; Password: plaid)

  As most CMU members of the CNUP join through A&S, it would be beneficial to also alert the A&S Ombudsperson. Graduate Co-Directors should also be notified to assist students with changing labs, rotations, course schedules, equipment access, etc., and to communicate with CMU personnel.

- Should mistreatment be caused by an undergraduate student working in a CNUP lab, their behavior should be reported to the Office of Student Conduct, 412-648-7910.
  https://www.studentaffairs.pitt.edu/conduct

### 11.3.3 Non-Reporting Resources for Sexual Misconduct or Other Mistreatment

Although the CNUP encourages all members of the community to report instances of mistreatment, it is understood this is an individual decision that may be difficult for some. Resources are available regardless of what choice a person makes about reporting. The following are free, confidential resources available through campus or community organizations. University of Pittsburgh mental health counselors are not mandated to file reports under Title IX, and so students may seek their assistance without triggering an official investigation. Counselors can also support students who have chosen to initiate official proceedings.

**Free to CNUP students in the SOM**

- SOM Mental Health Team https://www.medstudentaffairs.pitt.edu/contact-us/mental-health-team

**Free to all CNUP students**

- The University Counseling Center offers free mental health resources to all CNUP students https://www.studentaffairs.pitt.edu/cc/
- An extensive list of other Campus and Community Resources can be found at this website https://www.cnup.pitt.edu/diversity-and-inclusion-resources-pitt

### 11.4 Guidelines for Response to Mistreatment

For reports submitted to one of the University offices listed above, remediation will be determined by the relevant office, possibly in consultation with CNUP Co-Directors, departmental chairs, or other members of the CNUP community, as each case requires. The severity of remedies will depend on the degree and/or frequency of the misconduct, as suggested by the Mistreatment Response Pyramid, approved by the School of Medicine Faculty ELEAP (Enhancing the Learning Environment At PittMed) Committee, April 2019. Below are outlined procedures to be followed when reports of mistreatment are submitted internally within the CNUP and do not require adjudication by one of the above offices. All conversations regarding reporting of mistreatment and subsequent investigations will be held in the strictest confidence. Remedies will also be held in confidence to the greatest extent possible.

For **Title IX infractions** reported to The Office of Civil Rights and Title IX Compliance, investigations are handled with such all-encompassing confidentiality that even parties directly involved in the incident are often unaware of ongoing proceedings. Likewise, CNUP leadership may be unaware of ongoing proceedings. In this case, absence of evidence is not evidence of absence. CNUP community members with specific information about a Title IX infraction should provide their information directly to the Title IX office and

then keep this information private. Those who have secondhand information should likewise keep this information private. If they do choose to talk about it with others, they should exercise extreme caution and request complete confidentiality to the extent possible (see section 11.3.1). Maintaining confidentiality in the case of unadjudicated Title IX issues promotes CNUP's efforts to cultivate a community of mutual respect, in which civil rights are protected and due process is preserved.

**11.4.1 Acts of mistreatment committed by faculty against CNUP graduate students** will be investigated by the Graduate Co-Directors to obtain relevant information from the accused faculty, the aggrieved student, other parties involved, and any witnesses. Any individual may decline to be interviewed.

Graduate Co-Directors will make recommendations for **appropriate remedial actions** to the CNUP Co-Directors. Recommendations will depend on the severity and frequency of the mistreatment and may include, but are not limited to, verbal or written warning, oversight of the accused's activities related to the CNUP, prohibition from individually mentoring students for some period, exclusion from certain CNUP activities, or removal from the CNUP Training Faculty for some period or permanently. The agreed upon remediation will be communicated to the accused faculty in writing (unless a verbal warning is chosen) by the Center Co-Director from the same school as the faculty member, with copies to the department chair of the accused in cases when the chair is not a Center Co-Director. Center and Graduate Co-Directors will share the decision about remediation with the reporting student and any other CNUP students allowed to remain under the mentorship of the accused faculty. Temporary support will be provided to students requesting removal to another dissertation laboratory. CNUP Co-Directors may share the decision with other affected community members within their domains, although discretion will be exercised, such that information is limited to those needing to know. All else will remain confidential as required by University of Pittsburgh guidelines.

For faculty members under caution or sanction, a plan will be formulated for **follow-up monitoring** to ensure that sanctions are followed and that the faculty member is receiving appropriate supervision to prevent additional instances of student mistreatment.

Accused faculty have the **right to appeal** decisions to the relevant Dean of their school.

**11.4.2 Acts of mistreatment committed by staff or postdoctoral researchers against CNUP graduate students** will be **investigated** by the responsible PI mentors for laboratory incidents. Incidents outside laboratories will be **investigated** by the relevant departmental chair at the written request of the Center Co-Director from the same school. Graduate Co-Directors will assist in the investigation to provide advocacy for students. Information will be obtained from the accused, the aggrieved student, other parties involved, and any witnesses. Any individual may decline to be interviewed.

Lab PIs and/or departmental chairs will consult with the relevant Human Resources office or CNUP Co-Directors to determine appropriate **remedial actions**. These may include, but are not limited to, verbal or written warnings, placement of the accused on a performance improvement plan, suspension for a specified period, or termination of position. Remediation will be communicated in writing (unless a verbal warning is chosen) to the accused with copies to Human Resources and other individuals engaged in investigating. Lab PIs and departmental chairs may share the decision about remediation with affected community members within their domains, although discretion will be exercised, such that information is limited to those needing to know. All else shall remain confidential as required by University of Pittsburgh guidelines.

Staff or postdoctoral researchers remaining in their position under sanction will be monitored via a **follow-up plan** formulated to confirm sanctions are followed and no further acts of mistreatment are committed.

Accused staff have the **right to appeal** decisions to the relevant Human Resources office. Accused postdoctoral researchers have the right to appeal decisions to the offices located in their respective schools.

- Center for Postdoctoral Affairs in the Health Sciences within the Office of Academic Career Development https://www.oacd.health.pitt.edu/about-center-postdoctoral-affairs
- University of Pittsburgh Postdoctoral Association https://www.uppda.pitt.edu/about-us

**11.4.3 Acts of mistreatment committed by CNUP graduate students** will be investigated by the Graduate Co-Directors. Lab PI mentors and course instructors may be asked to assist but should not handle complaints independently. The CNUP Graduate Training Program and not individual faculty has ultimate responsibility for graduate students. **Investigations** will be conducted to obtain relevant information from the accused student, the aggrieved party, and any witnesses. Any individual may decline to be interviewed.

The Graduate Co-Directors will make **recommendations for remedial actions** to the CNUP Co-Directors. Once remediation is agreed to, it will be communicated in writing (unless a verbal warning is the chosen remedy) to the accused student by the CNUP Co-Directors, with copies to course instructors or lab PI mentors as the incident requires. Recommendations may include, but are not limited to, verbal or written warnings, removing the student from a course with an incomplete grade, removing the student from their rotation or dissertation laboratory, placing the student on program or University probation, or dismissal from the CNUP graduate program. CNUP Co-Directors, course instructors, or lab PI mentors may share the decision about remediation with affected community members within their domains, although discretion will be exercised, such that information is limited to those needing to know. All else will remain confidential as required by University of Pittsburgh guidelines.

Students allowed to remain in the program under sanction will be monitored via a **follow-up plan** formulated to confirm sanctions are followed and no further acts of mistreatment are committed.

Accused students have the **right to appeal** decisions to the appropriate Associate Dean for Graduate Studies, who will consider them in coordination with the Dean of the respective school.

A&S https://www.asgraduate.pitt.edu/about/staff-directory
SOM https://somgrad.pitt.edu/people

**Calendar of Milestones and Deadlines for PhD Students**
**(note that MD/PhD student requirements are somewhat different)**

## I. First Year

| | |
|---|---|
| • Select research rotation and initiate research | Upon entering program |
| • Submit Rotation Form | First week of Fall term |
| • Design a Two-Year Program of Study | By end of Fall term |
| • Submit first Rotation Report | End of Fall term |
| • Evaluation Committee Reviews student progress | Beginning of Spring term |
| • Submit second Rotation Form | First week of Spring term |
| • Submit second Rotation Report | End of Spring term |
| • Submit Reprint Examination Form | May 1st |
| • Complete Reprint Examination | May 31st |
| • Submit Progress Report | June 15th |
| • Annual Review by CNUP Evaluation Committee | Late July to Early August |
| • Select Dissertation Mentor & Advisory Committee | End of Spring or Summer Term |

## II. Second Year

| | |
|---|---|
| • Complete Teaching Requirement (flexible) | Fall or Spring Term |
| • Submit Annual Progress Report | June 15th |
| • Second Year Research Evaluation Meeting | July 31st latest |
| • Annual Review by CNUP Evaluation Committee | Late July to Early August |
| • Establish Comprehensive Exam Committee | August 31st |

## III. Third Year

| | |
|---|---|
| • Complete Comprehensive Exam | February 28th |
| • Submit Annual Progress Report | June 15th |
| • Annual Review by CNUP Evaluation Committee | Late July to Early August |
| • Approval of Dissertation Committee and First Meeting | August 31st |
| • Submit Dissertation Proposal | December 31st |
| • File for Admission to Candidacy | Upon approval of proposal |

## IV. Subsequent Years

| | |
|---|---|
| • Submit Annual Progress Report | June 15th of each year |
| • Annual Review by CNUP Evaluation Committee | Late July to Early August |
| • Data Meetings with Dissertation Committee | One required; two ideal |
| • Application for Graduation | Term of graduation |
| • Announcement of Dissertation Defense | A month prior to defense |

## Appendix A. Comps Exam Overview and FAQ

**Goals of the Comprehensive Exam are to test the student's ability to:**

- independently evaluate and critique a body of neuroscience literature,
- integrate the acquired information into broad conceptual schemes,
- develop testable hypotheses,
- devise experimental approaches to evaluate these hypotheses,
- demonstrate the communication skills required to present and defend scientific ideas in oral and written formats.

**What is the form of the written exam?**

The written portion of the exam should look like an NIH R01 with enough proposed work to last for 3 years. See the CNUP guidelines for further details, page limits and suggested format.

**What is the first step?**

By August 1st of their second year, the student must form a tentative comprehensive exam committee composed of qualified faculty (see Guidelines for definition) and receive approval of that committee from the Co-Directors of the Graduate Program.

**What should the student present to the committee one week prior to the initial proposal meeting?**

1) The student should submit the specific aims page from the Grant Writing course for comparison with the proposed comps exam projects.
2) The student should submit 3 research projects. Typically, each project has 2-3 Specific Aims and includes an introductory paragraph. Thus, the write-up for each project is similar to the Specific Aims page of an R01.

**How different does each proposed project have to be from previous work?**

1) Each project may be related to, but not excessively overlap with, the work the student is currently performing in the laboratory. This exercise is meant to stretch the student but not take them to brand new territory.
2) Each project should have features not found in the student's product from the Grant Writing course. Some overlap is, however, allowed. For example, within one project, two out of the 3 specific aims could be from the Grant Writing course.
3) There can be overlap between each of the three projects, but each should be able to stand on its own.

**How much flexibility does the committee have in molding the final approved aims the student will use for the basis of the exam?**

1) The committee is free to suggest changes to any project and approve that project for the exam.
2) The committee may mix together aims from the three proposed projects.
3) The committee may critique all three projects and deem them inadequate. The student will then be given a specified time period for returning to the committee with revised projects that it will again critique.

4) If, after three attempts, the committee cannot approve any of the aims proposed, the student will be considered to have failed the comps exam.

**What are the faculty options with respect to passing or failing a student who has presented both the written and oral portion of the exam?**

1) Significant problems associated with either the written or oral portion of the exam may result in a "partial pass." In these cases, the committee must present the student and the CNUP program with a detailed written description of what needs to be done to satisfactorily complete the exam within 2 weeks of the initial exam. If the revised material is considered inadequate by the committee, the student will have failed the attempt and be required to repeat the entire exam with new aims.
2) The committee can fail the student on the overall performance of the exam based on severe deficiencies in the written and/or oral portions of the exam. The student will be allowed to retake the exam, provided they are not already on probation. The second exam must be initiated (i.e. new Specific Aims advanced) within one month of the initial failure.

**What are the most common reasons for students to fail the Comps Exam?**

1) The foundational hypothesis is not tested by the proposed experiments, such that no definitive conclusions can be drawn.
2) The student does not have sufficient knowledge of the literature, such that they propose a project that is not feasible. For example, the student proposes to use a knockout mouse strain that previous studies have shown is embryonic lethal and cannot be obtained for testing in any stage. Or the student proposes to use a viral expression model that previous studies have shown is not specific for the cells of interest. Or the student proposes an experimental design that has never been successfully implemented. It is the student's and not the committee's responsibility to ensure projects can be successfully completed prior to the defense of the proposal.
3) The student's lack of knowledge of the field prevents them from demonstrating how potential results will move the field forward.
4) The student designs experiments that will only provide new information if they work as predicted; i.e., negative results are not interpretable.
5) The aims are interdependent, such that a negative result in one aim invalidates all subsequent aims.

## Appendix B. Dissertation Committee Requirements by School

An essential function of a dissertation committee is to ensure that a student who passes and is awarded the PhD degree would be considered comparably satisfactory in other departments, other schools, and other institutions across the world. Academicians, however, are not always in agreement as to what constitutes an optimal thesis committee. Consequently, there are often slight differences among degree-granting bodies. As the CNUP spans at least two major schools, the School of Medicine (SOM) and the Dietrich School of Arts & Sciences (A&S), such differences must be recognized and satisfied. What appears here are the school-specific regulations that differ from those of the CNUP and therefore must be added to CNUP rules.

The school-specific rules for any individual student are based on the primary appointment of their dissertation mentor. If their dissertation mentor does not have a primary appointment in the SOM or A&S, their secondary appointment determines the regulations to follow. Most typically, students of faculty at Carnegie Mellon University will follow A&S regulations, whereas students of faculty in the School of Bioengineering will follow the rules of the SOM for dissertation committees.

**Regulations Specific to A&S**

- The chair of the committee must have their primary appointment in the Department of Neuroscience and have Graduate Faculty status.
- One member of the committee must be Graduate CNUP Faculty but *external to the Neuroscience department, meaning they do not have a primary, secondary, or joint appointment in Neuroscience. Please designate which member is considered “external.”

**Regulations Specific to the SOM**

- A minimum of one Graduate Faculty member from the University community who is not a member of the student’s training program must participate on the committee as an *external member.
- The external member cannot serve as the committee chair.
- The dissertation committee must be approved by the director of the student’s training program prior to seeking approval from the Associate Dean for Graduate Studies. This is achieved by completing the Nomination of a Doctoral Dissertation Advisory Committee. Only upon these approvals may the student convene an Overview/Prospectus meeting and then petition for Admission to Candidacy.

* The external member is not to be confused with the "outside examiner" from a different institution. The SOM allows Neuroscience/A&S faculty to serve this purpose; faculty from other departments may also be allowed. Consult the graduate program co-directors.