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# Graduate Program in Neuroscience (GPN)

## *Graduate student handbook*

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## I. Introduction

Most of the information that students enrolled in the University of Minnesota Graduate School will need is contained in the Graduate School web site. The information presented in this handbook is a supplement to the Graduate School web site. It also gives students specific information about their appointments to the Neuroscience Program, and to the operational and administrative aspects of the Graduate Program in Neuroscience. For more information about Graduate School requirements and procedures, see the Graduate School home page at [www.grad.umn.edu](http://www.grad.umn.edu).

The Graduate Program in Neuroscience (GPN) at the University of Minnesota is an interdisciplinary program; its goal is to promote graduate education and research in Neuroscience, leading to the Doctor of Philosophy degree (Ph.D.). The GPN programs for both PhD students and MD/PhD students are covered by this handbook.

Forms, due dates, and details can be found on the Graduate School website at <http://www.grad.umn.edu/current-students-forms/formsdoctoral>

## II. History of the Graduate Program in Neuroscience

In the early 1980's, research in various areas of neuroscience was being actively carried out in several dozen laboratories scattered throughout the University of Minnesota. However, at the time, there was little interaction between faculty members except within single departments or specialized areas. At that time about a dozen faculty members from across the university began to seek ways to coordinate and expand interdisciplinary teaching and research in neuroscience. Neuroscience has always been an interdisciplinary science, drawing from physiology, psychiatry, pharmacology, animal behavior, economics, and biology, as well as computational and mathematical sciences. As of 2014, the GPN consisted of a diverse program with 107 faculty spanning 30 different departments. The GPN offers a PhD program in neuroscience that covers the complete range of research from subcellular to whole-organism behavior, and from fundamental research to clinical research, using a diversity of techniques.

### **Directors of Graduate Studies, Graduate Program in Neuroscience, 1987 to present:**

- 1986 - 1987 Dr. Richard Poppele (Directed Neuroscience minor prior to certification for the PhD Program)
- 1987 - 1989: Dr. Robert P. Elde, Dept. of Cell Biology & Neuroanatomy
- 1989 - 1992: Dr. Robert F. Miller, Dept. of Physiology
- 1992 - 1995: Dr. Alice A. Larson, Dept. of Veterinary PathoBiology
- 1995 - 1998: Dr. Timothy J. Ebner, Dept. of Neurosurgery
- 1998 - 1999: Dr. Esam El-Fakahany, Dept. of Psychiatry
- 1999 - 2002: Dr. John F. Soechting, Dept. of Neuroscience
- 2002 - 2005: Dr. William C. Engeland, Dept. of Surgery
- 2005 - 2008: Dr. Paul C. Letourneau, Department of Neuroscience
- 2008 - 2011: Dr. Virginia S. Seybold, Department of Neuroscience
- 2011 - 2014: Dr. James Ashe, Department of Neuroscience
- 2014 - Present: Dr. A. David Redish, Department of Neuroscience

### III. Requirements for a PhD degree from the University of Minnesota Graduate Program in Neuroscience

**Receiving a PhD from the Graduate Program in Neuroscience requires that students make satisfactory progress each semester.** Satisfactory progress is defined in the milestones available in the related documents.

#### A. Milestones to be expected in completion of the PhD degree

- Completion of the Itasca neurobiology course.
- Completion of the four core classes.
- Completion of the Career Skills class.
- Participation in and completion of the Seminar Journal Club Course.
- Completion of a statistics class (usually Neurostatistics).
- Completion of 6 additional credits.
  
- Completion of four rotations and selection of an advisor
- Passing the written preliminary examination.
- Writing an oral thesis proposal.
- Passing the oral preliminary examination.
- TAing for at least one class for at least one semester
  
- Giving colloquia annually, starting in the third year.
- Writing at least one manuscript submitted to a peer-reviewed journal.
- Writing a thesis.
- Passing the final thesis defense.

#### B. Course Requirements for the Ph.D. degree

The following requirements and procedures are specified for typical students. Certain exceptions can be made with the consent of the advisor and Director of Graduate Studies. See: [PhD Checklist](#) for a complete description of the Graduate School requirements from initial registration to graduation.

##### 1. Core Curriculum

First-year students take the Itasca course and then the eight core courses listed below, plus the four required laboratory rotations. The coursework schedule for the first year is as follows:

|                         |  |
|-------------------------|--|
| Summer Session (Year 1) |  |
| NSc 5551                | Cell & Molecular Neurobiology Lab at Itasca (4 cr) |
| Fall Semester (Year 1)  |  |

|                          |   |
|--------------------------|---|
| NSc 5461                 | Cellular & Molecular Neuroscience (4 cr)  |
| NSc 5561                 | Systems Neuroscience (4 cr)   |
| NSc 8334                 | Lab Neuroscience (1 cr)   |
| NSc 8321                 | Career Skills-Understanding Responsibilities as a Neuroscientist (0.5 cr)   |
| Spring Semester (Year 1) |   |
| NSc 5661                 | Behavioral Neuroscience (3 cr)  |
| NSc 8211                 | Developmental Neurobiology (3 cr)   |
| NSc 8334                 | Lab Neuroscience (1 cr)   |
| NSc 8321                 | Career Skills-Understanding Responsibilities as a Neuroscientist (0.5 cr)   |
| Fall Semester (Year 2)   |   |
| Nsc 8320*                | Quantitative Neuroscience (Experimental Design and Neurostatistics) (3 cr)<br>* The number will likely change soon. |
| Nsc 8321                 | Career Skills-Understanding Responsibilities as a Neuroscientist (0.5 cr)   |

MD/PhD students are expected to audit the Systems and Cellular and Molecular classes in the first semester. They are expected to participate in the active learning components of the classes and are responsible for the information in the Written Prelim (q.v.)

All neuroscience graduate students are required to take two semesters of journal club sometime in their career.

In addition, to meet university requirements, all students will have to take 24 thesis credits (Nsc 8888).

Students are welcome to take additional elective classes by discussion with their advisor and the DGS.

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## 2. *Supporting Program or Minor*

**GPN students are not required to take a supporting program nor are they required to take a minor.** If the supporting program option is selected, the courses may be from different disciplines, but should constitute a coherent program of courses that support the

overall interests of the student. Such a program should be approved by the DGS before beginning it.

A student who wishes to also have a minor will need to take additional coursework to qualify for a minor. To complete a minor or to have a supporting program, the Graduate School requires students to complete 12 credits in the minor or supporting program. If a student elects to complete a specific minor, all of the 12 credits must be from a single graduate program and the courses selected must be approved by the DGS of that graduate program.

### 3. *Registration Requirement*

All graduate students are required to register for 6-14 credits in the Graduate School every fall and spring term in order to maintain active status until they have passed the oral preliminary exam and completed 24 thesis credits (NSc 8888). To complete the required courses and thesis credits as efficiently as possible, the student should register for thesis credits (NSc 8888) during the 2nd year.

**Students who fail to register annually will be considered to have withdrawn and will have to apply for readmission.** Students are not required to register for courses in the summer, and registration during summer is not required to maintain health insurance coverage. Students should **NEVER** register for any credits during the summer without prior discussion with the program coordinator and your advisor. Please be aware that FICA taxes will be taken from the paycheck during summer. If a student registers for any credits during the summer, student services fees will be charged. Furthermore, tuition benefits are not available during the summer. Thus the student or the student's advisor will be responsible for the full tuition and fees incurred during a summer term. [This directive is based on evidence that the amount of FICA tax for the summer period is usually less than the amount of the tuition and student service fees.]

### 4. *Post Thesis Credits*

Upon completion of 24 thesis credits and passing the oral prelim, the student should register for NSc 8444, which entitles the student to full time registration for only 1 credit. This typically occurs in the Spring of the 3rd year. Note: Once you register for this you course you should no longer register for any other courses. You will also need to complete an [Application for Advanced Doctoral Status Form](#).

## C. **Laboratory Rotations**

In the first year of graduate studies, PhD students participate in four laboratory rotations, each of which will last approximately 7-8 weeks. Two rotations take place in the fall semester of the first year, and two rotations take place in the spring semester of the second year. (MD/PhD students have a different rotation procedure.)

Rotations assignments should begin with a discussion between the student and the potential rotation faculty. Assignments depend on space availability and the interests of the individual students. Students are encouraged to discuss their choices for rotation

advisors with the DGS prior to selecting each laboratory rotation. Students should make their selections well before the beginning of the semester to allow time for any arrangements that need to be made by the faculty.

Laboratory rotations allow students to experience the broadest possible spectrum of laboratory techniques and to explore experimental neuroscience in actual research settings. An important program goal is to emphasize the major requirement for a successful graduate education: the ability to plan and coordinate several efforts by balancing coursework and research. Research projects in different labs will be designed as components of current research projects. Consequently, the research results will be weighted equally with the experience gained by the students.

Typically, when not in class, students are expected to be involved in their research projects. It is expected that a minimum of 20 hours per week will be devoted to research projects. First-year PhD students should register for 1 credit of NSc 8334 (section 1).

Laboratory rotations have two primary goals: (1) to provide students and faculty the opportunity to “test-run” the interaction that could lead to a long-term advisor/advisee relationship (see Section V below), and (2) to provide students a broad experience across the field of neuroscience. It is expected that a student will have selected an advisor at the end of the fourth rotation. Students must do the first three rotations in different laboratories. In the fourth rotation, a student may return to a previous laboratory, either to complete a project or to start on their thesis research. Or the student may spend the fourth rotation in a different laboratory, either to get additional experiences or to try a fourth opportunity to find an advisor.

## **D. Teaching Requirements/Opportunities**

Teaching assistant (TA) requirement:

- It is required that GPN students TA at least one course in neuroscience.
- MD/PhD students are not required to TA, but can if they desire to.
  
- Student preferences for a TA assignment will be considered, but not guaranteed.
- Students will generally complete the TA requirement in their 2nd year.
- There may be opportunities for students to TA a second semester if they choose:
  - a. Students can arrange a mentorship with one of the course faculty for credit for PFF8102. They will function as a TA in the course and will be mentored in giving 3 lectures (course requirement). They will not be paid.
  - b. If TA positions are not filled by students completing the TA requirement and students enrolled in PFF8102, the Department of Neuroscience will offer a "fellowship" to students who choose to TA additional semesters and not receive credit in the PFF program.

## E. Colloquium

Students are expected to present a half-hour colloquium as part of the Wednesday noon GPN colloquium series annually starting in their third year to report their research progress.

## F. Seminars

Students are expected to attend the Wednesday noon Colloquia sponsored by the Neuroscience Graduate Program and the Friday noon seminars cosponsored by the Program and the Department. Seminars include professional development seminars as well as research presentations. Students are strongly encouraged to attend seminars in other areas/departments that may interest them.

## G. The manuscript requirement

A PhD in neuroscience is a research degree. The primary means of communication of results to the scientific community is through peer-reviewed publication in scientific journals. Students are expected to publish multiple papers in high-impact journals during their time as a graduate student.

All students are required to write at least one paper that is submitted to a peer-reviewed journal. It is preferred that this paper be published before graduation, but the GPN faculty recognize that publication can be a long process, particularly in high-impact journals. Therefore, the requirement is that at least one paper be submitted. The thesis committee (see Section VI below) is tasked with ensuring that the paper submitted is of good quality.

## H. Examinations

There are three examinations required for the Ph.D. degree: the **Written Preliminary Examination**, the **Preliminary Oral Examination**, and the **Final Oral Examination with Thesis Defense**.

### 1. *Written Preliminary Examination*

A qualifying written examination for candidates for the Ph.D. in Neuroscience will be given once during the year. The purpose of this exam is to test the integration of the student's knowledge and understanding of the core content, as well as the student's written communication and logic skills. The examination is usually scheduled for mid-June. All candidates will take the written examination after the completion of their first year's coursework. Instructions for the exam as well as a copy of the previous year's exam will be distributed to first-year students during the spring semester. Spring review sessions are held to assist students in preparation for the exam. Because of the magnitude of work involved in the organization and preparation of this exam, requests for deviation from the above schedule must be submitted in writing by the student to the DGS, and should be considered only for medical reasons or family crises.

The grading process for the written preliminary examination is contained in the related document (WrittenPrelimExam-GradingProcedures.docx).

## 2. *Oral Preliminary Examination*

The oral exam tests three areas:

- **Oral communication:** clarity in articulating a conceptual framework for a hypothesis and responses to questions.
- **Thinking:** logical thinking and the ability to "think on one's feet" in defending the soundness of one's ideas: the rationale for experiments, interpretation of data, and significance of conclusions.
- **Knowledge:** understanding of knowledge within an area chosen by the student (depth component) as well as the relevance of one's research to other areas of neuroscience and biology (breadth component). The scope of questioning in the oral exam is expected to include neuroscience and the minor or supporting field. The student may be asked to discuss other work that validates experimental approaches (may draw on other fields).

A research proposal will form the basis of the research discussion of the exam.

The proposal may be aligned with or separate from the thesis, but the program encourages them to be linked. The proposal is not a binding document but an exercise in analytical thinking and problem solving skills that will be tested in the oral examination. The research proposal describes experiments that will test a hypothesis. The hypothesis answers a question that is posed about the nervous system.

The written proposal must be in the form of an NRSA (F31/F30) research proposal, which has a 6-page limit plus a 1-page specific aims section for the research statement. Literature citations must be included, but do not count in the 6-page limit. Research statements that include vertebrate animals must include the 5-points of vertebrate animal justification as a separate section (the "vertebrate animal" section of an NRSA). Research statements that do not include non-human vertebrate animals do not need to include this section. Research statements that include humans do not need to include the human-subjects portion of the NRSA.

The written proposal must also include a training plan in the format appropriate for an NRSA (F31/F30) co-written by the advisor and student (as would be done for an NRSA application). This training plan should be included in the discussion by the oral prelim committee.

- The application may be written any time before the deadline of September 1 (see below). No written description of preliminary data is required. Preliminary data available at the time of the oral preliminary exam may be included in the oral presentation by the student at the beginning of the exam.
- The advisor is expected to be involved in discussing the research plan and editing at least one draft of the proposal as part of mentorship responsibilities. This is not

a conflict of interest because passing the oral exam is not dependent on the written document but on the student's performance in defending an hypothesis and how it will be tested (i.e., rationale, experimental design, significance of the research plan).

NOTE: After preparing the research proposal, the student and advisor should consider submitting the proposal for funding as a [Ruth L. Kirschstein-NRSA \(F31/F30\)](#).

#### Time, date and location of the oral prelim exam.

All research proposals are due in the graduate program office by 4 PM on September 1st of the student's third year in the graduate program (i.e., at the beginning of the student's third year). If September 1st falls on a weekend, proposals will be due by 4 PM of the Friday before this date.

Extensions to this deadline can be given with approval of the DGS. In order to get an extension, the student should send an email to the DGS and cc their advisor. The advisor should then reply to the DGS with an "OK"/Approval. (This is important because extending the deadline can delay the student's transition to advanced doctoral status (See Section III.B.4, above), which can increase the cost of the student to the advisor.)

The following information must be included with submission of the proposal:

- **Names of the members of the oral prelim committee.** Members are proposed by the student and advisor and approved by the DGS before **September 1st or at least 10 weeks before your oral prelim**. The chair of the committee must be a member of the graduate faculty in Neuroscience and may not be the advisor. Other members must include a minimum of 2 members of the neuroscience graduate program and 1 member from the minor/supporting field. (See Section VI, below.)

For PhD students, the exam must be completed by 1/December of the student's third year in order for the student to remain in good standing in the graduate program. For MD/PhD students, the exam must be completed by 20/January of the student's second year in order for the student to remain in good standing in the graduate program. If the normal completion target date falls on a weekend, the exam must be completed no later than the Friday before this date.

A student may petition the director of graduate studies for an extension of this deadline. The time and place of the exam are scheduled by the student, and the student must notify the graduate school. Three weeks are required between notification of the graduate school and the date of the exam so that the graduate school can process paperwork for the exam.

#### Role of the Oral Prelim Committee following the exam.

In addition to serving as the examining committee for the oral prelim, it is expected that this committee will be an advising committee for the student during the course of his/her

dissertation research and will meet with the student at least twice/year. Each meeting will be scheduled by the program administrator. See Section VI, Thesis Committees.

### 3. *Final Ph.D. Oral Examination*

The Ph.D. Thesis Final Committee Form should be filed with the Graduate School no later than one Semester after a student passes the preliminary oral examination and **at least** one term prior to the Final Oral Exam. See <http://www.grad.umn.edu/current-students-forms/formsdoctoral>.

In most cases, this committee will be the same as the Preliminary Oral Exam Committee. This form also specifies three members who will serve as reviewers of the thesis. Two reviewers, including the advisor, are selected from the major field. One reviewer must also be selected to represent the minor or supporting program. This person must have a graduate faculty appointment outside of the Neuroscience Program. The oral examining committee must be approved by the DGS.

These members read the thesis draft and must sign a form indicating that it is acceptable for defense at least two weeks prior to the scheduled date of the final oral examination. It is up to the student to find an appropriate date and room, and to make sure sufficient time is allowed for the readers to examine the thesis. Graduate school rules specify that all members of the committee must have at least two weeks to read the thesis. This examination is primarily the thesis defense, although the questions and discussion may cover related areas as well. The first portion of all final oral examinations is a seminar given by the student covering the thesis research. This seminar must be publicly announced and all interested faculty and students are invited. As is stated in the Graduate School Bulletin, the thesis seminar presentation is the part of the oral examination "to which the scholarly community is invited." Following a brief period of questions from the audience, the second portion of the examination will consist of additional questions to the candidate from the members of the examination committee. The second section of the examination is not open to the public.

Questions often arise about the role of the reviewers and the interpretation of the reviewers' actions prior to the oral examination. The reviewers determine whether the thesis is acceptable for defense. If the thesis is judged to be not acceptable for defense, specific reasons will be communicated to the student. If acceptable, the reader has judged that the thesis is ready for oral defense - and only that. The reviewer may have reservations and after the oral examination vote not to pass the candidate for the Ph.D. degree. These reasons should be communicated to the student. The Graduate School Bulletin provides further detailed information regarding the final oral exam.

#### Scheduling the oral defense

- Your dissertation must be submitted to your committee a minimum of **one month** before you can defend.
- The readers on your committee will then have **two weeks** to read the dissertation and approve it for defense.

- If your dissertation is approved for defense, you may schedule the defense any time at least **two weeks** after approval. The program coordinator must be made aware of the scheduled defense so that it can be announced to the community at least two weeks before your presentation.

Note: In practice, it is a good idea to know what date and time work for your committee. Scheduling the availability of four or more faculty can be difficult. **It is preferred for thesis defenses to occur during the Wednesday noon seminars, but this is not a requirement.**

## I. Evaluation of Student's Progress

Normal progress toward the Ph.D. degree by full-time graduate students is based on fulfillment of the following general minimum requirements.

- Selection of the thesis problem and advisor during the first year.
- Maintaining a minimum GPA of 3.0.
- Performing satisfactorily on the written preliminary exam.
- Passing the oral preliminary examination within one to one and one half years after successful completion of the written preliminary exam.
- Performing all teaching assignments and other program functions satisfactorily.
- Following the completion of the oral exam, students must meet bi-annually with their Graduate Committee. A **committee report** must be submitted to the program office following the annual meeting.
- Starting in the 3rd year (2nd year for those in the MD/PhD track) students must give a half hour oral presentation during the Wednesday GPN colloquium.

As a general rule, all requirements for the Ph.D. in Neuroscience should be completed in the range of 4 to 6 years. Although the Graduate School time limit for the Ph.D. degree is five years after the oral preliminary examination, the Neuroscience faculty view this limit as excessive. It is the joint responsibility of the student, the advisor and the Graduate Committee to set goals for completion of each individual's program and to periodically evaluate the rate of progress and achievement of these goals. It is of particular importance that the student assume an active role in this process and seek assistance from the advisor and Graduate Committee if unforeseen professional or personal circumstances appear to be substantially changing the rate of progress for attaining the Ph.D. degree.

Student progress is evaluated by annual meetings with the DGS and associate DGS for all students, annually by the advisor for all students after their first year, and biannually by the thesis committee for all students after their oral prelims. .

The initial assumption in any advisor/student interaction is that the both parties have each other's best interests at heart, that the advisor has the student's success as a goal, and that the student has an interest in the advisor's success. The role of the DGS is to mediate between students and advisors. If an adversarial relationship is revealed, then the DGS will step in to mediate; however, initial assumptions will be that such an adversarial

perspective is not necessary. The associate DGS will play this role between the DGS and its students. The goal of the DGS and associate DGS is to find ways to ensure both student and advisor success.

It is possible to change PhD thesis advisor during the time course of one's graduate career. Such a change should be discussed with the DGS and associate DGS and will require a process to find a new laboratory. However, such processes are doable. Importantly, however, if a student decides to leave an advisor's laboratory, the advisor will be notified immediately to ensure continuation of any experiments and other laboratory safety requirements.

## J. Stipend

The current stipend for beginning graduate students can be **found here**. In addition to the stipend, students receive full tuition and health benefits. Although this is officially identified as a 50% appointment due to university rules of research and training, in practice this is interpreted as a **full-time commitment**.

### 1. Awards

Some awards and fellowships may increase the stipend. Awards and fellowships that do not provide the full stipend must be supplemented to match the GPN-mandated stipend. In accordance with NIH guidelines ([link to NIH site](#)) supplements of Kirschstein-NRSA awards and appointments to T32 institutional training grants can only be made from non-sponsored funds because the dollars cannot represent compensation for work on a grant related to the student's research or graduate training.

### 2. Teaching Assistantships

Every student must TA one class during their time as part of their graduate training. Students do not receive any extra stipend supplement or teaching assistantship coverage of stipend for TAing this class.

Additional teaching assistantships may be available. The stipend may be supplemented if a student serves as a Teaching Assistant in certain courses beyond that one class TAship. Teaching assistantships in certain other courses can also be used to cover part or all of the stipend if they are available.

### 3. Augmentation of the stipend

Students are expected to pursue their research full time. The GPN recognizes that some students may be interested in augmenting their income with additional work for compensation that contributes to their long-term goals (e.g., teaching a course off-campus). **This work must not be related to the research plan for the thesis, nor should it interfere with, detract from, or prolong the student's graduate training.** Students must discuss any plan for compensation in addition to their stipend with their advisor and with the DGS.

The GPN has a policy of equity in the graduate student stipend. The only exceptions are competitive fellowships based on merit. A faculty member may not independently use a University account to augment the stipend of a student above the amount mandated by the GPN without written approval of the DGS.

## **K. Termination of Graduate Student Status and/or Support**

### *1. Award of the Ph.D.*

The Ph.D. in Neuroscience is awarded upon successful defense of the doctoral dissertation and submission of the completed dissertation to the Graduate School. The date of degree is the end of the month in which all requirements are completed. Upon completion of all degree requirements, students should notify the program office of the effective date for termination of student status.

### *2. Withdrawal from the program.*

Students who decide to withdraw from the program should give written notice to the Director of Graduate Studies as soon as the decision has been made. The notice should indicate the effective date of withdrawal. Withdrawing from the program without providing notice will be considered as unsatisfactory performance.

### *3. Termination of graduate status*

The Graduate School and Neuroscience Program require that one warning be issued to the student regarding unsatisfactory performance (including instances in which a student withdraws without notice to the GPN) before that student is terminated. This warning will be in the form of an official letter, written by the DGS and approved by the steering committee. The warning must include the specific deficiencies and must outline a mechanism and time limit for correcting them. If those milestones are not met, then the DGS can terminate the student from the program, but only if those concrete milestones are not met.

Students must have a cumulative graduate GPA of 3.0 or higher after 3 semesters of residence in order to remain in the program. Thereafter the cumulative GPA must be 3.0 or higher at the end of the spring semester of each year and prior to graduation. Satisfactory performance on all GPN milestones is required for continuation in the program.

### *4. Academic misconduct*

Academic misconduct (such as cheating on closed book examinations) or violation of course guidelines (which describe the extent of collaboration that is acceptable in responding to take-home examinations, homework assignments or problem sets) is sufficient cause for dismissal from the program. Please refer to the Student Conduct Code for more information on this issue <http://www.policy.umn.edu/Policies/Research/ACADEMICMISCONDUCT.html>.

## IV. Neuroscience Minor Requirements for Students Majoring in Other Fields

The program for an individual student is developed by consultation between the student and the DGS of the Graduate Program in Neuroscience. Students are required to take one of the following core courses.

- Function/Structure: NSc 5561: Systems Neuroscience (4 credits)
  - NSc 5561 requires that you be registered concurrently in NSc 5461, or that you have taken an undergraduate neuroscience course such as NSci 3101.
- Cellular/Molecular: NSc 5461: Cellular & Molecular Neuroscience (4 credits)
  - NSc 5461 requires that you have taken undergraduate courses in cell biology and biochemistry. We recognize that students who lack the prerequisites may nevertheless wish to minor in Neuroscience. If you do not have the undergraduate preparation, it is important that you consult with the DGS early in your graduate career to develop a plan of study.
- In addition, students are required to take elective neuroscience courses for a total minimum of 12 credits (including the core courses).

## V. Advisors

The graduate advisor will be the student's primary source of instruction and advice. Until a student selects a permanent advisor, the Director of Graduate Studies (DGS) will serve as interim advisor. To assist in the selection of a research problem and a research advisor, several activities have been arranged.

### A. Laboratory Rotations

The exposure to new laboratory techniques and participation in active research projects during the rotation allow the opportunity to become acquainted with current research interests of individual faculty members. There will be 4 laboratory rotations, each lasting half a semester (approximately 8 weeks). For a more complete description of laboratory rotations, see Section III.C above.

### B. Faculty Curricula Vitae

A complete curricula vitae and bibliographies of a faculty member can be requested from the program office. Short descriptions of each faculty member's research can be found on the Neuroscience Program's

website: <http://www.neuroscience.umn.edu/faculty/faculty.html>

In addition, attending seminars, especially the weekly Neuroscience Colloquium, is a good way to become acquainted with faculty research interests.

### C. Faculty mentoring

Faculty members are expected to provide mentorship to their students. The GPN steering committee is tasked with ensuring that faculty are providing good mentorship to the students. If training faculty are found to be not providing good mentorship for their PhD trainees, they may receive a letter from the GPN steering committee. This letter can have consequences that entail limitations of faculty rights with respect to the GPN, including but not limited to limitations in the faculty member's ability to take graduate students, the faculty member's ability to serve on GPN committees, or even termination from the GPN training faculty.

All training faculty are required to take mentorship training before being appointed to the GPN training faculty. Training faculty also are required to take this training before being renewed to the GPN faculty. This training is available at <https://www.ctsi.umn.edu/education-and-training/mentoring/mentor-training>.

### D. Selecting your Research Advisor

Students are expected to use the laboratory rotations as the major basis for choosing their research advisor. The actual selection will take place during Spring Semester, to allow

students time to collect as much information as possible before making a decision. Students should begin work in their chosen labs at the beginning of the summer.

Factors to consider when choosing an advisor include: laboratory research interests, laboratory space and equipment, rapport with advisor, and funding availability.

Once an advisor has been chosen, both the student and advisor must sign the following contract. <http://www.neuroscience.umn.edu/CurStu/contract.pdf>

## VI. Thesis committees / Graduate committee

Each graduate student will have a thesis committee that will provide additional advice, mentorship, and evaluation.

The formal Graduate Committee is initially appointed in conjunction with the filing of the Degree Program Transmittal (Form GS 89abc) **no later than one term** prior to your Preliminary Oral Exam. Students, in consultation with their advisors, should submit to the DGS a list of suggested faculty for these committees. Once informally approved, the student should submit the preliminary oral examination committee form (available at <http://www.grad.umn.edu/current-students-forms/formsdoctoral>) so that it can be officially approved. This committee will generally serve as the preliminary oral examination and final defense committees. In addition, this committee will participate in the student's annual research reviews, to monitor progress and provide advice about the thesis project.

### A. Membership

The thesis committee must consist of no fewer than four members, one of whom will be the student's advisor. Although there is no maximum size of the committee, students are strongly discouraged from having more than six members on their committee. (Remember that you can always get advice from any member of the GPN, whether they are on your committee or not.) The other members (beyond the advisor) must include two members from the major field, and one member representing an outside field (generally, the minor or supporting program if available). The member representing the outside must have a graduate faculty appointment in the University of Minnesota but outside of neuroscience. This outside field member can also have appointment in neuroscience – in other words, he or she cannot have a graduate appointment only in neuroscience.

One member of the committee must be delegated as the chair. The student's advisor may not serve as the thesis committee chair.

The committee must be officially approved by the DGS and may not be completely composed of members of a single working group. The committee must contain a diversity of faculty members from across the GPN, and can include faculty outside of the GPN if they are part of another graduate program.

It is also possible to include an outside member from outside the University community with DGS approval. The outside member must have appropriate expertise and relevant credentials. The outside member may not serve any of the other roles on the committee (advisor, chair, within-university outside-graduate-program member).

## B. Annual meetings

Students are encouraged to talk to their thesis committee members in an ongoing manner (and with the rest of the GPN!), but they are required to meet with their members twice annually.

Both annual meetings must consist of a group meeting, at which the thesis committee meets to evaluate the student's research progress (*Is the student making satisfactory research progress?*). No more than one member of the committee may be absent from the meeting. Both the advisor and the committee chair must be present. Members may phone or video-call in as necessary. This meeting should include a presentation by the student and a discussion of the student's recent research progress and research plans. It should include a portion during which the student leaves the room so that the committee can discuss the evaluation of the student's progress. The committee chair must fill out the thesis committee meeting form ([PDF](#)).

The process for the formal annual meeting with a thesis committee is as follows:

1. The committee meeting will entail the following process
  1. The committee meets with the advisor alone (without the student) to discuss progress, issues, and complications that the advisor is concerned about.
  2. The student presents a short progress report and answers questions from the committee (including the advisor). The committee provides insight, comments, suggestions, etc. to the student and advisor.
  3. The committee meets with the student without the advisor present to determine if there are any issues, complications, etc.
  4. The committee fills out the report form, and gives it to the student, who gives it to John Paton.

A post-oral-prelim student without a semi-annual progress report from a thesis committee is “not making satisfactory progress in the program”.

## VII. Individual development plans

The individual development plan (IDP) is an ongoing exercise designed to help guide thinking about long-term and short-term career plans, and to help bring them into alignment. An IDP is about helping identify short-term plans to move oneself forward in one's career. Generally, one can think of an IDP in three parts:

- long-term goals (10yr), which should be flexible and not-restricting.
- intermediate goals (2-3yr), which should be the skill-sets and markers needed to achieve the long-term goals
- short-term goals (1yr), which should be measurable, action-oriented, and realistic.

### A. Resources

The GPN provides a form for the IDP. Students are encouraged to use this form.

There are many resources to help you design your IDP. One is [myidp.sciencecareers.org](http://myidp.sciencecareers.org). Others include your colleagues and mentors.

### B. Requirements

The IDP should be started in the second semester of the second year of the GPN program. Writing the initial forms will be incorporated into the Career Skills class. It should be revisited and updated annually before your annual meeting with the DGS, and will serve a role in the annual meeting with the DGS. There will be a line on both the student and advisor progress report noting that the student and advisor have discussed this IDP.

All students are expected to create one and use it as a guide to their progress. Importantly, only the presence of an IDP will be used to evaluate students – the content of the IDP will not be used to evaluate students.

## VIII. Fellowships

Students are encouraged to apply for competitive fellowships whenever possible, as fellowship awards can be valuable, not only monetarily, but also in terms of aiding a graduate student's career.

- NSF fellowship applications in the life sciences are due the first week in November (e.g., 11/4/2004) no later than the student's second year of graduate studies.
- NIH Ruth L. Kirschstein NRSA fellowship. The written portion of the preliminary oral proposal / examination is in the NRSA format, students are encouraged to submit this proposal for funding.

It is strongly recommended that an NIH or NSF grant be prepared and submitted during the second year. This serves to focus the thesis plans and outline the introduction to the thesis, and provides both students and advisors with an agreed upon list of objectives. It is also excellent practice for future grant-writing.

A list of deadlines and fellowships available at the University of Minnesota is available at <http://www.grad.umn.edu/funding-tuition/fellowshipsandgrants>.

## IX. GPN Governance Committees

All GPN governance committees consist of a mix of faculty from the range of departments with membership in the GPN. All GPN governance committees have student representatives. Student representatives on the GPN governance committees are fully-fledged voting members of the committees and are expected to perform their duties with the same rights and responsibilities as the faculty members.

### A. Steering Committee

The steering committee is the principal governing body of the Neuroscience Graduate Program. The composition of this committee includes the heads of the major committees, the course masters for the core graduate courses, Principal Investigators of Neuroscience Training Grants and three members elected by the faculty of the Neuroscience Program. The terms of the three elected members shall be for three years. Presently, this membership is as follows:

1. Current Director of Graduate Studies (DGS)
2. Associate DGS
3. Past DGS
4. Chair of Faculty Status Committee
5. Chair of Curriculum Committee
6. Chair of Seminar Committee
7. Chair of Admissions Committee
8. Course Director, Itasca
9. Course Director, System Neuroscience Course
10. Course Director, Cell and Molecular Neuroscience
11. Course Director, Developmental Biology
12. Course Director for Behavioral Neuroscience
13. PI's on GPN-related Training Grants
14. 3x Elected Representatives
15. 2x Student Representatives

The election of the DGS takes place one year prior to the expiration of the DGS' term. Upon election, the DGS-elect becomes a member of the steering committee. The Steering Committee meets on a regular basis, under the guidance of the DGS, to consider the evolving issues of program development. The Senior Administrator of the program serves as the secretary of the Steering Committee. The decisions of the Steering Committee are binding and do not require approval by the general faculty membership.

The Steering Committee has two major functions. One is to approve all rules and changes in regulations initiated by the Director of Graduate Studies. Approval by the Steering Committee is also required for course/curriculum changes as proposed by the curriculum committee. Approval of any initiative considered by the Steering Committee, including changes in the bylaws, requires a majority vote of the attending steering committee membership, provided that a 2/3 majority of the committee is in attendance at the time. If

an insufficient number of members are in attendance for any deliberation, all absentee members can be polled by the secretary to determine their position on the issues at hand.

Members of the program committees will be appointed to 4 year, renewable terms. Nominations for membership will be solicited whenever a vacancy arises. Criteria for appointment to a program committee include: service to the Graduate Program, distinction in research and graduate training, and the need for diversity in faculty representation.

### **B. Admissions and Recruitment Committee**

This committee oversees the application and admissions process for bringing new students into the Neuroscience Graduate Program. These responsibilities include the evaluation of applicants, communication with prospective students and applicants, and their recruitment into the program. A major component of this process is to plan and execute the campus visits for each prospective student, to facilitate successful recruiting.

### **C. Awards and Fellowships Committee**

This committee oversees the allocation of currently existing award prizes, travel funds or other symbols of recognition of merit bestowed by the Graduate Program in Neuroscience as a whole. This includes soliciting nominees, selecting winners from among the nominees, and arranging for the formal conferring of the awards, and exploring possibilities of funding awards with outside organizations.

### **D. Curriculum and Examination Committee**

This committee oversees the educational composition of the Neuroscience Graduate Program. These functions include the programmatic features of graduate education in the Neurosciences, which include courses, seminars, and other components of the educational process, such as lab rotations. Recommendations from the Curriculum Committee are passed to the Steering Committee, where final decisions on programmatic changes are determined.

### **E. Faculty Status Committee**

This committee evaluates applications for membership in the Neuroscience Graduate Program and makes recommendations to the Neuroscience Faculty, whose majority vote determines membership in the program. The Faculty Status Committee also evaluates continued participation in the program for those members whose terms are scheduled for expiration.

### **F. Seminar Committee**

This committee is responsible for coordinating and organizing seminars to enhance the Graduate Program in Neuroscience. The functions of this committee will include a determination of invited guest speakers from outside the University, based on recommendations polled from the membership of the Graduate Faculty. In addition,

seminars internal to the program (Neuroscience Colloquium) and special events, such as the Neuroscience Grass Lecture Series, will be organized by the Seminar Committee.

### **G. Community Outreach Committee**

This committee is charged with overseeing and developing community outreach activities, such as those associated with Brain Awareness Week, exhibits at the State Fair, etc. The function of this committee is to enhance the visibility of neuroscience and the graduate program within the community, to foster a better understanding of neuroscience and to encourage K-12 students to consider higher education in science.

## X. Courses

**The list of courses offered by the Graduate Program in Neuroscience is available on the GPN website. Please see the website for a complete description of each. There are several relevant courses offered through other departments as well.**

## **XI. Graduate School Procedures**

### **A. Active student status**

Students must register in the Graduate School the semester in which they are admitted or readmitted. To maintain active student status, students must register in the Graduate School every fall and spring Semester.

### **B. Commencement**

Graduate School commencement ceremonies are held in fall and spring semesters. Students who wish to participate in commencement should contact the Graduate School one Semester in advance of the ceremony.

### **C. Required G.S. Forms**

Forms, due dates, and details can be found on the Graduate School website at <http://www.grad.umn.edu/current-students-forms/formsdoctoral>

## **XII. Administrative issues**

### **A. General policy statements**

The Graduate Program in Neuroscience is a part of the Academic Health Center at the University of Minnesota, and, as such, is covered by all of the standard policies applicable to those institutions.

Please see <http://policy.umn.edu/> for the latest official university policies.

A partial list of the appropriate policies are below:

- Policy on academic and research misconduct: [http://regents.umn.edu/sites/default/files/policies/Academic\\_Misconduct.pdf](http://regents.umn.edu/sites/default/files/policies/Academic_Misconduct.pdf)
- Student conduct code [http://regents.umn.edu/sites/default/files/policies/Student\\_Conduct\\_Code.pdf](http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf)
- Equal opportunity and disability accommodations [http://www.policy.umn.edu/Policies/hr/Hiring/RECRUITFACPA\\_APPB.html](http://www.policy.umn.edu/Policies/hr/Hiring/RECRUITFACPA_APPB.html)

### **B. Accident reporting**

All injuries should be treated without delay and must be reported to both the department in which the student is currently working and the victim's immediate supervisor as soon as possible. The full policy is available at:

[http://www.policy.umn.edu/Policies/Finance/Misc/PROPERTYINSURANCE\\_PROC01.html](http://www.policy.umn.edu/Policies/Finance/Misc/PROPERTYINSURANCE_PROC01.html)

[http://www.policy.umn.edu/Policies/hr/Benefits/WORKERSCOMP\\_PROC01.html](http://www.policy.umn.edu/Policies/hr/Benefits/WORKERSCOMP_PROC01.html)

### **C. U-Card, x500 account, etc.**

All GPN students will have an x500 email account assigned to them as per university policy. All students are required to get a U-Card for photo ID as per university policy <http://www.policy.umn.edu/Policies/Operations/Outreach/UCARD.html>

### **D. Copying**

First-year students may request use of the copy machine in 6-145 Jackson for GPN related activities. After a permanent advisor has been chosen, students should discuss the procedure to be used in the advisor's department.

## E. Mail

First-year students may request a mailbox in the Neuroscience Department mailroom (6-145 Jackson Hall). Generally, after a permanent advisor has been chosen, mail is delivered to mailboxes for the advisor's laboratory. Mail is delivered once daily.

Outgoing and campus mailboxes are in the mailroom. Personal mail must have postage affixed. U.S mail should be in the box by 4:00 to go out that day. There is a U.S. Post Office in Coffman Union.

## F. Paychecks

Student stipend is handled through standard university payroll practices and is covered by the policy

at <http://www.policy.umn.edu/Policies/hr/Hiring/GRADSTUDENTEMPLOYMENT.html>

Students are on biweekly payroll as per university standards and will receive paychecks every two weeks (26 checks per year). If the payday occurs on a weekend or holiday, checks will be in the department office the preceding Friday. Checks can be picked up after 12:00 noon. Students who want to have checks directly deposited into their bank account should obtain a form from the office. Direct deposit is more secure and more efficient, and it is strongly encouraged.

## G. Statement on Harassment

It is very important to remember that the Graduate Program in Neuroscience is a workplace, and must be a place conducive to work for everyone. Harassment of any sort will not be tolerated.

### 1. *Specific statement on sexual harassment*

Sexual harassment is against the law. Sexual harassment subverts the mission of the University, and threatens the careers of students, faculty, and staff, and will not be tolerated in the Graduate Programs of the Medical School.

The 2017 [Board of Regents policy](#) defines sexual harassment as “unwelcome conduct of a sexual nature under **either** of the following conditions: (a) When it is stated or implied that an individual needs to submit to, or participate in, conduct of a sexual nature in order to maintain their employment or educational standing or advance in their employment or education (quid pro quo sexual harassment). (b) When the conduct: (1) is severe, persistent or pervasive; and (2) unreasonably interferes with an individual's employment or educational performance or creates a work or educational environment that the individual finds, and a reasonable person would find, to be intimidating, hostile or offensive (hostile environment sexual harassment).”

All University members are prohibited from engaging in, or assisting or abetting another's engagement in, sexual assault, sexual harassment, relationship violence, stalking, and related retaliation (collectively "prohibited conduct").

Information and guidance regarding sexual harassment are available from the Office of Equal Opportunity and Affirmative Action, which is also the office that receives complaints of sexual harassment. See the current [University Policy](#) for more details.

As of the writing of this current document (10 July 2018), The Minneapolis St. Paul Campus Title IX officer is Tina Marisam, and her contact information is: (612) 626-9357, [marisam@umn.edu](mailto:marisam@umn.edu). Information about resources for personal support that are available to individuals who believe they have experienced prohibited conduct, as well as answers to questions including those listed below can be found at <https://policy.umn.edu/hr/sexharassassault#faqlink>.

- Who can I call for help? Are there any confidential resources available to me?
- Can the University provide me with any accommodations or protective measures? What about my housing situation and my classes?
- Do I have to initiate a University investigation if I have experienced prohibited conduct?
- Is there a time limit for initiating an investigation?
- Is it possible for a complainant to remain anonymous during an investigation?
- Who can explain the investigation process to me?
- Are there resources on campus that can support me through the investigation process?

## H. Conflicts

We do our best to minimize conflicts between students, between students and faculty, or between faculty. There are many available resources for a student to discuss such conflicts, including

- With one's advisor.
- With the DGS.

Confidential university-wide support for conflict resolution can be found at

- Student Conflict Resolution Center [www.sos.umn.edu](http://www.sos.umn.edu) x4-7272
- University Counseling & Consulting Services [www.uccs.umn.edu](http://www.uccs.umn.edu) x4-3323

Confidential mental health support can be found at

- Boynton  
<http://www.bhs.umn.edu/east-bank-clinic/mental-health-services.htm>  
x5-3222

## I. Vacation/Holidays

Working toward a Ph.D. is a full-time job. Graduate students receive no official paid vacation. However, they do receive paid official university holidays (such as Dec. 23, Dec. 24, July 4, etc.). Any other time off will have to be negotiated with the advisor, and students will be expected to make up the time taken off.

## **J. Sick Leave**

Graduate assistants are entitled to a paid sick leave, bereavement leave, Jury-duty leave, and military leave, and other leaves as covered

by [http://www.policy.umn.edu/prod/groups/president/@pub/@policy/@hr/documents/policy/gradstudentemployment\\_appf.pdf](http://www.policy.umn.edu/prod/groups/president/@pub/@policy/@hr/documents/policy/gradstudentemployment_appf.pdf)

In the case of repeated absences due to illness, the DGS may request a health provider's certification verifying the student's inability to work, and may request a consideration of whether a leave of absence would be appropriate as per the leave of absence

policy <http://policy.umn.edu/Policies/Education/Education/GRADSTUDENTLEAVE.html>.

## **K. Graduate Assistant Medical Insurance and Dental Coverage**

Students who choose to receive the health coverage provided by the University will be covered by the Graduate Assistant Insurance Plan (currently under a Blue Cross Blue Shield policy). This coverage is administered through the Graduate Assistant Insurance Office (GAIO) at 625-6936. Coverage for dependents is also available. A word of warning: after students graduate, they must contact the GAIO to cancel their insurance. Otherwise the office may continue to bill for coverage after the graduation date.

Details are available at <http://www.shb.umn.edu/twincities/graduate-assistants/gahp/graduate-assistant-health-plan.htm>

Boynton Health Service Dental Clinic provides dental care for students on the Graduate Assistant Health Benefit Plan. Please identify yourself as a Graduate Assistant Health Benefit Plan member and have your student ID number ready when making appointments for yourself or your dependents to assure that you receive appropriate discounts on services.

Details are available at <http://www.shb.umn.edu/twincities/graduate-assistants/gahp/graduate-assistant-dental-benefits.htm>

## Procedures for Grading and Evaluating GPN Preliminary Written Examinations

- A. **Two graders will independently evaluate each question and assign grades of Outstanding, Pass, or Fail.** The final grade for each question will be determined according to the following rules:
1. Two grades of Outstanding-Outstanding, Pass-Pass or Fail-Fail will be assigned the grade of Outstanding, Pass, or Fail for that question.
  2. A grade of Outstanding-Pass will be assigned a grade of Pass.
  3. A single Fail for a question, rather than both graders giving a question a Fail, requires that the graders consult each other and agree on a grade of Pass or Fail. The program administrator will note the discrepancy and will ask them to review the question. If the graders cannot resolve the situation or if they request additional help, the Curriculum Committee will assist in the grading.
- B. **If student fails a SINGLE question in ONE or MORE SECTIONS of the examination**
1. Student passes that particular section(s) of the examination.
  2. No further remedial work is required.
- C. **If student fails TWO or MORE questions in a SINGLE SECTION of the examination.**
1. Student fails that particular section of the examination.
  2. Subsequent course of action depends on previous academic performance.
  3. If student received **grade of B- or better in relevant core course**, then
    - a. Student will consult with course director.
    - b. Student will independently review entire field of core course.
    - c. Student will re-write all failed questions.
    - d. Student will also answer those questions previously chosen not to be answered.
    - e. All answers must be submitted during current calendar year.
    - f. Answers will be evaluated by course director and designated readers.
    - g. No subsequent re-writes will be allowed.
    - h. If student fails any questions, then student will be given oral examination by course director, designees, and student's advisor.
    - i. If student fails oral examination, then the decision of the Steering Committee would most likely result in termination.
  4. If the student received a **grade below a B- in the core course** related to failed section, then
    - a. Student should be required to retake relevant course.
    - b. If student achieves grade of B or better in the re-take then student passes exam.

- c. If student receives a grade below B in retake, then the decision of the Steering Committee would most likely result in termination.
- D. If student misses TWO or MORE questions in TWO or MORE sections of the examination.**
  1. Student has failed the examination.
  2. The student and advisor will petition the Steering Committee for continuation in the GPN.
  3. The Steering Committee will consider the petition and decide a course of action based on performance in all classes, rotations and other work.
    - a. Student may be required to undertake the courses of action listed in Section B above.
    - b. Student may be terminated from the program.
  4. If the Steering Committee chooses the first action above, the Committee will decide the deadline for satisfactory completion.

# Individual Development Plan (IDP)

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## *Graduate Program in Neuroscience (GPN)*

### About the IDP

The individual development plan (IDP) is an ongoing exercise designed to help guide your thinking about short-term and long-term career plans and to help bring them into alignment as your progress through your training.

The IDP needs to be used in the second semester of the second year of the GPN program. This will be introduced during the Career Skills class. It should be revisited updated biannually before your annual meeting with the DGS in the Summer/Fall and your annual meeting with the Associate DGS in the Winter. It is very important that this is living/working document. Discuss this with your PhD thesis mentor before your biannual DGS/ADGS meetings. **A signed IDP form signed by both you and your thesis advisor(s) must be handed in to the DGS/ADGS at your biannual meetings.**

### PART I: info

Trainee: \_\_\_\_\_

Advisor(s) and Department(s): \_\_\_\_\_

Starting Year: \_\_\_\_\_

Current Year: \_\_\_\_\_

Oral Examination Committee Chair (Department): \_\_\_\_\_

Oral Examination Committee Members (Department):

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Thesis Committee Chair (Department): \_\_\_\_\_

Thesis Committee Members (Department): (must be approved by the DGS)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Dates of Your Thesis Committee Meetings (Must meet bi-annually):

Name \_\_\_\_\_

\_\_\_\_\_ Year

## **PART II: Progress this year**

Description of your Thesis Research (one paragraph):

Summarize your research progress over the past year. Describe:

- major activities;
- specific objectives;
- significant results, including major findings, developments, or conclusions (positive and negative),
- key outcomes or other achievements; Include any meeting abstracts or publications submitted, in press, or published.
- goals not met:

### Reflection

- What were your short term and intermediate goals last year?
- Are those goals still relevant to your long-term interests?
- In what ways have you made progress toward these intermediate goals?
- What aspects need more development?

## **PART III: Intermediate and Long Term Goal Setting**

The goal is to keep the long term goals for your future career in mind as you progress through your PhD thesis research.

### **Long-term goals**

- What are the big questions that excite me?
- What are the places in which I want to have an impact?

### **Intermediate goals**

- What laboratory skills do I need?
- What literature do I need to know?

## Part IV: Short-term goal setting

**GOAL SETTING:** In a research career, you will find yourself needing skills in a variety of areas. While the specific instantiation of these areas may differ between careers, you will find that these skillsets translate between careers.

### RESEARCH GOALS

- Am I managing my time for experiments, reading, and writing?
- Can I plan and execute an experiment and record the results in a form that could be published?
- Can I interpret my results and assimilate new knowledge to formulate good scientific questions?
- Am I thinking creatively, troubleshooting my own experiments, and developing my independence?
- Am I willing to learn new techniques and to take risks?
- Do I have a clear plan for completing my PhD thesis research?

|  |  |
|--|--|
| Goal(s)  |  |
| How will you measure your progress?  |  |
| What actions will you take toward achieving your goal(s)?  |  |
| Which of your strengths will help your achieve your goal(s)?   |  |
| What roadblocks might you face when working toward your goal(s)? What resources needed to overcome these barriers? |  |
| Target date(s) for completion  |  |

|   |  |
|---|--|
| Goal(s)   |  |
| How will you measure your progress?   |  |
| What actions will you take toward achieving your goal(s)?   |  |
| Which of your strengths will help your achieve your goal(s)?  |  |
| What roadblocks might you face when working toward your goal(s)? What resources needed to overcome these barriers |  |
| Target date(s) for completion   |  |

## PUBLISHING AND WRITTEN COMMUNICATION GOALS

Written communication is a key to the scientific process.

- Have I developed a focused set of goals that will lead to publication of a paper?
- How far away am I from my next publication?
- How do I efficiently translate results into publication quality data?
- Do I have a workable pipeline to proceed from results to publication?
- How can I improve my writing?

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| Goal(s)   |  |
| How will you measure your progress?   |  |
| What actions will you take toward achieving your goal(s)?   |  |
| Which of your strengths will help your achieve your goal(s)?  |  |
| What roadblocks might you face when working toward your goal(s)? What resources needed to overcome these barriers |  |
| Target date(s) for completion   |  |

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|---|--|
| Goal(s)   |  |
| How will you measure your progress?   |  |
| What actions will you take toward achieving your goal(s)?   |  |
| Which of your strengths will help your achieve your goal(s)?  |  |
| What roadblocks might you face when working toward your goal(s)? What resources needed to overcome these barriers |  |
| Target date(s) for completion   |  |

## CONFERENCES AND ORAL COMMUNICATION GOALS

Oral communication (by poster or presentation) is fundamentally different from written communication.

- When will I next present my work and/or attend a scientific meeting?
- How well did my last presentation go?
- Am I presenting the right level of complexity to the right audiences?
- How can I improve my presentation skills?

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| Goal(s)   |  |
| How will you measure your progress?   |  |
| What actions will you take toward achieving your goal(s)?   |  |
| Which of your strengths will help your achieve your goal(s)?  |  |
| What roadblocks might you face when working toward your goal(s)? What resources needed to overcome these barriers |  |
| Target date(s) for completion   |  |

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| Goal(s)   |  |
| How will you measure your progress?   |  |
| What actions will you take toward achieving your goal(s)?   |  |
| Which of your strengths will help your achieve your goal(s)?  |  |
| What roadblocks might you face when working toward your goal(s)? What resources needed to overcome these barriers |  |
| Target date(s) for completion   |  |

**TEACHING GOALS**

The ability to communicate new ideas to students or mentees is an important skillset.

- How was my experience when I served as a course TA?
- What mentorship opportunities are available? How can I increase my mentorship skills? Include peers and undergraduate trainees.
- What course(s) development or a syllabus have I written or participated in designing?
- What outreach and teaching beyond the University of Minnesota have I done?

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| Goal(s)   |  |
| How will you measure your progress?   |  |
| What actions will you take toward achieving your goal(s)?   |  |
| Which of your strengths will help your achieve your goal(s)?  |  |
| What roadblocks might you face when working toward your goal(s)? What resources needed to overcome these barriers |  |
| Target date(s) for completion   |  |

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| Goal(s)   |  |
| How will you measure your progress?   |  |
| What actions will you take toward achieving your goal(s)?   |  |
| Which of your strengths will help your achieve your goal(s)?  |  |
| What roadblocks might you face when working toward your goal(s)? What resources needed to overcome these barriers |  |
| Target date(s) for completion   |  |

## FUNDING GOALS

Writing grant proposals is fundamentally different from writing publications – proposals are about the future, while publications are about the past.

- What grants will I apply for, and when are the deadlines?
- What feedback have I received on my grant writing skills?
- How will I improve my grant writing skills?
- Can I write an original and competitive research proposal?

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|---|--|
| Goal(s)   |  |
| How will you measure your progress?   |  |
| What actions will you take toward achieving your goal(s)?   |  |
| Which of your strengths will help your achieve your goal(s)?  |  |
| What roadblocks might you face when working toward your goal(s)? What resources needed to overcome these barriers |  |
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|---|--|
| Goal(s)   |  |
| How will you measure your progress?   |  |
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| Which of your strengths will help your achieve your goal(s)?  |  |
| What roadblocks might you face when working toward your goal(s)? What resources needed to overcome these barriers |  |
| Target date(s) for completion   |  |

## NETWORKING AND LEADERSHIP

Any scientific career will take you into a community that requires the ability to interact with co-workers and to provide leadership to those co-workers.

- What organization and leadership roles have I taken on?
- Are there organizational opportunities that I can use to learn networking and leadership skills?
- Am I increasing the depth and breadth of my knowledge by attending seminars within and outside of my field?
- What support relationships have I formed with mentors, peers, and administrative staff?
- How can I better access opportunities to network with individuals who will be a good fit for my future career aspirations?
- Who are key contacts, in addition to my thesis advisor, for helping me think through ideas?

|   |  |
|---|--|
| Goal(s)   |  |
| How will you measure your progress?   |  |
| What actions will you take toward achieving your goal(s)?   |  |
| Which of your strengths will help your achieve your goal(s)?  |  |
| What roadblocks might you face when working toward your goal(s)? What resources needed to overcome these barriers |  |
| Target date(s) for completion   |  |

|   |  |
|---|--|
| Goal(s)   |  |
| How will you measure your progress?   |  |
| What actions will you take toward achieving your goal(s)?   |  |
| Which of your strengths will help your achieve your goal(s)?  |  |
| What roadblocks might you face when working toward your goal(s)? What resources needed to overcome these barriers |  |
| Target date(s) for completion   |  |

Name \_\_\_\_\_

\_\_\_\_\_ Year

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Trainee signature

Date:

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PhD mentor(s) signature(s)

Date:

## Graduate Program in Neuroscience

### Student/Advisor Contract for PhD Students Commitments

We understand that \_\_\_\_\_ (student) has chosen \_\_\_\_\_ (advisor) to be his/her advisor. We are glad that you have found a good match. The Steering Committee and the staff of the Program will do everything possible to ensure the success of the student-advisor relationship. In this document, we have summarized some of the policies and rules governing graduate study in the Graduate Program in Neuroscience. Detailed descriptions of all policies can be found in the Student Handbook on the Program's website at <http://www.neuroscience.umn.edu>.

### Financial obligations

#### 1. Student Financial package

##### *First-year PhD students*

All students receive the same stipend (set at \$30,000 for academic year 2017-2018) plus tuition and insurance; we estimate this to be the equivalent of up to \$52,347 in total compensation per annum. It is likely that the stipend will increase during the course of graduate training. Stipends are paid biweekly throughout the calendar year.

##### *First-year MD/PhD students*

For the academic year 2017-2018, all eligible students will either be appointed to the Neuroscience Training Grant or they will be supported directly by the GPN. The support from either of these sources will contribute the first \$23,844 (equivalent to NRSA support) toward the stipend, \$14,086 toward tuition and insurance. The GPN will supply \$864 towards student fees in the first year. The advisor will be responsible for providing a supplement (approximately \$12,138, the exact amount will vary slightly based on pending University decisions) to make up the remainder of the first-year compensation package (currently a total of \$50,933). The supplement for students appointed to the Neuroscience Training Grant must come from non-sponsored funds. There is no restriction on the type of funds that can be used to supplement the support for students being supported by the GPN; in other words, the use of sponsored funds (i.e. NIH or other federal grants) is permissible. (Eligible international first year MD/PhD students will receive the same level of financial support as their peers, which will come directly from the GPN.) Neither the Graduate Program in Neuroscience nor the Department of Neuroscience will ensure any financial support to students after the first year.

##### *Second-year MD/PhD students*

The advisor is responsible for identifying and providing funds for the full stipend, tuition and insurance in all subsequent years. The advisor's support for 2017-2018 will be the entire second-year compensation package (currently a total of \$51,914). Students will be responsible for their student service fees starting in the second year, currently \$432 per semester.

##### *Second-year PhD students*

For the academic year 2017-2018, all eligible students not already on a training grant will receive partial funding from the GPN (at an NRSA level of support). This support will last for the first 6 months of the academic year, July thru December, after which their advisors will be responsible for the full stipend, tuition and insurance. The advisor's support for 2017-2018 (approximately \$32,949) will make up the remainder of the second-year compensation package (currently a total of \$52,347). There is no restriction on the type of funds that can be used to supplement the support for students being supported by the GPN; in other words, the use of sponsored funds (i.e. NIH or other federal grants) is permissible. (Eligible

international second year PhD students will receive the same level of financial support as their peers, which will come directly from the GPN.) Students will be responsible for their student service fees starting in the Spring semester and in subsequent years. Neither the Graduate Program in Neuroscience nor the Department of Neuroscience will ensure any financial support to students after the second year.

### ***Third-year students***

The advisor is responsible for identifying and providing funds for the full stipend, tuition and insurance in all subsequent years. If the student completes their Oral prelim and required coursework on time, the total cost for advisors in 2017-2018 should be approximately \$44,483. Students will continue to be responsible for their student service fees, currently \$432 per semester. That amount will drop to roughly \$35 per semester after the student completes their Oral prelim and required coursework.

### ***Fourth-year students and beyond***

If the student continues to make satisfactory progress in the program, the total cost for advisors is approximately \$37,629 per annum based on current rates. The student will continue to be responsible for the \$35 per semester in student fees until they graduate.

#### **2. Student Service Fees**

The student is responsible for full payment of the “Student Service Fees” each semester during the academic year. The student is also responsible for payment of 5% of their medical insurance premiums every year, which will be billed directly to the student.

#### **3. Charges Related to Additional or Elective Courses**

Students are responsible for reading the guidelines for registration in the student handbook (online at <http://www.neuroscience.umn.edu>) and for reviewing student account charges EACH semester. Errors can be corrected most easily during the first 2 weeks of the semester. GPN staff can assist administratively in the correction of errors, but the student and advisor will be responsible for tuition and insurance errors attributed to the student that cannot be reversed. Any questions about registration and student accounts should be directed to John Paton.

### **Progress to Degree**

#### ***1. Teaching Assistants***

The student will complete a teaching assistantship (estimated at 12.5% effort) during the second year in the program. If MD/PhD students are fully supported as a research assistant on the advisor’s grant, the GPN will cover this portion of the student’s stipend during the semester in which the teaching occurs.

#### ***2. Oral Preliminary Exam***

The Preliminary Oral Exam should be completed by the end of the fall semester of the third year (December 1, 2018 for beginning second year students). The research proposal for the oral exam is due in the GPN office no later than September 1, 2018. (See current version of “GPN Student handbook” for Rules on Written and Oral Examinations).

#### ***3. Meeting with Thesis Committee***

The student must meet twice annually with the thesis committee after passing the Preliminary Oral Exam. All committee members should be present for both meetings. A committee report must be submitted to the program office by the chair of the thesis committee after each thesis committee meetings.

#### ***4. Presentation at Colloquia***

The student is expected to give one colloquium presentation each year beginning in year 3 and to attend the colloquia and seminars sponsored by the GPN.

#### ***5. Laboratory Training and Other Mandatory Regulatory and Oversight Requirements***

Attendance at training sessions (e.g., research ethics, laboratory safety) is mandatory. These requirements are defined by the Graduate School and by Federal agencies. It is quite possible the student may not be able to graduate until these requirements have been met.

*6. Thesis Defense*

Students are expected to defend a thesis between 4 to 6 years after matriculating into the program (see attached milestones). Accordingly, the advisor's responsibility to support the student does not extend beyond 6 years. In any case, support is contingent upon satisfactory progress.

*7. Lack of Satisfactory Progress*

If the student fails to make satisfactory progress, support may be terminated on 3 months' notice. The Steering Committee of the GPN will be the ultimate arbiter of student progress; an advisor who wishes to terminate the relationship with a student because of poor progress or other issues would need to present a written petition to the Steering Committee outlining the pertinent issues involved.

Please sign one copy of this form, indicating that you understand the policies of the GPN and the expectations for both the advisor and the student and return the signed document to the Graduate Program Office (campus mail address: 6-145 Jackson Hall).

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Signature (Student) Date

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Signature (Advisor) Date

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Signature (Co-Advisor) Date

Attachment: PhD Milestones (Milestones for MD/PhD students can be found on the program website)

Versions:

July 2014

July 6 2017

Student Name: \_\_\_\_\_

Advisor: \_\_\_\_\_

Meeting Date: \_\_\_\_\_

Estimated completion date \_\_\_\_\_

**ACADEMIC PROGRESS**

**VOTE: Overall progress (as voted on by committee, circle one):**

*Outstanding*

*Satisfactory*

*Not satisfactory*

| <i>Committee Signatures</i> |      | Progress in the last year (initial one) |                     |                         |
|-----------------------------|------|---|---------------------|-------------------------|
| Role                        | Name | <b>Outstanding</b>                      | <b>Satisfactory</b> | <b>Not satisfactory</b> |
| Chair                       |      |   |                     |                         |
| Advisor                     |      |   |                     |                         |
| Committee member            |      |   |                     |                         |
| Committee member            |      |   |                     |                         |
| Committee member            |      |   |                     |                         |

**RECOMMENDATIONS:**

**STUDENT STATEMENT**

I have met with my committee and understand the recommendations suggested. I agree that the above completion date is a reasonable estimate.

\_\_\_\_\_  
 Signature

\_\_\_\_\_  
 Date

# Graduate Program in Neuroscience (GPN)

## *MD-PhD Milestones*

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These milestones do not include the milestones from the MD program. MD/PhD students are expected to graduate in year PhD3 or PhD4.

**NEVER** register for any credits during the summer without prior discussion with the program coordinator. Registration during summer is not required to maintain health insurance coverage.

### **A. M1**

#### *1. General steps*

- Year 1 medical school curriculum.
- 1st rotation.

#### *2. Deadlines*

- Meet with the DGS to discuss rotations and progress.
- Join the GPN for the annual retreat.

### **B. M2**

#### *1. General steps*

- Year 2 medical school curriculum.
- 2nd rotation.

#### *2. Deadlines*

- Meet with the DGS to discuss rotations and progress.
- Join the GPN for the annual retreat.

### **C. Summer between M2 and PhD1**

#### *1. General steps*

- Confirm an advisor.
- Clinical rotation.
- Year 2 medical boards.
- Itasca neurobiology course.

#### *2. Register*

##### a) Summer session

- NSc 5551: Cell & Molecular Neurobiology Lab at Itasca (4 cr)

### 3. *Satisfactory progress*

- Finding an advisor with whom to do your thesis project.

## D. **Year PhD1**

### 1. *General steps*

- Core coursework
- **Begin thesis research**
- Written preliminary exam
- Begin writing Individual Development Plan (IDP)

### 2. *Satisfactory progress*

- Making adequate research progress.
- Maintaining a 3.0 grade point average in all classes.
- Performing satisfactorily on the written preliminary exam.

### 3. *Register*

#### a) Fall semester

- Begin taking thesis credits.
- *Nsc 5461: Cellular and Molecular Neuroscience (4 cr) You should audit this class. Attending the lectures is recommended as a quarter of the written prelim exam will be derived from it.*
- *Nsc 5561: Systems Neuroscience (4 cr) You should audit this class. Attending the lectures is recommended as a quarter of the written prelim exam will be derived from it.*
- Nsc 8321: Career Skills (0.5 cr)

#### b) Spring semester

- Nsc 5661: Behavioral Neuroscience (3 cr)
- Nsc 8211: Developmental Neuroscience (3 cr)
- Nsc 8321: Career Skills (0.5 cr)
- Nsc 8320: Neuroscience Seminar Series Journal Club (Section 2)  
Register for Journal Club for 1 credit and S-N grading basis

### 4. *Deadlines*

- Meet with the DGS twice in year 1 (as a group).

## E. **Year PhD2**

### 1. *General steps*

- Make progress on thesis research.

- Present a half-hour colloquium as part of the GPN seminar series.
- Present a poster at the annual retreat.
- Students are encouraged to present a poster at Biomedical Science Research Recognition Day
- A good goal is to write a paper this year.
- Consider submitting your oral prelim as an NRSA application.

## 2. *Satisfactory progress*

- Maintaining a 3.0 grade point average in all classes.
- Submit written preliminary exam rewrites, if needed, before 1/Jan of year 2.
- Have formed a thesis committee.
- Passing the oral preliminary exam.
- Making adequate research progress.

## 3. *Register*

- Complete 3<sup>rd</sup> semester of NSC 8321 (Career Skills) - Fall.
- Complete 2<sup>nd</sup> semester of NSC 8320 sec 2 (Seminar Series Journal Club) - Spring.
- Register for classes outside of GPN. (A statistics course is required)
- Register for thesis credits NSC 8888. (Up to 14 credits total per semester)

## 4. *Deadlines and specific steps*

- File annual report form and meet with DGS ([form](#))
- File Degree Program with Graduate School ([form](#)) Examples: ([PhD](#)) ([MD/PhD](#))
- File Thesis Committee Selection with Graduate School ([form](#))
- Research proposal for oral exam is due 2/January.
- Oral preliminary must be scheduled at least 1 week before the oral exam. ([form](#))
- Oral preliminary exam must be completed before 20/January.
- Meet twice annually with your thesis committee. The meeting form must be filled out and filed with the program coordinator. ([form](#))

## F. **Year PhD3 and beyond**

### 1. *General steps*

- Complete coursework outside of GPN.
- Complete thesis credit requirement.
- Make progress on thesis research.
- Present a half-hour colloquium as part of the GPN seminar series.
- Present a poster at the annual retreat.
- Students are encouraged to present a poster at Biomedical Science Research Recognition Day
- A good goal is to write a paper this year.
- Consider submitting an NRSA application if it hasn't been funded already.

## 2. *Satisfactory progress*

- Maintaining a 3.0 grade point average in all classes.
- Making adequate research progress.

## 3. *Register*

- Complete coursework outside of GPN – Fall. (If not completed in year PhD2)
- Complete thesis credit requirement – Fall. (At least 24 accumulated credits)
- Register for 1 Post Thesis credit (NSC 8444) – Spring. ([form](#))

## 4. *Deadlines and specific steps*

- File annual report form and meet with DGS ([form](#))
- Meet twice annually with your thesis committee. The meeting form must be filled out and filed with the program coordinator. ([form](#))

## 5. *When you are ready to graduate...*

- Make sure that your advisor and committee also thinks you are ready.
- Your dissertation needs to be turned in to your committee **one month** before you can defend.
- The readers on your committee will then have **two weeks** to read the dissertation and approve it for defense.
- If your dissertation is approved for defense, you may schedule the defense any time at least **two weeks** after approval. It should be announced to the GPN as soon as possible.

Note: In practice, it is a good idea to know what date and time work for your committee. Scheduling the availability of four or more faculty can be difficult. **It is preferred for thesis defenses to occur during the Wednesday noon seminars, but this is not a requirement.**

# Graduate Program in Neuroscience (GPN)

## *PhD Milestones*

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**NEVER** register for any credits during the summer without prior discussion with the program coordinator. Registration during summer is not required to maintain health insurance coverage.

Students are expected to graduate sometime during year 5.

### **A. Year 1**

#### *1. General steps*

- Itasca neurobiology course
- Core coursework
- Rotations
- Written preliminary exam

#### *2. Satisfactory progress*

- Finding an advisor with whom to do your thesis project.
- Maintaining a 3.0 grade point average in all core classes.
- Performing satisfactorily on the written preliminary exam.

#### *3. Register*

##### a) Summer session

- NSc 5551: Cell & Molecular Neurobiology Lab at Itasca (4 cr)

##### b) Fall semester

- Nsc 5461: Cellular and Molecular Neuroscience (4 cr)
- Nsc 5561: Systems Neuroscience (4 cr)
- Nsc 8334: Lab Neuroscience (1 cr)
- Nsc 8321: Career Skills (0.5 cr)

##### c) Spring semester

- Nsc 5661: Behavioral Neuroscience (3 cr)
- Nsc 8211: Developmental Neuroscience (3 cr)
- Nsc 8334: Lab Neuroscience (1 cr)
- Nsc 8321: Career Skills (0.5 cr)

- Nsc 8320: Neuroscience Seminar Series Journal Club (Section 2)  
Register for Journal Club for 1 credit and S-N grading basis

#### 4. *Deadlines*

- Meet with the DGS twice in year 1 (as a group).

### **B. Year 2**

#### 1. *General steps*

- Complete coursework inside the GPN.
- Begin coursework outside of GPN.
- Begin taking thesis credits.
- Complete TA requirement.
- Begin thesis research.
- Present a poster at the annual retreat.
- Begin writing Individual Development Plan (IDP)

#### 2. *Satisfactory progress*

- Maintaining a 3.0 grade point average in all classes.
- Submit written preliminary exam rewrites, if needed, before 1/Jan of year 2.
- Making adequate research progress.

#### 3. *Register*

- Complete 3<sup>rd</sup> semester of NSC 8321 (Career Skills) - Fall.
- Complete 2<sup>nd</sup> semester of NSC 8320 sec 2 (Seminar Series Journal Club) - Spring.
- Register for classes outside of GPN. (6 credits are required & a statistics course)
- Register for thesis credits NSC 8888. (Up to 14 credits total per semester)

#### 4. *Deadlines and specific steps*

- File annual report form and meet with DGS ([form](#))

### **C. Year 3**

#### 1. *General steps*

- Complete coursework outside of GPN.
- Complete thesis credit requirement.
- Make progress on thesis research.
- Present a half-hour colloquium as part of the GPN seminar series.
- Present a poster at the annual retreat.

- Students are encouraged to present a poster at Biomedical Science Research Recognition Day
- A good goal is to write a paper this year.
- Consider submitting your oral prelim as an NRSA application.

## 2. *Satisfactory progress*

- Maintaining a 3.0 grade point average in all classes.
- Making adequate research progress.
- Passing the oral preliminary exam.
- Have formed a thesis committee.

## 3. *Register*

- Complete coursework outside of GPN. (6 credits total & a statistics course)
- Complete thesis credit requirement. (At least 24 credits total, over years 2 & 3)
- Once you have completed your classwork and have passed your oral prelim, register for 1 Post Thesis credit (NSC 8444). ([form](#))

## 4. *Deadlines and specific steps*

- File annual report form and meet with DGS ([form](#))
- File Degree Program with Graduate School ([form](#)) Examples: ([PhD](#)) ([MD/PhD](#))
- File Thesis Committee Selection with Graduate School ([form](#))
- Research proposal for oral exam is due 1/Sept.
- Oral preliminary must be scheduled at least 1 week before the oral exam. ([form](#))
- Oral preliminary exam must be completed before 1/December.

## D. **Year 4 and beyond**

### 1. *General steps*

- Make progress on thesis research.
- Present a half-hour colloquium as part of the GPN seminar series.
- Present a poster at the annual retreat.
- Students are encouraged to present a poster at Biomedical Science Research Recognition Day
- A good goal is to write a paper this year.
- Consider submitting an NRSA application if it hasn't been funded already.

### 2. *Satisfactory progress*

- Making adequate research progress.

### 3. *Register*

- Register for 1 Post Thesis credit (NSC 8444) ([form](#))

### 4. *Deadlines and specific steps*

- File annual report form and meet with DGS ([form](#))
- Meet twice annually with your thesis committee. The meeting form must be filled out and filed with the program coordinator. ([form](#))

### 5. *When you are ready to graduate...*

- Make sure that your advisor and committee also thinks you are ready.
- Your dissertation needs to be turned in to your committee **one month** before you can defend.
- The readers on your committee will then have **two weeks** to read the dissertation and approve it for defense.
- If your dissertation is approved for defense, you may schedule the defense any time at least **two weeks** after approval. It should be announced to the GPN as soon as possible.

Note: In practice, it is a good idea to know what date and time work for your committee. Scheduling the availability of four or more faculty can be difficult. **It is preferred for thesis defenses to occur during the Wednesday noon seminars, but this is not a requirement.**