

## ACADEMIC GUIDELINES FOR NGP STUDENTS 2021-2022

### ***MATRICULATING IN THE NEUROSCIENCE GRADUATE PROGRAM (NGP)***

The following pages outline the guidelines governing all students that enter the Neuroscience Graduate Program (NGP) and comply with the guidelines and requirements in the [By-Laws of the Graduate Council](#) and the [Academic Regulations of the School of Medicine Graduate Programs](#). Students are additionally subject to important guidelines contained in the [School of Medicine Graduate Studies Handbook](#). More information about program organization can be found here: <https://www.ohsu.edu/school-of-medicine/neuroscience-graduate-program/program-organization>

### **I. GENERAL TIME LINE**

#### **Year 1:**

- Complete the Summer B courses, fall NGP core courses, and usually one elective course
- Have a minimum of three meetings with the NGP director and one meeting with the assigned academic mentor
- Complete three laboratory rotations for a minimum of 2 months' duration, present one rotation talk, and submit a one-paragraph summary of each rotation within a week of the rotation ending
- Provide Annual Report to the NGP by August 1 including summary of myIDP
- Pass written comprehensive exam (December of first year)
- Choose a dissertation mentor

#### **Year 2:**

- Complete Neurobiology of Disease course (Year 1 or Year 2)
- Complete one or more required and elective course(s)
- Give one oral presentation on research (yearly talk requirement)
- Develop qualifying exam committee composition in February in consultation with NGP director
- Complete oral qualifying exam (QE) by the end of April of Year 2 (see below)
- Form Dissertation Advisory Committee (DAC) in consultation with NGP director and have first meeting six months after passing the oral qualifying exam (no later than October of your 3<sup>rd</sup> year)

#### **Years 3+:**

- Minimum one meeting every six months with DAC; prepare meeting report and distribute to DAC and the NGP office
- Complete final required and elective course(s)
- Fulfill yearly talk requirement

#### **Year 5/Final Year:**

- Minimum one meeting every six months with DAC
- Fulfill yearly talk requirement
- DAC must approve plan to proceed to dissertation
- Clarify timing of your defense and end date with mentor and program coordinator
- Review OHSU guidelines for completion of Ph.D. (Graduate Studies) well in advance of defense
- Dissertation defense

## II. REQUIRED AND ELECTIVE COURSES

### Required Courses

The following are required courses:

- NEUS Bootcamp course
- NEUS 624 Cellular Neurophysiology
- NEUS 625 Cell and Developmental Neurobiology
- NEUS 626 Neurobiology of Disease
- NEUS 627 Systems Neuroscience
- NEUS 607 Neuroscience Seminar (taken 3 times)
- MGRD 650 Principles of Scientific Conduct & Practice
- CONJ 620 Biostatistics for Basic Scientists (3 credits)

Most required courses are taken within the first year. They should all be completed by the end of the second year. Below is a sample schedule:

### Summer B

NEUS 630	Fluorescence Microscopy Toolbox for Cell Biologists (1 credit)
NEUS 616	NSF Workshop (1.5 credits)
NEUS 617	Manuscript Writing and Reviewing (1.5 credits)
NEUS 618	Navigating the Complexities of Grad School (1.5 credits)
NEUS 619	Effective Presentations (1.5 credits)
NEUS 620	NGP Bootcamp (1.5 credits)
NEUS 621	Professional Development: Conferences (0.5 credits)

### Fall Quarter

NEUS 624	Cellular Neurobiology (4 credits)
NEUS 625	Cell and Developmental Neurobiology (4 credits)
NEUS 627	Systems Neuroscience (4 credits)
NEUS 607	Neuroscience Seminar (2 credits)
MGRD 650	Principles of Scientific Conduct & Practice (2 credits)
1 Elective	Can be taken later

### Winter Quarter

NEUS 607	Neuroscience Seminar (2 credits)
NEUS 601	Research Rotation (variable credits)
CONJ 620	Biostatistics for Basic Scientists (3 credits), can be taken later
1 Elective	See attached list for some options

### Spring Quarter

NEUS 626	Neurobiology of Disease (3 credits), offered every other year
NEUS 607	Neuroscience Seminar (2 credits)
NEUS 601	Research Rotation (variable credits)

### Summer Quarter

NEUS 601	Research Rotation (variable credits)
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### Course requirements notes

Students are required to:

- Receive grades of B or better in all NGP core courses (NEUS 624, 625, 626, and 627) and complete and maintain a 3.0 average for all first-year courses.
- Take a total 6 elective credits and participate in at least three different career and professional development experiences, such as TA-ing, coordinating the summer program for undergraduates, taking outside courses for techniques not taught at OHSU (Woods Hole summer courses, MBL summer courses, organizing Gordon Research seminars, etc.), and the Vollum Writing Course, before dissertation defense. See below for more information.
- Register for a minimum of 9 credits for all terms of graduate school until dissertation defense.

NOTE: The OHSU registrar converts “+” or “-” grades to decimals. For example, a B- is equal to 2.7 and thus can result in academic probation.

If the student wishes to use prior graduate level courses in place of the required core courses, then the student and their mentor can petition for transfer credit with the NGP director. The NGP director will decide the issue and then the necessary Course Transfer Form will be submitted to the School of Medicine and Registrar’s office for approval.

The grade of “Incomplete” is reserved for circumstances beyond the control of the student (*e.g.*, illness) preventing completion of the course requirements by the end of the term **AND** it is possible to complete the requirements within the subsequent term.

Students prior to oral qualifying exam: Students are required to notify and meet with the NGP director or designate immediately upon receiving an NP grade on Research credits (NEUS 601). The NGP director will suggest a course of action for correcting research performance.

Candidate Students: After advancing to candidacy, students receiving an NP grade in Research (NEUS 603) must arrange a DAC meeting within two weeks of receipt of an NP grade. The mentor and DAC will determine a course of action that the student must follow to improve research performance.

### Elective courses

A total of 6 elective credit hours are required to be eligible for the degree. Journal Clubs (JCs) qualify for up to three credit hours of electives. The electives should be consistent with the program of training for the student.

A selection of electives are below. Students are encouraged to check courses available as listed in the course catalog for possible elective courses outside of this list. With permission from the NGP director and guidance of the academic or dissertation mentor, students can petition that other courses apply as elective credits.

Frequently chosen electives at OHSU include:

BEST 615	Condition, Learning and Cognition
BEST 616	Neurobiology of Learning & Memory
BEST 617	Neurochemical Substrates of Addiction
BEST 618	Behavioral Neuroscience
BEST 619	Molecular Strategies in Behavioral Research

BEST 625	Behavioral Genetics
BEST 627/628/629	Neuroscience of Aging
BME565/ BME665	Intro to Computational Neurophysiology
BMSC 661	Structure/Function of Biological Molecules
BMSC 662	Genetic Mechanisms and Bioregulation
BMSC 663	Molecular and Cell Biology
BMSC 667	Principles of Physiology
BMSC 668	Molecular Biophysics and Structural Bioinformatics
CONJ 620	Biostatistics for Basic Science
MSCI 621	Neuroscience and Behavior
NEUS 606	Neuroscience Journal Club
NEUS 631	Special Topics in Neuroscience
NEUS 633	Topics in Neuroendocrinology
NEUS 637/CELL 615	Advanced Topics in Developmental Neuroscience
NEUS 638	Advanced Optical Techniques in Neuroscience
NEUS 639	Topics in the Auditory System
NEUS 641	G-Protein Coupled Receptors
NEUS 642	Python Programming
NEUS 643	Statistical Image Analysis for Neuroscience
NEUS 614/PHPH 614	Neurophysiology and Pharmacology of Pain
PHPH 617	Pharmacokinetics: Drug Absorption, Distribution and Elimination
PHPH 619	Autonomic Drug Action
PHPH 620	Principle of Drug Discovery/Design
PHPH 622	Ion Channels and Genetic Disease

BEST	<a href="#">Behavioral &amp; Systems Neuroscience</a>
BME	<a href="#">Biomedical Engineering</a>
BMSC	<a href="#">Program in Biomedical Sciences</a>
CELL	<a href="#">Cell, Developmental, and Cancer Biology</a>
PHPH	<a href="#">Physiology and Pharmacology</a>
NEUS	<a href="#">Neuroscience Graduate Program</a>

### III. 1<sup>ST</sup> YEAR STUDENT ADVISING

First year student advising will be provided by the NGP director at group meetings scheduled throughout the year and one-on-one as needed. Advising will also be provided by an assigned academic mentor. The academic mentor is selected by the NGP director at the beginning of Year 1 from a list of NGP faculty with a history of graduate student training and advising. The academic mentor is there to provide consultation for NGP students with regard to academic and non-academic concerns, which is especially important before a dissertation lab and DAC have been selected. Advisors are familiar with the NGP academic requirements, as well as with

the Graduate Council By-Laws, Student Handbook and general School of Medicine regulations. 1<sup>st</sup> year students must meet at least once with the academic mentor in the Fall of Year 1.

Academic mentors are expected to

- Meet with the student at least once in Fall of Year 1
- Meet in Years 2+ as needed
- Review and advise with regards to rotation decisions, course choice and registration
- Report any concerns to the NGP director

The responsibilities of the academic mentor are supplemented by the dissertation mentor and DAC members once the student has passed the oral qualifying exam and advanced to candidacy according to School of Medicine regulations. If the academic mentor becomes a student's dissertation mentor or DAC member, a new academic mentor will be assigned by the NGP director.

#### **IV. ROTATIONS**

Research rotations in three different laboratories for a duration of at least 8 weeks each during the first year of the graduate program are a requirement. In extremely rare instances, a student may be permitted to join a dissertation lab after two rotations, although the circumstances must be extraordinary for this to occur. Completion of fewer than three rotations requires consultation with and approval from the NGP director. Rotations do not occur during the Summer B introductory courses or fall NGP core courses (August – December, Year 1), but students can begin the first rotation in the summer A term preceding the first year. The purpose of the laboratory rotations is for students to familiarize themselves with the research projects and the laboratory environments of the faculty. The outcome of the rotations is the selection of a dissertation mentor. A secondary purpose of the rotations is for the student to learn new techniques and experimental approaches. Rotations are selected in laboratories of NGP faculty. Rotations in non-NGP labs require permission of the NGP director prior to the rotation. In consultation with the rotation mentor, students are strongly encouraged to establish rotation expectations prior to or at the onset of each rotation.

Students will present an oral rotation talk together with their classmates and the NGP director for each rotation. A written summary (1 concise paragraph) of each rotation Report must be submitted soon after the rotation ends and will be included in the student's Annual Report.

After the successful completion of three research rotations, a student should select a faculty member to serve as their dissertation mentor. The decision of a student to enter into a laboratory to pursue dissertation research is dependent upon a joint agreement between the faculty member and the graduate student. The dissertation mentor must be a member of the School of Medicine Graduate Faculty and a member of the NGP faculty.

#### **V. YEARLY TALK REQUIREMENT**

All students in their second year and beyond are required to give one public presentation of their research each year. Second year students may use a poster presentation to fulfill this requirement. After the second year, the following are acceptable for the yearly talk requirement:

- Oral presentation at NGP retreat
- Vollum Friday seminars

- Platform (oral) presentation at a national or local meeting (poster and lightning talks do not count)
- Oral presentation on their project at a departmental or center group meeting (individual lab meetings do not count)

## VI. CAREER AND PROFESSIONAL DEVELOPMENT EXPERIENCES

Separate from the 6 elective credit hours at OHSU, the NGP has a distinct programmatic requirement of 3 different career and professional development experiences. These experiences may consist of certain official courses available at OHSU, but students can also petition the NGP director to apply experiences for intensive courses offered externally (*e.g.*, CSHL, MBL, Allen Brain Institute) when the course provides a selection of material not easily duplicated at OHSU. Students may also apply experiences for TAing courses, coordinating the undergraduate summer research experience didactic courses, and the Vollum Writing Course. The student must petition the NGP director for approval of career and professional development experiences, and these records will be kept on file in the NGP office. Students are expected to complete the career and professional development experiences before they defend.

## VII. NGP WRITTEN COMPREHENSIVE EXAM

### Overview

All first year NGP students are required to take the written comprehensive examination at the scheduled time (December, Year 1) following completion of the NGP core courses. This examination tests the student's ability to think scientifically using concepts covered during the coursework. The exam is prepared by the NGP curriculum committee. The exam is a take-home (open book/open internet) format, but each student must complete the exam independently without consulting any other person. The consequence for non-independent completion is automatic failure of the exam. The NGP curriculum committee formulates exam questions from NEUS 624, 625, & 627. The committee will select questions based on relevance to course instruction, content, and rigor. The committee will assess test scores and will make recommendations to the NGP director regarding retaining or dismissing the student.

### Examination format

The exam will consist of a series of questions to be answered in an essay and/or short answer, open book format. Questions will be equally distributed among subject material covered in NEUS 624, 625, & 627. Exam questions usually consist of several components and are designed to test broad aspects of student's knowledge. Effort will be made to integrate key concepts across traditional discipline boundaries.

### Grading

Each exam question will be graded by the course instructors or designated members of the curriculum committee or NGP faculty. However, the overall performance on the written comprehensive exam will be reviewed by the curriculum committee.

### Outcome

The curriculum committee will analyze the scores of the exam and assign a final grade of "Pass" or "Fail." A passing grade is awarded to students who successfully answer ALL sections of the exam. Poor performance on one or more sections/parts of the exam will be discussed by the curriculum committee in consultation with the NGP executive committee and the NGP director. Those students who fail one or more portions of the exam, but who have otherwise good

academic records, will be required to remediate their deficiencies. Students are required satisfy their remediation prior to the start of fall quarter of their second year of studies. Students who fail remediation will be subject to dismissal.

## VIII. NGP ORAL QUALIFYING EXAMINATION

### Overview

The oral qualifying exam tests the ability of the student to develop a question/hypothesis, design feasible experiments to address the hypothesis, and defend the hypothesis in written and oral format. These are foundational skills for any scientist. Thus, the exam is an important benchmark for the NGP in assessing whether a student has the skills necessary to successfully complete a dissertation. Students who pass the exam are advanced to candidacy.

### Timetable for 2<sup>nd</sup> Year NGP Students

By February 1	Proposed exam committee members submitted to NGP director
By March 1	Aims page submitted to committee chair
March 1 – 15	Collaborate with committee chair to agree on Aims page; schedule oral examination
Two weeks before oral examination	Submit written proposal to exam committee
By April 30	Oral examination

### Pre-exam process

The student and dissertation mentor will identify at least four suggested NGP faculty members who would be willing to serve on the exam committee, and the student will forward this list to the NGP director. The NGP director will choose at least two faculty members from this list, appoint a third member (not necessarily on the student's list), and appoint the chair. The dissertation mentor also serves on the exam committee for a total of four NGP faculty members.

### Preparing the written proposal

Guidelines for the written component follow NRSA guidelines (see below). The written proposal must include the following sections of the NRSA:

- Project Summary/Abstract (30 lines of text limit)
- Project Narrative (3 sentence limit)
- Student's Biosketch (5 page limit)
- Applicant's Background and Goals for Fellowship Training (6 page limit)
- Specific Aims (1 page limit)
- Research Strategy (6 page limit)
- Bibliography/References Cited (No page limit)

The topic is expected to be the student's anticipated dissertation project, but this is not a requirement. The student may discuss the proposal with the dissertation mentor or any other individual in order to devise the Aims of the proposal. By March 1, the student will provide an Aims page to the qualifying exam committee chair, who will aid the student until the chair is satisfied that the Aims are of acceptable quality and depth. By March 15, the student and chair will have agreed upon the Aims, and the student will schedule the oral examination.

For the written document, significant preliminary data are not required, but the student is encouraged to incorporate summary figures that clarify the experimental approaches and

describe possible outcomes for the proposed research. Acknowledgement of the source of any preliminary data or figures (*e.g.*, student or a lab member) must be included. The student may obtain feedback from the dissertation mentor or any other individual prior to submitting the written document to the qualifying exam committee.

### **Oral exam**

The student should prepare a ~15-20 minute presentation describing the proposal, and the student should expect committee members to ask questions throughout the presentation. This is not a general knowledge exam. Questions from the examining committee should focus on literature and methods relevant to the proposal, preferably of relevance to the student's chosen field. The examination typically lasts for ~60-90 minutes.

### **Committee responsibilities**

*Chair responsibilities:* The chair will advise the student to ensure that the Aims are of acceptable quality and depth to proceed to the full examination. This can be done by email or in person. The chair is also responsible for:

- Reviewing the student's transcript and ensuring that required core courses have been passed, including ethics (CONJ 650)
- Ensuring that other committee members provide feedback on the written proposal to the student
- Contacting the PI prior to the oral examination to obtain an evaluation of the student's progress in the lab (this can be done at the onset of the exam if the student is asked to leave the room)
- Relaying to the NGP director and program coordinator the action to be taken on the basis of the student's written proposal and oral examination.

*All committee members:* All committee members are responsible for reading all sections of the written proposal and for providing feedback on the content. The evaluation can be returned at the time of the oral exam. Committee members are responsible for questioning the student during the oral exam. Exam committee members may subsequently join the student's Dissertation Advisory Committee, but there is no requirement or expectation that this be the case.

NIH guidelines for preparing the NRSA research proposal can be located at the links below. The program strongly encourages eligible students to submit their proposals to the NIH as NRSA fellowship applications. <http://grants1.nih.gov/grants/funding/424/index.htm#inst>

<https://grants.nih.gov/grants/how-to-apply-application-guide/forms-d/fellowship-forms-d.pdf>

### **Outcome**

Immediately following the oral exam, the qualifying committee will inform the student of the committee's decision to **Pass, Conditionally Pass, or Fail**. The chair will also email this decision to the student, the NGP director, and the program coordinator. A Pass requires no or minor edits from the student. A Conditional Pass requires significant edits. Once the edits are made to the satisfaction of the committee, the chair shall inform the student and the program coordinator that their Conditional Pass has been turned into a Pass. Students will not advance to candidacy until they receive a full Pass. A Fail will have an opportunity to remediate. Remediation will consist of a full revision of their narrative pieces listed above and a new oral exam with the qualifying committee. If the student fails the second exam, then the student will be subject to dismissal from the program.



## **IX. PH.D. DISSERTATION ADVISORY COMMITTEE GUIDELINES**

### **Purpose**

The purpose of the Dissertation Advisory Committee (DAC) is to advise and oversee the progress of the student's post-qualifying examination graduate education and training. The DAC must include a minimum of three NGP faculty members and other members with appropriate research expertise, to a maximum of five members. The chair (cannot be the mentor) will be selected by the NGP director after discussion with the student and mentor. The responsibility of the chair is to obtain from the NGP office an update of the status of requirements including courses, electives, talk requirements, etc., and approve the student's report to the NGP office following each DAC meeting. If the focus of the student's research changes, then appropriate changes in the makeup of the DAC can be made with approval of the NGP director. The DAC should advise the student in matters of curriculum requirements and research objectives. The DAC may assist the student in developing and focusing the specific research objectives, which should ultimately form the main body of the dissertation. With regard to professional skill development and career planning, the DAC shares responsibility with the student, the dissertation mentor, and the OHSU Career and Professional Development Center.

### **Forming the Dissertation Advisory Committee**

The DAC can include some or all of the members of the oral qualifying exam committee. Following the successful completion of the oral qualifying exam, a request for a DAC with the names of faculty that have agreed to serve must be completed and filed with the Dean's office. This occurs after the student and NGP director have discussed and agreed upon the composition of the DAC. Changes to the committee can be made and must be discussed with the NGP director then filed with the Dean's office.

### **Committee meetings**

The first DAC meeting must be held no later than six months following passing the oral qualifying examination. At least one week prior to the first meeting, the student will use the DAC meeting summary form to send committee members an updated description of their immediate research goals. It is the responsibility of the student to schedule DAC meetings, but the NGP office will track DAC meetings and provide reminders to student, mentor, chair, and NGP director if meetings are overdue.

The DAC will meet at least every six months. At each meeting, the student will update the committee on the progress made toward the research objectives and the completion of NGP requirements. The student should be prepared to begin the meeting with a 15-minute overview of their more recent results and future directions. Within one week of the meeting, a copy of the summary as presented to the DAC should be sent electronically to the NGP office, and should include the following:

- Date, present participants, and absent members if necessary
- Progress since the previous DAC meeting
- Significant problems or issues that need to be addressed
- Goals for the next six months
- When appropriate, a summary of the student's future plans/career goals
- Estimated date of completion (this will be more precise as student advances)

Each DAC meeting report will be placed in the student's file.

Three to six months prior to the anticipated dissertation defense, the student should have a DAC meeting to obtain approval for the beginning of dissertation writing.

**Preparation and submission of the dissertation**

All [instructions and guidelines](#) adopted by the Graduate Council [By-Laws](#) shall be followed carefully.

**X. MISCELLANEOUS****Travel**

Per OHSU policy, travel cannot be reimbursed until after the travel has occurred. We therefore encourage students to reach out to their PI's administrative coordinator or the NGP program coordinator to pay for travel funds using a university purchasing card.

If you are travelling outside of the United States for a school-related learning activity, conference, or internship, you must complete a travel screening form:

<https://www.ohsu.edu/international-affairs/international-travel>

First year students are allotted a maximum of \$1,000 for travel to a conference in their first year. These funds can be used towards travel, registration, etc.

Any NGP student who has advanced to candidacy is eligible for a one-time disbursement of up to \$1000 to facilitate attendance at a conference, meeting, course, etc. We hope that this assistance will help our students network in their current field or a new field they might be interested in, present their work to colleagues if applicable, and facilitate travel to meetings that would not otherwise be possible to attend. This disbursement can be used towards travel, registration, etc. once, anytime between the end of the 2<sup>nd</sup> year (assuming the QE was passed) and graduation.

**Health & Wellness**

The Student Health & Wellness Center has many benefits and we strongly encourage you to use them as a resource during your time at OHSU. Primary care visits are not subject to a copay or deductibles (some exceptions apply). Mental health counselors specifically attuned to the needs of advanced degree students are available. Students are eligible for one free massage and free or subsidized acupuncture.

If emergency care or hospital services are needed, students can apply for financial assistance through OHSU Hospital: <https://www.ohsu.edu/health/financial-assistance-programs>

Occasionally, students do not find a counselor at the Student Health & Wellness Center who meets their needs. We understand how stressful it can be when you cannot find the right mental health provider and the deductible for seeking in-network providers outside of Student Health can be financially burdensome. We in the NGP take these concerns very seriously and want to emphasize the importance of mental and emotional wellness. In that vein, we will financially cover the costs to see a mental health specialist up to the maximum in-network cost of \$300. Please see the NGP program coordinator for details. You can use the Pacific Source provider directory to find a specialist in-network (select PSN plan in drop-down).