

***Neuroscience Graduate Program
Student Handbook***



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Vanderbilt Neuroscience Graduate Program Handbook

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How to use this handbook

The purpose of this Handbook is to help trainees make optimal use of the time they will invest in their graduate training in neuroscience. The Handbook provides information about the goals and global structure of the Neuroscience Graduate Program to assist students in ascertaining if these features of the Program are compatible with their training and career goals. Additionally, this Handbook outlines Program requirements that are currently in place so that students have an understanding of the pivotal events and achievements associated with successful completion of training in Vanderbilt's Neuroscience Graduate Program, and it provides students with an estimate of the timing of these events.

While it is the goal of the staff to keep this Handbook as up-to-date and applicable to Program and Graduate School requirements as possible, the student must understand that the administration of such a vast Program is dynamic, with changes constantly being suggested or mandated as the academic year goes on. The Program will be modified over time according to the evolving needs of trainees and to keep the Program at the leading edge of training innovation and excellence. Therefore, the Neuroscience Graduate Student Handbook should not be used as an immutable statement of requirements and timetables for Vanderbilt's Neuroscience Graduate Program. This Handbook makes no guarantees as to the requirements of the program *over the entire time of a student's matriculation*. Instead, the guidelines outlined herein are only official as of the date of the Handbook's publication. Because the Graduate Program Handbook will be continually updated to reflect Program modifications, the Handbook should be used as a preliminary first step for information about the requirements of the Neuroscience Graduate Program. Students should be sure to check over the handbook at least once a year to be sure they are aware of any Program developments occurring in the interim. Always confirm Neuroscience Program requirements with the Director of Graduate Studies, the Program manager, or other Program officials. Always confirm Graduate School requirements with the appropriate Graduate School official.

Welcome to the Vanderbilt Neuroscience Graduate Program; you have made a great decision!

Roz Johnson, B.B.A.
Program Manager

Who We Are

Vanderbilt Brain Institute

Welcome to the Vanderbilt Brain Institute! We are delighted that you have taken a minute to look at our website, and to learn a bit about the exceptional neuroscience community at Vanderbilt University. The VBI was founded in 1999 as a Trans-institutional entity to oversee and facilitate the extensive neuroscience-related endeavors carried out on the Vanderbilt campuses. As such, our primary mission is to promote research, education and training in the brain-related disciplines here at Vanderbilt, with the stated goal of fostering excellence in each of these arenas. Our ranks have grown amazingly in these past eleven years, and we are now comprised of nearly 500 faculty, students and staff who engage in neuroscience-directed research, training and clinical service. These individuals are distributed throughout the Vanderbilt campus, and represent 5 colleges, 24 departments and 27 centers and institutes. One of the primary responsibilities of the VBI is to administer the Neuroscience Graduate Program; one of the nation's leading programs in the predoctoral training of students interested in neuroscience. The Neuroscience Graduate Program is currently made up of 73 graduate students and 109 training faculty, and consistently ranks at the top of national listings of neuroscience graduate programs.

The Vanderbilt Neuroscience Graduate Program offers research opportunities for our trainees that span the breadth of contemporary neuroscience, and includes laboratories conducting basic, translational and clinical research.

Neuroscience Graduate Program

Vanderbilt's Neuroscience Graduate Program prepares each student to make significant contributions in neuroscience and fosters development from trainee to independent research scientist and educator. This is achieved by combining sound training in the fundamentals of neural science with more specialized training that focuses on the integration of this knowledge base into a study of nervous system function and disease. Students have the option of a curriculum and research program that emphasizes two paths, one based on first developing a strong biomedical knowledge base, and one based on rapid integration into neuroscience principles. The training, which combines rigorous course work with opportunities for state-of-the-art research, is designed to prepare graduates for a future in which neuroscientists must be able to make the transition from molecules and cells to neural systems and behavior.



Vanderbilt Brain Institute Team

Leadership

Lisa Monteggia, Ph.D.

Director, Vanderbilt Brain Institute
Director, Neuroscience Graduate Program
Professor, Pharmacology, Psychology, and Psychiatry

Bruce Carter, Ph.D.

Associate Director of Education & Training, Vanderbilt Brain Institute
Director of Graduate Studies – Neuroscience Graduate Program
Professor, Biochemistry

Ron Emeson, Ph.D.

Associate Director, Vanderbilt Brain Institute
Joel G. Hardman and Mary K. Parr Professor of Pharmacology, Biochemistry, Molecular Physiology and Biophysics and Psychiatry & Behavioral Sciences
Chair, Institutional Animal Care and Use Committee

Susana Herculano-Houzel, Ph.D.

Associate Director for Communications, Vanderbilt Brain Institute
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Douglas G. McMahon, Ph.D.

Co-Director, Neuroscience Training Program
Stevenson Professor of Biological Sciences
Professor, Pharmacology

Danny Winder, Ph.D.

Co-Director, Neuroscience Training Program
Director, Vanderbilt Center for Addiction Research (VCAR)
Bixler-Johnson-Mayes Professor, Molecular Physiology & Biophysics, Pharmacology, and Psychiatry

Staff

Pammy Doss

Executive Assistant, Vanderbilt Brain Institute

Rosalind (Roz) Johnson, BBA

Graduate Education Program Manager

Darlene Pope, BA

Executive Assistant, Vanderbilt Brain Institute

Amber Pursley

Administrative Manager, Vanderbilt Brain Institute

Vanderbilt Graduate School Academic Regulations

(excerpted from the Vanderbilt Graduate School catalog)

<https://www.vanderbilt.edu/catalogs/documents/graduate.pdf>

Academic Regulations

VANDERBILT'S students are bound by the Honor System inaugurated in 1875. Fundamental responsibility for the preservation of the system inevitably falls on the individual student. It is assumed that students will demand of themselves and their fellow students complete respect for the Honor System. All work submitted as a part of course requirements is presumed to be the product of the student submitting it unless credit is given by the student in the manner prescribed by the course instructor. Cheating, plagiarizing, or otherwise falsifying results of study are specifically prohibited under the Honor System. The system applies not only to examinations but also to written work and computer programs submitted to instructors. The student, by registration, acknowledges the authority of the Graduate Honor Council. The university's Office of Student Accountability has original jurisdiction in all cases of non-academic misconduct involving graduate and professional students. Students are expected to become familiar with the Rules Governing the Graduate Honor Council of Vanderbilt University, available at the time of registration. It contains the constitution and bylaws of the Graduate Student Honor Council, Appellate Review Board, and related regulations. Detailed descriptions of Honor System violations and procedures are also available on the web at *studentorg.vanderbilt.edu/gsc/honor-council*.

Academic Requirements

Candidates for graduate degrees must have satisfactorily completed all residency, academic course, and thesis or dissertation requirements, have passed all prescribed examinations, and be free of indebtedness to the university at the time of graduation. The academic requirements described on the following pages have been established by the Graduate faculty and are applicable to all graduate students at Vanderbilt. Individual degree programs may have additional requirements. Students are advised to refer to the various program descriptions listed in this catalog and to consult their major advisers for requirements in the specialty of interest. Students who were completing undergraduate or advanced degrees at the time of their admission must provide to the Graduate School, before initial registration, an official final transcript showing that the degree has been received and the date it was granted.

Responsible Conduct in Research

Vanderbilt University has an obligation to model, teach, and actively promote the responsible conduct of research in scholarship and science. Research integrity is fundamental to good research and crosses all disciplines and areas of focus. Vanderbilt's approach incorporates online and discussion-based content based on the individual's experience level and discipline. In addition to online education, individuals are

expected to participate in discussion-based sessions to further explore the issues and challenges in conducting ethical research and scholarship.

Intent to Graduate

An Intent to Graduate form must be submitted during the semester in which the student expects to receive a degree. Graduation dates are available at the Graduate School website, vanderbilt.edu/gradschool. Students can access the forms for the end-of-term conferral dates at the student's landing site in YES, three weeks after the start of the semester. These forms are submitted electronically and should be submitted within eight weeks of the start of the semester. If a student plans to graduate "IntraTerm" (January 31, February 28, March 31, May 31, June 30, August 31, September 30, October 31), these forms can be found at the Graduate School website and are to be submitted to the Graduate School at least fifteen days prior to the conferral date.

Requirements for the Ph.D. Degree

The degree of doctor of philosophy is awarded in recognition of high attainment in a special field of knowledge, as evidenced by examination and by a dissertation presenting the results of independent research. General requirements are listed below. In many programs there are additional requirements, and students should carefully check regulations in their particular programs.

Admission to Candidacy

Admission to the Graduate School does not imply admission to candidacy for the Ph.D. degree. To be admitted to candidacy the student must satisfy the language requirements, if any, in the program, and must pass a qualifying examination. The examination must be scheduled and passed within four years of the student being admitted to the program. Upon petition to the Graduate School, a one-year extension may be granted to complete this requirement. The examination will be administered by the student's Ph.D. committee, which will supervise subsequent work toward the degree. Upon completion of these requirements the Ph.D. committee will recommend to the Graduate School that the student be admitted to candidacy.

Residence and Course Work

The Ph.D. degree requires at least three academic years of graduate study. A student must complete 72 hours of graduate work for credit, of which a minimum of 24 hours in formal, didactic course and seminar work in the Vanderbilt Graduate School is required. In most programs students are required to present considerably more hours in formal course work than the 24-hour minimum. The remainder of the 72 hours, above the program requirements in formal course hours, may be in dissertation research hours, in special readings, and in transfer credit if applicable. Performance in dissertation research does not affect the grade point average. "Formal, didactic course work" is approved courses taken for credit other than thesis and dissertation research courses. Students should check departmental regulations for the number of "formal

course” hours required for their particular program. All students working full time toward the Ph.D. must register each fall and spring semester. When the required 72 hours of course work have been completed, registration for dissertation research without hourly credit applies; this reflects full-time effort on research and confers full-time student status. The minimum tuition of \$200 is charged.

Qualifying Examination

The purpose of the qualifying examination is to test the student’s knowledge of the field of specialization, to assess familiarity with the published research in the field, and to determine whether the student possesses those critical and analytic skills needed for a scholarly career. The examination is conducted by a Ph.D. committee appointed by the Graduate School on advice of the chair or director of graduate studies of the program. The committee consists of not fewer than four members of the Graduate faculty. Three of the members must be graduate faculty from within the student’s department/program and one from outside the program. Any variation of the committee makeup must be approved by the Graduate School. The committee must be appointed by the Graduate School no less than two weeks before the time the student expects to take the qualifying examination. **Graduate faculty** include all full-time tenured and tenure-track Vanderbilt University faculty members with primary appointments in departments or programs offering the M.A., M.S., and/or Ph.D. degrees. Those tenured or tenure-track faculty having secondary appointments in departments offering the M.A., M.S., and/or Ph.D. degrees will also be considered Graduate faculty members. Appointment of other faculty members to the Graduate faculty can occur upon recommendation by the faculty member’s department and with the approval of the Graduate School. Such appointment would require a majority vote by the Graduate faculty of the department/program, plus the recommendation of the chair/director of graduate studies and approval by the Graduate School. Such appointments are restricted to full-time faculty members with the rank of assistant professor or above, with a primary or secondary appointment in programs offering the M.A., M.S., and/or Ph.D. degree. Faculty members appointed to the Graduate faculty in this manner have all the privileges of Graduate faculty, including supervising graduate students’ research. Other faculty can be assigned some duties normally reserved for Graduate faculty on the recommendation of the chair and/or director of graduate studies of the department and with the approval of the Graduate School. The duties assigned must be specified and time-limited, e.g. membership on a Ph.D. committee or teaching a graduate-level class/ seminar in a particular semester. On occasion, these duties within a program or department may be specified without a specific time limit, e.g. standard graduate teaching duties or membership on any Ph.D. committee in the program. Faculty with limited responsibilities will not be permitted to direct theses or dissertations. Faculty members, or others carrying out research or scholarship from outside universities, may also be appointed to serve on a specific student’s Ph.D. committee without being considered for Graduate faculty status, e.g., a faculty member from outside of Vanderbilt, a faculty member from a professional school such as law or medicine, or a scientist working in a national laboratory, with the approvals of the director of graduate studies or chair of the student’s department and of the Graduate School. The request to appoint someone in this manner must be accompanied by a short letter of justification explaining what expertise this person brings to the student’s committee along with a copy of the faculty member’s curriculum vitae.

The functions of the Ph.D. committee are (a) to administer the qualifying examination, (b) to approve the dissertation subject, (c) to aid the student and monitor the progress of the dissertation, and (d) to read and approve the dissertation and administer the final oral examination. The qualifying examination may be administered at any time during the school year and shall be completed within a period of four weeks. Before a qualifying examination can be scheduled, the student must have completed at least 24 hours of graduate work (to include all course work required for the degree) and the language requirement, if any. In some programs the student may be required to demonstrate basic competence in the discipline through a written preliminary examination prior to the actual qualifying examination. All departments and other units offering Ph.D. programs must set a maximum time limit within which a student, under normal circumstances, is required to take the qualifying examination. That maximum time limit must not exceed four years. The qualifying examination may be written or oral, or both. The Graduate School must be notified of the time and place of the qualifying examination at least two weeks in advance. The qualifying examination is not a public examination, and voice recordings of it are not permitted. A student is allowed only two opportunities to pass the qualifying examination. The qualifying examination results form, signed by the committee members and the director of graduate studies for the program, shall be forwarded to the Graduate School immediately after the examination. When the student has passed the qualifying examination, the Ph.D. committee shall recommend to the Graduate School that the student be admitted to candidacy for the degree.

Dissertation

A candidate for the Ph.D. degree must present an acceptable dissertation. The dissertation demonstrates that the candidate has technical competence in the field and has done research of an independent character. It must add to or modify what was previously known, or present a significant interpretation of the subject based upon original investigation. The subject of the dissertation must be approved by the student's faculty adviser and Ph.D. committee. The dissertation must be completed within four years after a student has been admitted to candidacy for the degree. Upon petition to the Graduate School, a one-year extension of candidacy may be granted. If such a period has expired without successful completion of the dissertation, the student may be dismissed from the Graduate School. Readmission to the Graduate School, and to candidacy, requires application to the Graduate School, with approval of the program faculty. In such cases the student may be required, by the Graduate School or by the Ph.D. committee, to demonstrate competence for readmission by taking a qualifying examination or additional course work. The candidate should submit a copy of the completed dissertation to the Ph.D. committee at least two weeks prior to the dissertation defense. The committee reviews the dissertation and conducts the final examination. Final copies of the approved dissertation should be submitted to the Graduate School. Electronic submission is required. Style specifications, fees, and further details are listed at vanderbilt.edu/gradschool. One copy of the title page, with the original signatures of not less than a majority of the Ph.D. committee, and one copy of an abstract of not more than three hundred fifty words, signed by the student's adviser, must be turned in to the Graduate School by the date specified in the calendar section of this catalog. To submit their dissertations electronically, students should revise the title page, convert the documents to a PDF file, and upload the

document on the Electronic Theses and Dissertations (ETD) website, vireo.library.vanderbilt.edu. Dissertations are intended to be of benefit to the academic community and to society in general, and thus are required to be publicly available. This is accomplished by placing a copy in the Vanderbilt Institutional Repository. In some instances, students may request a delay in the release or posting of their dissertations for a limited time period. This can be done, for example, to protect intellectual property, to allow time to file a patent application, or to coordinate with the timing of publication in another form. In no circumstance will the release of the dissertation be delayed for more than two years. Unless requested for a shorter period of time, any request to delay public release will expire at the end of two years and the Graduate School will proceed with the public release through the library. For students who choose to register the copyright with the U.S. Copyright Office, the Graduate School will help facilitate the process. Registration is not required to ensure copyright protection for your work, but certain additional rights are gained by virtue of registration. All applicable fees must be paid at the time the dissertation is turned in to the Graduate School. The abstract is published in *Dissertation Abstracts*, which publicizes the completion of the dissertation and announces its availability on microfilm.

Final Examination

The candidate must pass his or her dissertation defense at least fourteen days before the end of the term in which the degree is to be conferred, or by April 1 for May graduation. The final oral examination is administered by the student's Ph.D. committee and is on the dissertation and significant related material; the student is expected to demonstrate an understanding of the larger context in which the dissertation lies. The public is invited to attend the final examination, which is announced in advance in Vanderbilt's electronic calendar. The chair of the Ph.D. committee or the director of graduate studies of the program, after consultation with the candidate, shall notify the Graduate School in advance of the place and time of the examination and the title of the dissertation. This should be done no later than two weeks prior to the examination. The Graduate School then formally notifies the Ph.D. committee and submits the defense notice to Vanderbilt's electronic calendar. The dissertation defense results form, signed by the committee members and the director of graduate studies for the program, should be forwarded immediately to the Graduate School.

Registration

The normal academic load for full-time registration is 9 to 13 hours in the fall and spring semesters. Students registered for 9 or more credit hours in fall or spring are defined as full time. Those registered for 7 or 8 hours in fall or spring are considered three-quarter time, those registered for 6 hours in fall or spring are half time, and those registered for less than 6 hours in fall or spring are less than half time. In the summer term, 6 or more hours is defined as full time, 5 hours is three-quarter time, 3 to 4 hours is half time, and less than 3 hours is less than half time. After completing the hourly requirements for the degree, full-time students register for master's (7999) or Ph.D. (8999, 9999) research without hourly credit to reflect full-time effort on research. Certain programs offer a half-time Ph.D. research course (9999) for students who are able to devote only half-time effort to dissertation research.

Grading System

The grading system in the Graduate School includes the letter grades *A*, *B*, *C*, and *F*. A student will not be granted graduate credit for any course in which a grade less than *C–* is received. Courses not designated as eligible to be repeated for credit may be repeated for grade replacement purposes. If a course was failed the last time it was taken, credit is awarded when the course is repeated with a passing grade. If a course was previously passed, no new credit will be earned. If a course previously passed is repeated and failed, credit originally earned for it is lost. In any case all grades earned are shown on the transcript. The most recent grade in a course replaces the previous grade in determining credit, in computing the grade point average, and in verifying the completion of degree requirements and progress toward the degree. Passed courses may be repeated only once. Failed courses may be repeated any number of times until passed. The letter *I* may be used at the discretion of the instructor in those cases in which the student is not able to complete work in the normal time. The notation *W* is entered onto the transcript when a student withdraws from a course or from the Graduate School.

A grade point average of 3.0 is required for graduation. Letter grades are assigned grade point values as follows:

A+ = 4.0, A = 4.0, A– = 3.7, B+ = 3.3, B = 3.0, B– = 2.7, C+ = 2.3, C = 2.0, C– = 1.7, F = 0.0

S/U grades are given every semester for all research courses (7999, 8999, and 9999), regardless of the number of hours registered. The accumulation of three (3) *U* grades over the course of study will lead to dismissal from the program and the Graduate School. No credit will be granted for courses in which a grade of *U* is received. Students receive grades in all courses except those approved for credit/non-credit, audits, and some seminars. An *I* that is not replaced by a letter grade within one year may be changed to the grade *F* at the discretion of the instructor; otherwise, the *I* may become permanent and remain on the transcript as such. Certain courses approved by the graduate faculty for credit/ non-credit or Pass/Fail count toward total hours. Courses that are strictly no-credit, however, do not count toward total hours or in calculating grade point average, although grades for such courses are entered on the student's record. With the instructor's permission, students are permitted to audit certain courses. Students who audit are expected to attend the course regularly. Students must be registered for regular courses in order to audit. Audits are listed on the student's transcript. Audits are limited to two per semester.

Further Requirements

It should be understood that the requirements stated above are minimum and that individual programs may add others. Students are urged to consult individual program entries in this catalog and departmental chairs and directors of graduate studies to learn the requirements of programs in which they are interested.

For additional educational requirements and information, please review the Graduate Catalog at the link listed above.

Becoming a Neuroscience Graduate Student

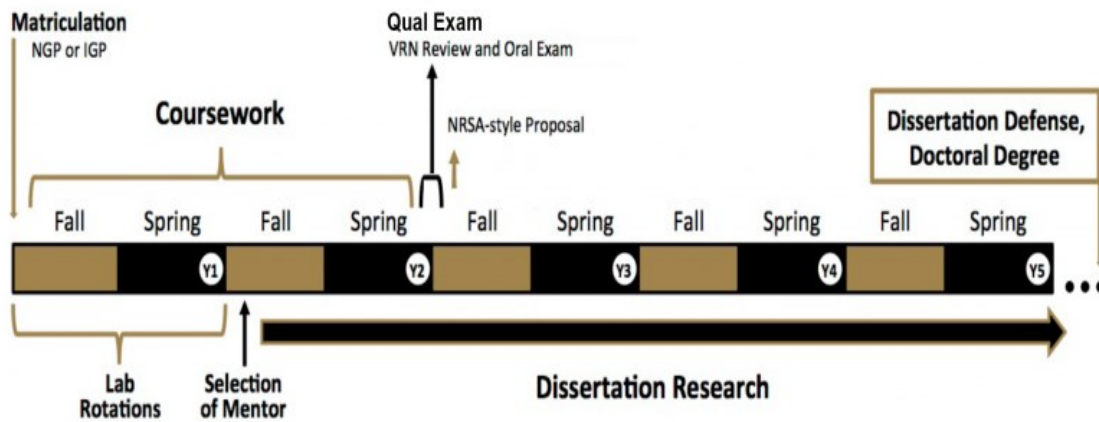
Program Requirements

Bruce Carter, Ph.D.
Director of Graduate Studies

Vanderbilt's Neuroscience Graduate Program prepares each student to make significant contributions in neuroscience and fosters development from trainee to independent research scientist and educator. This is achieved by combining sound training in the fundamentals of neural science with more specialized training that focuses on the integration of this knowledge base into a study of nervous system function and disease. The training, which combines rigorous course work with opportunities for state-of-the-art research, is designed to prepare graduates for a future in which neuroscientists must be able to make the transition from molecules and cells to neural systems and behavior.

Summary of Requirements

Students can enter the Neuroscience Graduate through the Interdisciplinary Graduate Program (IGP), or be directly admitted into the Neuroscience Graduate Program (NGP), or through the Medical Scientist Training Program (MSTP). As stipulated by the Vanderbilt University Graduate School, 72 total hours of graduate credit is required for the Neuroscience Ph.D. degree with a minimum of 27 hours of didactic (classroom) coursework and the balance of up to 48 credits of research hours. In most cases didactic course work will be completed during the first two years. At the end of the second year, a Ph.D. Qualifying Examination must be satisfactorily completed for the student to then be admitted into doctoral candidacy for a Ph.D. degree in neuroscience. If needed, remaining course electives may be taken following the Qualifying Examination after a student completes the qualifying process, the student's effort is largely directed towards completing her/his dissertation project. The average time to degree in our program is just over 5 years.



In addition to the academic requirements described below, every student is required to complete Teaching Apprenticeship/Assistantship in at least one course during graduate training. Also, students are required to attend the Neuroscience Graduate Program Seminar series, Research Forum, and the Annual Neuroscience Retreat.

Didactic Requirements

All neuroscience graduate students are required to take a minimum of 24 hours of coursework by the time they are ready for qualifying exams in the summer and fall of their second to third years. Besides the 24 non-research credits required, students have the option to take additional electives and research hours, up to a total of 12 credits (including required courses) per semester.

Required Courses (1st and 2nd year students):

IGP Entry

Bioregulation I & II

Fundamentals of Neuroscience I and II (NURO 8340 and 8345)

Neurobiology of Disease (NURO 8365)

Neuroscience Discussions I & II (NURO 8325 & 8326)

Neuroscience Research Forum, (NURO 8320, multiple semesters)

Electives

NGP Direct Entry

Lab Rotation (NURO 8302, first year of Graduate Program, 2 semesters)

Fundamentals of Neuroscience I and II (NURO 8340 and 8345)

Neurobiology of Disease (NURO 8365)

Neuroscience Discussions I & II (NURO 8325 & 8326)

Neuroscience Research Forum, (NURO 8320, multiple semesters)

Electives

MSTP Entry – see “Compass” MSTP handbook.

MSTP Seminar (first year in program)

Fundamentals of Neuroscience I and II (NURO 8340 and 8345)

Neuroscience Discussions I & II (NURO 8325, & 8326)

Neuroscience Research Forum, (NURO 8320, multiple semesters)

Electives

All Students:**Second year**

SUMMER: Qualifying Examination; Research Hours.

Third year

- * **FALL: Research Forum; Research Hours.**
- * **SPRING: Research Forum; Research Hours.**
- * **SUMMER: Research Hours.**

Fourth and Fifth years

Successful completion of Teaching Apprenticeship, Research Forum and Neuroscience Graduate Seminars; thesis Research and Defense of Thesis.

The 2nd year trainee will meet with the Program Director (Dr. Lisa Monteggia) and the Director of Graduate Studies (Dr. Bruce Carter) during the academic year of their second year to

discuss any concerns or issues as students of the program before qualifying exam. These meets will be setup for every other month basis during academic year.

Accumulating Credits

72 credit hours are required to graduate with the Ph.D. degree from Vanderbilt University. This includes the required minimum 27 credits from the didactic coursework in addition to any electives; MSTP students are limited to 27 total didactic credits. The hours of course work may be increased (but not decreased), with a corresponding reduction in research hours. The required neuroscience courses are the same for MSTP students who have entered the Neuroscience Graduate Program, and electives will be determined for each individual based on research interests and courses completed in the first two years of medical study. MSTP students must take the MSTP Seminar course (IGP 310) until all 72 graduate hours are earned. All graduate students who have completed their required 72 credit hours will be required to register for NURO 8399 (Ph.D. Dissertation Research) for 0 credits until they graduate.

Outcomes, Monitoring and Progress

Over the past 10 years, the Neuroscience Graduate Program at Vanderbilt has had exceptional success in placing graduates in premier postdoctoral fellowships at research institutions worldwide. The average time to degree for the program during this period has been 5.2 years. The program has numerous milestones for assessing student progress during the course of their graduate training. The most tangible of these for prequalifying students is the Research Forum – a works in progress presentation to the entire program, which is mandatory for all students in years 3 and 4. In addition, course directors and the Director of Graduate Studies (DGS) closely monitor progress. Once the student has successfully passed into doctoral candidacy, primary oversight shifts on to the thesis committee, which meets at a maximum interval of every 9 months in order to assess progress and provide feedback on the student's project. Students should prepare a brief summary of their progress and distribute it to the committee 1 week before the meeting.

Lab Rotation and Advisor selection

During their first year of matriculation, each student is required to perform experimental work in different laboratories. Students entering through the IGP will supply the IGP Director with a list of approved faculty with whom that student would like to rotate. The selection, however, is ultimately Dr. Patton's. Students in the IGP that are interested in neuroscience are encouraged to perform their research rotations with training faculty of

the Neuroscience Graduate Program. Once an IGP student has selected a faculty advisor, the student and advisor must submit a formal request for admission into the Neuroscience Graduate Program. The first step is to make an appointment with the DGS, who will explain the requirements and expectations of the Program and determine the student's interest and commitment to a neuroscience career. A subcommittee of the Neuroscience Steering Committee evaluates candidates and selects who will be admitted. Students entering the NGP directly perform laboratory rotations in their first year under the guidance of the DGS. Students should take care to diligently evaluate the research programs of Neuroscience [training faculty](#), and rotate in the labs of those that they deem most compatible with their goals. These laboratory rotations provide an early opportunity for research experience and an introduction to some of the many techniques used to investigate neuroscience problems. Of greater importance is that the laboratory rotations familiarize students with the science and working environments of potential dissertation advisors. Typically, each rotation lasts for one semester and the student chooses a mentor by the end of the spring semester of first year. A third optional rotation can be performed in the summer between the first and second years, if necessary or desirable. It is incumbent on all Cognitive and Systems students to have arranged for a faculty dissertation mentor, in consultation with the DGS and Director, before the beginning of fall semester of their second year. Failure to do so will be considered a lack of sufficient progress. To receive academic credit for their rotations, students should register for NURO -302 on the section number for their rotation faculty member. At the beginning of each semester, each student should email the DGS with their mentor selection.

Grades and Additional Expectations

Grades

The scale of grades in the Graduate School ranges from A (4.0) to C (2.0) to F (0). Continued financial support and good standing in the Neuroscience Graduate Program requires course grades of at least a B (3.0) average and taking a full course load (at least 8 hours) each semester. A student who fails to earn this minimum grade point average or who earns a C or lower in any course will be placed on academic probation. If a second grade of C or less is earned by a student, he/she is subject to dismissal from the Neuroscience Graduate Program. A special note concerning grades: research grades (NURO 8379 and 8399) are now on a "Satisfactory/Unsatisfactory" system (S or U). A "U" is considered a sign that a student is not performing up to the expectations of her/his dissertation advisor. Thus, if a student earns a "U" in research, the student should speak to his/her dissertation advisor and discover where his/her research performance is not meeting expectations. The accumulation of three (3) U grades over the course of study will lead to dismissal from the Program and the Graduate School.

Additional Expectations

In addition to earning 72 course work and research hours and maintaining at least a B average, there are additional Program requirements.

1. Every student is required to complete a Teaching Apprenticeship/Assistantship in at least one course during graduate training, recommended during year 4 or 5 but partly determined by support mechanism and program needs.
2. Neuroscience Graduate Program students are required to attend the weekly Neuroscience Graduate Program Seminar series, Research Forum meetings, and the Annual Neuroscience Retreat. Students who are in their third year at Vanderbilt or beyond are required to do either a poster or oral presentation at the retreat.
3. Students beyond the second year are encouraged to participate in outreach opportunities afforded through the Vanderbilt Brain Institute. Details of these additional requirements are described in the section on Additional Information Regarding Training Requirements and Opportunities.
4. While not required, all students are encouraged to attend topic-specific journal club meetings, and Cognitive & Systems track students are encouraged to attend the Psychology Neuroscience Seminar.
5. Throughout graduate training, students are expected to engage in scholarly activities, such as studying the scientific literature with the goal of integrating this new information into their own research questions, and attending lectures, journal clubs, and scientific meetings in order to keep abreast of the most recent scientific achievements.

Meeting these and other expectations will foster a student's professional development, establishing a scientific lifestyle of learning that will persist throughout his/her professional career.

Additional Information Regarding Training Requirements and Opportunities

Seminars: In addition to didactic course and laboratory research requirements, all students in the Neuroscience Graduate Program are required to attend the Neuroscience Graduate Seminars series. The series presents lectures by nationally renowned investigators conducting state-of-the-art research, allowing graduate students and faculty to keep abreast of ongoing achievements in neuroscience research. Students in the program may be asked to meet with visiting lecturers in the Neuroscience Graduate Seminar Series, expanding their professional contacts with leading researchers. Students are also required to attend Neuroscience Research Forum; in which trainees have the opportunity to present their own research to their fellow trainees (students in their first year are

expected to present a paper in a journal club format). Seminars presented by the Kennedy Center for Research on Human Development, the Vanderbilt Vision Research Center, the Departments of Biological Sciences and Psychology in the College of Arts and Science, and medical school departments further enhance the neuroscience graduate students' access to scientists and research breakthroughs in related disciplines. In addition, departments at Vanderbilt offer journal clubs that focus on specific areas within neuroscience. Students are encouraged to attend these seminars.

Teaching Assistant:

Another component of every neuroscience graduate student's training is the TA-ship, which provides experience in preparing and giving lectures and exposes the student to the responsibilities and duties of a course director. Opportunities are made available for every student to assist in one or more of the required or elective courses. There are three kinds of "TAs" in the Neuroscience Graduate Program: (1) "Teaching Assistantships" for undergraduate neuroscience courses performed as a condition of stipend support from the College of Arts and Science, (2) "Teaching Assistantships" assigned for NURO graduate courses, and (3) "Teaching Apprenticeships" arranged by students with individual professors. Each student in the NURO program must complete one semester of one type of "TAship". Assignment of TAs should be done spring/summer (May/June) for the following academic year.

Type 1 – Assignments are usually handled by the Undergrad Neuroscience Director and the CIGN Director in consultation with the VBI director and DGS. These TA-ships are usually fulfilled as a condition of support pre-qualification.

Type 2 and 3 TAs usually occur post-qualifying (year 4), but can occur prior to or following that interval.

Type 2 – NURO courses currently assigned TAs are 8325, 8326, 8365, 8340, 8345, and 8365. Note that the load is biased toward systems courses and students so the program must be proactive in assigning these students to courses rather than letting them do type 3 apprenticeships. The DGS/Program manager assigns these TAs in consultation with the VBI director (draft letter attached). They do not involve any monetary support to the student.

Type 3 – "Teaching Apprenticeships" are then performed by all students not having been assigned a type 1 or 2. The DGS/Program manager notifies all of these students of the requirements and procedures (draft letter attached). Each student must arrange for a TA with a professor (usually, but not

always the mentor), submit a brief written description of the TA activity to be performed, which is forwarded by the faculty member to the DGS signaling his/her of the TA activity approval. The DGS approves and forwards this to the Program Manager for the students file and database.

Teaching opportunities outside the traditional university classroom setting are also provided. These include, but are not limited to, public education and community outreach activities that form Vanderbilt's Brain Awareness celebration each March.

Outreach

One goal of Vanderbilt's Brain Awareness program is to educate the general public about how normal behaviors and functions are subserved by brain activity, and on the relationships among brain dysfunction, mental illness, and neurological disease, and the importance of biomedical research in understanding normal brain function and treating or eradicating nervous system diseases. As members of Vanderbilt's neuroscience community, neuroscience graduate students help attain this public education goal, and opportunities have included: visiting a fourth grade classroom and describing the "whys and hows" of your research; developing and conducting "hands on" neuroscience activities and demonstrations for middle school students visiting on the Vanderbilt campus; and leading interactive learning experiences for families visiting the Brain Blast brain fair.

Neuroscience Retreat

Each Fall the Vanderbilt Brain Institute coordinates a Neuroscience Retreat. Neuroscientists from the Vanderbilt University School of Medicine, the College of Arts and Science, the Kennedy Center for Research on Human Development, Meharry Medical College, and other neighboring institutions gather for a day filled with brain-related talks, poster sessions, and food. The purpose of the Retreat is to foster communication among laboratories within and beyond the Neuroscience Graduate Program. Speakers from Vanderbilt's own neuroscience community (both faculty and students) relate ongoing research projects and future plans, and a keynote address on a topic of general interest is presented by a nationally renowned neuroscientist. A graduate student poster session allows trainees and faculty to enjoy learning about and discussing the many varieties of neuroscience research being conducted at Vanderbilt in a relaxed and informal setting. Not only do these interactions stimulate new insights and collaborations, presenting scientific data and ideas at the Retreat will increase graduate student confidence and poise in future presentations at national meetings.

Other Opportunities:

The Neuroscience Student Organization (NSO) was established by graduate students and includes any interested graduate student doing neuroscience-related work in any department or program at Vanderbilt. The NSO is run by students and has its own

infrastructure including a president and advisory council. The NSO also coordinates an annual campus-wide Spring Neuroscience Seminar and plays a key role in coordinating the annual Neuroscience Retreat.

There are many opportunities for neuroscience graduate students to gather informally with guests, faculty, and other trainees. For example, students can meet scientists visiting Vanderbilt at small, informal luncheons that include only neuroscience students and the guest speaker as well as at more formal receptions.

Neuroscience graduate students also meet informally with neuroscience faculty members at the Neuroscience Research Forums. Many other opportunities to establish a broad network of on-campus faculty relationships, to develop ties with non-Vanderbilt scientists, and to serve as hosts to more junior trainees are provided for neuroscience graduate students.

Program Traditions: The Neuroscience Graduate Program gives out five awards each calendar year.

1. The *Elaine Sanders-Bush Student Research Award* is given to the student that published the highest quality, highest impact paper in the academic year prior to the Retreat as chosen by a special committee comprised of faculty and designated by the Director of the Vanderbilt Brain Institute. Recipients receive a plaque and have their name inscribed on a permanent plaque which hangs in the Vanderbilt Brain Institute office. This award is presented at the Annual Neuroscience Retreat.
2. The *Neuroscience Student Leadership Award* is given to the advanced student who has demonstrated the highest level of leadership and service to the program and their fellow students. The recipient is nominated by their peers and is selected by a committee comprised of administrative staff, faculty, and students. All students who are finished with the qualifying process are eligible to be nominated. Recipients receive a plaque and have their name inscribed on a permanent plaque which hangs in the Vanderbilt Brain Institute office; this award is presented at the Annual Neuroscience Retreat.
3. The *Vanderbilt Reviews Neuroscience Cover Award* is given to the third-year student who provided the cover-art for that year's volume of *VRN*. The cover is chosen by *VRN* editorial board for impact and aesthetic quality. The winner gets his/her image printed on the cover of the journal, and receives a framed and matted copy of that cover along with the cover's figure legend. This is awarded at the Annual Neuroscience Retreat.

4. The *Neuroscience Retreat Poster Award* is given to the poster session participant who is deemed to have prepared the most outstanding poster at the Annual Neuroscience Retreat (the panel awards one each to the outstanding graduate student and post-doc posters). The recipients are chosen by a panel of judges and receive a prize determined at the Retreat.
5. In the autumn, the program bestows the *Neuroscience Forum Speaker Award* on the student who received the strongest average audience rating for their forum presentation during the previous academic year.

In addition to the awards described above, the program holds parties on an annual basis. The purpose of the parties is to provide an opportunity for faculty and students to gather in an informal setting to socialize, and thus build cohesion across the program. The Annual First-Year Student Party is held in the autumn (usually in October), in order to welcome the new students who entered the program in August. In the winter, the program hosts a holiday party, typically in Medical Research Building III. Finally, the NSO hosts parties on a quarterly basis, during the academic year, for IGP students rotating in Neuroscience labs, to which all program graduate students are invited. The purpose of these gatherings is to provide a social outlet, as well as an opportunity for rotating students to meet and ask questions of students in the program.

Financial Support

Stipends and tuition allowances are awarded to students through multiple mechanisms. Stipend levels are set by the University in consultation with the department chairs. Stipends for the 2020-2021 academic year are \$32,500.

- Direct admit NGP students are supported by one of a variety of mechanisms for their first year. Some students on this track may be eligible for a second year of support from these means. Once training grant support and other competitive awards are completed, the financial support is the responsibility of the dissertation advisor. Financial support may be withdrawn at any time from a student whose academic performance is deemed inadequate. Medical Scientists Training Program (MSTP) Students, who have completed the first two years of Medical School, will be supported for one additional year on MSTP/Medical School Funds. The financial support is then the responsibility of the dissertation advisor. Financial support may be withdrawn from a student whose performance is deemed inadequate.

- IGP students: The first two semesters of support are provided by the BRET (Biomedical Research Education and Training) office, during which time students are enrolled in the common IGP curriculum. Students are then eligible to compete for positions on various training grants and in the Vanderbilt Brain Institute. Additional sources of support could include faculty research grants, faculty non-federal funds and individual fellowships from extramural sources. Once training grant support and other competitive awards are completed, the financial support is the responsibility of the dissertation advisor. Financial support may be withdrawn at any time from a student whose academic performance is deemed inadequate. MSTP Students' first two years of support (years 1 and 2 of Medical School) are provided by the Medical School. Once a student has chosen a dissertation advisor, the responsibility for support typically falls on to the chosen laboratory. However, in a number of cases the student can be supported by a training grant or institutional sources. Decisions as to this support are generally based on merit (such as prior academic performance or research), with the typical duration of support being two years.

Competitive topping-up awards include Harold Sterling Vanderbilt Graduate Scholarships and the Vanderbilt's Dean's Fellows program. The latter provides competitive fellowships targeted to individuals underrepresented in the basic sciences. The Milton T. Bush Scholars Program was established for general trainee related expenses. Financial support may be withdrawn from a student whose performance is deemed inadequate.

Stipend funds are available—either through the recommended direct deposit method or by actual check—on the last working day of the month. Checks are available for pickup in BRET Financial office - 350 Light Hall or Payroll Department – Baker Building with the appropriate signature. Tuition and fees are paid from various sources by BRET financial office, or in some cases, by the student:

- **Tuition:** All tuition expenses for approved courses will be covered. Tuition will be directly paid for those students in their first two years of training. There are other options for payment of tuition thereafter. Program Manager will discuss with the students on a case-by-case basis.
- **Health Insurance:** All graduate students, unless they sign an insurance waiver, are covered by health insurance through Vanderbilt University. The current health insurance fee is \$3064. If insurance is waived, please notify Program Manager each year. Coverage runs from August 12 of one year to August 12 of the next. This premium is covered by the stipend/payroll funding sources. Spouses and other dependents can be covered by this insurance but guidelines for paying for such coverage vary and payment of the premium for this additional coverage is the responsibility of the student. For additional information about student health insurance, or to request the insurance waiver, please contact the Student Health Center at (615) 343-4688.
- **Service Fees:** All graduate students pay a Service Fee, and this fee plus the student identification badge gives the student access to the excellent facilities at the Student Recreation Center the Libraries and other Vanderbilt resources. These fees are either paid by the stipend funding source or by the student. It is a complicated issue determined by the source from which the student's stipend comes. Students should speak with Program Manager for clarification about their particular circumstance. Spouses, domestic partners, and dependents may also use the facilities for an additional fee that is paid by the student.
- **Transcript Fees:** First time students at Vanderbilt: All new incoming students will be assessed a \$100 one-time transcript fee. This fee will be paid by the Neuroscience Graduate Program. Other special handling fees (FedEx, UPS, etc.) may be charged and this will be the responsibility of the student.

- Student Accounts Bills: Tuition, insurance and fees are pre-billed, so one should not panic a bill for several thousand dollars is received. If the next bill still shows a balance, please bring this bill to BRET financial office so that any problems can be resolved and no late fees are charged. Note: the student is responsible for traffic Violations, pharmacy bills, housing, etc. that are charged to the student account and for any associated late fees. Students on training grants will who come off of training grants, fellowships and go on PI support will be responsible for paying their student service fees. Any student with a balance on their student account going into the Fall or Spring semester will not be allowed to register.

Graduate students are eligible for a variety of Vanderbilt-derived grants. The Vanderbilt “Dissertation Enhancement Grant” (up to \$2,000) is intended to enhance already outstanding dissertation projects by permitting the addition of a new dimension, additional breadth, or other worthwhile extensions. Funding will not be available from this source for aspects of dissertation work that is an integral or essential constituent of the research as described and understood in the dissertation proposal, but rather as a means of expanding the scope of what was already approved in the research proposal. Applications for the Dissertation Enhancement Grant are usually due in February, so please visit the website for the specific date. The “Graduate Student Travel Grant” is an essential means of support for travel to present a student’s research. The student is eligible for up to \$500 for each year, for a maximum of three years. Application for this extremely versatile grant involves filling out this form and submitting the student’s presentation abstract. The application for the Travel Award must be signed by the Director of Graduate Studies and turned in to the Program Manager at least 2 weeks before the trip. Applications are rolling.

[The Society for Neuroscience offers Graduate Student Travel Awards](http://www.sfn.org/Awards-and-Funding/Individual-Prizes-and-Fellowships/Professional-Development-Awards/Trainee-Professional-Development-Awards)
(<http://www.sfn.org/Awards-and-Funding/Individual-Prizes-and-Fellowships/Professional-Development-Awards/Trainee-Professional-Development-Awards>):

You may nominate yourself for a Trainee Professional Development Award by submitting the following application components via the online application portal. Completed application form.

- ☐ Copy of the applicant's abstract submission confirmation form for the upcoming SfN annual meeting including both the control/tracking number and the abstract.
- ☐ Applicant’s CV, including education, honors/awards, and publications (abstracts and manuscripts).
- ☐ Short essay (no more than 500 words) on how attendance at the annual meeting will impact your career goals (for undergraduates, or why you chose the path of neuroscience). Additionally, the essay should speak to a personal experience that has had a broader impact on your career in science. Examples of topics could include:
 - A woman scientist who has inspired the applicant

- The importance of local advocacy and outreach efforts in neuroscience
- The importance of conducting rigorous science
- ▣ One-page letter of recommendation from the applicant's mentor, advisor, chapter representative or program/department chair.

All application components must be submitted as a single PDF with documents arranged in the following order: application form, completed abstract, CV, short essay, and letter of recommendation. Applications that are not submitted in this format or are missing one or more of the application components will not be considered.

Ruth L. Kirschstein National Research Service Award (NRSA) and other Grant Opportunities

All Neuroscience Graduate Program students are encouraged to submit a nationally competitive predoctoral grant application. The Ruth L. Kirschstein National Research Service Award (NRSA) is a NIH grant mechanism that provides stipend and tuition support for the duration of the student's graduate training. Other graduate student fellowships are offered by the National Science Foundation or by private foundations, and can be substituted. The awarding of these individual NRSA's or other independent graduate student funding mechanisms reflect exceptionally well on the student, their laboratory and the program.

Policy Regarding Outside Employment

Stipend and tuition fellowships are awarded to allow students to devote full time to the pursuit of a Ph.D. degree in the Neuroscience Graduate Program and to complete the requirements for the degree in as short a time as is consistent with adequate training and research progress. The student should not engage in additional employment while receiving a stipend through the graduate program, regardless of the source of that stipend, because such employment causes a serious impediment to the graduate educational process. Graduate education and research are of necessary, largely self-motivated processes, and the distractions of outside employment can interfere with the ability of students to prepare satisfactorily for their future professional careers. If additional income is absolutely necessary, students are encouraged to consider low-interest student loans. Advice about such loans

may be obtained from the Vanderbilt University Financial Aid Office. If a student feels strongly that outside employment is necessary while in the Neuroscience Graduate Program, this must be discussed with the student's dissertation advisor and a formal request must be submitted to the DGS. Students should be aware that such requests will rarely, if ever, be granted. However, if outside employment is necessary and is approved by the DGS, the student must not allow it to interfere with high standards of performance and the timely completion of graduate education and research training. If a student is discovered to have unapproved outside employment, he/she may face immediate dismissal from the Program.

Qualifying for Ph.D. Candidacy

The Ph.D. qualifying process should typically be completed by the end of the second year of graduate training. Successful qualification represents the final checkpoint for admission into candidacy for a Ph.D. degree. The purpose of the qualifying examination is to test the student's general knowledge of neuroscience and familiarity with published research related to their dissertation project, and to determine whether the student possesses and can communicate analytical abilities needed for a scholarly career.

The Dissertation Committee

The Dissertation Committee is comprised of the advisor, two members of the Neuroscience Graduate Program faculty, and one member of the Vanderbilt faculty from outside the Neuroscience Graduate Program. The Dissertation Committee serves as a working team to help the student in a number of ways including offering suggestions about experimental technique and design, and providing continual encouragement to be innovative and take risks—characteristics that are crucial to long-term success in research. Therefore, it is important that the Dissertation Committee be carefully selected, with consideration of the scientific training, intellectual interests, and research activities of each Committee member. The diversity of intellectual activity that will be present in a student's research project should be reflected in the composition of the Dissertation Committee. The student and dissertation advisor propose the composition of the Dissertation Committee to the Director of Graduate Studies, who then evaluates it and, if approved, sends it to the Dean of the Graduate School for final approval. The Dissertation Committee

is crucial to the trainee's research progress and professional advancement, and thus its composition should be based on sound scholarship and service to the student. During the Qualifying Exam, the mentor will not be present.

The Qualifying Examination Written documents

Five weeks prior to the Qualifying Examination, the student will submit a concise paper, reviewing the background literature relevant to the student's projected dissertation research to the Director of Graduate Studies (DGS), the Program Coordinator and to the members of the Dissertation Committee. This will be a 5-10 page review in the style of *Nature Reviews in Neuroscience*, including 1 figure. Appended to the review must be a page that describes the aims of the student's planned dissertation project (this section should be limited to one-page and will not be counted within the 10-page limit for the major review section) and a separate page listing all of the courses the student has taken since matriculating into the graduate program at Vanderbilt. Within one week, the chair of the committee will poll the members to decide whether the review and the Specific Aims are acceptable. The review and aims will either be approved or revisions will be requested. A final version must be accepted prior to the oral exam. Upon acceptance by the Dissertation Committee, the review is to be submitted to Editor-in-Chief (vrn@vanderbilt.edu) for publication with the reviews from the rest of the qualifying class in *Vanderbilt Reviews Neuroscience*, the official journal of the Vanderbilt Brain Institute. The format of the review must meet specific guidelines for publication (see <http://vrn.vanderbilt.edu/authors.html>). Prior to initiating writing, the student should consult freely with their advisor, laboratory members and other faculty, discussing relevant literature and techniques and refining the focus for the review, as well as formulating the specific aims. However, consultants should not dictate the content, provide templates (e.g., a grant), or critique drafts of the written document. Consultation, once writing is initiated, should be limited to specific questions, rather than broad-based issues related to content or structure of the review. The review must be the intellectual product of the student. The student may, however, have another student or postdoc read over the document for grammatical corrections.

The Qualifying Examination Meeting

The Qualifying Examination should take place about one month after acceptance of the review and Specific Aims Page by the Committee (in early June). An informational meeting will be held in March of each year to meet with the Director of Graduates for students who will be completing their qualifying exam. The Qualifying Exam will also include one Program Representative from the VBI Education and Training Committee, who will be responsible for making sure the exam is run consistent with the guidelines outlined below and will provide the evaluation form and a

summary letter to the DGS. The Program Representative will participate in questioning the student, particularly in fundamental knowledge of neuroscience, since they should be familiar with the material taught in the required courses. The Qualifying Exam meeting should last approximately two hours, including the oral exam and closed discussions. The Qualifying Exam comprises two parts: written proposal and oral exam. The committee confers in the student's absence at the start of the meeting, at which time the committee reviews the student's performance in classes (based on grades provided by the Program Coordinator) and discusses the scoring of the written proposal (the written part will already have been approved as acceptable prior to the meeting). Criteria for assessing the document include (but are not limited to) the following: scientifically sound, logical, sufficient background/review of field, well-organized, clearly written, proper grammar/spelling. The Program Representative polls each member to reach a consensus on a score. The student will then return to the committee and begin their oral defense of the proposal. The examination begins with the student giving no more than a 5-minute overview of the topic of their review and specific aims, followed by questions from the faculty designed to evaluate the student's general knowledge, ability to integrate didactic information into research design, capacity to connect and synthesize interrelated ideas and ability to think clearly and critically. The exam should take approximately 2 hours, but the exact time is at the discretion of the committee. Prior to the meeting, committee members will receive a list of topics the student is expected to be familiar with from coursework (this document will be formed from the syllabi from NURO 340 and 345). The examiners are also free to question the student about the content taught in other courses that they've taken or knowledge relevant to the student's area of research. Committee members will prepare in advance for the meeting by reading the review and specific aims and identifying several lines of questioning (on both the review itself and general background) to pursue during the oral exam. All committee members should actively participate in questioning the student. Although a wide variety of questions may be deemed appropriate during the oral exam, the committee's focus should be to ascertain whether the student has established a critical knowledge base essential for understanding his/her research project and achieving success as he/she progresses through graduate school. It is the Program Representative's responsibility to keep everyone "on track" (in terms of time, lines of questioning, and overall direction) during the oral exam. Upon conclusion of the oral exam, the committee confers in the student's absence to evaluate the student's performance. The Program Representative polls each member to reach a consensus as to whether the student passed or failed the exam. A conditional pass is a possible outcome with conditions to be established by the committee. Two forms will be completed by the Program Representative, one for the Neuroscience Program and one for the graduate school. The Program Representative will then inform the student of the results and go over in detail the committee's evaluation. It should be noted that both the Neuroscience program and the graduate school allow a student to repeat the examination should the student fail the first examination. Both the student's written document and performance during the oral exam must be deemed satisfactory by all committee members. The written document must be approved before the oral exam. Inadequate performance by the student in the oral exam is grounds for failure and will necessitate a second oral exam and/or additional remediation (within 90 days). In such cases, it is the Program Representative's responsibility to delineate (with input from the committee) what remedial steps are most appropriate for a particular student and how the committee will evaluate the student a second time. Examples of remediation used successfully in the past include the following: provide

student with a specific reading list to augment background knowledge relevant to his/her project followed by a second oral exam to test understanding of the assigned material; student meets with an assigned faculty member for "tutorials" to remedy specific gaps in knowledge or to improve breadth of understanding of fundamental cell and neuroscience topics (e.g. discuss chapters from Kandel's textbook).

After the qualifying exam, the Program Representative will prepare a brief report summarizing the student's performance and outcome of the exam. The representative will ask for input from all committee members and then provide the report to the DGS and the Program Coordinator within one week of the exam who will forward to the mentor and the student. After completing the exam, the student should schedule their first regular committee meeting, which should occur within 3-6 months after the exam. If the committee recommends that the student must repeat the examination, the Program Coordinator will schedule the committee meeting. Otherwise, it is the student's responsibility to schedule the first regular committee meeting. Unless requested, the Program Representative will not be a part of the regular committee and a chair will be chosen by the student with recommendations from the mentor. At the first committee meeting, the student will present their thesis proposal. A written proposal, in NIH NRSA format, must be provided to the committee at least one week prior to the meeting. For all subsequent meetings, students are expected to provide the committee with a brief (2-3 page) progress report at least one week prior to the meeting.

Becoming a Doctoral Candidate

The entire qualifying process must be completed by the end of the third year of graduate school or the student faces dismissal from the program. Any exceptions to these guidelines must be discussed in advance with the Director of Graduate Studies. After the successful completion of the Qualifying Examination, the Director of Graduate Studies will notify the Graduate School so that they can officially designate the student as an official doctoral candidate.

Submission of the Grant Proposal to NIH or Equivalent

After incorporating recommendations made by the student's Qualifying Examination Panel and Dissertation Committee, the student is **HIGHLY** encouraged to submit a nationally competitive grant to the National Institutes of Health or some other funding agency. Once the dissertation committee has approved the proposal, the student should work with their advisor to refine the proposal for submission to external agencies. Susan Hoteling can answer most questions regarding practical and financial matters and can assist in the submission of fellowship applications.

Subsequent Dissertation Committee Meetings and Expectations

During the time between becoming an official Ph.D. candidate and the dissertation defense, each student must convene the Dissertation Committee periodically so that committee members can monitor the student's progress and make timely, constructive suggestions. *Students are required to meet with their committee at least every nine months.* However, the student and advisor may decide more frequent committee meetings are necessary, such as at the completion of a major set of experiments or at other critical points in the research process. *Students should prepare and distribute a brief two to three page progress report to their committee at least one week prior to their committee meeting.* The report should highlight accomplishments and problems which have occurred since the previous committee meeting.

Dissertation Research

The most important aspect of the Neuroscience Graduate Program is the student's dissertation research. Other aspects of the program are designed to provide the scholarly background and professional experiences that prepare the student to conduct and defend the dissertation research and, subsequently, to develop a career as an independent investigator. Thus, after the student completes both phases of the Qualifying Examination, efforts should focus towards completing his/her project.

Before Dissertation Submission to the Committee

It is appropriate to convene a committee meeting once all data are collected and analyzed, several months before the final defense date. This meeting can resolve, before the final defense, any major stumbling blocks that might preclude committee approval of the final dissertation project. Before dissertation writing begins, students should obtain a copy of the Graduate School's official instructions, available online at <https://gradschool.vanderbilt.edu/academics/theses/index.php>
https://gradschool.vanderbilt.edu/documents/checklist_for_graduation_spring2020.pdf

During the development of the dissertation, the student and advisor should review and edit the student-generated text together on a chapter-by-chapter basis. When both student and advisor agree that the dissertation is completed, the student sets up the thesis defense with committee members and, *no later than three weeks before the defense date*, notifies the Interdisciplinary Program Coordinator as to the date, time, and place of the defense as well as the title of the dissertation. The Interdisciplinary Program Coordinator subsequently notifies the Graduate School.

Submission and Defense of the Ph.D. Dissertation

Dissertation Submission

The dissertation defense should be scheduled at a time when all Dissertation Committee members can attend. In order to achieve this, the defense must often be scheduled well in advance of the anticipated date. Although most dissertation defenses take less than two hours, a two-hour period should be scheduled. All Dissertation Committee members must receive a copy of the dissertation at least two weeks prior to the defense date. Please see checklist for defending in Neuroscience Graduate Program on next page for instruction.

Overview of the Defense

As a final requirement for completion of the Ph.D. degree in Neuroscience, each candidate must orally defend the dissertation before the Dissertation Committee and other interested persons. This initial, “public seminar” portion of the defense consists of a 45-50 minute oral presentation summarizing the project for the committee and public attendees. Following this oral presentation, the public may question the candidate and then, in a closed session, the Dissertation Committee will ask questions related to the dissertation research in order to assess the thoroughness of the candidate’s knowledge and the quality of the work. The successful oral defense of the dissertation requires that the candidate demonstrate authority and expertise in his/her research area.

After the oral defense, the Dissertation Committee determines whether the candidate passed or failed the dissertation defense, and notifies the candidate at that time. The Dissertation Committee will file the official decision with the Graduate School. Since the Graduate School requires that all Dissertation Committee members affix their signatures to each of at least three title pages of the dissertation on bonded paper (see Graduate School dissertation guidelines below), students who pass their dissertation defense should be prepared to get signatures from their committee members before the defense meeting is adjourned, while all members are present. The candidate should then file all necessary forms with the Graduate School.

Completing the Ph.D. Degree Process

The Graduate School has several deadlines (see Calendar) that must be met during the semester in which the degree is to be awarded, including: (1) last day to file “Intent Graduate” form; (2) last day for approval of dissertations and successful oral defense of thesis research; (3) last day candidate’s approved copies of the dissertation are accepted in the Graduate School Office. These deadlines are listed in the Graduate School dissertation guidelines website. <https://gradschool.vanderbilt.edu/academics/intraterm-graduation.php> The Ph.D. candidate must have completed all course work, submitted and successfully defended the dissertation, and be registered during the semester in which the degree is to be conferred. The program will pay for 3 hardbound copies of the thesis: One for you, your mentor and program. See the Program Manager for details. You will also want to have copies bound for your own use. The Neuroscience Graduate Program will pay for the binding of three hardback copies (one for the Neuroscience Program, one for your Thesis Advisor, and one for you) and the paperback copies for your Committee members. Students who complete their defense and turn in their paperwork to the graduate school between the deadline for the previous semester and the first day of the next semester should not have to register for the

STEPS FOR DEFENDING AND GRADUATING IN NEUROSCIENCE

DISSERTATION DEFENSE INSTRUCTION

We will need the following items by (a month before defense):

- Date and time of defense (Please work with your committee to schedule a date and time). Zoom meeting.
- Title of your talk and image for the flyer. We will need this to submit paperwork to graduate school to approve the defense. (Please send this information to roz.johnson@vanderbilt.edu)
- Title and Journal of your first author paper.
- Intent to graduate form: (See links below).
 - Students enrolled in the Graduate School who are scheduled to graduate in a given term must complete the Intent to Graduate form in **YES**
 - For more information about the Graduate School's Intent to the Graduate application, please see [Graduation Intent user guide](#).
- See the link below for the graduate school checklist of things to do. Please talk with Amanda King regarding formatting matters.

<https://gradschool.vanderbilt.edu/academics/theses/index.php>

- On the day of defense, please have 3 copies of your title page and 2 copies of the abstract page. I will take care of the other forms to be turned in to graduate school and program.

Note: Due to the current circumstances, the Graduate School recognizes the difficulty of obtaining original signatures on dissertation title pages, abstracts, and exam results, as well as hand delivering items. For the remainder of the semester we will also accept these items electronically. In order to remain in FERPA compliance, please see the following guidelines for electronic approvals and submissions.

Title Pages and Abstracts (Please send a copy to Roz Johnson)

1. Students - Email the title page and abstract to the entire committee for approval, copy etdadmin@vanderbilt.edu
2. Committee Members - REPLY ALL with their approval or disapproval.
3. Students - Combine the title page, abstract, and all email responses into one PDF and upload to your VIREO submission as an Administrative file.

Results of Defenses

Because exam results are considered grades, these approvals may not be emailed. However, the Graduate School will accept electronic signatures, and the document may be delivered securely through Vanderbilt BOX. These should be delivered by a faculty or staff member, not the student.

1. Committee Chair - Complete the fillable Results form and share with the entire committee & DGS in Vanderbilt BOX (will return to Roz Johnson)
2. Committee Members – sign for approval *electronic signature accepted
3. DGS – sign for approval *electronic signature accepted
Committee Chair, DGS, or Program Coordinator – Upload to Graduate School Submissions folder in BOX with file name: Defense Results – Student's Last Name (Qualifying Results – Student's Last

following semester, but regardless, their graduation date will be the end of the semester following the defense.

Life After Degree Completion

Deciding what direction your career will take following completion of the Neuroscience Graduate Program should arise early and become increasingly important as your training progresses. It is never too early to consider career options and plan a curriculum accordingly. To prepare further for a career of independent research in academic biomedical research, it is usually essential that students who receive the Ph.D. in Neuroscience take a postdoctoral position in order to pursue a specific research interest and acquire additional technical skills and expertise. Some students may take permanent positions in industrial or government research laboratories or at teaching-oriented colleges immediately after receiving their degree. Your career objectives can best be realized through the careful planning of your graduate training program. Your advisor, Dissertation Committee, Director of Graduate Studies, and members of the Neuroscience Ph.D. faculty and Program staff stand ready to advise you on career options. In addition, the B.R.E.T. office offers career counseling and Vanderbilt's Career Center offers a variety of services including resume and interview assistance, and on-campus employer interviews.

