Neuroscience Graduate Program

Student Handbook

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Contents

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 understand 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

n 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!

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 five 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 72 graduate students and 111 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
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Chair, Institutional Animal Care and Use Committee
Susana Herculano-Housel, Ph.D.
Associate Director for Communications, Vanderbilt Brain Institute Associate Professor, Biological Sciences and Psychology
Danny Winder, Ph.D.
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Vanderbilt Graduate School Academic Regulations
(Excerpted from the Vanderbilt Graduate School catalog)
https://www.vanderbilt.edu/catalogs/kuali/graduate.php#/content/60a6b20c81d317001c82ef70

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 courses, 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. All new graduate students are required to take the Collaborative Institutional Training Initiative (CITI) course for their discipline during their first semester of study. Some are also required to participate in additional discussion-based RCR education, prior to completing their degrees. Each graduate program has defined the content of the discussion-based program for its students, based on the specific training needed within that disciplines. To find out more about your department's requirements, please check with the department chairman or director of Graduate Studies (DGS).

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. Students will receive a notification when the electronic

Intent form for the end-of term conferral dates becomes available in the student's landing site in YES. All dates and deadlines will be posted on the academic calendar. 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 at Vanderbilt. 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.

Ph.D. Committee

The Ph.D. committee is appointed by the Graduate School on the 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.

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.

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.

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. 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 must 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.

Students must also upload the dissertation for required format review in the VIREO Electronic Thesis and Dissertation website, vireo.library.vanderbilt.edu, at least two weeks prior to the dissertation defense. The final dissertation and accompanying requirements must be submitted through VIREO by the appropriate deadline specified on the academic calendar. Requirements include the title page with signatures of at least a majority of the Ph.D. committee, the signed abstract with a maximum of three hundred fifty words, properly formatted, a Curriculum Vitae, and the Survey of Earned Doctorates completion certificate.

Style specifications templates and VIREO submission instructions are listed at gradschool.vanderbilt.edu/academics/theses.

Students in foreign language departments may submit manuscripts in a language other than English. The abstract, however, must be in English.

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 24 hours of didactic (classroom) coursework and the balance of up to 48 credits of research hours. In most cases didactic coursework 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 5.8 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 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) 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) Neuroscience Discussions I & II (NURO 8325 & 8326) Neuroscience Research Forum, (NURO 8320, multiple semesters) Electives
MSTP Entry – see "Compass" MSTP handbook. MSTP Seminar 8310 (first year in program) and 8314 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 Assistantship/Apprenticeship, Research Forum and Neuroscience Graduate Seminars; thesis Research and Defense of Thesis

The 1st and 2nd year trainees will meet with the Program Director (Dr. Lisa Monteggia) and the Director of Graduate Studies (Dr. Bruce Carter) during the academic year to discuss any concerns or issues as students of the program before qualifying examination. These meeting will be set up monthly basis during the academic year.

Accumulating Credits

72 credit hours are required to graduate with the Ph.D. degree from Vanderbilt University. This includes the required minimum 24 credits from the didactic course work 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 (8310) for the first of year graduate school in program. 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

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 are the Research Forum – a works in progress presentation to the entire program, which is mandatory for all students in years 3 and up. 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 faculties with whom that student would like to rotate. The selection, however, is ultimately Dr, Singleton'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 the IGP student has selected a faculty advisor, the student and advisor must submit a formal request for admission into the Neuroscience Graduate Program. A subcommittee of the Neuroscience Steering Committee evaluates the candidates and selects who will be admitted.

Direct Admit students entering the NGP 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. This should be discussed with the DGS if you would like to do this. At the beginning of each semester, each student should email the DGS and Program Manager with their mentor selection.

MSTP students declare their graduate program in the spring/summer (May-June) of FCC (M2 year). Members of the program faculty affiliated with any of the Ph.D. degree-granting departments or trans-institutional programs who meet specific criteria are eligible to serve as mentors for MSTP students. Students joining a junior faculty members research program who have limited experience training graduate students are paired with a senior faculty member who serves as a co-mentor. The Senior mentor in this arrangement serves as an additional source of advice both for the student and the Junior mentor. This arrangement requires approval by the MSTP LT. In general, mentors don't supervise more than one MSTP student from the same matriculating class and careful consideration is given if more than two MSTP students will be conducting their dissertation research in the same lab.

As mentioned above, prior to choosing a thesis laboratory, each MSTP student must satisfactorily complete at least two rotations. Before finalizing their thesis mentor selection, students review their choice(s) with at least one of the Associate Directors of Graduate Studies, Dr. Pozzi or Dr. Winder. Of note, as these MSTP leaders run highly productive labs that are attractive to MSTP students, the MSTP leadership team takes appropriate steps to conduct lab choice discussions in a manner that avoids conflicts of interest. Therefore, other LT members (Dr. C. Williams or Dr. Estrada) manage these discussions. **See MSTP – The Compass for additional information.**

Once a student has selected a faculty advisor, the student and advisor will complete the **Request to Appoint/Change Adviser** form link listed below and return it to the Program Manager. This form is also used to change advisor as well.

https://gradschool.vanderbilt.edu/academics/theses/updated-forms/Appoint_Change-Adviser-NEW.pdf

Note: First year direct admits, will complete this form at the end of the Spring semester of first year in April. It is incumbent on all direct admit students to have arranged for a faculty dissertation mentor, in consultation with the Director of Graduate Studies, 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 - 8302 on the section number for their rotation faculty member.

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 B– = 2.7

A = 4.0 C+ = 2.3

A– = 3.7 C = 2.0

B+ = 3.3 C– = 1.7

B = 3.0 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 can 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.

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.

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 in their third year and above.

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 "Tasha". 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 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. 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). 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 ("Brain Blast") each March.

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. Vanderbilt's own neuroscience community (both faculty and students)

Speakers from relate ongoing research projects and future plans, and a keynote address on a topic of general interest is presented by a nationally renowned neuroscientist. 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.

Neuroscience Student Organization (NSO)

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. Subgroups within the NSO include the Academic Committee, Curriculum Committee, Social Committee, Diversity, Equity and Inclusion Committee, Outreach Committee, Retreat Coordinator, Vanderbilt Reviews Neuroscience Editors and President. Contact information for NSO officers can be found on the Vanderbilt Brain Institute website.

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.

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 2022-2023 academic year are $35,000 and are awarded the following ways:

- 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: The 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.
- All graduate students, unless they sign an insurance waiver, are covered by health insurance through Vanderbilt University. The current health insurance fee is $3492. 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 see the Student Health Center website at:

  https://www.vumc.org/student-health/student-health-insurance

- Student 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 the 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. **Note: Students on training grants who come off of training grants or fellowships and go on PI support will be responsible for paying their student service fees**
- Transcript Fees: All new incoming direct admit students will be assessed a $100 one- time transcript fee. This fee will be paid by the Neuroscience Graduate Program.
- Student Accounts Bills: Tuition, insurance and fees are pre-billed, so one should not panic a bill for several thousand dollars is received. I**f the next bill still shows a balance, please contact the 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. 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 Vanderbilt "Dissertation enhancement Grant" (up to $2,000) is enhance already outstanding dissertation projects by permitting the grants. The intended to 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. See link below for travel grant and other travel funds:

https://gradschool.vanderbilt.edu/funding/travel.php

All Neuroscience Graduate Program students are encouraged to submit a nationally competitive predoctoral grant application. The Ruth L. Kirsch stein 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 NRSAs or other independent graduate student funding mechanisms reflect exceptionally well on the student, their laboratory and the program. Susan Hotaling sends a form out each semester for students to contact her about submitting grant applications.

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

Under the academic regulation of the Graduate School and Neuroscience Graduate 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 Neuroscience Graduate Program. Because the training faculty for Neuroscience primary faculty appointment is through another department, this will allow any of the faculty members to be consider as outside faculty. Note: Your mentor cannot be the chair of the committee. 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.

During the Qualifying Exam, the mentor will not be present. The Qualifying exam comprises two parts: written proposal and oral exam:

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 Manager 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. 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 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 VRN publication. 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. 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 serve as the program representative/chair and 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. 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. The Qualifying Exam meeting should last approximately two hours, including the oral exam and closed discussions. 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). 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. 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 NURO8 340 and 8345). 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. 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. 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. 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 manager 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 student will work with the Program Manager to schedule the schedule the new exam 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. Student should select a faculty member to serve as their chair of the Ph.D. committee two weeks after the qualifying exam. You advisor/mentor cannot be the Ph.D. committee chair. Please send name of new chair to the program manager after it has been selected. At the first committee meeting, the student will present their thesis proposal. A written proposal, could be 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. Committee chairs will submit SACS (Southern Association of Colleges and Schools) information and qualifying exam summary letters in the RedCap systems for student to review after qualifying exam.

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 Hotaling 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. Committee chairs will submit SACS (Southern Association of Colleges and Schools) information and committee meeting summary letters in the RedCap systems for student to review after each committee meeting.

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 checklist for Graduation website: https://gradschool.vanderbilt.edu/academics/checklistforgraduation.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 three hardbound copies of the thesis: One for you, your mentor and program, as well as the paperback copies for your Committee members. See the Program Manager for details. You will also want to have copies bound for your own use. 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 following semester. Please discuss with Program manager.

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.

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

- 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.
- 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.
- 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.
- 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.
- 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.

VBI and NGP Diversity, Equity and Inclusion Statement

The Vanderbilt Brain Institute (VBI) and Neuroscience Graduate Program (NGP) are committed to promoting an environment in which faculty, staff and trainees from diverse backgrounds and identities experience respect and a sense of belonging. We and Vanderbilt University do not discriminate against individuals based on identities not limited to race, sexual orientation, gender identity, religion, color, national or ethnic origin, socio-economic background, or disability.

We believe our intellectual environment is improved by incorporating perspectives of people from a range of ethnicities, races, genders, sexual orientations, political and religious beliefs, abilities, and life experiences. To bring this vision to life, we are intentional about recruiting, retaining, and supporting diverse and underrepresented personnel at all levels. We endeavor to create intentional spaces where marginalized and underserved populations are celebrated and supported, both in their labs and in the Vanderbilt community. We also encourage all members of our community to participate actively in advancing this mission.

In accordance with our commitment to these principles, we maintain active committees comprising both students and faculty, whose mission is to support and promote diversity, inclusivity, and belonging through both ongoing and new initiatives. These include the Student Support Committee, the VBI DEI Committee, and the Communication Committee.

Land Acknowledgement

We acknowledge that Vanderbilt University occupies the ancestral hunting and traditional lands of the Cherokee, Shawnee, Choctaw, Chickasaw, and Creek peoples. Today, these people have nation boundaries in Oklahoma, North Carolina, and Mississippi, after the Indian Removal Act of 1830 led to the forced removal of southern tribes to the west of the Mississippi River. In particular, the University resides on land ceded in the Treaty of Hopewell (1795-96). We recognize and support the Indigenous individuals and communities who live here now, and for those forcibly removed from their Homelands. We also recognize the resistance, strength, and pride of other people of color whose ancestors worked, lived, and bled on this land without benefit or due compensation. Our goal is to be allies and work alongside you in the fight for equity.

Other Resources:

Vanderbilt University offers a wide array of student support resources for health, wellness, student life and identity, academic support, funding, professional development, and administrative assistance. Please visit Vanderbilt's Graduate School website at https://gradschool.vanderbilt.edu/ where you can find resources for support units such as the University Counseling Center (UCC), International Student & Scholar Support (ISSS), Center for Teaching (CFT), Career Center, and many others.

Appendix:

General coursework layout for IGP, Direct Admits and MSTP Neuroscience Graduate Students:

NGP Direct Admit - 1st and 2nd year of coursework:

Fall 1			Hours	Didactic credit hours
NURO	8302	Techniques and Preparations	3 to 6	Didactic
NURO	8320	Neuroscience Research Forum	0	
NURO	8325	Experimental Design and Statistical Methodology	2	Didactic
NURO	8327	Graduate Neuroanatomomy	3	Didactic
NURO	8340	Fundamentals of Neuroscience II	3	Didactic
NURO	8342	Seminar In The Neurobiology Of Hearing And Multisensory Processes	1to2	Didactic
NURO	8352	Methods and Experimental Design in Neuroscience Research	1	
Electives			3	Didactic
		For total of 12 hours each semester	12	
Spring 1				
NURO	8302	Techniques and Preparations	3 to 6	Didactic
NURO	8320	Neuroscience Research Forum	0	
NURO	8345	Fundamentals of Neuroscience I	4	Didactic
NURO	8346	Advanced Molecular Neurobiology	3	Didactic
NURO	8347	The Visual System	3	Didactic
NURO	8365	Neurobiology of Disease	3	Didactic
PHAR/NURO	8338	Principles of Pharmacology in Neurobiological Research	3	Didactic
Electives			3	Didactic
		For total of 12 hours each semester	12	
Summer 1				
NURO	8320	Neuroscience Research Forum	0	
NURO	8999	Non-Candidate Research	12	
		For total of 12 hours each semester	12	
Fall 2				
NURO	8320	Neuroscience Research Forum	0	
NURO	8326	Neuroscience Grant Writing	1	
NURO	8999	Non-Candidate Research	11	
		For total of 12 hours each semester	12	
Spring 2				
NURO	8320	Neuroscience Research Forum	0	
NURO	8999	Non-Candidate Research	12	
Electives				
		For total of 12 hours each semester	12	
24 hours of didactic course work to sit for Qualifying Exam				
Summer 2				
NURO	8999	Non-Candidate Research	12	
		For total of 12 hours each semester	12	
3 Year and Above				
NURO	8320	Neuroscience Research Forum	0	
NURO	9999	Ph.D. Dissertation Research	0	
Once you reach your 72 hours of required course work, student are registered for 0 hours until they defend.				
Required courses				
Graduate School and program requires 72 hours for Ph.D.			72	

NGP IGP/QCB Admits coursework:			Hours	Didactic Credits
Fall 1		IGP	8	Didactic
Spring 1		IGP	8	Didactic
Summer 1		NURO 8999	12	all depends on support
		Total:	28	
Fall 2 year			Hours	
NURO	8320	Neuroscience Research Forum	0	
NURO	8325	Experimental Design and Statistical Methodology	2	Didactic
NURO	8327	Graduate Neuroanatomomy	3	Didactic
NURO	8340	Fundamentals of Neuroscience II	3	Didactic
NURO	8342	Seminar In The Neurobiology Of Hearing And Multisensory Processes	1to2	Didactic
NURO	8352	Methods and Experimental Design in Neuroscience Research	1	
NURO	8999	Research	varies	
Electives			3	Didactic
		For total of 12 hours each semester	12	
Spring 2 year				
NURO	8320	Neuroscience Research Forum	0	
NURO	8345	Fundamentals of Neuroscience I	4	Didactic
NURO	8346	Advanced Molecular Neurobiology	3	Didactic
NURO	8347	The Visual System	3	Didactic
NURO	8365	Neurobiology of Disease	3	Didactic
NURO	8999	Research	varies	
PHAR/NURO	8338	Principles of Pharmacology in Neurobiological Research	3	Didactic
Electives			3	Didactic
		For total of 12 hours each semester	12	
24 hours of didactic course work to sit for Qualifying Exam				
Summer 2				
NURO	8999	Non-Candidate Research	12	
		For total of 12 hours each semester	12	
Fall 3				
NURO	8326	Neuroscience Grant Writing	1	
NURO	8999	Non-Candidate Research	9	
		For total of 12 hours each semester	12	
Spring 3				
NURO	8999	Non-Candidate Research	12	
Electives				
		For total of 12 hours each semester	12	
Summer 3				
NURO	8999	Non-Candidate Research	12	
		For total of 12 hours each semester	12	
4th year and above				
NURO	9999	Ph.D. Dissertation Research	0	
		Once you reach your 72 hours of required course work, student are registered for 0 hours until they defend.		
Required courses				
Graduate School and program requires 72 hours for Ph.D.			72	

MSTP Admits coursework:			Hours	Didactic Credit hours
Medical School Transfer credit		IGP	48	Didactic
		Total:	48	
Fall GS 1 year			Hours	
MSTP	8310	MSTP Seminar	1	Didactic
NURO	8325	Experimental Design and Statistical Methodology	2	Didactic
NURO	8327	Graduate Neuroanatomomy	3	Didactic
NURO	8340	Fundamentals of Neuroscience II	3	Didactic
NURO	8342	Seminar In The Neurobiology Of Hearing And Multisensory Processes	1to2	Didactic
NURO	8352	Methods and Experimental Design in Neuroscience Research	1	
NURO	8999	Research	7	
Electives			3	Didactic
		For total of 12 hours each semester	12	
Spring GS 1 year				
MSTP	8310	MSTP Seminar	1	Didactic
NURO	8345	Fundamentals of Neuroscience I	4	Didactic
NURO	8326	Neuroscience Grant Writing	1	
NURO	8347	The Visual System	3	Didactic
NURO	8365	Neurobiology of Disease	3	Didactic
PHAR/NURO	8338	Principles of Pharmacology in Neurobiological Research	3	Didactic
NURO	8999			
		For total of 12 hours each semester	12	
24 hours of didactic course work to sit for Qualifying Exam				
Summer GS1 year			**72**	
NURO	8999	Non-Candidate Research	0	
			0	
Fall GS2 year				
NURO/MSTP	8320/8310	Neuroscience Research Forum/MSTP Seminar Series	0	
NURO	9999	Non-Candidate Research	0	
			0	
Spring GS 2 year				
NURO/MSTP	8320/8310	Neuroscience Research Forum/MSTP Seminar Series	0	
NURO	9999	Non-Candidate Research	0	
			0	
Summer GS 2year				
NURO	9999	Non-Candidate Research	0	
			0	
Fall GS 3 year and above				
NURO/MSTP	8320/8310	Neuroscience Research Forum/MSTP Seminar Series	0	
NURO	9999	Ph.D. Dissertation Research	0	
Once you reach your 72 hours of required course work, student are registered for 0 hours until they defend.				
Required courses				
Graduate School and program requires 72 hours for Ph.D.			72	

Qualifying Exam Guidelines and Procedures

Qualifying for PhD candidacy in the Neuroscience Program

The overall goals of the qualifying exam are as follows:

* Assess the student's ability to formulate a series of hypotheses and specific aims to test these hypotheses.

* Immerse the student in scientific literature relevant to the Ph.D. dissertation.

* Assess the student's general neuroscience knowledge base and aptitude for a research career.

* Form a thesis committee to foster and monitor the student's continued development.

The Dissertation Committee

Under the academic regulation of the Graduate School and Neuroscience Graduate 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 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 Manager 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 (seehttp://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). 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 8340 and 8345). 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, then complete the evaluation form as well as write a summary letter, which will be uploaded in the RedCap system within one week of the exam for student to review. 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 student will work with the Program Manager to schedule the schedule the new exam 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. Student should select a faculty member to serve as their chair of the Ph.D. committee two weeks after passing the qualifying exam. Please send to name to the program manager after it has been selected. 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.

Neuroscience Graduate Program Qualifying Exam process.

* **Committee selection due by May xx**
* **Written review due by May xx**
* **Schedule your oral exam – June xx to July xx (completed by July 31st) (send all information above to Program manager)**

ORAL QUALIFYING EXAMINATION- TIPS

- The beginning. You should arrive well ahead of time to set up your presentation and familiarize yourself with the room and visual aids. The committee will then filter in and once they are all present they will ask you to leave the room briefly. The committee members will update each other on your academic standing and the courses you have taken, and the Program Rep will review the "ground rules" for the exam with the committee. [If the exam is by Zoom, then you should make sure you have a good WIFI connection and are in a quiet location. Be sure to test everything out beforehand. The committee gathers, then you will be sent to a waiting room]

- The Examination itself.

  a) Oral presentation by the student (5 min duration). Highlight key areas of background and unanswered questions that you have addressed in your review. You can use PowerPoint (no more than 5 or 6 slides at most) or board, either way, don't be too fancy. [If by Zoom, you can use ppt slides or a drawing function on Zoom or other software that allows the committee to see what you're writing.]
  b) Questions by faculty to the student. Total time, about 90 minutes.
  c) The student will be asked to leave the room, and the board will deliberate on the student's strengths and weaknesses and make a decision about the exam outcome.
  d) Committee will inform the student of the outcome (pass, fail, conditional pass) and Program Rep will meet with you in a later appointment to talk to you about perceived strengths and weaknesses.

- Information on Questions and Answers

  a) The exam is designed to test the depth and breadth of your fundamental knowledge in neuroscience as you learned it in your course-work, the additional level of knowledge you have obtained in areas related to your review, and to test your ability to synthesize and

communicate scientific information related to research design and background literature.

b) Specific information will be requested, including information you will have learned in your courses as well as details of experimental design and data interpretation from your review.
c) You should have command of the facts you learned in courses (8340, 8345, 8365, and electives).
d) You should be prepared to think on your feet.
e) You should be prepared to use basic scientific information to generate a reasonable answer to a question even if an answer does not immediately spring to mind.
f) You should be prepared to diagram relevant neural/cellular/molecular pathways, experimental designs, and potential experimental outcomes on the board.
g) You should be prepared to follow a line of questioning until you reach the point where either you or the examiner or both, are stumped.
h) You may be asked to think of alternative interpretations of experiments and alternative experimental approaches.
i) You may be asked to generate reasonable positive and negative controls.
j) <u>You should not</u>: panic, worry about an earlier wrong answer, stall, go off on tangents unrelated to the question, or attempt to verbally answer a question when a drawing would be better.
k) Questions will come from all committee members and the Program Rep.

- After you learn the outcome:
  a) If pass: Proceed to set up your committee within 6 months.
  b) If you do not pass: You will be allowed to take the examination again within 90 days. You must pass the 2nd time <u>or you will have to leave the program. You, your advisor, and</u> your exam committee will agree on a written "study plan" to address the weaknesses.

Dissertation Committee Meetings process:

- Students are required to have a committee meeting at least every nine months. The Ph.D. committee may request before the nine-month period.
- 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.
- Committee chairs will submit SACS (Southern Association of Colleges and Schools) information and committee meeting summary letters in the RedCap systems for student to review after each committee meeting.

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).
- Title of your talk and image for the flyer. We will need this to submit paperwork to graduate school to approve the defense at least two weeks before exam. (Please send this information to roz. johnson@vanderbilt.edu) If you plan on doing a hybrid defense, you will need to supply a Zoom link for the meeting.
- Title, Journal, and publication date 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 -
    - For more information about the Graduate School's Intent to the Graduate application, please see the **Graduation latent user guide**.
- See the link below for the graduate school checklist of things to do. Please talk with Amanda King or Susan Hilderbrand regarding formatting matters.

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

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

  Students submit their materials in by combing the title page, abstract, 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. I will send the form in a secure format to gather signatures and submit this form to the Graduate School after the members have signed it.

- Last day you will be in the lab. Please discuss with your mentor. I will send an email to you as we get closer to the defense.
- If you will be defending and graduating in Fall (December graduation), please complete the Health Insurance Waiver. You will be responsible for the fee if it is not waived. See link below. _
- https://finance.vanderbilt.edu/stuaccts/graduate/hlth-insurance.php. This needs to be completed for so you will not be charge in the Spring semester.
- Once you defend and finalize your thesis, we will get it printed. The program will print 3 hard-bound copies - one for you, one for your mentor and one for the program. Please submit your approved thesis to the printing service at vu.edu/print. Let them know them know that we will be paying for it.
- We will need to know your job position plans once you have defended and graduate:
    - Name of position:
    - Company or University:

Let me know if you have any other questions or concerns.

Roz