



Neurosciences, PhD

Degree Requirements

Neurosciences

The Neuroscience Program at WashU is a graduate training program within the Roy and Diana Vagelos Division of Biology and Biomedical Sciences (DBBS).

Washington University has a long-standing tradition of excellence in neuroscience. Historic milestones include Erlanger's pioneering work on nerve conduction velocity and its relationship to axon diameter, as well as the 1950s discovery of the first neuronal trophic factor, nerve growth factor, by Levi-Montalcini, Cohen, and Hamburger. Today, a large and collaborative faculty is engaged in nearly every area of modern neuroscience, from molecular studies of ion channels to positron emission tomography (PET) imaging of the human brain, and the genetics of neurological diseases.

Faculty from a variety of departments — including Neuroscience, Anesthesiology, Biochemistry and Molecular Biophysics, Biology, Biomedical Engineering, Cell Biology and Physiology, Developmental Biology, Genetics, Molecular Microbiology, Neurology, Neurosurgery, Ophthalmology and Visual Sciences, Pathology and Immunology, Physics, Psychiatry, Psychological & Brain Sciences, and Radiology — serve as advisors for thesis research and as teaching faculty. The diverse expertise of the faculty ensures students gain exposure to a wide range of neurobiological challenges and research methods.

To earn a PhD at within the Roy and Diana Vagelos Division of Biology and Biomedical Sciences at Washington University, a student must complete all courses required by their department; maintain satisfactory academic progress; pass the qualifying examination; complete all requirements for doctoral candidacy; create a Research Advisory Committee (RAC); submit a Title, Scope, and Procedure Form; fulfill residence and Mentored Experience Requirements; write, defend, and submit a dissertation; and apply for program completion (graduation) via Workday Student.

Program Requirements

- **Total Units Required:** 36 units
- **Degree Length:** Seven years
 - Students are expected to maintain satisfactory academic progress in accordance with academic milestones. Students entering their seventh year in the program will receive a warning letter in regards to reaching their stated degree length. Students entering their eighth year in the program will be required to obtain permission from the Associate Dean of Graduate Education. Across DBBS programs, the average time to degree is 5.6 years.
 - **Note:** Students must be enrolled in 9 graduate credits each semester to retain full-time status. As students complete their coursework, if enrolled in fewer than 9 graduate credits, they must enroll in a specific Biology & Biomedical Sciences research graduate course to maintain full-time status. Prior

to completing 36 credit units, students will enroll in BBS 5900 Research for research credit; after completing 36 credit units, students will enroll in BBS 9000 Full-Time Graduate Research/Study, which will show 0 credit units but fulfills full-time status. Students should follow advising instructions to ensure proper enrollment prior to Add/Drop.

- Continued support is guaranteed for the duration of the student's graduate studies, provided that the student maintains satisfactory progress toward completion of the degree.
- **Grade Requirement:** Required courses generally consist of four to nine courses in areas fundamental to the student's program. Students are expected to maintain a B average in graduate courses.

Required Courses

DBBS Required Courses

- BBS 5098 Graduate Research Fundamentals
- BBS 5011 Ethics & Research Science

Program Required Courses

- BBS 5571 Cellular Neurobiology
- BBS 5648 Coding and Statistical Thinking in the Neurosciences
- BBS 5651 Neural Systems
- BBS 5646 First-Year Fundamentals
- BBS 5565 Oral Presentation of Scientific Research Materials

Specialized Advanced Electives

Students must complete 1 credit of NanoCourses. Note that NanoCourses may be assigned 0.5 or 1 credit, depending on the course.

- BBS 5989 Advanced Topics in Neuroscience and/or BBS 5910 Nano Topics in Biology and Biomedical Sciences

Journal Clubs

Students can select from a variety of ongoing journal clubs that best align with their interests, with topics ranging from circuits to behavior to glial biology.

Laboratory Rotations

Selecting a thesis advisor is the most important decision a student makes in graduate school. To help each student make an informed, thoughtful choice, the Division builds in flexibility to explore options. Students usually participate in three lab rotations during their first year. Additional rotations can be arranged, and rotation lengths are flexible. Students usually begin their thesis research by the end of their first year.



Scientific Scholarship

Keeping abreast of scientific developments is critical for faculty and students alike. The Division offers many ways to stay current. More than 15 weekly biology seminars provide excellent opportunities to meet outstanding scientists from outside Washington University. Several annual symposia bring internationally recognized speakers to campus. Journal clubs meet weekly for students, postdoctoral fellows and faculty to present and discuss current scientific literature. A number of Interdisciplinary Research Pathways allow students to enhance their PhD program. Program retreats allow for informal interaction among students and faculty. The Division also provides funds for each student for professional development.