



Neuroscience



**WASHINGTON
& JEFFERSON
COLLEGE**

The Neuroscience major and minor are rigorous interdisciplinary programs designed to provide a **foundation in neuroscience** and to allow students to focus their **research interests** in a variety of levels of nervous system functioning, from the activity of **single neurons to the complexity of behavioral systems**. Majors distribute their coursework across the fields of **biology, chemistry, philosophy, physics, and psychology** as these disciplines all contribute to the interdisciplinary nature of the brain sciences.

Major Requirements

- Cell & Molecular Biology (BIO 121)
- Organismal Biology (BIO 131)
- Organic Chemistry I (CHM 160)
- Intro/Gen Physics I (PHY 101/107)
- Intro/Gen Physics II (PHY 102/108)
- Elementary Psychology I (PSY 101)
- Math requirement:
 - Introductory Statistics (MTH 125)
 - Calculus (MTH 151)
 - Applied Statistics for the Life Sciences (BIO 245)
- Introduction to Neuroscience (NSC 210)
- Experimental Neuroscience (NSC 300)
- Advanced Topics in Neuroscience (NSC 400)

- Three NSC electives from BIO, PSY, PHL or other approved programs to help shape their individual NSC major to reflect their interest and expertise, such as:
- Animals Physiology
 - Medical Histology
 - Systems and Development Neuroscience
 - Comparative Psychology
 - Psychopathology
 - Cognitive Psychology
 - Psychology of Stress
 - Biochemistry
 - Molecular Biology
 - Philosophy of the Mind
- Capstone: Approved research projects from summer internship, Independent Study, or approved advanced experimental lab course in Biology or Psychology

Minor Requirements

- Two introductory science courses from different disciplines (BIO, CHM, PHY, or PSY)
- Introduction to Neuroscience (NSC 210)
- Experimental Neuroscience (NSC 300)
- Advanced Topics in Neuroscience (NSC 400)

Program Director

Kelly Weixel, Ph.D.
kweixel@washjeff.edu

Faculty

Ronald Bayline, Ph.D.
rjbayline@washjeff.edu

Sean Coyne, Ph.D.
scoyne@washjeff.edu

Michael Leonard, Ph.D.
mleonard@washjeff.edu

Kelly Lohr, Ph.D.
klohr@washjeff.edu

Nobunaka Matsuno, Ph.D.
nmatsuno@washjeff.edu

Beyond the Classroom

Students in Neuroscience have opportunities to explore **research, internships, and networking** outside of their classroom. Furthermore, the structure of the **NSC curriculum permits flexibility** in pursuing unique interests and pairing this program with a wide range of complementary majors and minors available at the College.

Research & Internships

The interdisciplinary nature of the NSC program offers students opportunities to work in areas that cross disciplines and **capitalize on their broader education while developing unique and specialized expertise**. Recent students have engaged in the following while pursuing their degree at W&J:

- Collaboration with Dr. Sean Coyne under a partnership with the Maryland Zoo investigating the effects environmental variables on large mammal behavior across different seasons.
- Conduct research on the role of gut microbiome on neurodegeneration and present research at the Society for Neuroscience Conference under the direction of Dr. Kelly Lohr.
- Develop structurally novel neurotoxic compound in collaboration with Dr. Michael Leonard and present research at the American Chemical Society Conference.
- Neurorepair research at the Lewis Katz School of Medicine at Temple University.
- Develop artificial grammars to test language learning at the Institute of Neuroscience, Newcastle University Medical School in Newcastle upon Tyne, England.
- Research effects of radiation exposure on the behavior, cognition, and neurochemistry of rats as a model for long-term human space flight at the Johns Hopkins School of Medicine and present work at a NASA workshop.

Recent Alumni Employment & Education

- Graduate Program in Public Health, University of Pittsburgh
- Medical School: University of Colorado, LECOM, LKSOM, West Virginia University
- Ph.D. candidates in Neuroscience: Case Western University, University of Delaware, Purdue University Weldon School of Biomedical Engineering, Washington University in St. Louis School of Medicine
- Behavioral Specialist, Wexford, PA
- U.S. Medical Lead, Teva Pharmaceuticals
- Research Health Science Specialist at Providence VAMC, Center for Neurorestoration and Neurotechnology, Providence, RI
- Cognitive Behavioral Researcher, University of Arizona
- Research Specialist in Pediatrics, Washington University in St. Louis School of Medicine



Program Website

washjeff.edu/neuroscience