NEUROSCIENCES, PHD

Degree: Doctor of Philosophy (PhD)
Field of Study: Neurosciences

Program Overview

The Neurosciences graduate program has a strong emphasis on cellular and molecular mechanisms that mediate the function and development of the nervous system. Admissions to the Neurosciences PhD program may be obtained through the integrated Biomedical Sciences Training Program or via the Medical Scientist Training Program. To earn a PhD in Neurosciences, a student must complete rotations in at least three laboratories, followed by selection of a research advisor, and complete Core and Elective coursework including responsible conduct of research as described in the plan of study, below. In general, students must be registered for a total of 9 credit hours each fall and spring semester until they advance to candidacy, at the end of their 2nd year. Students who previously completed relevant coursework, for example, with a Master's of Science, may petition to complete alternative courses. Each graduate program follows the overall regulations established and described in CWRU Graduate Studies and documented to the Regents of the State of Ohio.

Admissions

Students are admitted to this PhD program through the Biomedical Sciences Training Program (BSTP) or the Medical Scientist Training Program (MSTP).

Biomedical Sciences Training Program (BSTP)

The BSTP offers a common entry point to most of the School of Medicine's biomedical PhD programs. BSTP students can choose among research mentors in many different PhD programs in the School of Medicine.

Medical Scientist Training Program (MSTP)

Students in the MSTP earn the dual MD/PhD degree. MSTP students also have the choice of mentors in many different PhD programs. The admission requirements of those programs can be viewed on their pages in the Bulletin. Program requirements for the dual can be found on the Medical Scientist Training Program, PhD/Medicine, MD program page.

PhD Policies

For PhD policies and procedures, please review the School of Graduate Studies section of the General Bulletin.

Program Requirements

Each student must successfully complete a preliminary exam after year one, and a qualifier examination for advancement to candidacy in the form of a short grant proposal with oral defense. The qualifier is generally completed in the summer after year two. During the dissertation period, students are expected to meet at least once a year with their thesis committee, present seminars in the department, and fulfill journal publication requirements. Throughout the doctoral training, students are expected to be enthusiastic participants in seminars, journal clubs, and research meetings in the lab and program. Completion of the PhD degree will require 36 hours of coursework (24 hours of which are graded) and 18 hours of NEUR 701.

Biomedical Sciences Training Program (BSTP) Requirements

Coursework

Students take integrated courses in Cell and Molecular Biology (IBMS 453, IBMS 455). They also complete a course in biostatistics (IBMS 450) and a literature based reading course (IBMS 456A). These four courses, offered in the fall semester, emphasize the molecular approaches that form the basis of modern biology. We also seek students with strong quantitative training who may have majored in physics or math, and offer alternative courses for these students to acquire foundations in biology. Qualified students also may take more specialized elective courses. All students take IBMS 500 On Being a Professional Scientist: The Responsible Conduct of Research.

Research Rotations

The research rotations allow students to explore research areas and become familiar with faculty members and their laboratories. The main purpose of these rotations is to aid students in selecting a laboratory for their thesis work. Students are encouraged to begin their rotations in July. Doing so gives them the opportunity to complete rotations during the summer before classes begin at the end of August. Students must complete at least three rotations.

Choosing a Thesis Advisor

During the first year, students select an advisor for their dissertation research. Each student also joins the PhD program with which their advisor is affiliated. Once students choose a PhD program, the requirements of that program are followed to obtain the PhD. The emphasis of the PhD work is on research, culminating in the completion of an original, independent research thesis and publishing the results in the scientific literature. PhD programs also focus on educating students to work as professional scientists.

Sample Plan of Study

First Year		
Fall		**Hours**
IBMS 453	Cell Biology I	3
Select one of the following:		1
NEUR 601	Research in Neuroscience	
BSTP 400	Research Rotation in Biomedical Sciences Training Program	
MSTP 400	Research Rotation in Medical Scientist Training Program	
IBMS 455	Molecular Biology I	3
IBMS 456A	Since You Were Born: Nobel Prize Biomedical Research in the Last 21 Years- Section A	1
IBMS 450	Fundamental Biostatistics to Enhance Research Rigor & Reproducibility	1
	Hours	**9**
Spring		
Elective Graduate Course		3
NEUR 415	Neuroscience Seminars	1
NEUR 601	Research in Neuroscience	1
NEUR 402	Principles of Neural Science	3

IBMS 500	On Being a Professional Scientist: The Responsible Conduct of Research	1
Begin Thesis Research		
Complete Preliminary Exam by July 31		
	Hours	**9**
Second Year		
Fall		
Elective Courses		6
NEUR 601	Research in Neuroscience	3
	Hours	**9**
Spring		
NEUR 419	Critical Thinking in Neuroscience	3
Elective Courses		3
NEUR 601	Research in Neuroscience	3
Complete Qualifier Exam by June 30th		
Form Thesis Committee		
Research		
Prepare Individual Fellowship Application		
	Hours	**9**
Third Year		
Fall		
NEUR 701	Dissertation Ph.D.	1 - 9
Thesis Committee Meetings every 6 months		
	Hours	**9**
Spring		
NEUR 701	Dissertation Ph.D.	1 - 9
Thesis Committee Meetings every 6 months		
	Hours	**9**
Fourth Year		
Fall		
NEUR 701	Dissertation Ph.D.	1 - 9
Thesis Committee Meetings every 6 months		
	Hours	**9**
Spring		
NEUR 701	Dissertation Ph.D.	1 - 9
Thesis Committee Meetings every 6 months		
	Hours	**9**
Fifth Year		
Fall		
NEUR 701	Dissertation Ph.D.	1 - 9
Thesis Committee Meetings every 6 months		
	Hours	**9**
Spring		
NEUR 701	Dissertation Ph.D.	1 - 9
IBMS 501	Responsible Conduct of Research for Advanced Trainees (Thesis Committee Meetings every 6 months)	0
Thesis Committee Meetings every 6 months		
	Hours	**9**
	Total Hours	**90**

* IBMS 501 Responsible Conduct of Research for Advanced Trainees is offered every spring semester (beginning 2020). The SOM requires that PhD students who are 4 years beyond their initial RCR training in IBMS 500 On Being a Professional Scientist: The Responsible Conduct of Research, register for IBMS 501.