

DEPARTMENT OF NEUROSCIENCES

Robert Smith, M.D., Ph.D., chair
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The combination of molecular biology and genetics with modern neuroanatomical techniques is transforming both our ability to examine and to understand the nervous system. Ongoing research by the faculty in the Neurosciences and Neurological Disorders graduate program is providing insights into neurotransmission, sensory system function, development and plasticity of the nervous system, regeneration and repair following neural damage, the basis of neural disease, and behavior. As one of four biomedical science degree programs in the University of Toledo, College of Medicine & Life Sciences, the Neurosciences and Neurological Disorders program is an interdisciplinary course of studies whose primary goal is to train students for independent, creative careers in biomedical research and/or teaching. The program awards both PhD and MSBS in biomedical sciences degrees and participates in the MD/PhD and MD/MSBS combined degree programs. Nationally-recognized, NIH-funded Neuroscience faculty who serve as research mentors are drawn from a number of departments including: Neurosciences, Neurology, Physiology and Pharmacology, Otolaryngology, Psychiatry and Radiation Therapy. Modern, state-of-the-art research laboratory and core facilities are available through the program and these participating departments.

The Neurosciences and Neurological Disorders training program at the University of Toledo on the Health Science Campus offers the PhD, or MD/PhD degrees through the interdisciplinary degree programs in Biomedical Sciences. The primary goal of the doctoral program in Neurosciences and Neurological Disorders is to train students for independent, creative careers in research and/or teaching. The curriculum for the PhD degree consists of a core of concentrated course work in the first year, followed by specialized elective courses and an emphasis on laboratory research. Elective courses are offered in developmental and systems neuroscience, as well as ion channel function, sensory physiology, and neuropharmacology. During the first two semesters, each student rotates through four research laboratories, conducting short-term projects, gaining exposure to techniques and identifying potential areas for further investigation. At the end of the second semester, each student selects a major advisor who directs the student's doctoral or thesis research. A faculty committee is also jointly chosen by the student and advisor to supervise academic progress toward completion of the PhD or MSBS degree. In addition to 90 credit hours in didactic and other courses, PhD students are required to successfully pass a qualifying exam and to write and defend a research dissertation. *Masters students complete a minimum of 40 credit hours and write and defend a research thesis.

* MSBS in Neuroscience and Neurological Disorders is not currently offered

Degrees Offered

- Neuroscience and Neurological Disorders, PhD (<https://catalog.utoledo.edu/graduate/medicine-life-sciences/departments->

[divisions/neurosciences/phd-biomedical-science-neuroscience-neurological-disorders/](https://catalog.utoledo.edu/graduate/medicine-life-sciences/departments-))

- Bioinformatics, PhD (<https://catalog.utoledo.edu/graduate/medicine-life-sciences/graduate-degrees-certificates-offered/bioinformatics-phd/>)
- Biomedical Science: Bioinformatics and Proteomics-Genomic, MSBS (<https://catalog.utoledo.edu/graduate/medicine-life-sciences/graduate-degrees-certificates-offered/msbs-bioinformatics-proteomics-genomics/>)
- Bioinformatics & Biomarkers, Certificate (<https://catalog.utoledo.edu/graduate/medicine-life-sciences/graduate-degrees-certificates-offered/certificate-bioinformatics-biomarkers/>)

NNDP 5810 Neuroscience

[5 credit hours]

A survey of medical neuroscience, taught as part of the medical school curriculum. It includes lectures, laboratories, and patient-presentation sessions.

NNDP 6010 Neurosciences Neurolog Disease

[2 credit hours]

NNDP 6500 Seminar in Neuroscience

[0 credit hours]

Training and practice in presenting seminars on neuroscience research. May be repeated for credit.

Term Offered: Spring, Fall

NNDP 6540 Journal Paper Review Neuroscience

[1-2 credit hours]

A weekly report on recent advances in neurobiology taken from original papers to give the students an opportunity to find, critically assess, and report on these studies. Students will develop skills for communicating scientific ideas in a seminar format. May be repeated for credit.

Term Offered: Spring

NNDP 6560 Readings in Neuroscience

[1-4 credit hours]

Tutorial course between major advisor and student to acquaint student with important writings relevant to neuroscience concepts. May be repeated for credit.

Term Offered: Summer, Fall

NNDP 6720 Current Topics in Neuroscience

[1-4 credit hours]

Tutorial course between major advisor and student to acquaint student with the range of topics of current major interest in neuroscience research. May be repeated for credit.

Term Offered: Fall

NNDP 6730 Research in NNDP

[1-15 credit hours]

NNDP 6890 Independ Study in Neuroscience

[1-12 credit hours]

Independent library and laboratory work under the supervision of the major advisor. May be repeated for credit.

Term Offered: Summer, Fall

NNDP 6910 Biomedical Publishing

[1 credit hour]

Academic and student development course offering an introduction to an open access peer reviewed journal. Offers strategies to gain a better understanding of this example of journal system by examining and eventually assisting with The University of Toledo Journal of Medical Sciences (Translation) through process, procedures, and application.

Term Offered: Spring, Summer, Fall

NNDP 6990 Thesis Research Neurosci Neuro

[1-15 credit hours]

NNDP 7810 Neuroscience

[6 credit hours]

A survey of medical neuroscience, taught as part of the medical school curriculum. It includes lectures, laboratories, and patient-presentation sessions.

Term Offered: Spring

NNDP 8010 Neurosci Neuro Diseases

[2 credit hours]

The objectives of the course are to study nervous system development, organization and structure and of nervous system-related diseases.

NNDP 8500 Seminar in Neuroscience

[1 credit hour]

Training and practice in presenting seminars on neuroscience research. May be repeated for credit.

Term Offered: Spring, Fall

NNDP 8540 Journal Paper Review Neuroscience

[1-2 credit hours]

A weekly report on recent advances in neurobiology taken from original papers to give the students an opportunity to find, critically assess, and report on these studies. Students will develop skills for communicating scientific ideas in a seminar format. May be repeated for credit.

Term Offered: Spring

NNDP 8560 Readings in Neuroscience

[1-4 credit hours]

Tutorial course between major advisor and student to acquaint student with important writings relevant to neuroscience concepts. May be repeated for credit.

Term Offered: Spring, Summer, Fall

NNDP 8720 Current Topics in Neuroscience

[1-4 credit hours]

Tutorial course between major advisor and student to acquaint student with the range of topics of current major interest in neuroscience research. May be repeated for credit.

Term Offered: Spring, Summer, Fall

NNDP 8890 Independ Study in Neuroscience

[1-12 credit hours]

Independent library and laboratory work under the supervision of the major advisor. May be repeated for credit.

Term Offered: Spring, Summer, Fall

NNDP 8990 Research in Neuroscience

[1-15 credit hours]

Training in neuroscience research techniques through laboratory experience. May be repeated for credit.

Term Offered: Spring, Summer, Fall

NNDP 9990 Dissertation Research in NNDP

[1-15 credit hours]