Overview
The Neuroscience Graduate Program, established in 1992, is an interdisciplinary/interdepartmental PhD program designed to guide trainees through the process of acquiring the research skills and the intellectual rigor needed to become independent professional neuroscientists. The program achieves these goals through coursework, journal clubs, dissertation research committee guidance, and outstanding faculty mentorship. The program also provides multiple annual forums for students to showcase their own research and learn from international research leaders.

More than 80 participating faculty are located in several departments and schools on three UM campuses including Biochemistry, Cell Biology and Anatomy, Molecular and Cellular Pharmacology, Physiology and Biophysics, and Genetics on the Medical campus. From the Coral Gables campus, we have faculty from Biology, Biomedical Engineering and Psychology, as well as several clinical departments such as Medicine, Neurological Surgery, Neurology, Ophthalmology, Otolaryngology, Pathology, Physical Therapy, and Psychiatry. In addition, we have faculty from the Rosenstiel School of Marine and Atmospheric Sciences.

Neuroscience faculty pursue a wide variety of research interests, including cellular and molecular mechanisms involved in signal transduction, gene expression in electrically excitable cells, synapse formation, neuronal growth and survival, integrative neuroscience, neuroimmunology, stroke, neuronal regeneration, autonomic control, brain metabolism and cerebral blood flow, spinal cord and brain injuries, degenerative changes within specific neural pathways in Parkinson’s and Alzheimer’s diseases, ALS, and genetic analysis of neurological disorders.

Contact Information
Coleen Atkins (CAtkins@med.miami.edu), PhD, (CAtkins@med.miami.edu) Graduate Program Director William Orta (wxo35@med.miami.edu), Senior Program Coordinator Office of Graduate and Postdoctoral Studies Rosenstiel Medical Sciences Building, Suite 1128A 1600 NW 10th Avenue, M857 Miami, FL 33136 neuroscience@miami.edu 305 243 3368

Admission Requirements
Admission to the Neuroscience Program is through the common umbrella of Programs in the Biomedical Sciences (PIBS), for all biomedical PhD programs.

For more information, please visit this website (http://biomed.med.miami.edu/graduate-programs/programs-in-biomedical-sciences-pibs).

Curriculum Requirements
Graduate training is the major goal of the program, with emphasis on cellular, molecular, and genetic approaches to Neuroscience. A single core curriculum provides the didactic scaffold of the program. This curriculum consists of courses in Developmental Neuroscience, Membrane Biophysics, Introductory Neuroscience, Neural Systems, and Neuroanatomy. The core courses are supplemented with a variety of Special Topics Short Courses. Students also attend research seminars and a scientific journal club. The Neuroscience Steering Committee guides the students, overseeing their coursework, until they have passed their qualifying exams. From then on, their progress is supervised by individually tailored dissertation committees.

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Neuroscience Required Courses

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Research Credits

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Total Credit Hours 67-78

¹ Neuroscience students must take 1 seminar credit each fall and spring semester.

Sample Plan of Study
Please note that the following is only a sample curriculum plan. Current students must discuss their plan with their program director to make adjustments as needed. It is the student’s responsibility to contact the program to verify the information.
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NEU 601. Introduction to Neuroscience Techniques. 1 Credit Hour.
Hands-on exercises in research laboratories introduce first-year Neuroscience students to methodologies commonly used in the Neurosciences. The course includes selected techniques from electrophysiology, immunocytochemistry, fluorescein microscopy, recombinant DNA, protein immunoblotting, and functional imaging. Students are required to complete a lab notebook of each exercise. There is also a segment on database searches.
Components: LEC.
Grading: GRD.
Typically Offered: Fall & Spring.

NEU 609. Research. 1-5 Credit Hours.
Students work with individual members of the program faculty on research problems. Provides orientation as to the areas of research in the field and the techniques used.
Components: LEC.
Grading: GRD.
Typically Offered: Fall, Spring, & Summer.

NEU 641. Statistics in Neuroscience. 1 Credit Hour.
This course will provide basic information necessary to appropriately design experiments and analyze and interpret data in the behavioral and biological sciences. A lecture/discussion format will be used. The course will cover research methodology, basic statistical concepts, and an in-depth discussion of descriptive (measures of central tendency, variability and correlation) and inferential statistics (both parametric and non-parametric tests of significance). In addition, various statistical computer programs will be reviewed. Specific topics include: 1. Statistical terminology; 2. Measurement scales; 3. Plotting your data for initial interpretation; 4. Measures of central tendency and variability; 5. Type I and Type II errors and controlling power; 6. Which statistical test do I use for my data? 7. What can I conclude from my data and does it mean anything? Students will be evaluated based on their understanding of statistical design and data interpretation.
Components: LEC.
Grading: GRD.
Typically Offered: Offered by Announcement Only.

NEU 650. Modeling CNS injury and Repair. 1 Credit Hour.
This course provides an overview of a number of complex modeling systems using in CNS Injury and Repair biomedical research. The course examines models, such as spinal cord injury, traumatic brain injury, ischemic/stroke injury, experimental autoimmune encephalomyelitis (EAE) model of multiple sclerosis, axon regeneration in retinal nerve and spinal cord, and drosophila models of degeneration. The course will consist of both lectures and hands-on laboratory components. Elective
Components: LEC.
Grading: GRD.
Typically Offered: Fall & Spring.

NEU 700. Seminars in Neuroscience. 1 Credit Hour.
Required each Fall and Spring for all NEU students, emphasizes student research presentations (30 min each for 2nd year students; 60 min each for student 3rd year on). Attendance at neuroscience related seminars is also required.
Requisite: Neuroscience.
Components: LEC.
Grading: GRD.
Typically Offered: Fall & Spring.

NEU 711. Accelerated Basic Science Medical Curriculum. 1-18 Credit Hours.
From late June to mid-February, the following accelerated and intensive complete basic science medical curriculum is offered: Embryology, Gross Anatomy, Histology, Biochemistry, Neuroanatomy, Biophysics and Neurophysiology, Systemic Physiology, Pathology, Medical Microbiology, and Pharmacology. A single grade will be entered on the graduate transcript for this course.