



FLORIDA ATLANTIC UNIVERSITY

Stiles-Nicholson
Brain Institute

Neuroscience Graduate Program





Brain Science On the Move

FAU Neuroscience has reached an extraordinarily exciting stage. Disciplines such as physics, biology, genetics, chemistry, psychology, anatomy, computer science, medicine and neuroengineering, to name a few, are now powering discoveries at a rapid pace that reveal the basis of how we learn, think, remember, love and dream. These discoveries provide hope that better diagnostics and treatments are within reach for millions of people with brain disorders.

SNBI – A Visionary Strategic Plan

As part of a visionary strategic plan, Florida Atlantic University is investing its energies and resources in cross-disciplinary programs of neuroscience research and education, coordinated by the FAU Stiles-Nicholson Brain Institute (SNBI). With substantial investments from federal, state, foundation and philanthropic sources, the Brain Institute and its partners are expanding our research infrastructure, faculty breadth, and community commitments to insure the training of high caliber students. These investments allow FAU to realize a truly outstanding environment for neuroscience research and education.

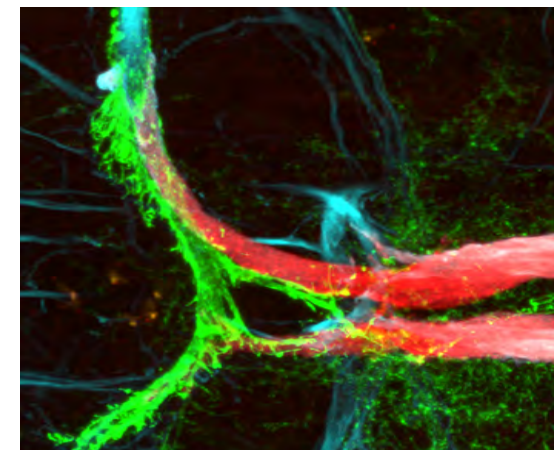
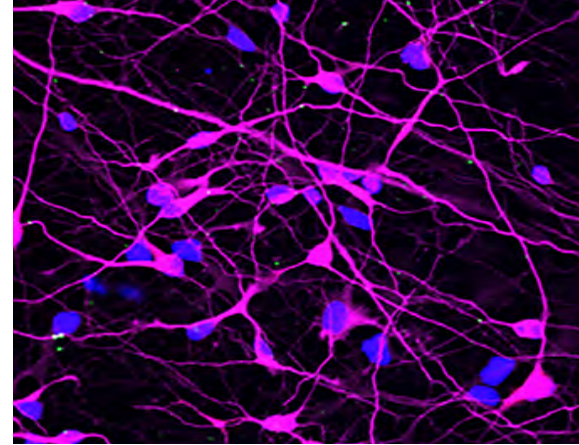
Neuroscience Graduate Program

The Neuroscience Graduate Program (NGP) unites scientists, educators and students engaged in research that spans the breadth of neuroscience inquiry. The program is organized around three major areas of emphasis 1) Computational Neuroscience and NeuroEngineering 2) Cellular, Molecular & Biomedical Neuroscience and 3) Sensorimotor, Cognitive & Behavioral Neuroscience. FAU's Neuroscience Graduate Program provides a one-of-a kind training opportunity for those at the beginning stages of their neuroscientific careers, together with the Max Planck Florida Institute for Neuroscience an internationally recognized research institute. Without a doubt, FAU Neuroscience is on the move, and we hope you will join us.

First Year Hosted by FAU Stiles-Nicholson Brain Institute

THREE LABORATORY ROTATIONS
SELECTION OF FINAL LAB
FLEXIBLE CURRICULUM

Learn more:
fau.edu/brain/gradneuro



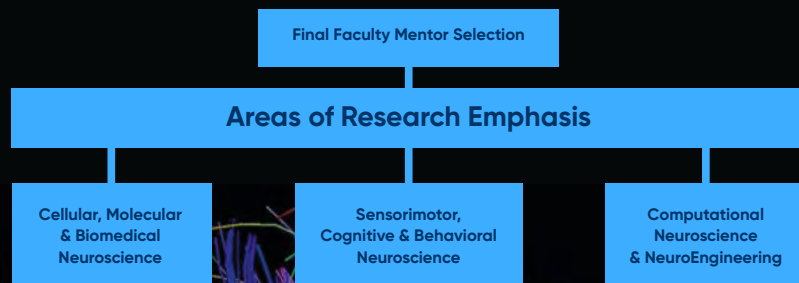
Program Overview

During their first year, students will have the opportunity to pursue three laboratory rotations with faculty in multiple departments and colleges to experience a range of different research areas in neuroscience. Students will pursue a common curriculum, attend graduate seminars, and engage in social and professional development activities with program faculty and the Neuroscience Student Organization.

The NGP recognizes three broad areas of research emphasis pursued by our faculty and trainees. Rather than formal, rigid tracks, these areas encourage us to support the full breadth of faculty and student interests.

Neuroscience Graduate Program (NGP) Year 1

3 RESEARCH LAB ROTATIONS – SHARED CORE CURRICULUM



Cellular, Molecular & Biomedical Neuroscience

Research in this area focuses on understanding molecular and cellular mechanisms of normal nervous system development and function, and how disruptions in these mechanisms impact the risk for brain disorders. Multidisciplinary approaches examine the genetics, metabolism, neurochemistry, synaptic connectivity, and structural-functional organization of neurons and the circuitries they form. Animal models of human neurological disorders are used to study pathological changes in neuron function to devise more effective, targeted therapeutics for pain, epilepsy, autism, neurodegeneration, and mood disorders. Students apply modern techniques in high-resolution microscopic imaging, conditional gene manipulation, micro-electrode arrays, induced pluripotent stem cells, transcriptomics, proteomics, and bioinformatics to unravel the mechanisms that drive both fundamental neural processes and those that cause brain diseases.

Sensorimotor, Cognitive & Behavioral Neuroscience

Research in this area focuses on the neuroanatomy, development, and physiology of neural systems that mediate sensory perception, motor functions and cognition, as well as how the brain integrates these. Both human subjects and animal models are used. Cognition research tracks the development of language, learning and memory, visual perception, and social awareness/interaction, and examines how aging, brain injury and neurodegeneration impact cognitive abilities. Students elucidate the neural substrates of learning, memory, attention, sleep, and brain wave patterns using modern technical approaches that apply neurophysiological, neuropharmacological, biophysical, genetic, and behavioral research tools, as well as advanced methods in human fMRI and fNIRS brain imaging, EEG, in vivo electrophysiology, and computational modeling.

Computational Neuroscience & NeuroEngineering

Research in this area involves the use of theoretical and computational techniques to model and evaluate the dynamics of neural networks underlying brain function, and ultimately, behavior. Training focuses on unraveling the mechanisms that underlie complex behaviors, from the level of individual neurons and the coordination of neural circuits to human sensation, cognition, consciousness, personality, and social interactions. Study in theoretical and computational neuroscience encompasses multiple disciplines including theoretical physics, cognitive neuroscience, applied mathematics, biomedical engineering, computer science and philosophy. Research is supported by modern facilities and technologies in human fMRI brain imaging, fNIRS and EEG, machine learning, in vivo electrophysiology, biophotonics, robotics, brain-machine interfaces, prosthetics, and artificial intelligence.



Environment

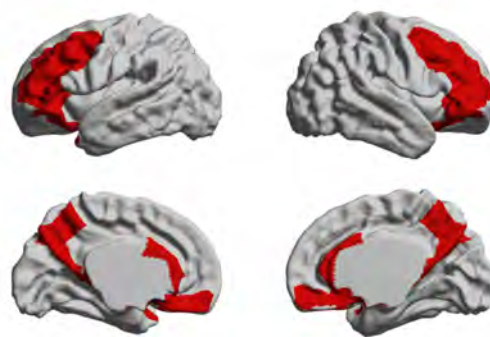
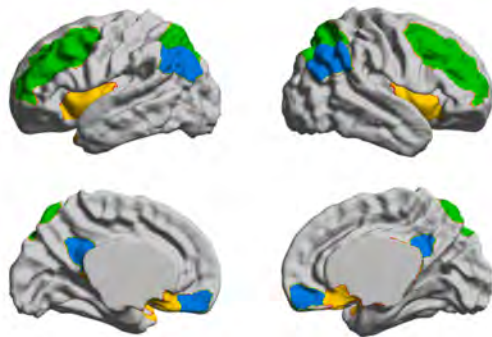
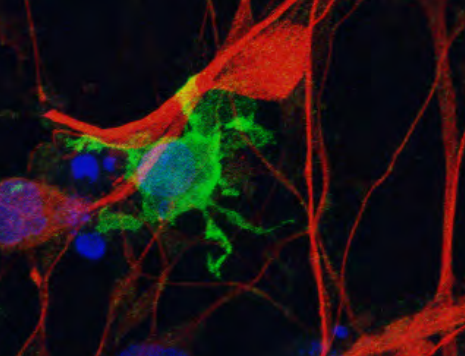
NGP students can pursue education and research options on the FAU Boca Raton, Davie and Jupiter campuses. All campuses are located only minutes away from coastal beaches and intracoastal waterways, each teaming with wildlife and providing many opportunities for aquatic adventures. The Everglades National Park, as well as many state parks, local nature centers and wildlife refuges offer hours of relaxation amid the beauty of sunny Florida.

Step out of the classroom and into all that South Florida offers, including stunning beaches, snorkeling, paddle boarding, boating, diving, and fishing. Sophisticated entertainment and dining also are within easy reach of FAU students, including world-class shops and restaurants, concerts, and art museums. A free, Wi-Fi enabled shuttle connects the Boca Raton and Jupiter campuses. You'll quickly see why millions travel here from around the globe —and why so many choose to stay.



Research Resources

FAU Neuroscience students have access to state-of-the-art tools that explore the brain across multiple levels of analysis, from super-resolution microscopy that can illuminate the detailed organization of molecules and cells in the nervous system, to automated screening systems that assess the behavioral impact of brain disease-causing mutations. Research techniques encompass molecular analyses from proteomics and transcriptomics, to in vivo physiological recording and imaging platforms that interrogate functional areas of the thinking human brain. Students have access to several specialized research core facilities, including the Institute's Advanced Cell Imaging Core, and the Human Imaging Core on the FAU Boca Raton campus, as well as biomedical research facilities within the College of Engineering & Computer Science and the Colleges of Science and Medicine. Additional cutting-edge research cores are available at the Max Planck Florida Institute for Neuroscience.



Our Faculty

NGP faculty mentors target a wide range of questions in modern neuroscience, from molecules and circuits to mind and artificial intelligence. Faculty are drawn from FAU's Colleges of Science, Medicine, Engineering and Computer Science, Education, as well as the Wilkes Honors College and the Max Planck Florida Institute for Neuroscience.

Financial Support

All students receive nationally competitive stipends consisting of guaranteed research and teaching assistantships, health insurance coverage, and opportunities to compete for research and travel grants. Admitted students who join the NSO receive a complimentary membership in the Society for Neuroscience and the opportunity to host prominent visiting speakers at our annual Neuroscience Retreat.

Admissions

The NGP admits students once per year in the fall semester which begins in August of each year. Applicants are reviewed and nominated for further consideration by faculty on the NGP admissions committee.

How to Apply

Applications for the NGP are made electronically via FAU Graduate College website using GRADCAS. Search "Florida Atlantic University Neuroscience-Doctor of Philosophy", and pay/submit the electronic form by December 1st.

Applicants must submit the following documents:

- Personal Statement
- Unofficial copies of all transcripts

Requirements

NGP Admission Requirements:

- Relevant BS or BA degree in Neuroscience, Biology, Psychology, Biomedical Engineering, Computer Science, or a related field
- Minimum 3.4 GPA (on a 4.0 scale)
- Three letters of reference, preferably from academic/research advisors
- Graduate Record Exam (GRE) is not a requirement

International Students Must Provide the Following Additional Documents:

- Unofficial copy of your TOEFL score report
- Unofficial copy of your Course-by-course transcript evaluation which includes a GPA equivalent

The **FAU Stiles-Nicholson Brain Institute** supports research, education and community outreach, with efforts spanning all of the FAU campuses.



FLORIDA ATLANTIC UNIVERSITY

Stiles-Nicholson
Brain Institute

Neuroscience **Graduate** Program

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