

Academic Track in the Biological Science Major

PHYSIOLOGY & NEUROSCIENCE

Physiology is the study of functional processes, such as gas exchange, water and ion balance, and muscle contraction, at all levels of biological organization from the cellular/molecular to tissues and organs. Physiologists typically utilize physical-chemical tools and techniques to probe these functional processes. Neuroscience is the study of the physiology, chemistry, and structure of excitable cells such as neurons, muscle cells, and receptor cells. Neuroscientists investigate a wide array of processes, including membrane biochemistry and membrane biophysics, neuroendocrine regulation of physiological processes, the detection of external stimuli by receptor cells, the coding of information as electrical events in the nervous system, and the neuronal basis of behavioral processes. Students following this academic track are generally preparing for careers in research, medicine, the allied health fields, or graduate study in physiology or neuroscience.

CURRICULUM: The following list recommends elective courses offered by the department that are applicable to physiology and neuroscience. Students should determine which elective courses to take based on educational interests and career goals.

PCB 3134	Cell Structure and Function (3)	PCB 4843	Fundamentals of Neuroscience (3)
PCB 3743	Vertebrate Physiology (3)	PCB 5746	Mammalian Physiology I (4)*
PCB 4024	Molecular Biology (4)	PCB 5747	Mammalian Physiology II (4)*
PCB 4024L	Molecular Biology Lab (1)	ZOO 4513	Animal Behavior (4)
PCB 4723	Comparative Animal Physiology (3)		
PCB 4731L	Experimental Physiology Lab (2)		

* Graduate-level course. Enrollment by special permission only.

Additional Recommended Electives (Not for Biological Science major credit):

BCH 4053	General Biochemistry I (3)	EXP 3203L	Animal Sensory Processes Lab (1)
BCH 4053L	General Biochemistry Lab (3)	EXP 3422	Conditioning and Learning (3)
BCH 4054	General Biochemistry II (3)	EXP 3422	Conditioning and Learning Lab (1)
EXP 3202	Sensation and Perception (3)	PSB 2000	Introduction to Brain and Behavior (3)
EXP 3202L	Sensation and Perception Lab (1)	PSB 3004	Physiological Psychology (3) & Lab (1)
EXP 3203	Animal Sensory Processes (3)	PSB 4240	Biological Basis of Brain Dysfunction (3)

FACULTY: Undergraduate teaching and guidance is a large part of the commitment of our regular faculty in Biological Science. Our faculty value interaction and discussion with students and encourage individual discussion and research projects. The following faculty have expertise in physiology and or neuroscience.

P. Bryant Chase	Biomechanics of cardiac and skeletal muscle
Dexter Easton	Invertebrate neurophysiology; mathematical modeling
John Elam	Nerve cell maintenance and regeneration
Ross Ellington	Comparative physiology and biochemistry
Debra Fadool	Olfactory signal transduction; ion channel structure and function; neuromodulation
Piotr Fajer	Molecular biophysics of muscle contraction
Marc Freeman	Neuroendocrine regulation of reproduction
Thomas Hout	Molecular neurobiology of learning and memory of food intake
Michael Meredith	Sensory physiology (olfaction); computer modeling of brain circuits
Timothy Moerland	Muscle physiology and biochemistry
David Quadagno	Hormonal control of behavior
Paul Trombley	Synaptic physiology and plasticity; ion channel modulation

Many members of the physiology/neuroscience faculty are also appointed in the Neuroscience program, a nationally recognized interdepartmental research program with faculty from the Departments of Biological Science and Psychology. Some faculty are also appointed in the Molecular Biophysics Program and in the Structural Biology Program.

FACILITIES: Physiologists and neuroscientists have access to a variety of research facilities including the scanning and transmission electron microscope laboratory, the Analytical Biochemistry Lab, the Monoclonal Antibody facility, and the Psychobiology Microcomputer facility. The staff of the Laboratory Animal Resources (LAR) maintains vertebrate animals. Some faculty members also conduct research at the FSU Marine Laboratory, located on the Gulf of Mexico.