

## BACKGROUND AND REQUEST

### OHIO UNIVERSITY

#### Bachelor of Science in Neuroscience, Honors Tutorial College

#### EXECUTIVE SUMMARY/REQUEST

**This program clearly meets Regents' standards for baccalaureate degrees. No concerns were identified in the review.**

**Request:** Ohio University requests approval for a Bachelor of Science degree in Neuroscience. The proposed degree program is an interdisciplinary program for students admitted through the Honors Tutorial College. The Honors Tutorial College at Ohio University provides an intense educational experience for students. Drawing upon the educational traditions of Oxford and Cambridge, the program is designed around faculty tutorials of individual students or small seminars for substantial core portions of the degree. The proposed program will involve faculty from Biology, Psychology, Physics and Astronomy, Mathematics and Philosophy.

**Program Purpose/Mission:** The Bachelor of Science in Neuroscience is designed to provide students with a comprehensive education in the emerging discipline of neuroscience. Students will have the knowledge and skills necessary for industry or additional study in graduate academic programs or medicine. Most students will pursue additional study.

**Enrollments:** Ohio University anticipates an initial enrollment of 3-6 students in the program, with full capacity at 12-24 students after four years.

**Curriculum:** Modern neuroscience is an interdisciplinary field that builds on knowledge and skills in biology, chemistry, psychology, philosophy, physics and mathematics. The proposed program will build on foundation knowledge in these disciplines and provide opportunities for students to pursue interests in one of four major concentrations: cell and molecular neuroscience, cognitive neuroscience, quantitative neuroscience, or neuroethology.

- **Cell and molecular neuroscience** focuses on the structure and function of the individual neurons and glia that are building blocks of the nervous systems. Study in this concentration includes the expression and regulation of genes during nervous system development and the molecular bases of nervous system diseases.
- **Cognitive neuroscience** integrates ideas and approaches from psychology, biology and philosophy to better understand the neural basis of complex processes such as perception, emotion, language, consciousness, memory, attention, and decision making.

- **Quantitative and systems neuroscience** encompasses the development of computational models of neuronal processes as well as an analysis of neural circuits and pathways as complex, dynamic systems. These approaches make extensive use of ideas and methods developed in mathematics and physics.
- **Neuroethology** is the study of the neural basis of naturally occurring behaviors. This approach combines concepts from biology and evolutionary psychology; it involves observing animals in their natural habitats and identifying how their nervous systems have adapted to produce appropriate natural behavior.

The program is structured to provide all students with core courses in biology, chemistry and mathematics during the first year. A series of tutorials provide an introduction to neuroscience and a foundation for individual pursuits in the subsequent years. The second year continues the development of foundation knowledge and focuses on physics and organic chemistry. Students begin exploring individual interests in the areas of concentration through tutorials/seminars and elective courses. The third and fourth years are immersion years in the concentration areas. All students are required to do a senior research thesis in the lab of a Neuroscience Program faculty.

**Resource/Faculty Needs:** Existing faculty and lab resources are sufficient to support the program.