Interdisciplinary Proposal:
Neuroscience

The mind and body are two interrelated entities controlled by the most complex and fascinating structure known to science, the human brain. The study of neuroscience is the cornerstone in understanding how we perceive and interact with the external world, and has become one of the most rapidly developing fields in the study of medicine. Advances in research and technology have enabled scientists to ascertain probable causes and advanced treatments to many neurological and mental disorders and diseases such as Alzheimer's, Parkinson's and strokes. Neuroscience has become one of the most promising fields of study as we explore the infinite possibilities of the brain and nervous system as the key to unlocking the limitless capabilities our body has within itself.

The field of neuroscience encompasses a multitude of opportunities for research and careers. There are numerous branches of neuroscience such as cellular and molecular, behavioral, developmental, cognitive, etc., and taking courses in those areas and others such as genetics, philosophy of the mind, and developmental psychology will give me insight into the divisions of neuroscience that I may want to explore further in graduate school. The study of the human brain and body is so broad and complex that to suppose a complete understanding of a particular aspect of the mind or body could be undertaken in certain fields to the exclusion of others would be shortsighted. The answers to questions concerning how the brain and body relate and interact cannot be found in any one discipline, but each discipline must be thought of as a piece to a puzzle that must be revealed before that puzzle can be completed or the question resolved.

As I began to fulfill my learning domains in a liberal arts education, I developed an interest in psychology and how it relates to the physiology of the body. When taking Introduction to Psychology and Developmental Psychology, I learned how our senses, thoughts, emotions and other mental processes of the brain and nervous system play an integral part in the physiological aspects of

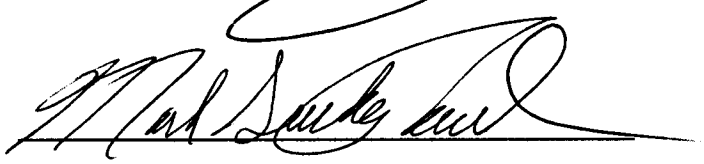
the body and how physiology plays an integral role in our senses, thoughts, emotions and other mental processes. It is clear that the relationship of our physical, social and cognitive abilities is very powerful and all work together toward our total health, well being and quality of life. This is a field where there are no boundaries, as all of these aspects are ever changing. The more we understand these relationships, the more we will be able to intervene and create new possibilities in the fields of medicine and psychology. Because of the inherent interdisciplinarity of neuroscience I would like to keep my undergraduate education broad enough to allow me a good foundation for further study in neuroscience rather than focusing on one specific area such as biology or chemistry.

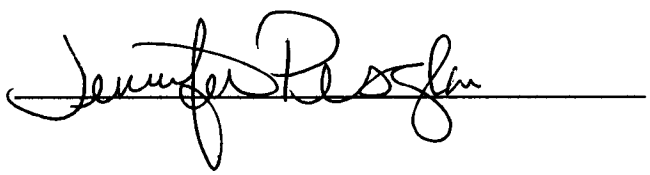
After consulting with Dr. Murray about the requirements and research involved in a soon to be proposed neuroscience major, it seemed consistent with my interests for an area of study. The introduction of neuroscience as a major course of study at Hendrix would go along with Hendrix's aims of being on the forefront or cutting-edge of advances in science education and I believe the study of neuroscience will become a prevailing and noteworthy primary course of study.

I would like to pursue an interdisciplinary study in the field of neuroscience. I am currently fulfilling the pre-medical requirements and hope to attend medical school after earning a degree from Hendrix. I am interested in the anatomical, physiological and psychological aspects of the human body. Several courses offered in the Allied Health major such as anatomy and physiology were of interest to me yet did not offer enough depth into the sciences. The biochemistry major, although on a direct pre-med track, lacked the psychology and neuroscience courses I would like to pursue. A neuroscience major would open a whole new dimension of learning and provide me with potential research and career opportunities in fields such as neuropsychology, neuroanatomy, neuropathology, or neurophysiology. I respectfully request your consideration of my desire to pursue an Interdisciplinary Study in the field of Neuroscience.

Interdisciplinary Studies
Supervisory Committee Members:

Dr. Richard Murray 

Dr. Mark Sutherland 

Dr. Jennifer Peszka 

Interdisciplinary Neuroscience Major

Neuroscience is a diverse field that draws on biology, chemistry, philosophy, and psychology. An interdisciplinary neuroscience major would include the following:

Required core courses:

1) BIOL 150: Cell Biology
2) BIOL 320: Animal Physiology
3) BIOL 325: Cellular and Molecular Neuroscience
4) CHEM 110: General Chemistry I
5) CHEM 120: General Chemistry II
6) CHEM 240: Organic Chemistry I
7) CHEM 250: Organic Chemistry II
8) PSYC 290: Statistics
9) PSYC 295: Research Methods
10) PSYC 360-A: Behavioral Neuroscience
11) PHIL 350: Philosophy of Science, or PHIL 480: Philosophy of Mind

Two courses from the following list:

1) BIOL 300 or PSYC 300-A: Comparative Animal Behavior
2) PSYC 330-A: Learning
3) PSYC 335-A: Sensation and Perception
4) CHEM 330: Biochemistry

A research project (BCMB 498) that consists of:

1) Two semesters of research at Hendrix
   OR
2) One summer (minimum of 8 weeks at 40 hours/week) of research at Hendrix or another pre-approved summer research program.

Capstone experience

1) The capstone experience would involve the preparation of a literature review of a topic of interest in Neuroscience. The paper would be submitted to and graded by your advisor.
2) An oral presentation of the literature review to the major committee would also be required and would be graded by the committee.
3) The final capstone grade would be a combination of these two grades.