

University of Georgia New Program Proposal

Date: August 2003

Institution: University of Georgia, Athens

School/Division: Biomedical and Health Sciences Institute

Name of Proposed Program: Neuroscience

Degree: Ph.D.

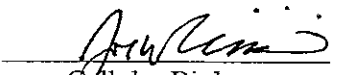
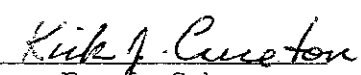

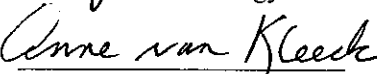
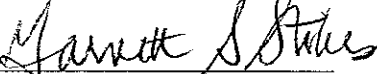
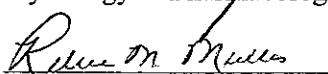
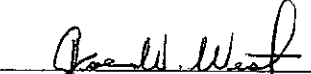
Major: Neuroscience

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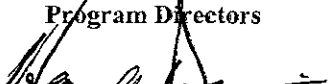
Starting Date: August, 2004

Signatures:


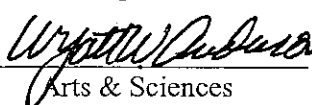
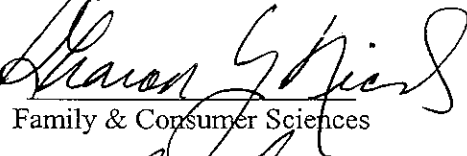
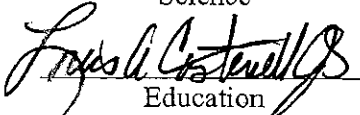


Department Heads

 Cellular Biology	 Exercise Science	 Physiology & Pharmacology
 Communication Science & Disorders	 Psychology	 Foods & Nutrition
 Animal & Dairy Science		

Program Directors

 Interdisciplinary Toxicology	 Biomedical & Health Sciences Institute
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College Deans

 Agriculture & Environmental Science	 Arts & Sciences	 Family & Consumer Sciences
 Education	 Veterinary Medicine	 Pharmacy

Dean of Graduate School

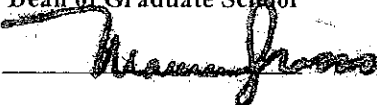


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1. Program Description and Objectives

This proposal outlines a mechanism for establishing a multidisciplinary, degree-offering Neuroscience Program that will enhance the training and research functions of The University of Georgia (UGA). The Neuroscience Program will provide students with the training necessary for careers in the rapidly expanding biotechnology and pharmaceutical industries as well as academic careers. Recent studies clearly indicate that prospective students in the neurosciences prefer to earn advanced degrees specifically in neuroscience rather than in traditional biological or behavioral science programs. The Neuroscience Program will therefore enhance the ability of UGA to compete for top graduate students.

The 1990's were designated as the "Decade of the Brain" through a joint resolution of Congress and the President. Since this declaration, neuroscience research has rapidly expanded and flourished throughout the majority of the nation's leading research universities. The primary objective of this national emphasis on neuroscience research was to improve the health and welfare of citizens of the United States by focusing biomedical resources on the study and treatment of disorders of the nervous system. Examples of these diseases include Alzheimer's, Parkinson's, epilepsy, affective disorders, schizophrenia, drug abuse, stroke, multiple sclerosis, as well as many others. Making neuroscience research a national biomedical priority also grew out of the recognition that the cause and treatment of all forms of disease, from cancer to infectious disease to obesity, are influenced by functions of the nervous system.

Due to its inherently broad and multidisciplinary nature, neuroscience research provides an unparalleled collaborative opportunity. The field of neuroscience encompasses several fields of biological and behavioral research and is typically subdivided into the following disciplines: Molecular and Cellular Neuroscience, Systems Neuroscience, Behavioral Neuroscience, Cognitive Neuroscience, and Clinical Neuroscience. Neuroscience research at UGA spans several departments and colleges, such as Cellular Biology and Psychology (College of Arts and Sciences); Physiology and Pharmacology and Pathology (College of Veterinary Medicine); Entomology and Animal Science (College of Agricultural and Environmental Sciences); Foods and Nutrition (College of Family and Consumer Sciences); and Exercise Science, Communication Sciences and Disorders and Educational Psychology (College of Education). UGA currently possesses the faculty and facilities needed to create the Neuroscience Program. Indeed, a number of investigators at UGA are recognized worldwide for their research in a variety of areas of neuroscience. The total extramural funding for neuroscience research at UGA currently exceeds \$11 million. Neuroscience thus represents research strength for the University of Georgia. Moreover, the University of Georgia has made a major commitment of funding the Neuroimaging Facility in the Paul D. Coverdell Building for Biomedical and Health Sciences. This facility will undoubtedly increase funding of neuroscience research at the University of Georgia.

Although many neuroscience programs or departments are affiliated with on-campus medical schools, there are numerous examples of major research universities with established graduate programs that are independent of medical schools. Examples include the California Institute of Technology, Massachusetts Institute of Technology, the University of Colorado, the University of Delaware, the University of Oregon, and the University of Texas at Austin.

The existence of a strong research faculty in the neurosciences lends itself to development of a multidisciplinary graduate program in an area of national importance. The Neuroscience Program will facilitate collaborative education and research across UGA departments, thereby enhancing the quality and visibility of biomedical research. Increasing collaborative opportunities will stimulate innovative, multidisciplinary proposals for extramural funding and provide the resources and environment needed to compete for graduate training or center grants. A multidepartmental Neuroscience Program could tap existing talent across the university and produce a cohesive unit with immediate national visibility. Moreover, this multidisciplinary program will generate training programs and grants. Thus, enhancing the quality of graduate education at the University of Georgia.

Finally the Neuroscience Program will offer citizens of the State of Georgia and non-Georgians the opportunity to earn an advanced degree in Neuroscience at the state's flagship university. Data presented below reveal that the overwhelming majority of other state universities offer graduate degrees in neuroscience. No state institution in Georgia offers a graduate degree in neuroscience. Establishing such a program at the University of Georgia will provide an option for neuroscience students to earn their advanced degree in the state of Georgia without the need to attend a private institution.

2. Justification and Need for the Program

A. Societal Need

The need for increased understanding of neurological disorders is looming as the "Baby Boomer" generation approaches retirement age. Diseases such as Alzheimer's and Parkinson's are widely recognized as diseases of the elderly. Other diseases such as deafness, loss of motor coordination, mild cognitive disorder and stroke are also recognized, though not as publicized, among the elderly. Neurological diseases commonly affect young to middle-aged adults as well. Drug abuse and alcoholism are common in this population, and the toll these two diseases take on our society is widely recognized. Diseases such as multiple sclerosis and affective disorders such as bipolar disease are also crippling diseases. The attention-deficit disorders among the young are a growing concern, and many believe the obesity epidemic in the United States has a neural basis. Thus, establishing a program dedicated to the study of these diseases at the University of Georgia is critical to maintaining the University of Georgia's emergence as a leading research institution.

Neuroscience departments or degree-offering neuroscience programs may be found in over 130 research universities across the United States. Data generated from surveys conducted by the Association of Neuroscience Departments and Programs (ANDP) in 1986, 1991, 1998 and 2001, reveal a growing trend among prospective graduate students to apply to these neuroscience programs. In its survey of 104 U.S. graduate programs in neuroscience, the ANDP reports that the number of applications per program has increased 57% from 1991 and 275% from 1986. Moreover, the average GRE scores for applicants have increased approximately 50 points and the average number of students enrolled per program has more than doubled since 1986.

The ANDP survey also reveals an increasing trend for students to earn advanced degrees specifically in “neuroscience” rather than in traditional biological or behavioral sciences (see Table 1).

Table 1. Degrees Offered in Neuroscience vs. Traditional Fields

Survey Year	1986	1991	1998	2000/2001
Ph.D.-Neuroscience	24%(of Total)	28%	66%	63%
Ph.D.-Traditional	74%	54%	30%	33%
Other	5%	14%	4%	4%

Survey data also reveal that the placement of neuroscience Ph.D.s into postdoctoral positions, which is the typical first employment for Ph.D.s in the biological sciences, remained stable from 1991-1998 (see Table 2).

Table 2. Placement of Graduates

Survey Year	1991	1998	2001
Postdoctoral Position	60% (of Total)	70%	62%
Medical School	13%	15%	11%
Faculty Position	6%	5%	7%
Research Institute	12%	1%	8%
Other	6%	4.5%	8%
Employed Outside Field	1.6%	3.4%	2%
Currently Unemployed	0.6%	1.3%	2%

The information above supports the conclusion that the Neuroscience Program fulfills a need by providing the training sought by students in the biological and behavioral sciences. Trained Neuroscientists fulfill a societal need to elucidate the genetic, molecular, cellular and behavioral basis and aspects of neurological diseases and disorders.

From a broader perspective, the increased student interest in neuroscience reflects an intellectual convergence in the scientific community to study the nature and functions of the nervous system. It also reflects increased public awareness for the need to understand and treat

neurological, developmental, and psychological disorders. Federal funding of such research has been steadily increasing in recent years. The pharmaceutical industry and biotechnology companies also continue to invest heavily in developing treatments for neurological, developmental, and psychological disorders.

B. Student Demand

Student demand for a Graduate Program in Neuroscience is demonstrated by the results of a campus-wide survey mailed to graduate students in neuroscience-related fields in the fall of 2000. The questionnaire was designed and administered by the UGA Neuroscience Student Association. The data are summarized below as rounded percentages:

1. Some of my research interests lie within the field of neuroscience:

Strongly agree/agree	Neutral	Disagree
100%	0	0

2. I have completed neuroscience-related coursework while in graduate school.

Strongly agree/agree	Neutral	Disagree
84%	15%	0

3. A degree in neuroscience would accurately reflect my graduate training.

Strongly agree/Agree	Neutral	Disagree
76%	8%	16%

4. I would have applied for a graduate degree in neuroscience had it been offered by the University of Georgia.

Strongly agree/Agree	Neutral	Disagree
69%	23%	8%

5. A degree in neuroscience would prepare me to pursue my career goals.

Strongly agree/Agree	Neutral	Disagree
69%	31%	0

6. I would prefer to earn my degree in neuroscience.

Strongly agree/Agree	Neutral	Disagree
62%	15%	23%

Respondents: 13

Departments Represented: 4

C. Additional Factors

The proposed program meshes perfectly with the objectives of the Biomedical and Health Sciences Institute to enhance multidisciplinary graduate education in the biomedical sciences. Inclusion of the Neuroscience program will enhance and coalesce biomedical science on campus. As noted above, the University of Georgia is supporting the establishment of a Neuroimaging Facility in the Paul D. Coverdell Building for Biomedical and Health Sciences. This facility will facilitate the efforts of the Neuroscience program to promote collaborative studies as well as attract students to a neuroimaging facility dedicated to research.

D. Consultant Reports

Please see appendix II.

E. Public and Private Institutions in the State of Georgia with Similar Programs:

- Emory University

F. Public and Private Institutions in the Southeastern Region with Similar Programs:

- Florida State University
- Louisiana State University
- Medical University of South Carolina
- Tulane University
- The University of Alabama
- The University of Florida
- The University of Kentucky
- The University of Miami
- The University of North Carolina at Chapel Hill
- The University of South Carolina
- The University of Tennessee, Memphis

- Wake Forest University
- Vanderbilt University

3. Procedures Used to Develop the Program

Faculty and student interest in a Neuroscience Program has grown over the last decade. This interest is a reflection of the growing interest in neuroscience across the nation. The impact of the nervous system on the pathogenesis of many diseases ranging from obesity to Alzheimer's is well recognized. Moreover, the role of the nervous system in prevention and recovery from diseases such as cancer is a research area of intense interest. Thus, establishing a program with the purpose of coalescing the many faculty and students interested in neuroscience at the University of Georgia is of utmost importance.

The Biomedical and Health Sciences Institute was established in 2001 with the charge to develop and promote biomedical sciences and human health programs at the University of Georgia. Thus, there was an administrative home for implementation of a multidisciplinary program such as neuroscience. A committee of neuroscientists at the University of Georgia has prepared a proposal to develop a Neuroscience Program to offer graduate degrees in neuroscience. This program meshes nicely with the goals of the Biomedical and Health Sciences Institute and will offer a degree sought by many students applying to the University of Georgia graduate school. This committee has continued to work closely with the programs and departments that will be involved in the Neuroscience Program and the University of Georgia Chapter of the Society for Neuroscience. Proposals for courses appropriate to a neuroscience degree were developed and submitted to departments and the graduate school for review. These comments were then taken into consideration for development of the final program requirements.

Admission to the program is based on the requirements of the Graduate School. Completion of an undergraduate degree from an accredited institution with appropriate transcripts is required. Cumulative grade point average of 3.0 or greater on a 4.0 scale is expected. Additionally, each applicant will complete the verbal and quantitative portions of the General Test of the Graduate Record Exam (GRE) and submit the results to the Graduate School of the University of Georgia. Competitive students will have a GRE score of 600 or better on each section. Foreign students will also be required to complete the TOEFL and submit this score to the Graduate School of the University of Georgia. Admission to the program will be based on the above test scores as well as 3 letters of recommendation. Given the extensive interdepartmental nature of the program, the background of the student will not be limited to biological sciences. Students with training in social or clinical sciences will be strongly considered. A broad background in biological and social or clinical sciences will be particularly appealing.

4. Curriculum

A. All programs of study must meet all guidelines set forth by the Graduate School of the University of Georgia. This includes a minimum of 16 hours 8000/9000 level courses.

B. Required Courses (12 h)

Student must complete the following required courses:

1. Neurophysiology (2 h):
VPHY 8400 Neurophysiology
2. Neuroanatomy (3 h):

PSYC 8300 Neuroanatomy for Behavioral Scientists
3. Research Skills: Statistics and Laboratory Techniques selected from the following list of courses (6h):

STAT 6210 and STAT 6220 Statistical Methods I & II

PSYC 6410 Statistics in Psychological Research and PSYC 6430 Applied Regression Methods in Psychology or PSYC 6440 Experimental Design in Psychology.)

VPHY 6930 Research Methods

PSYC 8330 Laboratory Apprenticeship in Biopsychology

CBIO 8920L Cellular Biology Research Techniques

BIOL (CBIO) (VPAT) 5040/7040 Electron Microscopy

CBIO 8050-8050L Techniques in Modern Microscopy

C. Content Area Requirements (9 h)

Students must fulfill requirements for three out of the four content areas below by completing at least one course from the category:

Area A: Cellular/Molecular Biology:

BCMB 6000 General Biochemistry and Molecular Biology
or BCMB 6010 and BCMB 6020 Biochemistry and Molecular Biology I & II
or BCMB 8010 and BCMB 8020 Advanced Biochemistry and Molecular Biology I & II

Area B: Physiology & Pharmacology:

VPHY 6090 and VPHY 6100 Comparative Mammalian Physiology
or VPHY 8460 Molecular Pharmacology
or PHRM 6400 Human Physiology I
or PHRM 6410 and PHRM 6420 Pharmacology I & II
or PHRM 8430 Advanced Neuropharmacology
or CBIO 6730 Endocrinology

Area C: Behavioral/Systems Neuroscience:

PSYC 6130 Biological Foundations of Behavior
or PSYC 6160 Sensory Psychology
or PSYC 8900 Psychopharmacology Seminar
or CMSD 6800 Neural Bases of Speech, Language, and Hearing

Area D: Cognitive/Clinical Neuroscience:

PSYC 7780 Animal Cognition
or PSYC 8550 Neuropsychological Assessment
or PSYC 6110 Basic Learning Processes
or EPSY 8340 Child Neuropsychology

Taken over the course of residency at the University of Georgia

NEUR 9000	Research	10-30h
NEUR 9300	Dissertation	6h
BHSI 8000	Bioethics	3h

D. Other Elective Courses (recommended 10 h)

BCMB 6000	General Biochemistry & Molecular Biology	3h	
CBIO 7040/7050L	Electron Microscopy	6h	
CBIO 6340	Biology of Aging	3h	
CBIO 6730	Endocrinology	3h	
CBIO 8010	Molecular Cell Biology	3h	
CBIO 8050/8050L	Techniques in Modern Microscopy	4h	
CBIO 8400	Advanced Cell Biology	3h	
GENE 8910	DNA Modeling	2h	
GENE 8920	Nucleic Acids	3h	
GENE 8930	Advanced Molecular Genetics	3h	
PSYC 6700	Psychology of Aging	3h	
PSYC 6930	Systems of Psychology	3h	
PSYC 7750	Principles of Primate Phylogeny	3h	
PSYC 7770	Organization of Primate Social Groups	3h	
PSYC 6100	Cognitive Psychology	3h	
PSYC 6110	Basic Learning Processes	3h	
PSYC 6130	Biological Foundations of Behavior	3h	
PSYC 6160	Sensory Psychology	3h	
PSYC 6180	History of Psychology	3h	3h
PSYC 6200	Advanced Social Psychology	3h	
PSYC 6220	Developmental Psychology	3h	
PSYC 6420	Advanced Experimental Psychology	3h	
PSYC 8000	Advanced Topics in Psychology	3h	
PSYC 8220	Human Memory	3h	
PSYC 8230	Classical Perception	3h	
PSYC 8260	Applied Cognition	3h	
PSYC 8280	Individual Differences in Child Cognition	3h	
PSYC 8350	Sociobiology	3h	
PSYC 8360	Comparative Cognition	3h	
PSYC 8380	Behavioral Neuroendocrinology	3h	
PSYC 8600	Comparative Behavioral Development	3h	
PSYC 8900	Psychopharmacology Seminar	3h	
CMSD 6820	Advanced Electrophysiology	3h	
EXRS 8340	Seminar in Exercise Psychology	2h	
FDNS 6560	Nutrition and Aging	3h	
FDNS 8510	Metabolic Controls in Nutrition	3h	
FDNS 8520	Nutritional Aspects of Growth and Devel.	3h	
PHRM 6400	Human Physiology I	4h	
PHRM 6500	Human Physiology II	4h	
PHRM 6410	Pharmacology I	4h	
PHRM 6420	Pharmacology II	4h	
PHRM 6910	Introductory Toxicology	3h	
PHRM 8940	Organ Systems Toxicology	4h	

VPHY 8460	Molecular Pharmacology	3h
VPHY 8100	Comparative Medical Endocrinology	2h
VPHY 8010	Mammalian Cell Physiology	3h
VPHY 8200	Animal Molecular Biology: Concepts and Current Literature	2h

Sample Programs of Study

Program of Study I

Physiology/Pharmacology Area

Year 1

VPHY 6090	Comparative Mamm. Physiol.	3h
VPHY 6100	Comparative Mamm. Physiol.	3h
BCMB 8010	Adv. Biochem. Mol. Biol. I	4h
BCMB 8020	Adv. Biochem. Mol. Biol. II	4h
STAT 6210	Statistical Methods I	3h
STAT 6220	Statistical Methods II	3h

Year 2

PHRM 6410	Pharmacology I	4h
PHRM 6420	Pharmacology II	4h
VPHY 8400	Neurophysiology	2h
CBIO 8050-8050L	Tech.in Modern Microscopy	4h
PSYC 8300	Neuroanatomy for Behav. Sci.	3h

Year 3

PSYC 7780	Animal Cognition	3h
PSYC 8900	Psychopharmacology Seminar	3h
VPHY 8460	Molecular Pharmacology	3h

Taken over the course of residency at the University of Georgia

NEUR 9000	Research	10-30h
NEUR 9300	Dissertation	6h
BHSI 8000	Bioethics	3h

Program of Study II

Behavioral Neuroscience Area

Year 1

PSYC 6410	Stat in Psych. Res.	3h
PSYC 6130	Biological Foundations of Behavior	3h
PSYC 6440	Experimental Design in Psychology	3h
VPHY 6090	Comp Mammalian Physiology	3h
BCMB 6000	General Biochemistry & Molecular Biol.	3h

Year 2

PHRM 6410	Pharmacology I	4h
PHRM 6420	Pharmacology II	4h

PSYC 8300	Neuroanatomy for Behavioral Scientists	3h
PSYC 8330	Laboratory Apprenticeship in Biopsychology	3h
PSYC 8380	Behavioral Neuroendocrinology	3h

Year 3

PSYC 8360	Comparative Cognition	3h
PSYC 8900	Psychopharmacology Seminar	3h
VPHY 8400	Neurophysiology	2h

Taken over course of residency at University of Georgia

NEUR 9000	Research	10-30h
NEUR 9300	Dissertation	6h
BHSI 8000	Bioethics	3h

Program of Study III Cellular Biology Area

Year 1

BCMB 8010	Adv. Biochem Mol. Biol I	4h
BCMB 8020	Adv. Biochem Mol. Biol II	4h
STAT 6210	Statistical Methods I	3h
STAT 6220	Statistical Methods II	3h

Year 2

CBIO 8010	Molecular Cell Biology	3h
CBIO 8300	Adv. Developmental Biology	3h
PSYC 8300	Neuroanatomy for Behavioral Scientists	3h
VPHY 8400	Neurophysiology	2h

Year 3

CBIO 8400	Adv. Cell Biology	3h
CBIO 8520	Topics in Biochem. and Mol. Gen of Parasites	3h

Taken over course of residency at University of Georgia

NEUR 9000	Research	10-30h
NEUR 9300	Dissertation	6h
BHSI 8000	Bioethics	3h

**Program of Study IV
Neurotoxicology Area**

Year I

VPHY 6090	Comparative Mamm. Physiol.	3h
VPHY 6100	Comparative Mamm. Physiol.	3h
BCMB 8010	Adv. Biochem. Mol. Biol. I	4h
BCMB 8020	Adv. Biochem. Mol. Biol. II	4h
STAT 6210	Statistical Methods I	3h
STAT 6220	Statistical Methods II	3h

Year II

PHR 6910	Introductory to Toxicology	3h
PHR 8940	Organ Systems Toxicology	4h
VPHY 8400	Neurophysiology	2h
PSYC 8300	Neuroanatomy for Behav. Sci	3h
CBIO 8400	Advanced Cell Biology	3h

Year III

VPAT 8020	Cellular Pathology	4h
VPHY 8460	Molecular Pharmacology	3h
CBIO 8920L	Cell. Bio. Res. Techniques	2h

Taken over the course of residency at the University of Georgia

NEUR 9000	Research	10-30
NEUR 9300	Dissertation	6
BHSI 8000	Bioethics	3

5. Inventory of Faculty Directly Involved

Name	Title	Department
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Richard D. Andreatta	Assistant Professor	Communication Sciences and Disorders
Clifton A. Baile	Distinguished Professor	Animal and Dairy Sciences
C. Richard Bard	Adjunct Research Scientist	Animal and Dairy Sciences
Mark R. Brown	Associate Professor	Entomology
Julie A. Coffield	Associate Professor	Physiology and Pharmacology
Jonathon D. Crystal	Assistant Professor	Psychology
Rodney K. Dishman	Professor	Exercise Science
Gaylen L. Edwards	Professor	Physiology and Pharmacology
Dorothy M. Fragaszy	Professor	Psychology
Silvia Q. Giraud	Assistant Professor	Foods and Nutrition
Adam S. Goodie	Assistant Professor	Psychology
Ruth B.S. Harris	Associate Professor	Foods and Nutrition
Andrea G. Hohmann	Assistant Professor	Psychology
Philip V. Holmes	Associate Professor	Psychology
Charles Keith	Associate Professor	Cellular Biology
William S. Kisaalita	Associate Professor	Biological & Agricultural Engineering
James D. Lauderdale	Assistant Professor	Cellular Biology
Jennifer E. McDowell	Assistant Professor	Psychology
L. Stephen Miller	Associate Professor	Psychology
Thomas F. Murray	Distinguished Professor	Physiology and Pharmacology
Patrick O'Connor	Professor	Exercise Science
Raghubir P. Sharma	Professor	Physiology and Pharmacology
Rebecca J. Shisler	Assistant Professor	Communication Sciences and Disorders
Steven Stice	Professor	Animal and Dairy Sciences
John J. Wagner	Associate Professor	Physiology and Pharmacology

See Appendix I for curriculum vitae

6. Outstanding Programs of This Nature in Other Institutions

1. University of Alabama, Birmingham
 Contact: Dr. Paul D. Gamlin
 Neuroscience Graduate Training Program
 924 18th Street South
 Birmingham, AL 35294-4390

Tel: (205) 934-8249

Fax: (205) 934-5725

The Neuroscience Graduate Training Program at the University of Alabama, Birmingham is an interdisciplinary program with over 60 faculty from multiple departments. Areas of interest range from molecular studies of ion channels to fMRI imaging of non-human primates. Thus, students from a variety of backgrounds participate

in

the program. The University of Alabama, Birmingham has strong imaging capabilities including high-resolution microscopy and a 4.7 Tesla MRI for non-human primate studies. These capabilities make the University of Alabama, Birmingham a leader in neuroimaging.

2. New York University
Contact: Samuel M. Feldman
Director of Graduate Studies
Center for Neural Science
Meyer Hall
New York University
New York NY 10003
Tel: (212) 998-7780
Fax: (212) 995-4011

The Neuroscience Program at New York University (NYU) is excellent example of how a graduate program in a multidisciplinary science should be structured. Students in the Neuroscience Program at NYU are immediately exposed to a variety of faculty and their laboratories through a rotational system. This exposure to research topics and techniques provides students with the ideas and tools they need to pursue independent research as quickly as possible.

3. Brown University
Department of Neuroscience
Box 1953
Providence, RI 02912
Phone: (401) 863-1054
Fax: (401) 863-1074

Brown University has long been recognized for excellence in neuroscience. Their strength derives from the interdisciplinary approach they utilize in their program as well as excellent faculty and students. The program also benefits from a training grant and weekly colloquia in the neuroscience area. This broad spectrum of neuroscience interests and neuroscience discussion provides students with an excellent exposure to the field of neuroscience and leads to well-rounded and well-trained graduate students. Furthermore, they have developed core facilities for transgenic animals and molecular techniques.

7. Inventory of Pertinent Library Resources

The University of Georgia has the largest library in the state, with more than 3.8 million volumes. The UGA Libraries are members of the Association of Research Libraries and ranked 35th in total volumes held and 9th in current periodicals owned in 2000. Moreover, UGA is a Regional Depository library to the U.S. Superintendent of Documents and U.S. Government Printing Office.

A. Print Materials

The University of Georgia Libraries owns an impressive print collection in the sciences and ranks very high for a research university that does not have an affiliated medical school. The Science Library owns 1044 periodical titles in medicine and 1326 periodical titles in basic life sciences. Approximately 225 periodicals are related to neuroscience research. This includes the only subscription to the journal *Brain Research* in the state. There are additional titles located in the Main Library that are relevant to Psychology and Behavioral Science.

B. Electronic Materials

Like the print materials, the University of Georgia Libraries offer very impressive access to electronic resources, including full text journal articles. Among these resources is the *Web of Science* from the Institute of Scientific Information, *Science Citation Index* with back files to 1945 and *Journal Citation Reports*. Hundreds of additional databases are available via the statewide GALILEO system. Among these are CABI, Agricola, BIOSIS, Biological and Agricultural Index, MEDLINE, Cambridge Scientific Abstracts, PsychInfo, Sport DISCUS and Chemical Abstracts SciFinder Scholar. Important to the Neuroscience Program is the electronic access to full-text journal articles via Elsevier's ScienceDirect (over 900 titles), Springer-Verlag, Academic Press, Lippincott/Williams and Wilkins, Cell Press and several individual neuroscience-related titles such as Annual Reviews. This access expands the ability of the neuroscience students and faculty to follow current neuroscience research.

GALILEO also allows access to other full-text resources such as AHFS Drug Information, CRC Handbook of Chemistry and Physics, Stedman's Medical Dictionary and USP/DI Drug Information.

Among the approximately 750,000 volumes in the Science Library, it is estimated that at least 5000 monographs are directly related to neurology, nervous system, neurosciences, clinical neurology and psychiatry. If vision and olfaction are included, this list of monographs grows.

No new library support will be needed to implement the neuroscience degree.

8. Facilities

The Paul D. Coverdell Building for Biomedical and Health Sciences will house the administrative offices for the Neuroscience Graduate Program. Additionally, office and laboratory space will be available in the Coverdell building for specialized techniques such as a planned magnetic resonance imaging facility and a transgenic rodent facility.

The University of Georgia also houses the editorial offices for Critical Reviews in Neurobiology.

All faculty involved in the neuroscience program have well-equipped laboratories to sustain their current research load. It is expected that students will be trained in these existing facilities. These laboratories include laboratories for genomics, proteomics, molecular biology, neurophysiology, neuroanatomy, neurosurgery, neuropharmacology and behavior. Investigators in the Department of Psychology and College of Education also utilize local neuroimaging facilities in their research.

9. Administration

The Neuroscience Program will be administered by the Neuroscience Division of the Biomedical and Health Sciences Institute. The Graduate Coordinator/Division Chair, with the support of the Neuroscience Graduate Affairs Committee, will be responsible for coordinating all aspects of the program including instruction, policy development, admission and retention of students, and financial support as well as coordinating the graduate program. This includes coordinating the admission of students and assuring that the policies and standards of the Graduate School are implemented within the Neuroscience Program. A Neuroscience Graduate Affairs Committee consisting of the division chair and 4-5 members of the neuroscience faculty is expected to serve as a resource for faculty and student input and to provide assistance in the establishment and implementation of policies of the Neuroscience Program. It is believed that the proposed administrative structure will provide clearly defined lines of participation by all program members. As such, it is in keeping with the good practice and accepted standards of the university's best graduate programs. This administrative structure is similar to that which exists in Ecology, and it has clearly enabled them to maintain a highly successful interdisciplinary graduate program.

In addition to its advisory function, the Neuroscience Graduate Affairs Committee will also serve as an Admissions Committee for the Neuroscience Program under the leadership of the Division Chair. In this capacity, the Committee will rely primarily on previous grade point averages (GPA), results of the Graduate Record Examination (GRE), letters of reference, and interviews, as evaluative measures for student admission. Admissions deadlines, requirements and procedures will be in accordance with Graduate School policies and procedures.

10. Assessment

A. Direct Student Assessment:

Students admitted to the program will be evaluated a minimum of two times per year by their advisory committees. These evaluations will include a self-assessment by the student as well as assessments by the faculty research advisor and advisory committee. The advisory committee will submit annual reports to the Neuroscience Graduate Affairs Committee containing their appraisal of each student's progress and recommendation for continuance or termination. A written evaluation will be provided to the student and copies maintained for program review. Upon receipt and consideration of this input, the Neuroscience Graduate Affairs Committee will render a final decision regarding continuation or termination of the student in the program. All requirements for candidacy, comprehensive examinations, preparation of dissertation and defense of the dissertation will be in accordance with existing Graduate School policies.

B. Learning Outcomes Assessment:

Outcomes assessment will be based on the document "Guidelines and Procedures for Assessment of Student Learning Outcomes in Graduate Programs at the University of Georgia". The Graduate Student Steering Committee will establish guidelines for criteria used to judge the quality and effectiveness of the program. Although there is no national standardized exam for neuroscience a number of factors can be monitored to determine the effectiveness of the program.

For example:

Student interest in the program, and the referral of students to the program by previous graduates.

- Monitoring the placement of our graduates in quality postdoctoral, industrial or faculty positions.
- Using exit interviews and surveying graduates to determine if the training was appropriate to the work they are conducting.
- Success of graduates in obtaining external funding.
- Success of graduates in obtaining tenure track faculty positions.
- Regularly conducting student and peer evaluations.
- Recruitment and hiring of tenure track faculty with interest in Neuroscience.

Data collected by the advisory committee will be reviewed and a report will be

forwarded to the Director of the Biomedical and Health Sciences Institute for consideration by the Executive Committee of the Biomedical and Health Sciences Institute.

11. Accreditation

There is no accreditation agency for neuroscience.

12. Affirmative Action Impact

Recruitment efforts will be directed to stress the importance of minorities as professionals in the neuroscience field. Faculty and student representatives will visit targeted campuses in the southeast particularly on placement services days and career development days at these universities. Additionally, promotional and recruitment brochures and flyers will be mailed to schools with significant African-American student populations. Examples of such schools include, but are not limited to: Schools in the Atlanta University Center, Albany State, Armstrong Atlantic and Tennessee State.

Faculty in the Neuroscience Program will also participate in the Summer Undergraduate Research Program and the Graduate Recruitment Opportunities Program. These programs are targeted at recruiting students who are educationally or economically disadvantaged or offer a unique, diverse background to an area of study.

13. Degree Inscription

The diploma will be inscribed with Doctor of Philosophy.

14. Fiscal and Enrollment Impact and Estimated Budget

The program will include approximately twenty full time faculty members from a variety of departments. A part time administrative assistant and release time for the Division Chair and graduate coordinator will be required for administrative functions. Student enrollment is expected to be 8-10 students per year for the first three years and increasing to 10-15 students per year as faculty extramural funding for graduate research assistantships increases.

The program envisions providing assistantship or fellowship support for full-time Ph.D. students enrolled. Therefore, the size of the program depends, at least in part, on the ability to generate such support. The potential sources of support are: (1) Graduate School Nonteaching Assistantships and Fellowships. The best way to obtain these is to recruit students with high GREs and excellent GPAs from quality undergraduate programs. (2) Asking the departments whose faculty is contributing to the program to open the competition for their departmental assistantships to qualified neuroscience students. (3) Request to Vice President for Research and/or to the Provost and Vice President for Academic Affairs for four assistantships per year for the first three years. (4) Commit assistantships from present and future extramural grants held by participating faculty to students in the program. (5) NIH/NSF predoctoral fellowships. (6) Special predoctoral

fellowships, such as the APA and the Ford Foundation Minority Fellowships. (7) Training grant after program is established.

A. Detailed Funding

I. Enrollment Projections	FY 2004	FY 2005	FY 2006
Student Majors			
1. Shifted from other programs	0	0	0
2. New to institution (1/3 part time)	8	10	10
Total Majors	8	18	22
Degrees awarded			6

II. Costs	EFT	Dollars	EFT	Dollars	EFT	Dollars
A. Personnel reassigned or existing positions.						
1. Faculty						
2. Part-time Faculty						
3. Grad. Assistants						
4. Administrators	0.25	25,000	0.25	25,750	0.25	26,525
5. Support Staff						
6. Fringe Benefits (26%)		6,500		6,695		6,897
7. Other Personnel Costs						
Total Existing Personnel Costs		31,500		32,445		33,422
B. Personnel new positions						
1. Faculty						
2. Part-time Faculty						
3. Grad. Assistants (6)	0.4	108,000	0.4	180,000	0.4	252,000
4. Administrators						
5. Support Staff	0.5	12,000	0.5	12,360	0.5	12,731
6. Fringe Benefits (26%)		3,120		3,224		3,310
7. Other personnel costs						
Total New Personnel Costs		123,120		195,584		268,041

C. Start-up Costs (one-time expenses)	1 st Year	2 nd Year	3 rd Year
1. Library/learning resources			
2. Equipment (Microcomputer/printer)			
3. Other ()			
D. Physical Facilities: construction or major renovation			
Total One-Time Costs		-0-	-0-
E. Operating Costs (recurring costs- base budget)			
1. Supplies/Expenses	5,000	10,000	12,000
2. Travel (student)	626	1,500	2,250
3. Equipment			
4. Library/learning resources			
5. Other (Colloquium Speakers)	1,500	4,500	6,000
Total Recurring Costs	7,126	16,000	20,250
Grand Total Costs	161,744	244,029	321,713
III. Revenue Sources			
A. Source of Fund			
1. Reallocation of existing funds	40,000	40,000	40,000
2. New student workload			
3. New tuition (Includes full and part-time)	121,744	273,924	426,104
4. Federal funds			
5. Other Grants			
6. Student fees			
7. Other ()			
Subtotal			
New State Allocation Requested	-0-	-0-	-0-
Grand Total Revenues	161,744	313,924	466,104
B. Nature of funds			
1. Base budget	161,744	313,924	466,104
2. One-time funds			
Grand Total Revenues	161,744	313,924	466,104

Review of Proposal for new Neuroscience Program, University of Georgia

Prepared by:

**Cheryl L. Sisk, Director, Neuroscience Program, Michigan State University
March, 2003**

Program justification

A group of faculty representing 8 departments, 2 programs, and 6 colleges proposes to establish an inter-departmental multidisciplinary degree-granting program in neuroscience. The rationale for offering a PhD in neuroscience at the University of Georgia is clearly spelled out and is compelling. Simply put, a majority of students interested in the nervous system want a PhD in neuroscience, and they apply to research institutions that offer this degree. The proposal offers supporting data both from national surveys conducted by the Association of Neuroscience Departments and Programs (ANDP) and from a local survey conducted at the University of Georgia. Data from ANDP surveys conducted in 1986, 1991, 1998, and 2000 (www.andp.org) show an increasing trend in the number of PhDs awarded in Neuroscience as compared with traditional disciplines (24% in 1986 vs 67% in 2000). Although there are numerous PhD programs in neuroscience at institutions in the southeast, there are no similar programs at public institutions in the State of Georgia. It is also telling that there is a UGA Neuroscience Student Association in the absence of a PhD program in neuroscience. The recently established UGA Biomedical and Health Sciences Institute provides an appropriate administrative structure for multidisciplinary, interdepartmental graduate programs. An interdepartmental structure for neuroscience programs works very well at many institutions across the country, and it should also work well at UGA. Thus, establishment of a neuroscience PhD program at UGA would create new opportunities for graduate research training at the institution and would surely increase the graduate applicant pool in biomedical sciences, thereby strengthening faculty research programs.

Program structure

The proposed program offers several features that will be attractive to applicants and funding agencies, including a broad-based and flexible curriculum and diversity of faculty research programs. A wide variety of courses already exists, and it is clear that the curriculum provides opportunity for formal course-work in a number of areas. Students will be able to pursue one of several specialized tracks within the Program, including neuropharmacology and neurotoxicology, behavioral neuroscience, and cellular neuroscience. Twenty-four faculty will provide research training opportunities in these areas. The Program will be administered by the Chair of the Neuroscience Division of the Biomedical Health Sciences Institute and a faculty Steering Committee. The Chair and Steering Committee will be responsible for policy development and

implementation and graduate admissions. Students will be supported throughout their program of study via a variety of mechanisms, including both internal and external sources. It is expected that the Program will enroll 8-10 students per year over the first three years, and 10-15 students per year thereafter. If these enrollments are met, a quick calculation based on a 5 year plan of study indicates that the Program would eventually reach a steady state size of 44-60 students.

Program critique

Research training. One aspect that needs to be clarified is how students will take advantage of the range of available research opportunities and select a thesis advisor. The laboratory rotation system at New York University is mentioned as a good model for this aspect of graduate training. In addition, one expectation of the NIH Jointly Sponsored Predoctoral Training Grants in Neuroscience (Program Announcement PAR-02-017) is that trainees conduct laboratory rotations prior to full time thesis research. Laboratory rotations are indeed an excellent mechanism for exposing students to diverse research problems and experimental approaches and for selection of a thesis lab, particularly in interdepartmental programs. Some thought should be given as to how a lab rotation system in the UGA program would work, how a thesis lab will be selected, and how a laboratory rotation requirement will interact with the mechanisms of support. For example, if students are required to perform laboratory rotations during the first year of study, then support on an R01 may not be appropriate.

Course requirements. The example programs of study are course-intensive and demanding. In each example, first year students would take 7-9 credit hr of content courses per semester. Course loads remain relatively heavy through at least the second year of study, resulting in a total of 31-42 credit hours of content courses. This amount of course work may be excessive, and in any case does not leave much time for lab rotations or research training in the first two years of study. The Program should consider the trade-offs between time spent in the class room and time available for research experiences in the early years of study.

Administrative structure. The Steering Committee is responsible for all administrative functions. Considerable effort will be required for graduate recruitment and admissions, and as the Program grows, the administrative responsibilities for Program review and evaluation and tracking graduate students through the program will increase. Eventually, the Program may be better served by having separate committees for policy, graduate recruitment and admissions, and tracking of students. A multi-committee structure not only spreads the work load, but also increases the number and diversity of faculty involved in Program activities.

Program size. The goal of enrolling 10-15 students per year over the first three

years is laudable, but ambitious, and may be unrealistic for a new Program considering the recruitment effort that will be required to enroll that many students. In addition, a steady state Program size of 44-60 students may be too large for a faculty of 24, especially if it is anticipated that the Program faculty will also be training and supporting graduate students in departmental programs.

Program cohesiveness. One challenge that all interdepartmental programs face is the establishment and maintenance of program cohesiveness. A sense of community is particularly important for the students, who do not have a departmental home base and who most likely will be working in labs that are geographically spread over the campus. In addition to sponsoring colloquium speakers, the Program should consider other activities that will promote program cohesiveness, such as an annual retreat.

Budget. The proposed budget does not include costs for graduate recruitment. Graduate recruitment will be an expensive and on-going activity that will probably include web-site development and maintenance and annual on-campus interviews of applicants. Therefore, funds should be allocated for this purpose.

Summary

Over the past three decades, neuroscience has emerged as a biomedical research area of critical importance. Federal research support of neuroscience research has surged in recognition of the deleterious societal impact of neurodegenerative diseases and mental illness. An understanding of the normal and diseased nervous system is best accomplished by integrated study across levels of analysis and through a wide variety of experimental approaches. Consequently, at most research institutions, the range of faculty research programs in neuroscience is diverse and the faculty are often in several different departments. Interdepartmental Neuroscience Programs are a common mechanism for formalizing graduate training in neuroscience and for providing cohesive and integrated study of the nervous system within the institution. The establishment of an interdepartmental PhD Program in Neuroscience at the University of Georgia will accomplish these same goals, and will demonstrate an institutional level of support for neuroscience research that transcends the traditional departmental structure. In addition, it will create a unique opportunity for graduate training in the state and will strengthen and enhance the existing faculty research programs in neuroscience. It should serve as a useful recruiting tool not only for graduate students, but also for faculty and postdocs. The proposed program is faculty driven and fits well with the mission of the Biomedical and Health Sciences Institute--two important factors that will contribute to the success of the Program.

Report on the Neuroscience PhD Program Proposal

University of Georgia

**Cathy W. Levenson, PhD
Florida State University
March 14, 2003**

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I. Students

A. Demand

It is clear that students at UGA who want to study Neuroscience can, and are, receiving solid training. However, there are several strong indicators of significant demand for a formal PhD-granting program in Neuroscience at UGA. First, the survey taken by the UGA Neuroscience Student Association shows that 9 of 13 current doctoral students, representing 4 different departments, responded that they would have applied for a Neuroscience degree if it had been offered. Eight of the students would have preferred a degree in Neuroscience to the one that they are currently getting. This survey, while polling only a small sample of students, does suggest that a formal degree in Neuroscience would better fulfill the career objectives of many students already enrolled. Secondly, a doctoral program in Neuroscience at UGA would make it the only Neuroscience PhD program at a state institution in Georgia. Students would no longer be forced to leave the state to obtain their degrees. Thus, this program would serve as a strong recruiting tool for graduate enrollment at UGA.

No master's degree program is planned. This is a wise decision given that the degree does not really have suitable employment options. It would also run the risk of distracting faculty from the time consuming task of training PhD students. Furthermore, there appears to be ample opportunities to obtain a master's degree in the individual departments. However, these masters's degree programs can also serve as preparation for the PhD program in Neuroscience. Thus, by instituting a degree program in Neuroscience more master's level students can be expected to stay at UGA to obtain a PhD.

The proposal is to enroll 8-10 students per year for the first several years of the program. This seems reasonable given the responses in the above survey. As the reputation of the program grows, this number can easily be expected to increase. The projected increase in year 4 (to 10-15) is not unreasonable, but with over 20 faculty involved in the Program, I would predict an even higher number. This program has the potential to be very popular not just in the State of Georgia (where there certainly will be a significant draw), but nationwide as well.

B. Curriculum

The curriculum is a good mix of core and elective courses. The core curriculum includes a series of standard courses in Neuroanatomy, Neurophysiology and Laboratory techniques. This is supplemented by 4 areas Cellular/Molecular Biology, Physiology and Pharmacology, Behavioral/Systems Neuroscience, and Cognitive/Clinical Neuroscience. Students must take a minimum of one course from at least 3 of these areas. In an interdisciplinary Neuroscience program that will have a very broad list of research areas and emphases, a single curriculum cannot serve all students. The curriculum organization proposed here is an ideal way to allow students (presumably in close consultation with their major professor and supervisory committee) to design a program of study that will best prepare them for the type of

research they are conducting for their doctoral dissertation. The "Sample Programs of Study" are very good examples of the types of programs that students will be able to put together using this system. These examples will be valuable both to students in the program and as a recruiting tool to show prospective students the breadth of this program. The list of "other elective courses" that will be available to students is impressive and illustrates one of the many strengths of an interdisciplinary program such as the one proposed here, as no single department could make all of these courses available to students.

My only suggestions would be to 1) consider the possibility of building into the first year a series of rotations in several different research laboratories before making the final decision on a major professor, and 2) add the "Bioethics" course to the core. It is listed as a required course in each of the sample programs of study provided, so the change is minor. I make both of these suggestions because, once in place, the UGA Neuroscience program should be able to put together a very competitive application for an Institutional Training Grant from the NIH. Both a course in "Ethical Conduct of Research" and laboratory rotations are requirements for these training grants. Having these in place in advance would strengthen the application.

C. Assessment

A plan for student assessment is in place. Graduate students will be evaluated by their advisory committees who will report the student's progress and recommend continuance or termination to the Steering Committee. The Steering Committee makes the final determination of the student's continued suitability for the program. This is a good plan for a number of reasons. 1) By making the evaluation a committee process, it prevents the evaluation and decisions from being the sole responsibility of the major professor. 2) It allows the student to be first evaluated by the faculty most closely associated with their research area. 3) One of the dangers of a having faculty from so many different departments is that there may be inconsistencies in the standards and requirements for individual students. This will not be a problem at UGA because the Steering Committee will make the final decisions and be able to insure that the expectations for students are uniform. The Steering Committee can also provide feedback to the supervisory committees and major professors where inconsistencies are noted. Since students will be in different buildings all over campus, this will also provide them with consistency (and cohesiveness) if they know that they will all, regardless of what department their lab is housed in, be evaluated in March (for example) of each year.

There is also a plan for program-wide assessment of the success of the program's graduates. Graduates will be tracked to determine such things as placement in post-doctoral positions, industry and faculty positions, funding record, and tenure. This is an excellent idea. Not only will this information be valuable in allowing the program to evaluate itself, but good placement records will be a useful recruiting tool (for both new graduate students and new faculty), and will be needed for applications for program-wide training grants.

D. Funding

Competitive graduate student stipends are essential for the growth and quality of any PhD Program. As we all know, the competition for top-notch graduate students is intense. This is especially true in the Neurosciences. The proposal offers a number of potential sources for funding including six 0.33 EFT graduate assistantships in the first year of the program at approximately \$14,800. Furthermore, faculty who serve as major professors are able to write doctoral student stipends and tuition into federal grant proposals. There is also a plan to have the graduate students write proposals. This is a good plan because 1) as of October 1, 2002, the NRSA funding level for pre-doctoral fellows is \$19,968. It pays tuition and fees as well as some travel expenses. This is a highly competitive award that will free up money to recruit larger numbers of incoming students. 2) Students get the opportunity to learn the grant writing process, and become acquainted with the federal grants process. This is true even if the proposal is not funded. 3) Evidence of grant activity and obtaining federal funding as a graduate student will enhance a student's potential for getting a high profile post-doc and eventual employment. 4) Proposals can also serve as a student's dissertation proposal. Thus, the suggestion to have students write grants is such a good idea that submission of a pre-doctoral NRSA (or other proposal for international students) could even be added as a requirement in the Program of Study for the semester after successful completion of comprehensive exams.

II. Facilities

One of the many advantages of this proposal to develop an interdisciplinary/multidisciplinary degree program is that each of the participating faculty already have well equipped laboratories in several departmental units. Furthermore, the core facilities at UGA are also excellent for work in the Neurosciences. Thus, at UGA the Neuroscience program will not have to wait for laboratories to be built, core facilities to be established, or faculty to be hired. No additional dollars will be needed for infrastructure or equipment. The program will be able recruit good students immediately with little or no ramp time.

III. Administration

The establishment of the Biomedical and Health Sciences Institute, which was designed to foster multidisciplinary research and programs, appears to have provided the ideal framework for a Neuroscience Program at UGA. The program itself will be administered by the Chair of the Neuroscience Division of the Biomedical Health Sciences Institute. The Chair will be responsible for most of the major administrative duties including coordinating policy development, student admission process, retention, and finances. Because the Chair is already in place, the transition to an independent PhD program will be seamless.

The Chair will be assisted by a Steering Committee of 4-5 members of the Neuroscience faculty that will also serve as the Admissions Committee. While it is not clear from the provided information how the Steering Committee members will be selected, there is the presumption that it will be generally representative of the different

departments in the Program. Furthermore, there is on campus another unit (Ecology) that has a similar administrative structure and can serve as a model for the day to day working of this committee. In addition to the Chair and the Steering Committee, there is also the proposal to have a graduate coordinator. This, too, is a good proposal because with so many faculty housed across a large campus, the graduate coordinator can be a person who will provide a feeling of unity for the graduate students.

IV. Budget

The budget for the Program is well worked out. It is self-sustaining with projected revenue sources exceeding recurring costs. It is simply remarkable that the University has the opportunity to have such a quality program at virtually no cost. In fact, I would argue that the creation of a Neuroscience doctoral program will provide even more potential sources of revenue for the University than are reflected in this budget. For example, the existence of a Neuroscience program will, in many cases, make faculty extramural grant proposals more competitive. Attaining more federal grants will not only mean additional research dollars, but additional overhead dollars as well.

V. Faculty

A. Description

The proposal currently has 24 participating faculty members from 8 different departments in 6 different colleges. There is a good balance of full (10), associate (6) and assistant (7) professors (and one research faculty member). Tenure will be granted through the home department. This will reduce the amount of administrative resources needed for non-research activities in the program. Once the program is in place, faculty, in consultation with the Steering Committee and Chair, can decide the criteria for joining the program as a faculty member, and the requirements for maintaining doctoral directive status in the Neuroscience Program. I should point out that having a Neuroscience program on the UGA campus will attract quality faculty not only in the Neurosciences, but also in closely related fields that will benefit from having a Neuroscience Program for collaboration and consultation. It also increases the possibility that UGA faculty will contribute to collaborations nationally, increasing the visibility of the University and the state at the national level.

B. Contributions

Examination of the CVs for each faculty shows that there is already a plan for how each faculty member can contribute to the teaching and/or research mission of the program. The breadth of faculty expertise is impressive and will attract quality graduate students. The wide variety of contributions and expertise also increases the possibility that several areas of strength and emphasis can be identified for the purpose of research collaboration, joint grant proposals, and the writing of larger proposals for Program Project grants.

C. Publications

The faculty have been productive scholars. They participate on editorial boards, as manuscript reviewers, and hold a variety of posts in professional service. They are already publishing in recognized Neuroscience journals. A number of faculty are publishing in top-tier journals such as *Science*, *Journal of Neuroscience*, *Proceedings of the National Academy of Sciences*, and the *Journal of Comparative Neurology*. Many faculty are also publishing papers in the next tier of solid Neuroscience journals such as *Brain Research* and *Physiology and Behavior*. In the last 5 years (1998-2002) faculty have published 279 papers. Broken down by rank, full professors have published an average of almost 18 papers per person, roughly 3 and a half papers per year. Faculty at the Associate level have published on average about 2 papers per year. Assistant professors as a group have published less, but in several cases these faculty have only recently set up their labs and begun to get funding. I have no doubt that they will have significant success over the next several years as evidenced by one Assistant professor who has been awarded both NIH and USDA funding, as well as having an impressive publication record.

It is also worth noting that the editorial offices for the journal *Critical Reviews in Neurobiology* are housed at UGA. Thus, while this program will technically be the nation's newest Neuroscience Program, the journal will provide the program with visibility generally associated with more established programs.

D. Funding

The faculty have a track record of federal funding and many are currently funded. As discussed briefly in a previous section, the existence of a formal PhD program in Neuroscience will open doors for new avenues of research funding. This will include both federal (NIH, NSF, USDA) funding as well as funding from the private sector. It will include individual grants (ROI, etc) and collaborative efforts. Enhanced funding opportunities will come because faculty will now be eligible to apply for additional programs. The new program will also enhance the funding potential of the faculty by increasing visibility and the reputation of the research that faculty are conducting and proposing.

VI. Summary

While the informal mentoring of graduate students in Neuroscience has served many students at UGA well, the program is unlikely to expand until a formal PhD program is in place. This proposal represents a well thought-out, realistic, and exciting plan to develop such a program without requests for an additional financial investment. The faculty, facilities, and budget are all in place. There are good models on campus for an administrative structure that will meet the needs of the program without being burdensome. Furthermore, the existence of a Neuroscience PhD program will position the University to recruit highly qualified students and faculty, increase the potential for extramural funding, and increase the state's participation in this growing research area.

