

AUTHORIZATION TO PLAN AN ACADEMIC PROGRAM
University of Hawai'i at Hilo

1. **Vice Chancellor for Academic Affairs Consultation:** 09/25/2012 with Interim VCAA Kenith Simmons
2. **Requesting Campus:** UH-Hilo, CAS, Department of Psychology
3. **Planning Chair and Members:** Chair: Eric Heuer, Ph.D.; Adam A. Pack, Ph.D. & Errol Yudko, Ph.D.
4. **Degree Proposed:** Neuroscience (B.S.)
5. **Need for the Program**

a. Program Description

Neuroscience is a field of science that focuses on the study of the nervous system. Although neuroscience is a relatively new scientific discipline in its own right, elements of neuroscience research have been present in various academic departments for over two centuries. The Society for Neuroscience (SfN), was founded in 1981 to provide a common forum to discuss current research on neuroscience and increase public awareness of the importance of studying the brain. While initially a small organization, the Society for Neuroscience has grown to include over 40,000 members and represents one of the largest professional societies in the world. Neuroscience, as a whole, has seen unprecedented growth over the past three decades and there is no indication that this growth will slow in the near future. Following the creation of SfN, academic departments across the country began to develop neuroscience programs, traditionally housed in Psychology and/or Biology. There are a variety of reasons for the growth of Neuroscience, including: advances in the understanding of communication between neurons and within the brain, a better understanding of the relationship between brain and behavior, development of new technologies (i.e. functional Magnetic Resonance Imaging), an increase in neurodevelopmental disorders such as autism, and an unprecedented aging population who are at risk for developing neurodegenerative diseases such as Alzheimer's and Parkinson's Disease. As such, institutions around the country have developed and/or are developing undergraduate and graduate programs in neuroscience to meet this ever-increasing demand.

The development of a Neuroscience major at UH-Hilo has been a topic of discussion within the Psychology Department for several years, although the personnel resources to offer the full curriculum within the field of neuroscience were not present until recently. The initial development of this plan came about as a mechanism to meet the needs of students who were interested in specializing their studies and future careers in the biological aspects of Psychology. Additional motivation for this major includes the fact that Psychology as a discipline is evolving to include the identification of biomarkers for both normal development and disease specific pathology. This is also evident at the level of major research funding organizations, such as the National Institutes of Health, who now routinely issue Requested Funding Announcements for mental health research that includes the identification of novel biomarkers. Thus in order to be cutting edge and competitive, Psychology Departments are increasingly including neuroscience in its offerings.

As a major at UH-Hilo, a B.S. in neuroscience will be a unique major unique in the UH system as well as among other private colleges in the Hawaiian Islands. The neuroscience major will provide an attractive opportunity for UH Hilo students to develop skills and knowledge that will enable them to be more competitive than at present for a variety of graduate programs focused on the biological aspects of psychology (e.g., Neuroscience, Learning, Cognitive Psychology, Cognitive Development, Biopsychology). It will also better prepare them as potential candidates for medical school specializations and high technology positions related to neuroscience. The B.S. in Neuroscience will be a multi-disciplinary major, offering training in all aspects of Neuroscience including: cellular

neuroscience, neuroanatomy, neurological/psychiatric illnesses and cognitive neuroscience, as well as, a foundation in basic life science and psychological sciences related to behavior, learning, and cognition. Students completing this major will gain an understanding of the complexity of the nervous system and the evolutionary conservation of neuronal systems in varying species. Students will also learn how brain structure and function corresponds to the behavior of humans and non-humans. Through the addition of this new program, the Psychology department hopes to increase our ability to serve our ever growing and diverse student population, to prepare them for careers in new STEM related disciplines, and to enhance and extend the workforce in Hawaii Island. These objectives will be achieved by creatively repackaging existing resources and course offerings at UH Hilo.

- 1) **Program learning outcomes:** Learning outcomes for the Neuroscience major are consistent with those developed by other neuroscience programs.

Baccalaureate candidates (and minors, to a lesser extent) should be able to define, give examples of, apply, and/or demonstrate the following in papers, reports, oral presentations, and other performances:

- Describe the structure and function of the nervous system at various levels of organization
- Demonstrate a number of research techniques in neuroscience and evaluate the strengths and weaknesses of various methods
- Design experiments, analyze data and think critically about current topics in Neuroscience
- Critically evaluate published literature in Neuroscience

- 2) **Program Justification:** The UH Hilo Department of Psychology contains one of the largest undergraduate majors at UH Hilo. Consequently, it is vital that this department have offerings that reflect the growth and changes in psychology. The field of Psychology has evolved over the past thirty years to include Neuroscience as a major area of study and aspects of neuroscience are now common in textbooks and course offerings in Learning, Cognitive Psychology, Sensory Perception, and Biopsychology. The dramatic growth in neuroscience as a part of psychology has manifested itself in emphases in new funding opportunities and jobs. Therefore, it is prudent that the UH Hilo Department of Psychology extend and enhance its offerings to undergraduate students by providing them with the opportunity to participate in this thriving new area of psychology, an area that promises broad high level employment opportunities. The opportunity for undergraduate students to specialize their undergraduate studies in neuroscience is a win-win for the students, the community of Hawai'i Island, and the State of Hawai'i in general. Presently, there are no undergraduate degree programs in Neuroscience offered at any University of Hawai'i campus or any private college or university in Hawai'i. Thus, students earning a B.S. in Neuroscience will be in a unique and competitive position for entry into top graduate school or professional programs related to Neuroscience and/or employment in public and private sector industries related to Neuroscience. Finally, because of the uniqueness of this program it will serve not only as a "magnet" for new students to UH Hilo, but will showcase UH Hilo as a place of excellence in scientific studies of Neuroscience. Further, to determine the interest level in such a program we have conducted a survey of Psychology Majors currently enrolled in our Block 2 courses to assure that there is in fact an interest in the program. The survey of majors consisted of three questions: 1) Would you be interested in learning more about neuroscience? 2) Would you consider majoring in neuroscience if it was offered at UH Hilo? and 3) Are you currently considering a career in neuroscience/biopsychology following your graduation from UH Hilo? The results of the survey, shown in the graph below indicates that there is interest in neuroscience (73% of respondents), that a

population of students would consider majoring in neuroscience (39% of respondents) and that a small percentage of majors (23%) are already considering a career in neuroscience. This data strongly supports the need for this interdisciplinary major, which will better serve those students who are already planning a career in neuroscience.

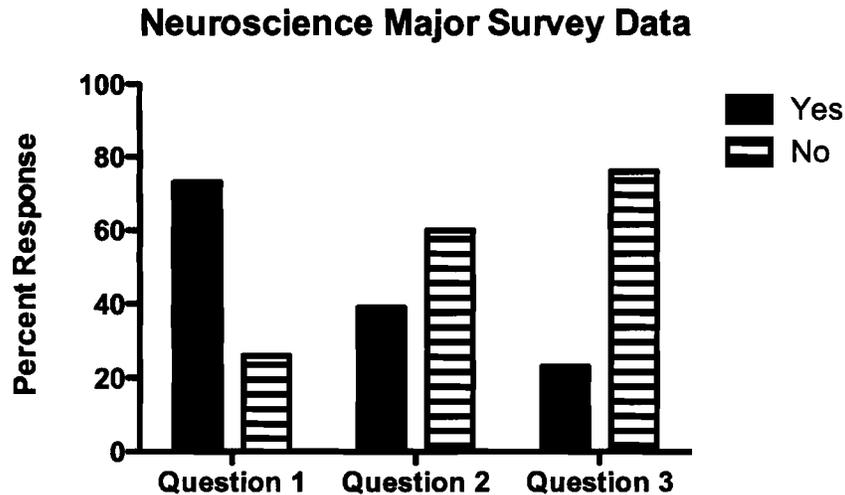


Figure 1: Needs Assessment. The above data was collected from a survey of students currently enrolled in the Block 2 Courses (Fall 2012) offered by the Psychology Department at UH Hilo.
 Question 1: Would you be interested in learning more about Neuroscience?
 Question 2: Would you consider majoring in neuroscience if it was offered at UH Hilo?
 Question 3: Are you currently considering a career in neuroscience/biopsychology following your graduation from UH Hilo?

3) Economic Development:

The acronym STEM, refers to science, technology, engineering and math. Public misconceptions about the type of research done by Psychologists have made it difficult to attract grants that are targeted at STEM disciplines. Further, those same misconceptions have made it difficult to attract students to the discipline who are interested in studying STEM. According to the US Department of Commerce, Economics and Statistics Division, over the past 10 years, STEM jobs have increased at a rate three times that of non-STEM jobs. Further, STEM workers have been significantly less likely to experience joblessness than non-STEM workers. Moreover, STEM workers have earned 26% more, on average, than non-STEM workers. The Psychology Department at UH Hilo has a strong STEM focus in that we currently have expertise in the study of behavioral neuroscience, cognitive neuroscience, and psychoneuroendocrinology in addition to a long tradition of expertise in the science of health and behavior change. A degree line that is more obviously STEM focused will allow students who are interested in the greater earning potential available to STEM graduates to take advantage of such while also opening the door to more lucrative grant opportunities for our faculty.

4) Workforce Needs:

Training in Neuroscience imparts a unique set of skills that are typically not available to biologists or psychologists who train in their specific disciplines. For example, neuroscientists learn both

laboratory technique and behavioral analysis with a strong emphasis in statistics and research methodology. This opens doors for those holding a Neuroscience degree to enter academia, to become laboratory technologists in private bio-related industries, or to gain entry into medical, legal, or publishing related occupations.

5) Program Alignment with System and Campus Mission/Strategic Plan and Outcomes:

5a) Alignment with the strategic plan:

The B.S. in Neuroscience program aligns well with goals 1 and 2 of the UHH strategic plan.

Goal 1 of the strategic plan is to “*provide learning experiences and support to prepare students to thrive, compete, innovate and lead in their professional and personal lives.*” The actions identified by the strategic plan as necessary to achieving this goal include improving our mentorship of students and developing more applied learning settings. The proposed degree in Neuroscience would better enable us to match students who have specific interests in Neuroscience with faculty who have similar interests. This would allow for 1) better mentorship of students; and 2) greater access to research opportunities for those students including summer and post-baccalaureate fellowships.

Goal 2 of the strategic plan is to “inspire excellence in teaching, research and collaboration.” The proposed degree in neuroscience is an interdisciplinary major. Forging interdisciplinary collaboration is one of the supporting activities of Goal 2.

5.b. Existing UH Programs

We have been unable to find any neuroscience degree offered at the bachelor level in the state of Hawaii, although UH Manoa does currently offer a B.S. Degree in Psychology. We have consulted with Dr. Lorey Takahashi, Chair of the UH Manoa Psychology Undergraduate Program and are currently awaiting a letter of support from him.

6. Planning the New Program

a. Planning Period

- 1) The planning period for the B.S. major in Neuroscience is from September 2012 to September 2013. However, a substantial amount of pre-planning has already been conducted by the committee of Drs. Heuer, Pack, and Yudko from the UH Hilo Department of Psychology including official agreement from the Department of Psychology to initiate pre-planning for the new major, development of a proposed course curriculum, meeting with the chair of the Biology Department of UH Hilo, and initiating discussions with the division chairs of both Social Science and Natural Science at UH Hilo.
- 2) As part of the official planning process, the Department of Psychology will establish an MOU with the Natural Science departments who will contribute some of their existing courses to the Neuroscience program, including: Biology, Chemistry, Mathematics and Physics. Some of these courses already fulfill UH Hilo’s requirements in its General Education Program. As part of the

pre-planning period, this committee has already consulted with these departments and the Natural Science Division Chair (see letters of support). Once the proposed program is finalized, it will be reviewed officially through the UH Hilo curriculum review process.

- 3) It is anticipated that the B.S. in Neuroscience program will be submitted for University approval in September 2013, with the goal of program implementation in August 2014.
- 4) It is anticipated that during the planning period there will be no budget requirements or workload additions for planning committee members.
- 5) The program will be sustained through student tuition and existing faculty resources. Additional resources may be available through external grants awarded to the principal faculty within the program.
- 6) The proposed major in Neuroscience is consistent with UH Hilo's accreditation standards.
- 7) The B.S. in Neuroscience will be a program within the Department of Psychology and the Social Science Division of the College of Arts and Sciences at UH Hilo.

b. Description of Resources Required

1. The proposed B.S. in Neuroscience program will be delivered by current faculty within the Department of Psychology at UH Hilo. These include: Dr. Eric Heuer, specialist in Neuroscience and Cognition; Dr. Adam A. Pack, specialist in Animal Learning and Behavior, and Marine Mammal Science; Dr. Errol Yudko, specialist in Psychobiology; and Dr. Susan Brown, specialist in Evolutionary Psychology. This program can commence with existing courses in Psychology and other departments in the natural sciences as well as current resources. The 2011-2012 UH course catalog includes 25 courses that would be offered as part of the B.S. in neuroscience. In addition, we will seek in the Fall of 2012 to make two "Special Topics" courses permanent courses as they are directly relevant to the new B.S. in neuroscience: "Brain Disease", and "Child Cognition."
2. Library Resources: No new library resources are anticipated for this major.
3. Physical resources: No new physical resources are needed for this major.
4. Additional resources: No additional staff or positions are required.

c Five-Year Business Plan. Five-Year Business Plan.

Program Costs	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Faculty w/o fringe	0 ¹	0	0	0	\$30,000 ²
Other Personnel costs w/o fringe	0	0	0	0	0

Library	0 ³	0	0	0	0
Supplies	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
Other	0	0	0	0	0
TOTAL EXPENSES	\$2,000	\$2,000	\$2,000	\$32,000	\$32,000
REVENUES					
Projected major enrollment	5	10	15	20	25 ⁴
# of course sections	25	25	25	25	25
# of credits	84	84	84	84	84
SSH	350	700	1050	1400	1750
Tuition rate/credit	277	297	318	318	318
Total revenue from tuition	<i>\$16,620 (5 X 277 X 12 credits)</i>	<i>\$35,640 (10 X 297 X 12 credits)</i>	<i>\$57,240 (15 X 318 X 12 credits)</i>	<i>\$76,320 (20 X 318 X 12 credits)</i>	<i>\$95,400 (25 X 318 X 12 credits)</i>
Other sources of revenue	0	0	0	0	0
TOTAL REVENUES	\$16,620	\$35,640	\$57,240	\$76,320	\$95,400
LESS TOTAL COSTS	\$2,000	\$2,000	\$2,000	\$2,000	\$32,000
NET REVENUE	\$14,620	\$33,640	\$55,240	\$74,320	\$63,100

¹As the BS in Neuroscience major is an interdisciplinary major, which will be sustained by repackaging existing courses, no new faculty are required for this major at this time.

²We have included the cost of ½ of an Assistant Professor to in Year 5 in anticipation of having 25 individuals in this program. At present we can manage 20 students in the major without additional instructional resources. However, if CAS desires the major to increase beyond this cap, additional resources will be needed in both Psychology and Natural Science.

³ No new library resources are required for this major, as existing scientific journal subscriptions for Psychology, Biology and Pharmacy are adequate for the creation of this program.

⁴With existing resources we can manage a total of 20 students in the major. If the major is to be expanded beyond this limit then additional resources, specifically additional Lecturers, Instructors and/or Professors, would be required in both Psychology and Biology. We will address the issue of capping the major and the logistics of doing so during the planning period.

7. Impact on current courses or programs.

The proposed B.S. in Neuroscience is intended to have a positive impact within the Department of Psychology at UH Hilo by providing those students interested in focusing their studies on Neuroscience with a degree in psychology that represents that interest and will better prepare them for graduate and professional programs in neuroscience or related fields in Psychobiology, Behavior and Medicine, health-related technician positions, and health-related high technology positions. The major is planned as an interdisciplinary program in which along with specific courses in psychology that emphasize neuroscience, biological psychology, and behavior, students will be required to take several courses within the natural sciences. No negative impacts are anticipated for either courses in the department of psychology, the B.A. in Psychology, or for programs within the natural sciences. On the contrary, this major is expected to increase retention at UH Hilo by offering a program that is unique to the UH system and by offering courses in neuroscience that may be attractive to students in biology wishing to pursue graduate degrees in medicine or pharmacology. In addition, the B.S. in neuroscience may be attractive to students that begin in a pre-pharmacy or pre-nursing tract and are looking for an alternative pathway to obtaining a bachelor's degree in a health-related field. The course requirements for the B.S. in Neuroscience will be aligned with the course requirements. For example, the Core, Block 1, Block 2, and electives currently required for the B.A. in Psychology will also be required for the B.S. in Neuroscience. For the B.A. in Psychology, students have considerable choice in terms of which courses they complete for their Psychology electives. On the contrary, the B.S. in Neuroscience will be more prescriptive as to courses students will need as a part of their electives. In the event a student decides to change their major from the B.S. in Neuroscience to the B.A. in Psychology, they will be well positioned to do so since the requirements of both degree programs will be closely aligned. Overall, the B.S. in Neuroscience at UH Hilo will 1) generate new student interest in a cutting edge scientific program not currently offered at an undergraduate academic institution in Hawaii; 2) will provide an attractive alternative pathway in a health-related field for undergraduate students competing for limited positions within the colleges of pharmacy and nursing; 3) will provide undergraduate students in psychology with enhanced opportunities to compete for graduate school positions in cutting edge fields related to the biological aspects of psychology; and 4) will enhance Hawaii's workforce by providing students with skills and knowledge to enable them to better compete for medically-related research and health-care positions.

While the largest number of courses for the proposed Neuroscience Major are supported by the Psychology Department, it is important to note that this major is not possible without the cooperation and participation of the Division of Natural Sciences. During the planning period, the committee was able to meet with and reach preliminary agreements with each of the Natural Science Department Chairs (Biology, Chemistry, Mathematics and Physics), as well as, the Natural Science Division Chair.

8. If this program is multidisciplinary, provide evidence of commitment for support.

Attached, please find a list of courses currently being offered within the department of psychology that would continue and be part of the proposed major in Neuroscience. Also, please

find a list of courses from the natural sciences that would be part of this major and letters of commitment from chairs of those departments under which those courses are offered, as well as, from the Natural Science Division Chair.

Reviewed by:

Campus Chief Academic Officer:

Recommend

Comments:

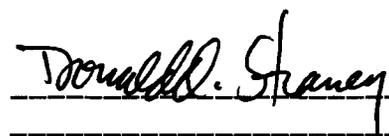
	Matthew S. Platz Vice Chancellor for Academic Affairs	MAR 12 2013
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Signature	Print Name	Date

Chancellor:

Approved

Disapproved

Comments:

	Donald O. Straney, Ph.D. Chancellor, University of Hawai'i at Hilo	18 March 13
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Signature	Print Name	Date

Council of Chief Academic Officers (Systemwide Consultation):

Comments

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Signature	Print Name	Date

(A copy of the signed document is provided to the Office of the Executive Vice President of Academic Affairs/Provost.)

Course List for Neuroscience B.S.

Psychology:

Core

100 Survey of Psychology
213 Statistics
214 Research Methods

Block 1

320 Development
324 Abnormal

Block 2

352 Biopsychology and one of the following
314 Learning
315 Sensation and Perception
350 Cognitive

An additional 9 credits at the 300 level and 9 Credits at the 400 level including:

PSY 430 Physiological Psychology
PSY 431 Brain Disease

Biology

Biol 175 & 175L Introductory Biology I
Biol 176 & 176L Introductory Biology II
Biol 243 & 243L Human Anatomy and Physio I
Biol 244 & 244L Human Anatomy and Physio II
Biol 270 & 270L Interm Cell and Molecular Biol

Chemistry

CHEM 124 and 124L: General Chemistry I and Lab
CHEM 125 and 125L: General Chemistry II and Lab
CHEM 241 and 241L: Organic Chemistry I and Lab

Mathematics

MATH 205: Calculus I

Physics

PHYS 106-106L College Physics I
PHYS 107-107L College Physics II

September 26, 2012

Memorandum

To: Kenith Simmons, Vice Chancellor of Academic Affairs

Via: Randy Hirokawa, Dean, College of Arts and Sciences

From: Leon Hallacher, Chair, Natural Sciences Division

Subject: ATP Neurosciences Major

A handwritten signature in black ink, appearing to read 'L. Hallacher', is written over the 'Via' and 'From' lines of the memorandum.

I write in support of the psychology department's proposal to develop a B.S. degree in neurosciences. I have read the program description in the ATP submitted by Eric Heuer et al. It appears to be academically rigorous, needed, unique in the UH System, and not offered by private institutions in the State of Hawaii.

The proposed neurosciences degree will have impact on four departments in Natural Sciences because it requires students to take 11 lower division lecture courses and 10 lower division laboratory courses spread among biology, chemistry, mathematics, and physics. Dr. Heuer contacted all four departments and all understand the added pressure the proposed degree will put on their department's lower division offerings. In spite of that, all are still supportive of the proposed neuroscience major.

It would be nice to hope that as student demand continues to grow for the Natural Sciences lower division courses needed by the proposed major and so many others programs at UHH as well that more instructional resources and operational monies will follow. If they don't, then neurosciences majors can join equally in the scramble to find open sections of the courses they need to graduate and many will be unable to complete their degrees in four years.

Sept. 7, 2012

To: Neuroscience Major Committee, UH Hilo Dept. of Psychology (Eric Heuer, Chair)

From: Patrick Hart, interim Chair, UH Hilo Dept of Biology

Dear Neuroscience Major Committee,

The Department of Biology has reviewed your request for the new Neuroscience major at UH Hilo and is happy to support this proposal. We believe this is an admirable attempt to better serve the needs of students at UH Hilo through expanding the diversity of options they have in choosing a major. In addition, we have reviewed the list of Biology-related courses you plan to require for the new major and feel that your projected 3-5 students per year will not significantly increase the burden on Biology Department resources. We look forward to collaborating with you on this.

Sincerely

Patrick Hart
Interim Chair, Department of Biology
University of Hawaii at Hilo
200 W. Kawili St.
Hilo HI. 96720
808-974-7645
pjhart@hawaii.edu

Email of support from the Chair of Chemistry:

Eric Heuer Aloha Ernie, Thank you again for taking the time to speak with me al  Aug 30

Ernest Kho

3:24 pm (4 days ago)



to me ▾

Eric,

I apologize for the delay in returning this email.

First of all, I support this ATP for the B.S. in Neurosciences.

I do have a suggestion however about the CHEM 241/L. Since Medical and Pharmacy Schools require two semesters of Organic Chemistry, those students who are looking more towards those programs should take both semesters. The other students could take CHEM 141 which is a survey course in Organic Chemistry and Biochemistry that we normally do not teach with a lab and is required for the Nursing program.

Ernie Kho

Email of Support from the Chair of Mathematics:

Email of Support

Inbox x



Reni Ivanova

Sep 24 (7 days ago)



to me ▾

Dear Eric,

I reviewed the APT for the proposed Neuroscience Major. I support the initiative, contingent upon funding for the extra students to take the required Math class(es).

Email of Support from the Chair of Physics:

Neuroscience

Inbox x



William Heacox

Sep 28 (3 days ago)



to me ▾

Dear Eric;

I am writing this letter at the request of the Psychology Department's Neuroscience ATP Committee. The committee contacted me to request course support for their proposed interdisciplinary major in Neuroscience, which would require students to take College Physics I and II, including the laboratory sections. As chair of the Physics Department at UH Hilo, I am supportive of this new initiative, which will provide students with increased options by repackaging existing resources. Please contact me if you have any further questions.

Aloha,

Bill Heacox

Neuroscience Major in Psychology Department

Inbox x



Sep 29 (2 days ago)



Bartley Frueh

to me ▾

Dear VCAA Simmons,

I am writing at the request of the Psychology Department Neuroscience Major Committee to offer my unequivocal support as the Social Science Division Chair for the Bachelor of Science in Neuroscience ATP. At a time when fiscal resources are limited, this committee has managed to assemble a cutting-edge multidisciplinary major that builds upon existing resources and strengths, which will increase the available options to our students. I think that this committee should be commended for their work on this project and I offer my unconditional support for this ATP. Further, the members of this committee have already consulted with the Natural Science Division, demonstrating the feasibility of this major and forging new cross-college collaborations, to the benefit of our students.

In my opinion, and the opinion of many of my colleagues across the US, neuroscience is the future of the discipline of psychology. In fact, as but one example, in my own clinical and epidemiological research on mental illnesses, we are implementing measurements of biological variables relevant to a neuroscience perspective, including genetic sequencing and brain imaging using functional magnetic resonance imaging (fMRI) protocols. We are using these state-of-the-art measures in our psychotherapy clinical trials, examining the effects that psychosocial interventions have on brain structures and circuit activity. The American Psychological Association has an official effort on-going to increase the emphasis of neuroscience approaches in psychology programs across the US, which includes an effort to have psychology added to the list of programs meeting STEM eligibility. My strong recommendation is to allow the Psychology Department to add this new major in order to allow it to continue to be a strong, relevant, and state-of-the-art department at UH-Hilo. Without it, the department risks obsolescence and irrelevance.

Please feel free to contact me if you have any further questions.

Thank you in advance for your consideration,
Chris

B. Christopher Frueh, Ph.D.
Professor of Psychology
Chair, Social Sciences Division
University of Hawaii, Hilo, HI



UNIVERSITY
of HAWAII®
MĀNOA

Department of Psychology

October 17, 2012

Cheryl M. Ramos, Ph.D.
Associate Professor
Chair, Psychology Department
University of Hawai'i Hilo
200 W. Kawili Street, UCB 266
Hilo, Hawaii 96720

Dear Cheryl,

I am very pleased to recommend your ATP for an eventual Neuroscience B.S. degree at the University of Hawaii at Hilo. The Neuroscience field is a dynamic one that has expanded tremendously in the last 40 years. As an example, over 30,000 participants now attend the Annual Society for Neuroscience meeting. I have taken my undergraduates to this meeting and they were astonished at the range of research from gene to behavior that is presented by investigators from institutions throughout the world. Exposing your undergraduates to neuroscience research and courses are key in motivating and preparing them for advanced graduate degree training in the Neurosciences as well as in Medicine and Pharmacology. Importantly, the research that Neuroscience students will conduct will have vast implications for understanding the pathophysiology and disease processes occurring in the brain and how to develop effective means to alleviate currently untreatable brain diseases and disorders.

In summary, I enthusiastically recommend your ATP for a B.S. degree in Neuroscience at the University of Hawaii at Hilo. Students majoring in Neuroscience will obtain tremendous, lasting value from their undergraduate education.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Lorey K. Takahashi'.

Lorey K. Takahashi, Ph.D.
Professor of Psychology &
Psychology Undergraduate Chair &
Director, Psychology Honors Program