

Contact: Diana Gonzalez

REQUEST TO CREATE NEW INSTITUTE AT THE UNIVERSITY OF IOWA:
IOWA NEUROSCIENCE INSTITUTE

Action Requested: Consider recommending approval of the request by the University of Iowa to establish the Iowa Neuroscience Institute in the College of Medicine.

Executive Summary: The purpose of the proposed center is to establish a community of scientists to solve fundamental problems in neuroscience research. This proposal was reviewed by the Board Office and the Council of Provosts and is recommended for approval. Board of Regents Policy §6.08 requires that all centers and institutes be approved by the Board. This request addresses the Board of Regents Strategic Plan priorities to provide “educational excellence and impact” and “economic development and vitality,” Goal #7 - “Iowa’s public universities shall contribute to the expansion and diversification of the Iowa economy,” and Goal #8 - “Iowa’s public universities and special schools shall be increasingly efficient and productive.”

Background:

- ◇ **Description of proposed institute.** The mission of the Iowa Neuroscience Institute (INI) is to bring together a community of scientists, clinicians, and trainees seeking to solve fundamental problems in neuroscience research and translating discoveries into real-life therapies for neurological and neuropsychiatric diseases. SUI has long been recognized for major contributions to a variety of subfields of neuroscience, including vision and hearing research, neurogenetics, neuromuscular disorders, brain imaging, and mental illness. Currently, these research activities involve more than 100 faculty members distributed across many departments in multiple colleges, including the Colleges of Medicine, Liberal Arts and Sciences, and Engineering. The location of the INI in the Pappajohn Biomedical Discovery Building (PBDB) will provide a much-needed hub to centralize key resources for the wide range of neuroscience research activities on campus, and help foster collaboration, synergy, and community. Graduate and undergraduate students will interact scientifically and socially with biomedical engineers, Ph.D. scientists, and physicians. This environment will catalyze discovery and innovation, and provide a fertile training ground for tomorrow’s scientific leaders.

- ◇ **Need for proposed institute.** The ability to better understand the brain is crucial to improve diagnosis and treatment of inherited diseases and to develop strategies to offset the neurodegeneration and cognitive impairment that occur with age. Perhaps more than for any other field, the major advances in neuroscience stem from cross-disciplinary efforts. During the past 20 years, tools in optical imaging, informatics, structural biology, and nanotechnology have been developed to investigate the function of the nervous system in normal and diseased states. The lack of a centralized institute hinders the cross-fertilization of research areas that is required to make the next breakthroughs in neuroscience. The INI will bridge this gap, and will help leverage existing research strengths at SUI to take advantage of new federal funding opportunities, such as President Obama’s investment in the BRAIN initiative.

◇ Proposed center activities and objectives. The proposed institute will address the following:

- ⇒ *Interdisciplinary research.* Although it will have close ties to the greater neuroscience community on campus, the INI will be comprised of a core group of researchers whose laboratories will occupy multiple floors of the PBDB. The research goals of the INI will include understanding the molecules and mechanisms that control the ability to process information about the world in the context of vision, hearing, learning, memory, and emotion. In addition to engaging in basic neuroscience research, INI investigators will be studying what causes, and how to cure, a variety of conditions, including pain, blindness, deafness, stroke and traumatic brain disorders, Parkinson's disease, mood and anxiety disorders. To accomplish these goals, the INI will recruit a number of new faculty members whose primary appointments will be in various departments throughout SUI. All INI faculty members will be expected to participate in the training and outreach/advocacy objectives of the institute.

To promote synergy with the broader scientific community at SUI, the INI will sponsor funding opportunities for collaborative and transformative research that will involve core INI faculty and faculty from various departments and colleges. In addition, the INI will provide core facilities that will empower faculty across campus with the ability to tackle challenging questions in neuroscience with technologies that are not currently available at SUI.

- ⇒ *Training.* The INI will coordinate training initiatives that enrich the education and career development of trainees at multiples levels. These include Ph.D. students in the Interdisciplinary Graduate Program in Neuroscience and the Clinical Neuroscientist Training Program. The INI will host a monthly seminar series featuring external speakers who are top neuroscientists, as well as workshops that will focus on cutting edge techniques used in neuroscience research.

At the undergraduate level, the INI will help develop a Neuroscience major in conjunction with the Departments of Biology and Psychological and Brain Sciences and a summer undergraduate research program. Both of these efforts are expected to further distinguish SUI in attracting the best and brightest undergraduate students and to expand the pool of qualified applicants with identified research interests for the Interdisciplinary Neuroscience Graduate Program.

- ⇒ *Outreach and Advocacy.* In recognition of the importance of outreach and advocacy, the INI will organize a variety of events that bring the INI mission to lowans at the local, regional, and state levels. For example, the INI will mobilize a team of faculty, clinicians, and trainees to develop a program for Brain Awareness Week – a world-wide campaign sponsored by the Society for Neuroscience to raise public awareness of neuroscience research. Activities could include field trips for K-12 students to the INI and the University of Iowa Hospitals and Clinics to observe techniques in brain imaging and electrophysiology that allow physicians and scientists to measure brain activity.

In addition, the INI will work with the College of Medicine and the Office of the Vice President for Research and Economic Development to organize venues for INI researchers to participate in advocacy for neuroscience research support. For example, INI researchers represent Iowa in the Society for Neuroscience Capitol Hill Day, in which researchers from across the country convene on Capitol Hill to meet with congressional representatives to discuss advances in the field of neuroscience, share the economic and public health benefits of investment in biomedical research, and make the case for strong national investment in scientific research through the National Institutes of Health and the National Science Foundation.

- ◇ Relationship of proposed institute to University's Strategic Plan. The INI directly addresses the cornerstones of SU1's strategic plan. In terms of **education**, accomplishing the training objectives will make SU1 a destination for education in neuroscience at the undergraduate, graduate, and post-graduate levels. The establishment of the INI will provide new opportunities for **research and creative work** that will lead to high-impact publications that raise SU1's profile as a major research institution. The **outreach** efforts of the INI will educate individuals, families, and communities in Iowa about the problems in neuroscience research and how they are being addressed at SU1. The expected collaborative interactions between physicians and scientists, as well as the focus of the INI on translational neuroscience research, is expected to lead to new insights into disease and therapeutics, which will advance **healthcare**.
- ◇ Relationship of proposed institute to existing centers/institutes at SU1. The INI fills a gap in the academic and healthcare landscape in Iowa because there is no major collective of investigators focused on broad issues in neuroscience. Such institutes characterize virtually all major research institutions, and provide a powerful platform on which to advance the research, education, and outreach missions of the university. The INI will provide additional core facilities and training opportunities for other institutes and centers at SU1. Because of the major role played by the nervous system in many disease processes, the INI will spur synergistic collaborations with investigators involved in vision disorders (Wynn Institute for Vision Research), neurovascular disease (François Abboud Cardiovascular Research Center), and brain cancers (Holden Comprehensive Cancer Center). Given that a major research focus of the INI will be on neurodegenerative disease, which is particularly devastating to the aging population, the INI will have close ties with the Center on Aging and the Aging, Mind, and Brain Initiative. The INI will have numerous interactions with the Iowa Institute for Human Genetics and the Iowa Institute for Biomedical Imaging, because a number of INI faculty will be working in the areas of neurogenetics and brain imaging, respectively.
- ◇ Existence of proposed institute at other Iowa institutions. This type of institute does not exist at any other Iowa institution. With its focus on basic and clinical neuroscience research, the INI will not replicate any of the existing centers/institutes at SU1 or any programs within colleges or other universities in Iowa.

- ◇ Unique features of the University of Iowa to support the proposed institute. As the only comprehensive academic medical center in Iowa, UIHC is a unique environment in which to carry out the INI's mission for translational neuroscience research. SUI is known internationally for major contributions in neuroscience. While professors at SUI, Drs. Antonio and Hanna Damasio revolutionized the use of brain imaging techniques to describe the neural basis of cognition and decision-making. In Otolaryngology, Dr. Bruce Gantz and colleagues helped develop a novel hybrid cochlear implant that allows patients with hearing loss to better understand speech and music. In the Department of Psychiatry, Dr. Nancy Andreasen has won numerous awards for her ground-breaking work on schizophrenia. This rich history combined with the concentration of physicians and scientists engaged in neuroscience research makes SUI an unparalleled environment for the INI.

- ◇ Inter-institutional and collaborative efforts with other entities. The close interactions with UIHC clinicians is a crucial aspect of the INI because of a major emphasis on translational neuroscience research. In addition, the INI will draw on SUI strengths in neuroscience research and training of Ph.D. and clinician-scientists in neuroscience research. These aspects of the INI will not be readily duplicated at any other college or institution in Iowa. However, the INI will extend training and career development opportunities to graduate students in neuroscience at Iowa State University; for example, by providing live feeds of the seminars and workshops. In addition, the INI will form close ties with undergraduate colleges across Iowa to facilitate recruiting of students for summer undergraduate research opportunities.

- ◇ Personnel. The following positions will be associated with the proposed institute:
 - ⇒ Director. An internationally regarded neuroscientist will serve as the director of the INI. The director will help guide the design and implementation of the institute's strategic plan, and will oversee all aspects of administration. The director will work closely with leadership at SUI to enable successful recruitments of faculty and coordination of training/outreach initiative.
 - ⇒ Associate director. The associate director will assist the director in administrative oversight of the INI.
 - ⇒ Administrator. A full-time administrator will provide pre- and post-award grant administration, human resource assistance, daily fiscal oversight and aid in financial planning for the INI.
 - ⇒ Administrative Assistant. A full-time administrative assistant will provide office support for the members and directors of the INI regarding scheduling, grant editing, and purchasing and accounts payable.

- ◇ Facilities. The proposed institute will be located on Floors 1 and 2 of the Pappajohn Biomedical Discovery Building; additional space will be allocated as needed.

- ◇ Equipment. The equipment used for INI research activities will be in individual laboratories or shared equipment available through existing or planning core facilities.

- ◇ Expected need. Neurosciences is an escalating priority for the country and is a major focus within many external funding organizations such as NIH, Department of Defense, National Science Foundation and others. There is no anticipated end date for this initiative.
- ◇ Communication with existing campus structures. The proposed institute has been reviewed and approved by the appropriate campus committees and authorities.
- ◇ Cost. The proposed institute will be funded by the University of Iowa Hospitals and Clinics as well as philanthropy.

The cost of the proposed institute at SUI will include the following:

Total Costs	Total New Costs	Total Costs	Sources of Funds
Year 1	\$4,550,000	\$4,550,000	UIHC and Philanthropy
Year 2	\$6,050,000	\$6,050,000	UIHC and Philanthropy
Year 3	\$6,050,000	\$6,050,000	UIHC and Philanthropy
Year 4	\$6,050,000	\$6,050,000	UIHC and Philanthropy
Year 5	\$4,720,000	\$4,720,000	UIHC and Philanthropy

- ◇ Evaluation plan. The proposed institute will undergo a formal review every five years. The review will include internal and external advisors. This formal review will serve as the basis for recommending changes that will be implemented over the ensuing five years.
- ◇ Implementation. After obtaining Board approval, the Iowa Neuroscience Institute at the University of Iowa will be implemented immediately.

NEUROSCIENCE INSTITUTE REVIEW COMMITTEE

As the vision was developed for a Neurosciences Institute, the Dean constituted a committee to review current neurosciences strengths on campus. The review committee included four external reviewers.

- David Bleakman, PhD, the Executive Director and Chief Scientific Officer, Neurosciences Division, Eli Lilly and Company
- Holly Cline, PhD, the Hahn Professor of Neuroscience, California Campus, Scripps Research Institute
- Story Landis, PhD, Former Head of NIH, National Institute for Neurological Disorders and Stroke
- Ricardo Dometsch, PhD, Global Head of Neuroscience, Novartis institutes for BioMedical Research

The external neuroscience review committee began by identifying strengths within current University of Iowa neuroscience programs. Highlights include strong clinical programs in neurology, neurosurgery, otolaryngology, and psychiatry, and a strong culture of inclusivity across departments and Colleges. With an emphasis on translational neuroscience, the committee specifically recognized interdisciplinary strength and breadth of expertise across the UI campus, identifying leaders who are nationally/internationally recognized experts in genetics, auditory biology, interoception and autonomic neuroscience, vision biology, and peripheral neuropathies. The external committee strongly supported the creation of an Integrated Neuroscience program. In terms of opportunities, the committee identified need for increased depth in fundamental, basic neuroscience in order to synergize with already strong translational neuroscience groups. Specifically, the committee recommended recruitment of new faculty with expertise in neuronal cell biology, developmental neurobiology, neuronal circuitry, and computational neurobiology, to complement UI's expertise in genetics and to facilitate the translation of genetic findings into mechanistic insights.

At this time, our focus has been on recruiting a new Director of the UI Integrated Neuroscience program. Our goal has been to recruit an outstanding, accomplished, nationally regarded scientist with broad interests across the spectrum of basic to clinical and translational neuroscience. Our new Director must demonstrate that s/he is committed to fostering integration and inclusivity, since he/she will need to partner with department leadership across colleges to meet the goal of truly synergizing UI efforts in the field of neuroscience.

Once the Director is in place, we will charge the new Director with the task of developing an advisory board that includes leaders in neurosciences from around the institution as well as several external advisors from outside the University of Iowa. This team will focus on honing neurosciences educational opportunities as well as clinical, translational and foundational research directions for the campus.