

BRAIN RESEARCH INSTITUTE

UNIVERSITY OF CALIFORNIA, LOS ANGELES

52nd ANNUAL REPORT

July 1, 2012 to June 30, 2013

MISSION

The Brain Research Institute's mission is:

- to increase understanding of how the brain works, how it develops, and how it responds to experience, injury and disease;
- to help make UCLA the preeminent center for translating basic knowledge into medical interventions and new technologies; and
- to promote neuroscience education at all levels.

To execute this mission, the BRI functions explicitly as the interdisciplinary and non-departmental voice of the basic neuroscience community. The BRI's strategic goals are:

- to invigorate research programs and to nurture novel collaborations that bring together investigators from complementary fields;
- to stimulate the translation of basic knowledge into therapies and cures for diseases and injuries of the nervous system;
- to recruit outstanding faculty, postdoctoral fellows and graduate students;
- to strengthen existing educational programs by fostering the integration of insights from basic neuroscience, cell and molecular biology, cognitive science, engineering and clinical neuroscience; and
- to extend educational outreach programs about the brain into the community.

HISTORY

The Brain Research Institute is an Organized Research Unit (O.R.U.) that fosters interdisciplinary research and education within the UCLA neuroscience community. At the present time it includes 343 members; 277 full members who are active faculty members, 57 emeritus members, and 9 corresponding members, representing 27 academic departments throughout the campus.

The generosity of the Gonda family made possible the newest home of the Brain Research Institute, the Gonda (Goldschmied) Neuroscience and Genetics Research Center. A formal dedication of this specially designed research center was held on December 15, 1998. The first three floors of this building are designated specifically for the support of neuroscience research and education.

Organization of the Institute began in the early 1950s. Under the leadership of Dr. H. W. Magoun, members of many departments with prominent interests in nervous system research were encouraged to develop closer relationships so they might broaden the scope of their investigative activities and extend the effectiveness of their educational efforts.

A formal proposal was written and reviewed, and late in 1959, Institute status was assigned by the University of California. Concurrently, plans were completed to erect a building to house the research projects. In 1958, construction of a structure containing 76,000 square feet of space began. Occupancy of the building started in March of 1961, and the official opening of the Brain Research Institute was held on October 14 and 15, 1961. Dr. John D. French served as Director during the period 1961 to 1976. He was followed by Dr. Carmine D. Clemente, who served from 1976 to 1987. Dr. Arnold B. Scheibel served as Acting Director from 1987-1990, and as Director until June 1995. Dr. Allan J. Tobin served as Director from July 1995 through December 2003. For the year 2004, Dr. Christopher Evans, Associate Director for Research, and Dr. Michael Levine, Associate Director for Education, served as Interim Co-Directors. In December 2004, Dr. Christopher Evans was appointed as Director of the BRI.

**Brain Research Institute
Summary of Activities 2012-2013**

Number of Members	343
Number of Member Publications	1515
Collaborative Publications between two or more BRI members	750
Predocctoral Students under Supervision of BRI Members	332
Postdoctoral Students under Supervision of BRI Members	317
Total Funding Administered through the BRI Fiscal Office (BRI Training Grants)	\$ 1.97 million

Annual Lectures and Prizes:

- H.W. Magoun Lecture presented by V. Reggie Edgerton.
- Eva Mary Kavan Prize for Excellence in Research on the Brain recipient: Sangmok Kim.
- Charles Sawyer Distinguished Lecture presented by Melissa Hines.
- Samuel Eiduson Student Lecture presented by Jesse Brown.
- The Arnold Scheibel Distinguished Postdoctoral Fellow in Neuroscience Lecture presented by Paul Mathews.

Guest Lectures

The Joint Seminars in Neuroscience sponsored twenty-eight guest lectures this year. The Joint Seminars in Neuroscience are sponsored by the Brain Research Institute, the Semel Institute for Neuroscience & Human Behavior and the David Geffen School of Medicine at UCLA. In addition, the Brain Research Institute sponsored or co-sponsored 98 special guest lectures this year. For a complete list of the speakers and the title of their presentations, please see “Joint Seminars in Neuroscience” and “Special Lectures” within the “Instructional Activity” section of this report.

Poster Session

The BRI Neuroscience Poster Session, featuring the research of all UCLA neuroscientists, including predoctoral students and postdoctoral fellows, was initiated in 1989. This year, the 24th Annual Neuroscience Poster Session was held on December 4, 2012. The Poster Session was attended by well over 300 neuroscientists comprised of graduate students, postdoctoral fellows, and faculty members that represent a multitude of departments on campus. Over 150 posters were presented, many of which had been presented at the 42nd Annual Meeting of the Society for Neuroscience. The guest speaker this year was J. Anthony Movshon, Ph.D. from the Center for Neural Science, New York University, New York. He presented, “Cortical Mechanisms of Visual Perception,” to a standing-room-only crowd. This yearly poster session represents continuing efforts to educate investigators about state-of-the-art neuroscience research being conducted at UCLA.

Special Conferences Sponsored or Co-Sponsored by the Brain Research Institute

To view program schedules, please see “Special Conferences,” listed in the “Instructional Activity” section of this report.

The UCLA Integrative Center for Neurogenetics Inaugural Symposium

The Inaugural Symposium of the UCLA Integrative Center for Neurogenetics was held on February 21, 2013. The UCLA Integrative Center for Neurogenetics (ICNG) focuses on discovering the genetic basis of major psychiatric and neurological disorders, and genetically dissecting additional traits that will shed light on the development, function, or degeneration of the central nervous system. Lack of understanding of the causes of brain diseases limits our capacity to develop better treatments and for prevention. We now have the research tools

necessary to identify and characterize the specific genetic variations that predispose to brain disorders or that are associated with important nervous system traits in a wide range of model organisms.

The 11th Annual Center for Neurobiology of Stress Basic and Translational Science Symposium

The 11th Annual Center for Neurobiology of Stress Basic and Translational Science Symposium, “Systems Biological Approaches to Gut-Brain Interactions in Health and Disease- From Molecular to Social Networks,” was held on April 26, 2013.

The symposium was sponsored by the UCLA Brain Research Institute, the UCLA Division of Digestive Diseases, the VA Greater Los Angeles Healthcare System/Brentwood Biomedical Research Institute, the Gail and Gerald Oppenheimer Family Foundation and the Morris A. Hazan Family Foundation. Additional information about the Center can be found on the Center’s website: www.uclacns.org.

Neural -Immune Interactions in Neurodegenerative Diseases: Innate and Adaptive Neuroprotective and Regenerative Mechanisms

The 3rd UCLA Immunology in Neuroscience Mini-Symposium/Poster Gala, “Neural -Immune Interactions in Neurodegenerative Diseases: Innate and Adaptive Neuroprotective and Regenerative Mechanisms,” was held on May 7, 2013. The program featured four invited speakers who have made major contributions to the understanding of how neuroinflammatory responses potentiate or restrict the pathologies of neurodegenerative diseases and/or contribute to their repair. To provide an opportunity for informal scientific exchange, a poster session was held immediately following the mini-symposium.

The 7th Annual Neural Microcircuits Training Program Symposium, “Dynamics of Neural Microcircuits”

The 7th Annual Neural Microcircuits Training Program Symposium, “Dynamics of Neural Microcircuits” was held on May 9, 2013.

20th Annual Joint Symposium on Neural Computation

In 1994, the Institute for Neural Computation at the University of California, San Diego hosted the first Joint Symposium on Neural Computation with the California Institute of Technology in Pasadena. This Symposium brought together students and faculty for a day of short presentations. Since then, this Symposium has rotated between San Diego, Caltech, UCI, UCLA, USC and UCR. This year, the 20th Annual Joint Symposium on Neural Computation was held at the California Institute of Technology on June 1, 2013.

The Integrative Center for Learning and Memory

12th Annual Southern California Learning and Memory Symposium

The Twelfth Annual Southern California Learning & Memory Symposium was held on June 3, 2013. This symposium is a yearly meeting primarily for Southern California laboratories interested in plasticity and learning. This year’s annual symposium was supported by the Brain Research Institute, and the Clinical and Translational Science Institute.

Prion-Like Pathogenesis in Neurodegenerative Diseases

The Prion-Like Pathogenesis in Neurodegenerative Diseases symposium was held on June 13, 2013. This symposium was sponsored by the CHDI Foundation, the UCLA Department of Neurology, and the UCLA Brain Research Institute.

Carol Moss Spivak Cell Imaging Facility

In March 2008, the BRI Cell Imaging Facility moved to the California Nanosystems Institute (CNSI) to join with the CNSI Advanced Light Microscopy Facility. The joined facility has since served over 1400 users representing over 250 labs at UCLA, LABioMed, Harbor-UCLA and Cedars Sinai Health Center as well as several industry laboratories (e.g. Nestlé, NanoH2O, Sonendo Inc., Agensys Inc.). The facility houses five Leica spectral confocal microscopes, three of which have multiphoton laser scanning ability. The facility now has a Spinning

Disk Confocal microscope, a Laser Microdissection System and will soon have a TIRF (Total Internal Reflectance) microscope online. Additional techniques now available include: FRET (fluorescence resonance energy transfer) FLIM (fluorescence lifetime imaging), FRAP (fluorescence recovery after photobleaching) and STED (scanning transmission depletion microscopy, which allows imaging below the diffraction limit of normal light resolution) and spectral unmixing both on microscopic and macroscopic (small animal) imaging scales. Dr. Laurent Bentolila is the scientific director of the facility.

Integrative Centers for Neuroscience Excellence (ICNE)

The launch of six new [Integrative Centers for Neuroscience Excellence](#) (ICNE) will bring different areas of research excellence into the forefront and highlight the specific strengths of UCLA's neuroscience activities. The UCLA neuroscience community is very large, and research is conducted within a number of schools, institutes, departments and organized research units (ORUs) which can make it difficult to envision how all the components contribute to the whole. The ICNE, by giving an institutional "face" to different areas of neuroscience, will remedy this situation by providing a focused profile highlighting the diverse activities of the neuroscience community to potential students and the public. The proposed ICNE represent communities of scientists who share an interest in similar topics or techniques, and correspond roughly to the focused areas of research (FARs) that guide curriculum options for the Interdepartmental Ph.D. Program for Neuroscience. Each ICNE will develop its own identity. Each will have its own website, and receive endowment support to organize symposia and seminars, as well as facilitate coordination and cooperation in its particular field. There are six Integrative Centers for Neuroscience Excellence. Two ICNE have launched ([the Integrative Center for Learning and Memory](#), and the [Integrative Center for Neurogenetics](#)) and four are in the process of development. The next center to be launched will be the Integrative Center for Neural Repair and will represent research concentrations in neural development, degeneration and repair. Future ICNE will be concentrated on neuroimaging, synapses, cells and circuits, and addiction neurobiology.

Affinity Groups (*upcoming ICNE)

A variety of interdisciplinary affinity groups, developed to provide scientific exchange on specific research topics, meet at regular intervals. A number of these groups have developed collaborative, center, and training grant proposals. These groups represent one of the greatest strengths of the Institute, that is, the scientific depth and diversity of its membership, and their collaborative interaction. These affinity groups include:

<u>Affinity Group</u>	<u>Leader(s)</u>
Addictions Research Consortium*	Edythe London & Igor Spigelman
Astrocyte Biology	Baljit Khakh & Michael Sofroniew
Autism	Daniel Geschwind
Brain-Mind-Body Interactions	Michael Irwin
Circadian and Sleep Medicine	Christopher Colwell
Computational Neuroscience	Ladan Shams
Immunology in Neuroscience	James Waschek
Inner Ear	Felix Schweizer
Neural Repair*	Marie-Françoise Chesselet
Neural Stem Cells	Harley Kornblum
Neurobiology of <i>Drosophila melanogaster</i> and <i>C. Elegans</i>	David Krantz
Neuroendocrinology	Arthur Arnold
Neuroimaging/Cognition*	Susan Bookheimer
Neuronuclear Imaging Affinity Group	Daniel Silverman
Neurophysics & Neuroengineering	Mayank Mehta
Neuroscience History	Joel Braslow & Russell Johnson
Songbird	Stephanie White
Stress, Pain and Emotion	Emeran Mayer
Synapse to Circuit Club*	Kelsey Martin & Larry Zipursky

Affinity Group

Undergraduate Researchers in
Parkinson's Disease
Zebra Fish

Leader(s)

Marie-Françoise Chesselet

Alvaro Sagasti

Scientific and Educational Outreach Programs

Brain Awareness Week March 2013

The UCLA Chapter of the Society for Neuroscience recognized Brain Awareness Week with a number of special events. "Project Brainstorm" and "Interaxon" conducted demonstrations and hands-on activities, laboratory tours in the Brain Research Institute, workshops and campus tours.

Project Brainstorm

The current outreach program of the Brain Research Institute and Neuroscience Interdepartmental Educational Programs, "Project Brainstorm," grew out of the former SPARCS (Special Achievement Rewards for College Scholars) Program that was developed by Dr. Arnold Scheibel and Ms. Norma Bowles of the ARCS Foundation (Achievement Rewards for College Scientists). The goal of Project Brainstorm is to stimulate interest in science for children and young adults by emphasizing the function and importance of the brain. Over 50 students in the Interdepartmental Graduate and Undergraduate Neuroscience Programs participate in the program and visit private and public schools in the Los Angeles area throughout the academic year.

Interaxon

Interaxon is an Undergraduate Neuroscience Educational Outreach Group founded in 2006 at UCLA (<http://interaxon.scienceontheweb.net>) by the first group of students to take the NS195 Project Brainstorm outreach course. Interaxon now consists of over 30 students, freshmen to senior, from a variety of majors (neuroscience, biology, physiological science, molecular and cell biology, and also economics, philosophy, foreign language, and international development). Interaxon reaches 1st-12th grade students, with as many as 6 presentations per quarter, and as many 150 students in a single school visit.

New Initiatives

NeuroCamp was initiated in the summer of 2010. NeuroCamp invites students, drawn mainly from local high schools, to enjoy a crash course of lectures and hands-on exercises covering many aspects of the fundamentals of neuroscience. Students spend several hours attending lectures by UCLA professors and mastering a wide variety of laboratory techniques crucial to modern science. This intensive two-week course exposes students to the basics of neuroanatomy and molecular biology.

The BRI Outreach Program also sponsors science fairs off campus at local high schools and also at the state level. The BRI sponsors prizes at the Annual California State Science Fair, awarding multiple Neuroscience prizes for both the senior (grades 9-12) and junior (grades 6-8) levels. The BRI also sponsors prizes at the Los Angeles County Science Fair, and co-sponsors the LA BRAIN BEE (<http://www.losangelesbrainbee.com>). During the summer the BRI also places as many as 20 local high school students in research labs in the UCLA neuroscience community. The BRI also sponsors winners of local high school fairs as part of the Summer Internship Program.

Publications

Neuroscience News provides a quarterly update on Institute news and events.

UCLA Neuroscience Research Seminars and Lectures calendar is published bi-monthly.

The **BRI Annual Neuroscience Calendar** includes major national, international and UCLA neuroscience events throughout the year.

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BRAIN RESEARCH INSTITUTE MEMBERS

All members of the Institute must be members of academic departments and devote their main research effort to programs advancing the knowledge of the function and structure of the brain and nervous system. The following list of BRI members attests to the broad depth and interdisciplinary nature of the Institute, its members, and their research endeavors.

At the end of the fiscal year 2012-2013, there were 343 members in the Brain Research Institute; 277 full members, 57 emeritus members, and 9 corresponding members. These faculty members represent 27 academic departments, 19 of which are in the School of Medicine, 5 in the College of Letters and Science, 1 in the Henry Samueli School of Engineering and Applied Science, 1 in the School of Dentistry, and 1 in the School of Nursing. In addition, investigators from many other departments of the University join in active collaborative research with BRI members.

<u>Name</u>	<u>Title</u>	<u>Research Interest</u>
Jeffrey R. Alger, Ph.D.	Professor of Neurology, and Radiological Sciences	Magnetic resonance imaging, magnetic resonance spectroscopy and diffusion tensor imaging of the brain
Lori Altshuler, M.D.	Professor of Psychiatry and Biobehavioral Sciences; Director, UCLA Mood Disorders Research Program	The UCLA Mood Disorders Research Program focuses on exploring the etiology of mood disorders through neuroimaging, evaluating factors associated with vulnerability to mood episodes, and finding new treatment options for individuals suffering from mood disorders
Anne M. Andrews, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences, and Chemistry and Biochemistry	Understanding how the serotonin neurotransmitter system modulates complex behaviors including anxiety, mood, stress responsiveness, and learning and memory
Liana G. Apostolova, M.D.	Associate Professor of Neurology	Memory disorders and dementia
Arthur P. Arnold, Ph.D.	Distinguished Professor of Integrative Biology & Physiology; Director, Laboratory of Neuroendocrinology, Brain Research Institute	Hormonal and sex chromosomal factors that cause sex differences in physiology and disease, as a strategy for finding factors that protect from disease
Utpal Banerjee, Ph.D.	Professor and Chair of Molecular, Cell & Developmental Biology; Professor of Biological Chemistry	Signaling and metabolic control of development

Mark Barad, M.D., Ph.D.	Associate Professor of Psychiatry and Biobehavioral Sciences	Biological bases of fear extinction
Jorge R. Barrio, Ph.D.	Distinguished Professor of Molecular and Medical Pharmacology; Elizabeth and Thomas Plott Chair in Gerontology	Developing molecular imaging probes and investigating the intricate mechanisms of human disease
George Bartzokis, M.D.	Professor of Psychiatry and Biobehavioral Sciences	Brain imaging of neuropsychiatric disorders
Michele A. Basso, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences	Cognitive neuroscience and movement disorders
Ulrich Batzdorf, M.D.	Professor of Neurosurgery; Director of Spine Surgery	Chiari malformations and spinal cord disorders
Carrie E. Bearden, Ph.D.	Associate Professor of Psychiatry and Biobehavioral Sciences, and Psychology	Neurodevelopmental disorders; cognition, neuroimaging and genetics of mood disorders and psychosis
Donald P. Becker, M.D.	Professor and Chief, Department of Neurosurgery	Neurometabolic pathobiology of traumatic brain injury
Marvin Bergsneider, M.D.	Associate Professor of Neurosurgery	Study of cerebral metabolism following traumatic brain injury using PET and intracranial pressure modeling
Steven M. Berman, Ph.D.	Researcher, Department of Psychiatry and Biobehavioral Sciences	Functional disorders; substance abuse
Suraj P. Bhat, Ph.D.	Associate Professor of Ophthalmology	Molecular genetics of the development of the vertebrate eye, relating gene activity to the realization of the phenotype of vision
Robert M. Bilder, Ph.D.	Michael E. Tennenbaum Family Professor of Psychiatry and Biobehavioral Sciences; Professor of Psychology	Translational phenotyping of cognition and neural systems, understanding neuropsychiatric syndromes as dimensional quantitative traits, and applying knowledge about neuroplasticity to enhance well-being in health
James W. Bisley, Ph.D.	Assistant Professor of Neurobiology, and Psychology	Neural mechanisms underlying visual perception, visual attention and visual memory
Gal Bitan, Ph.D.	Associate Professor of Neurology	Structure-based drug development for amyloid-related diseases

Douglas L. Black, Ph.D.	Professor of Microbiology, Immunology & Molecular Genetics; Investigator, Howard Hughes Medical Institute	Regulation of pre-mRNA splicing and the biochemical mechanisms that control changes in splice sites
Hugh T. Blair, Ph.D.	Associate Professor of Psychology (Behavioral Neuroscience)	Neurobiology of learning, memory and motivation with an emphasis on the role of neural oscillations in the storage and processing of information
Aaron Blaisdell, Ph.D.	Professor of Psychology	Comparative psychology and animal cognition
Gene D. Block, Ph.D.	Professor of Psychiatry & Biobehavioral Sciences, and Integrative Biology & Physiology; Chancellor, UCLA	Circadian rhythms and aging
Ruben J. Boado, Ph.D.	Professor of Medicine/Endocrinology	Blood-brain barrier genomics, genetic engineering of fusion proteins and plasmid DNA for non-viral gene therapy to the brain
Dean Bok, Ph.D.	Distinguished Professor of Neurobiology, and Dolly Green Professor of Ophthalmology	Cell and molecular biology of the retina in health and disease
Susan Y. Bookheimer, Ph.D.	Joaquin Fuster Professor of Cognitive Neuroscience, Department of Psychiatry and Biobehavioral Sciences	Functional magnetic resonance imaging to understand disruptions in brain systems in patients with a range of neurological developmental and neuropsychiatric disorders
Yvette M. Bordelon, M.D., Ph.D.	Assistant Professor of Neurology	Identification of biomarkers, including the use of PET imaging ligands, and clinical trials in Huntington disease, Parkinson disease and other movement disorders
James R. Boulter, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences	Molecular neurobiology of neuronal nicotinic acetylcholine receptors
Anatol Bragin, Ph.D.	Professional Research Neurologist	Basics mechanisms of epilepsy
Joel T. Braslow, M.D., Ph.D.	Professor of Psychiatry and Biobehavioral Sciences, and History; Director, Neuroscience History Archives	History of the neurosciences and psychiatry

Nicholas C. Brecha, Ph.D.	Professor and Vice Chair of Neurobiology; Professor of Medicine	Retinal circuitry and transmitter systems mediating visual information processing
Kevin C. Brennan, M.D.	Assistant Professor of Neurology	Cortical spreading depression; neurobiology of migraine
Arthur L. Brody, M.D.	Professor of Psychiatry & Biobehavioral Sciences	Molecular brain imaging of cigarette smokers
Jeff Bronstein, M.D., Ph.D.	Professor of Neurology, and Molecular Toxicology; Director, UCLA Movement Disorders Program	Genetic and environmental causes of Parkinson's disease to develop new therapies
Warren S. Brown, Ph.D.	Adjunct Professor of Psychiatry and Biobehavioral Sciences	The contribution of interhemispheric interactions via the corpus callosum to human higher cognitive capacities
Dean V. Buonomano, Ph.D.	Professor of Neurobiology, and Psychology	Neural computation and neural basis of learning and memory
Rochelle Caplan, M.D.	Professor of Psychiatry and Biobehavioral Sciences; Director Pediatric Neuropsychology	Thought disorder, social communication, psychopathology and neuroimaging in pediatric neurobehavioral disorders
Joseph Caprioli, M.D.	Professor of Ophthalmology; Chief, Glaucoma Division, Jules Stein Eye Institute	Detection of early glaucoma damage, neuroprotection as treatment for glaucoma, visual function in glaucoma, surgical outcomes
S. Thomas Carmichael, M.D., Ph.D.	Professor of Neurology	Mechanisms of brain repair after stroke
Ellen M. Carpenter, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences; Associate Director for Science Outreach, Brain Research Institute	Role of reelin signaling pathway in regulating cell migration in the brain and mammary gland
Scott H. Chandler, Ph.D.	Professor of Neuroscience, Department of Integrative Biology & Physiology; Chair, Interdepartmental Undergraduate Program for Neuroscience	Neuronal mechanisms underlying ALS
Andrew C. Charles, M.D.	Professor of Neurology; Meyer and Renee Luskin Chair in Migraine and Headache Studies	Investigation of basic cellular neurophysiology and neuropharmacology with a particular focus on mechanisms of migraine

Marie-Françoise Chesselet, M.D., Ph.D.	Charles H. Markham Professor of Neurology; Chair and Distinguished Professor, Department of Neurobiology	Molecular mechanisms of neurodegenerative diseases and neural repair in the basal ganglia
Francesco Chiappelli, Ph.D.	Professor of Oral Biology, School of Dentistry	Comparative effectiveness and efficacy research and analysis for practice, with emphasis on the bridge between translational research and translational effectiveness, as it applies in particular to psychoneuroendocrine-osteimmunology
Jacobo W. Chodakiewitz, M.D.	Assistant Professor of Neurosurgery	Neurostimulation of brain and spinal cord and/or ablation for pain control; involuntary movements
Steven G. Clarke, Ph.D.	Distinguished Professor of Chemistry and Biochemistry	Role of protein methylation reactions in the repair of age-damage and in the regulation of biological function
Timothy F. Cloughesy, M.D.	Professor of Neurology; Director, Neuro-Oncology Program; Co-Director, Henry Singleton Brain Cancer Research Program	Human brain tumors
Mark S. Cohen, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences	Applications and technology of neuroimaging
John Colicelli, Ph.D.	Professor of Biological Chemistry	Signal transduction in cancer and neurobiology
Christopher S. Colwell, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences	Circadian and sleep medicine
Ian A. Cook, M.D.	Professor of Psychiatry and Biobehavioral Sciences	Improving the management of depression with research using existing treatments more effectively through biomarker guidance, developing new treatment approaches (neuromodulation) and expanding understanding of the pathophysiology of depression
Edwin L. Cooper, Ph.D., Sc.D.	Distinguished Professor of Neurobiology	Evolutionary development of the neuroimmune system; Evidence-based complementary and alternative medicine

Giovanni Coppola, M.D.	Assistant Professor of Psychiatry and Biobehavioral Sciences, and Neurology	Understanding the genetic contribution to neurodegenerative and psychiatric disorders by using genetic, genomic, and integrative approaches
Eain M. Cornford, Ph.D.	Professor of Neurology; Chief, Neuropharmacology Laboratory, VAMC, West Los Angeles	Blood-brain barrier function
Mirella Dapretto, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences	Neuroimaging of language, social cognition, and developmental disorders such as autism
Antonio A.F. De Salles, M.D., Ph.D.	Professor of Neurosurgery, and Radiation Oncology	Functional Neurosurgery: Clinical aspects of Parkinson's disease after pallidotomy and basic research in Parkinsonism MPTP primate model including cell transplantation and growth factor injections in the non-human primate basal ganglia; Radiosurgery: Clinical research on application of radiosurgery for brain tumors, epilepsy, and chronic pain, and basic research on effects of ionizing radiation to cerebral vasculature and neuronal firing
Jean S. de Vellis, Ph.D.	Professor of Neurobiology, and Psychiatry and Biobehavioral Sciences; Director, Intellectual and Developmental Disabilities Research Center	Role of stem cells, glia and growth factors in neurodevelopment, developmental diseases and regeneration
Andrew C. Dean, Ph.D.	Assistant Professor of Psychiatry and Biobehavioral Sciences	Neuropsychology of substance abuse
Antonio V. Delgado-Escueta, M.D.	Professor of Neurology; Director, Epilepsy Center of Excellence, GLAVA Healthcare System	Molecular genetics of epilepsy
Joseph L. Demer, M.D., Ph.D.	Professor of Ophthalmology, and Neurology	Translational studies of neural and mechanical control of ocular motility in animal models, and in normal and clinical human populations using neuroanatomical, biomechanical, physiological, and functional imaging methods
Patricia I. Dickson, M.D.	Associate Professor of Pediatrics	Therapy for pediatric neurodegenerative diseases

Joseph J. DiStefano, III, Ph.D.	Distinguished Professor of Computer Science, Medicine, and Biomedical Engineering	Computational systems biology
Bruce H. Dobkin, M.D.	Professor of Neurology; Medical Director, Neurologic Rehabilitation and Research Unit	Rehabilitation interventions and monitoring and outcome measurements to improve motor skills after brain and spinal cord lesions
Hong-Wei Dong, M.D., Ph.D.	Assistant Professor of Neurology	Construction of a three dimensional connectivity atlas to characterize neuronal networks in the mouse brain
Lars Dreier, Ph.D.	Assistant Professor of Neurobiology	The function of ubiquitin ligases in the formation of synapses and neurodegenerative disease in the genetic model organism <i>C. Elegans</i> and mammalian systems
V. Reggie Edgerton, Ph.D.	Distinguished Professor of Integrative Biology & Physiology, Neurobiology, and Neurosurgery	Investigations focus on how the spinal cord controls posture and locomotion and the potential and mechanisms of the plasticity of the spinal cord and muscles following spinal cord injury
Jerome Engel, Jr., M.D., Ph.D.	Jonathan Sinay Distinguished Professor of Neurology, Neurobiology, and Psychiatry and Biobehavioral Sciences; Director, UCLA Seizure Disorder Center	Epilepsy
Christopher J. Evans, Ph.D.	Stefan Hatos Professor of Psychiatry and Biobehavioral Sciences; Director, Brain Research Institute	Neurobiology of drugs of abuse and neuroimmune interactions
Gordon L. Fain, Ph.D.	Distinguished Professor of Integrative Biology & Physiology, and Ophthalmology	Physiology of vertebrate photoreceptors
Guoping Fan, Ph.D.	Professor of Human Genetics	Epigenetic mechanisms in neural development and stem cell regulation
Michael S. Fanselow, Ph.D.	Distinguished Professor of Psychology, and Psychiatry and Biobehavioral Sciences	Neural mechanisms of learning, memory and emotion

Debora B. Farber, Ph.D., D.Ph.h.c.	Distinguished Professor of Ophthalmology	Animal models of retinal degeneration; biochemistry, molecular biology, and genetics of retinal degenerations; gene regulation and gene therapy, retinitis pigmentosa and allied human diseases, and ocular albinism
Kym F. Faull, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences; Director, Pasarow Mass Spectrometry Laboratory	Monitoring compounds that are important in cellular communication, and relating their concentrations and turnover to cellular homeostasis
Jack L. Feldman, Ph.D.	Distinguished Professor of Neurobiology	Neural control of movement
Jamie D. Feusner, M.D.	Associate Professor of Psychiatry and Biobehavioral Sciences	Phenotypes of perception, emotion, and obsession across body image and anxiety disorders
Robin S. Fisher, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences, and Neurobiology	Forebrain neurogenesis and establishment of axonal connectivity
L. Jaime Fitten, M.D.	Professor of Psychiatry and Biobehavioral Sciences	Attentional dysfunction in Alzheimer's disease and its implications for motor vehicle operation
Brent L. Fogel, M.D., Ph.D.	Assistant Professor of Neurology	Molecular pathogenesis of neurodevelopmental and neurodegenerative disease
Nelson B. Freimer, M.D.	Maggie Gilbert Professor of Bipolar Disorders, Department of Psychiatry and Biobehavioral Sciences; Director, Center for Neurobehavioral Genetics; Associate Director, Research Programs, Semel Institute for Neuroscience & Human Behavior	The genetic basis of complex traits, particularly neurobehavioral phenotypes such as bipolar disorder, Tourette Syndrome, and temperament
Itzhak Fried, M.D., Ph.D.	Professor of Psychiatry and Biobehavioral Sciences, and Neurosurgery; Director, Epilepsy Surgery; Co-Director, Seizure Disorder Center	Neuronal basis of cognitive processing in the human brain
Mark A. Frye, Ph.D.	Professor of Integrative Biology & Physiology, and Neurobiology	Sensory neurobiology, motor control, and behavior

Denson G. Fujikawa, M.D.	Clinical Professor of Neurology	<i>In vivo</i> programmed mechanisms of seizure and methamphetamine-induced neuronal necrosis
Joaquin M. Fuster, M.D., Ph.D.	Distinguished Professor of Cognitive Neuroscience, Department of Psychiatry and Biobehavioral Sciences	Cortical physiology of perception and memory in the primate
Adriana Galván, Ph.D.	Assistant Professor of Psychology (Developmental Area)	Adolescent brain development
Richard A. Gatti, M.D.	Distinguished Professor of Pathology and Laboratory Medicine, and Human Genetics	Pathogenesis and molecular genetics of ataxia-telangiectasia and related DNA repair disorders
Daniel H. Geschwind, M.D., Ph.D.	The Gordon & Virginia MacDonald Distinguished Professor of Human Genetics; Professor of Neurology, and Psychiatry and Biobehavioral Sciences; Director, Neurogenetics Program; Director, UCLA Center for Autism Research and Treatment	Uncovering the molecular and genetic bases of neurodevelopmental and neurodegenerative diseases using an array of cell biologic, molecular biologic, network biologic, and bioinformatic strategies
Christopher C. Giza, M.D.	Professor of Neurosurgery, and Pediatrics (Pediatric Neurology)	Developmental traumatic brain injury and neuroplasticity; functional and structural neuroimaging
David L. Glanzman, Ph.D.	Professor of Integrative Biology and Physiology, and Neurobiology	Neurobiology of learning and memory in simple systems
Vay Liang W. Go, M.D.	Distinguished Professor of Medicine (Digestive Diseases)	Neuro-hormonal integration of metabolism
Peyman Golshani, M.D., Ph.D.	Assistant Professor of Neurology	GABAergic network function in awake behaving mice; GABAergic network dysfunction in models of autism and developmental epilepsy
Fernando Gómez-Pinilla, Ph.D.	Professor of Neurosurgery, and Integrative Biology & Physiology	Plasticity of brain and spinal cord

Michael B. Gorin, M.D., Ph.D.	Professor of Ophthalmology, and Human Genetics	Clinical and molecular aspects of hereditary ocular disorders, especially retinal and macular dystrophies, complex genetic disorders and the neural pathways and molecules related to light-related sensitivity and pain (photophobia) associated with both central and eye-related disorders
Robert J. Greenberg, Ph.D.	Adjunct Assistant Professor of Electrical Engineering	Retinal degeneration and retinal prostheses
Carlos V. Grijalva, Ph.D.	Professor of Psychology; Associate Dean, Graduate Division	Activity-based anorexia and neuroendocrine mechanisms
Alan D. Grinnell, Ph.D.	Distinguished Professor of Physiology, and Integrated Biology and Physiology; Director, Ahmanson Laboratory of Neurobiology; Associate Dean of Life Sciences	Synaptic mechanisms
William Grisham, Ph.D.	Adjunct Professor of Psychology	Birdsong and sex differences in the brain
Warren S. Grundfest, M.D., FACS	Professor of Bioengineering, Electrical Engineering, and Surgery	Biophotonics, brain mapping, minimally invasive surgery, biologic spectroscopy, and haptic feedback
Cameron B. Gundersen, Ph.D.	Professor of Molecular and Medical Pharmacology	Presynaptic structure and function
Ming Guo, M.D., Ph.D.	Associate Professor of Neurology, and Molecular & Medical Pharmacology	Molecular mechanisms of neurodegenerative disorders in <i>Drosophila</i>
Zhefeng Guo, Ph.D.	Assistant Professor of Neurology	Structural biology of amyloid-related neurodegenerative diseases
Karen H. Gyls, Ph.D., R.N.	Associate Professor, School of Nursing	Alzheimer's disease; apoE and synaptic pathology; biomarkers
Elissa A. Hallem, Ph.D.	Assistant Professor of Microbiology, Immunology, and Molecular Genetics	Odor-driven behaviors of free-living parasitic nematodes
Ronald M. Harper, Ph.D.	Distinguished Professor of Neurobiology	Neural mechanisms underlying cardiovascular and respiratory control during sleep and waking states

Neil G. Harris, Ph.D.	Associate Professor of Neurosurgery	Traumatic brain injury and mechanisms of neural plasticity/recovery of function including neurogenesis
Volker Hartenstein, M.D., Ph.D.	Professor of Molecular, Cell & Developmental Biology	<i>Drosophila</i> brain development and digital reconstruction; stem cells and their niches in invertebrate model systems
Chih-Ming Ho, Ph.D.	Ben Rich-Lockheed Martin Professor of Mechanical & Aerospace Engineering; Director, Institute for Cell Mimetic Space Exploration; Associate Vice Chancellor for Research	Rapid identification of optimal combinatorial drugs
Larry F. Hoffman, Ph.D.	Adjunct Professor of Surgery (Head & Neck)	Sensory neuroscience, particularly in the inner ear vestibular system; systems and computational neuroscience; neural repair; sensory learning
Joshua A. Hoffs, M.D.	Associate Clinical Professor of Psychiatry and Biobehavioral Sciences	Mind-brain-integration
Keith J. Holyoak, Ph.D.	Distinguished Professor of Psychology	Thinking and reasoning
Carolyn R. Houser, Ph.D.	Professor of Neurobiology	Morphological and neurochemical plasticity of GABA neurons and GABA _A receptors in temporal lobe epilepsy and Fragile X syndrome
David A. Hovda, Ph.D.	Professor of Neurosurgery, and Molecular and Medical Pharmacology	Brain injury and recovery of function
Sherrel Howard, Ph.D.	Associate Professor of Molecular and Medical Pharmacology, and Psychiatry and Biobehavioral Sciences	Dopamine receptors, oligodendrocyte development, drugs of abuse
Yih-Ing Hser, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences	Life course addiction, health services research, longitudinal research and statistical methodologies for studying addictive disorders

Wayne L. Hubbell, Ph.D.	Jules Stein Professor of Ophthalmology; Distinguished Professor of Chemistry and Biochemistry	Molecular basis of membrane excitation
Marco Iacoboni, M.D., Ph.D.	Professor of Psychiatry and Biobehavioral Sciences	Human systems neuroscience using brain imaging and neuromodulation
Louis J. Ignarro, Ph.D.	Professor of Molecular and Medical Pharmacology; Jerome J. Belzer Chair—Medical Research	Nitric oxide, vascular physiology, cellular proliferation
Michael R. Irwin, M.D.	Cousins Professor of Psychiatry and Biobehavioral Sciences; Director, Cousins Center for Psychoneuroimmunology; Professor of Psychology	Interactions between behavior and immunity, consequences of major depression on immune processes relevant to infectious disease and inflammatory disorders
Alicia Izquierdo, Ph.D.	Associate Professor of Psychology	Brain mechanisms of optimal choices
Joanna C. Jen, M.D., Ph.D.	Professor of Neurology	Disease mechanisms, diagnosis, and treatment for neurological disorders affecting balance, coordination, and eye movement control
J. David Jentsch, Ph.D.	Professor of Psychology, and Psychiatry and Biobehavioral Sciences; Associate Director for Research, Brain Research Institute	Genetic and neurochemical influences on cognitive and executive functions in laboratory animals
Shafali Spurling Jeste, M.D.	Assistant Professor of Psychiatry and Biobehavioral Sciences, and Neurology	High-density electrophysiology to characterize infants at high risk and young children with autism and related neurodevelopmental disorders, to define neural predictors of outcome in this population
H. Ronald Kaback, M.D.	Distinguished Professor of Physiology	Structure and function of membrane transport proteins
Bruce L. Kagan, M.D., Ph.D.	Clinical Professor of Psychiatry and Biobehavioral Sciences	Amyloid peptide channels: role in pathophysiology of disease
Daniel L. Kaufman, Ph.D.	Professor of Molecular and Medical Pharmacology	Neuroimmunology, neurodevelopment, immunotherapeutics for neurodegenerative disease

Baljit S. Khakh, Ph.D.	Professor of Physiology, and Neurobiology; Executive Vice Chair of Physiology	ATP signaling and glial biology in neuronal circuits
Barbara J. Knowlton, Ph.D.	Professor and Vice Chair for Undergraduate Programs, Department of Psychology	Cognitive neuroscience of memory and executive function
Carla M. Koehler, Ph.D.	Professor of Chemistry and Biochemistry	Protein import into mitochondria; understanding how mitochondrial dysfunction contributes to disease
Brian J. Koos, M.D., Ph.D.	Professor and Vice Chair (Academic Affairs) of Obstetrics and Gynecology	Fetal behavior and cardiovascular responses to hypoxia
Harley I. Kornblum, M.D., Ph.D.	Professor of Psychiatry & Biobehavioral Sciences, Molecular & Medical Pharmacology, and Pediatrics	Neural stem cells and brain tumors
David E. Krantz, M.D., Ph.D.	Associate Professor of Psychiatry and Biobehavioral Sciences	Molecular mechanisms that regulate neurotransmitter release with a focus on the function of neurotransmitter transporters using the model organism <i>Drosophila melanogaster</i>
Carol A. Kruse, Ph.D.	Adjunct Professor of Neurosurgery	Immune and gene therapy for brain tumors
Ira Kurtz, M.D.	Professor of Medicine (Nephrology); Chief, Division of Nephrology; Factor Chair in Molecular Nephrology	Physiological and biophysical studies of acid-base transport proteins in sensory and extrasensory organs
Jennifer S. Labus, Ph.D.	Adjunct Assistant Professor of Psychiatry and Biobehavioral Sciences	Delineating the neural networks underlying the neurobiology of stress with a specific emphasis on models of functional and persistent pain and brain-body interactions
Albert Lai, M.D., Ph.D.	Associate Professor of Neurology	Correlation of genomics/epigenomics with phenotype to identify prognostic and predictive biomarkers for malignant gliomas

Joseph L. Lasky, III, M.D.	Associate Clinical Professor of Pediatrics (Hematology/Oncology), and Neurosurgery	Novel therapies for pediatric cancers, especially brain tumors; methods to stimulate the immune system to attack brain tumors, and how to target the immune system against putative brain tumor stem cells
Jin-Jyung Lee, Ph.D.	Assistant Professor of Electrical Engineering, and Psychiatry and Biobehavioral Sciences	Optogenetics; functional and molecular brain imaging
Andrew F. Leuchter, M.D.	Professor of Psychiatry and Biobehavioral Sciences; Director, Laboratory of Brain, Behavior and Pharmacology; Director, Office of Professional and Community Education	The enhancement of treatment outcomes in depression using brain-imaging techniques (QEEG, MRI, PET) to examine brain function and predict which treatments are most likely to benefit individual patients
Michel F. Lévesque, M.D.	Associate Clinical Professor of Neurosurgery	Endogenous and autologous neural stem cell repair of neurodegenerative disorders
Barbara A. Levey, M.D.	Professor of Medicine, and Molecular & Medical Pharmacology; Assistant Vice Chancellor of Biomedical Affairs	Graduate education; clinical pharmacology and clinical research
Michael S. Levine, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences; Associate Director, Intellectual and Developmental Disabilities Research Center; Associate Director for Education, Brain Research Institute; Chair, Graduate Interdepartmental Program for Neuroscience	The mechanisms underlying neuronal dysfunction in the basal ganglia and cortex in neurodegenerative disorders
Linda M. Liao, M.D., Ph.D.	Professor of Neurosurgery	Brain tumor molecular biology, and immunology
Shuo Lin, Ph.D.	Professor of Molecular, Cell and Developmental Biology	Developmental biology of the nervous system and regulation of neural gene expression
Walter Ling, M.D.	Professor of Psychiatry and Biobehavioral Sciences	Development and evaluation of pharmacotherapy-based and behavioral therapies for treatment of drug dependence; pain

Xin Liu, M.D., Ph.D.	Assistant Professor of Pathology and Laboratory Medicine, and Molecular and Medical Pharmacology	Molecular genetics and neurobiology
Zili Liu, Ph.D.	Associate Professor of Psychology	Visual perception, computation, and learning
Edythe D. London, Ph.D.	Thomas and Katherine Pike Professor of Addiction Studies, Department of Psychiatry and Biobehavioral Sciences, and Professor of Molecular and Medical Pharmacology	Multimodal neuroimaging approaches to study the neuronal circuits and molecular mediators of self-control in healthy and pathological states
Sandra K. Loo, Ph.D.	Associate Professor of Psychiatry and Biobehavioral Sciences	Gene-brain-behavior pathways evident in childhood psychiatric disorders and translation of this work to improve treatments for these disorders
Aldons J. Lusis, Ph.D.	Professor and Vice-Chair, Department of Human Genetics; Professor of Microbiology, Immunology & Molecular Genetics, and Professor of Medicine	Systems genetics to understand higher order interactions in complex disease
Karen M. Lyons, Ph.D.	Professor of Molecular, Cell & Developmental Biology, and Orthopedic Surgery	Bone morphogenetic proteins (BMP); skeletal development
Paul M. Macey, Ph.D.	Assistant Professor, School of Nursing	Sleep disorders and central regulation of autonomic function, including cardiovascular and affective functions
Nigel T. Maidment, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences	Neurobiology of motivated behavior and neurodegenerative disease
Kelsey C. Martin, M.D., Ph.D.	Professor and Chair of Biological Chemistry; Professor of Psychiatry and Biobehavioral Sciences	Cell biology of long-term memory
Juan Carlos Marvizón, Ph.D.	Adjunct Associate Professor of Medicine (Digestive Diseases)	Neurophysiology of pain and analgesia; cellular and molecular mechanisms that mediate central sensitization in the spinal cord
Sotiris C. Masmanidis, Ph.D.	Assistant Professor of Neurobiology	Network-level neuronal mechanisms of reward-mediated learning

Gary W. Mathern, M.D.	Professor of Neurosurgery, and Psychiatry and Biobehavioral Sciences	Analysis of human brain tissue removed from pediatric and adult epilepsy surgery patients to identify basic mechanisms of epileptogenesis with the goal of developing new translational methods to diagnose and treat patients
Emeran A. Mayer, M.D.	Professor of Medicine, Physiology, and Psychiatry and Biobehavioral Sciences; Director, Oppenheimer Family Center for Neurobiology of Stress; Associate Director, CURE: Digestive Diseases Research Center	Interception at the interface between stress, pain and emotions in health and disease
John C. Mazziotta, M.D., Ph.D.	Associate Vice Chancellor, Executive Vice Dean, David Geffen School of Medicine at UCLA; Chair, and Frances Stark Professor of Neurology; Director, UCLA Brain Mapping Center; Professor of Neurology, Radiological Sciences and Molecular & Medical Pharmacology	Imaging the structure and function of the human brain in health and disease
James T. McCracken, M.D.	Joseph Campbell Professor of Child Psychiatry and Biobehavioral Sciences; Director, Child and Adolescent Psychiatry	Treatment of early-onset psychiatric disorders, studies of risk factors, including genes, for neuropsychiatric disorders such as ADHD and OCD
Dennis J. McGinty, Ph.D.	Adjunct Professor of Psychology; Chief, Neurophysiology Research, Sepulveda VAMC	Sleep neurobiology
Mayank R. Mehta, Ph.D.	Professor of Physics & Astronomy, Neurology, and Neurobiology	Electrophysiological and computational study of cortico-hippocampal interaction during spatial navigation and sleep, and its influence on learning and memory
William P. Melega, Ph.D.	Professor of Molecular and Medical Pharmacology, and Molecular Toxicology	Molecular mechanisms of neurodegenerative diseases and drug addiction
Walter Metzner, Ph.D.	Professor and Vice Chair of Integrative Biology & Physiology	Behavioral neurobiology (neuroethology) of auditory-vocal interaction in mammals (echo-locating bats)
Paul E. Micevych, Ph.D.	Professor of Neurobiology, and Surgery (Head & Neck Surgery)	Reproductive neuroendocrinology

Thomas R. Minor, Ph.D.	Professor of Psychology	Animal models of anxiety and depression; stress resilience; hormetic stress
Istvan Mody, Ph.D.	Tony Coelho Professor of Neurology, and Professor of Physiology	GABAergic neurotransmission in health and disease
Bartly J. Mondino, M.D.	Bradley R. Straatsma Professor of Ophthalmology; Chair, Department of Ophthalmology; Director, Jules Stein Eye Institute; Chief, Cornea-External Disease Division	Cornea-external disease
Martin M. Monti, Ph.D.	Assistant Professor of Psychology	The relationship between language and thought; consciousness after severe brain injury
Norman S. Namerow, M.D.	Clinical Professor of Neurology, and Psychiatry	Chronic pain
Peter M. Narins, Ph.D.	Distinguished Professor of Integrative Biology & Physiology, and Ecology and Evolutionary Biology	Auditory neurophysiology and behavior
Katherine L. Narr, Ph.D.	Assistant Professor of Neurology	Applied neurobiological imaging in psychiatric disorders
Valeriy Nenov, Ph.D.	Adjunct Associate Professor of Neurosurgery, and Biomedical Engineering	Development of Java-based telemedical applications for remote monitoring of patients in intensive care; computational modeling of memory functions of the hippocampus
Bennett G. Novitch, Ph.D.	Assistant Professor of Neurobiology	Molecular mechanisms controlling neural stem cell maintenance and differentiation
Erika L. Nurmi, M.D., Ph.D.	Assistant Professor of Psychiatry and Biobehavioral Sciences	Neuropsychiatric genetics
Marc R. Nuwer, M.D., Ph.D.	Professor of Neurology	New clinical applications for EEG and evoked potentials, demonstrations of usefulness, creation of new public policy, and outcome studies
Thomas J. O'Dell, Ph.D.	Professor and Executive Vice Chair of Physiology; Interim Chair of Physiology	Cellular and molecular mechanisms underlying activity-dependent forms of synaptic plasticity

Paul H. O'Lague, Ph.D.	Associate Professor of Molecular, Cell & Developmental Biology	Mathematical modeling of osmoregulation using phase transition physics to model osmoregulation in cells
Riccardo Olcese, Ph.D.	Professor of Anesthesiology, and Physiology	Physiology and biophysics of ion channels and their role in cell function and cardiac arrhythmias
Richard W. Olsen, Ph.D.	Distinguished Professor of Molecular and Medical Pharmacology	GABA-A receptor structure and function: GABA-A receptor plasticity induced by acute and chronic ethanol in rats; Sites for allosteric modulatory ligands like general anesthetics and ethanol on mammalian brain GABA-A receptors
Roel A. Ophoff, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences, and Human Genetics	Identification of genetic susceptibility of complex traits, in particular neuropsychiatric illnesses such as schizophrenia and bipolar disorder
Thomas Otis, Ph.D.	Professor and Vice Chair of Neurobiology	Cerebellar physiology, spinocerebellar ataxias
Diane M. Papazian, Ph.D.	Professor of Physiology	Research focuses on the role of electrical excitability in neurodevelopmental and neurodegenerative diseases
William M. Pardridge, M.D.	Distinguished Professor of Medicine (Endocrinology)	Blood-brain barrier; brain drug and gene targeting
Michael E. Phelps, Ph.D.	Norton Simon Professor of Molecular and Medical Pharmacology; Chair, Department of Molecular and Medical Pharmacology; Director, Crump Institute for Biological Imaging; Associate Director, Laboratory of Structural Biology and Molecular Medicine; Professor of Biomath	The merger of biology and imaging to provide the means to examine molecular and cellular function in tissue cultures as well as integrated organ function in animals and humans
Patricia E. Phelps, Ph.D.	Professor and Vice Chair of Integrative Biology & Physiology	Axon regeneration following complete spinal cord transection and olfactory ensheathing cell transplantation ; the effects of the Reelin signaling pathway on pain processing in the dorsal horn of the spinal cord

Natik Piri, Ph.D.	Associate Professor of Ophthalmology	Retinal ganglion cells and optic neuropathies
Whitney B. Pope, M.D., Ph.D.	Assistant Professor of Radiological Sciences (Neuroradiology)	Advanced imaging of brain tumor
Carlos Portera-Cailliau, M.D., Ph.D.	Associate Professor of Neurology, and Neurobiology	The assembly and plasticity of cortical circuits in health and disease
Nader Pouratian, M.D., Ph.D.	Assistant Professor of Neurosurgery	Brain mapping, neuromodulation, and neural prostheses
Mayumi L. Prins, Ph.D.	Associate Professor of Neurosurgery	Traumatic brain injury
Robert M. Prins, Ph.D.	Associate Professor of Neurosurgery, and Molecular and Medical Pharmacology	Immune-based therapies for brain tumors
Javier Quintana, M.D., Ph.D.	Associate Professor of Psychiatry and Biobehavioral Sciences	Neural bases of social cognition deficits in schizophrenia
Richard Rawson, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences; Associate Director, Integrated Substance Abuse Programs (ISAP)	Research on addiction medications, psychosocial trails and dissemination of research findings nationally and internationally
Lara A. Ray, Ph.D.	Associate Professor of Psychology (Clinical Area), and Psychiatry & Biobehavioral Sciences	The etiology and treatment of substance use disorders, integrating experimental psychopathology, behavioral genetics, and pharmacology
Dario L. Ringach, Ph.D.	Professor of Neurobiology, and Psychology	Visual electrophysiology and psychophysics, mathematical modeling of receptive field function, cortical dynamics
Jesse A. Rissman, Ph.D.	Assistant Professor of Psychology, and Psychiatry and Biobehavioral Sciences	Functional neuroimaging studies of human memory and cognitive control
Leonard H. Rome, Ph.D.	Professor of Biological Chemistry	The study of biogenesis and function of novel subcellular organelles called vaults
Roland R. Roy, Ph.D.	Researcher, Brain Research Institute, and Integrative Biology & Physiology	Plasticity of the neuromuscular system under chronic conditions of increased or decreased neuromuscular activity
Eduardo H. Rubinstein, M.D., Ph.D.	Professor of Physiology, and Anesthesiology	Techniques for brain protection during ischemia

Fred W. Sabb, Ph.D.	Assistant Professor of Psychiatry and Biobehavioral Sciences	Novel technological approaches to cognitive neuroscience and neuroinformatics in order to elucidate the biological origins of major mental illness
Alvaro Sagasti, Ph.D.	Associate Professor of Molecular, Cell & Developmental Biology	Development and plasticity of somatosensory neuron axon arbors in larval zebrafish
Albert Sattin, M.D.	Associate Clinical Professor of Psychiatry and Biobehavioral Sciences; Chief, Antidepressant Neuropharmacology Laboratory, West Los Angeles VAMC	The role of TRH and related peptides in CNS function
Stan Schein, M.D., Ph.D.	Professor of Psychology	Retinal circuits and color vision; retinal synapses and synaptic release processes; endocytosis and fullerene self-assembly
Barnett A. Schlinger, Ph.D.	Professor and Chair of Integrative Biology & Physiology; Professor of Ecology and Evolutionary Biology	Neurosteroid synthesis and actions; neuroethology
Felix E. Schweizer, Ph.D.	Professor of Neurobiology	Physiological and molecular mechanisms of neuronal communication at synapses
Ladan Shams, Ph.D.	Associate Professor of Psychology	Multisensory integration, visual perception, perceptual learning
Steven Shoptaw, Ph.D.	Professor of Family Medicine, and Psychiatry and Biobehavioral Sciences; Vice Chair for Academic Affairs	Clinical trials of medications for stimulant dependence
Nancy L. Sicotte, M.D.	Associate Professor of Neurology, Division of Brain Mapping	Multimodal imaging in multiple sclerosis
Jerome M. Siegel, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences; Chief, Neurobiology Research, Veterans, Sepulveda VAMC	Sleep, arousal and the function of orexin (hypocretin) neurons
Alcino J. Silva, Ph.D.	Professor of Neurobiology, Psychiatry & Biobehavioral Sciences, and Psychology	Molecular and cellular mechanisms underlying learning and memory and its disorders, including age-related cognitive decline, autism and schizophrenia

Daniel H. Silverman, M.D., Ph.D.	Professor of Molecular and Medical Pharmacology	Neurological basis for, and optimizing evaluation and management of, cognitive dysfunction secondary to a wide array of insults (neurodegenerative, hormonal, pharmacologic, traumatic)
Dwayne D. Simmons, Ph.D.	Professor of Integrative Biology & Physiology; Director, Minority Access to Research Careers Program	Synapse formation and sensory cell development
Elyse J. Singer, M.D.	Professor of Neurology	NeuroAIDS
Gary W. Small, M.D.	Parlow-Solomon Professor on Aging; Professor of Psychiatry and Biobehavioral Sciences; Director, Longevity Center; Director, Geriatric Psychiatry Division, UCLA	Early detection and prevention of age-related memory loss and dementia
Desmond J. Smith, M.D., Ph.D.	Professor of Molecular and Medical Pharmacology	Genetics of behavioral, neuropsychiatric and neurodegenerative disorders
Judith L. Smith, Ph.D.	Professor of Integrative Biology & Physiology; Vice Provost for Undergraduate Education, College of Letters and Science	Neural control of stereotypic limb motions
Michael V. Sofroniew, M.D., Ph.D.	Professor of Neurobiology	Astrocyte biology in health and disease
Sophie Sokolow, Ph.D.	Assistant Professor of Nursing	Alzheimer's disease
Elizabeth R. Sowell, Ph.D.	Associate Professor of Neurology	Developmental neuroimaging
Igor Spigelman, Ph.D.	Professor of Oral Biology & Medicine, School of Dentistry	Neurobiology of disease; mechanisms of chronic pain, seizures, stroke, brain trauma, and addiction
Francis F. Steen, Ph.D.	Associate Professor of Communication Studies/Speech	The nature of cognitive processes involved in interpersonal, computer-mediated, and mass communication

Enrico Stefani, M.D., Ph.D.	John Bartley Dillon Endowed Chair in Anesthesiology; Distinguished Professor of Anesthesiology and Physiology; Dorothy and Leonard Straus Scholar; Associate Director, Cardiovascular Research Laboratories	Stimulation emission depletion super-resolution microscopy, heart protection and mitochondria channels
Catia Sternini, M.D.	Professor of Medicine, and Neurobiology	Mechanisms that govern receptor-mediated responses in the enteric nervous system and chemosensing in the gastrointestinal tract
Ronald Stevens, Ph.D.	Professor of Microbiology, Immunology and Molecular Genetics; Director, IMMEX Project	EEG measures of workload and engagement to model the neurodynamic complexity of submarine piloting and navigation teams
Rebecca A. Stockton, Ph.D.	Assistant Professor of Pediatrics	Cerebrovascular disease, vascular medicine
Hui Sun, Ph.D.	Associate Professor of Physiology, and Ophthalmology; Early Career Scientist, Howard Hughes Medical Institute	A novel membrane transport system in physiology and mechanism of macular degeneration
Yi E. Sun, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences, and Molecular and Medical Pharmacology	Epigenetic regulation of stem cells
Yvette Taché, Ph.D.	Professor of Medicine (Digestive Diseases); Director, Animal Core, CURE: Digestive Diseases Research Center; Co-Director, Center for Neurovisceral Sciences & Women's Health	Brain-gut interactions: Underlying mechanisms of stress influence on visceral pain with a focus on corticotrophin releasing factor signaling pathways; Gut alterations in Parkinson's disease models; Gut-brain peptides and regulation of food intake and gastric transit
Anna N. Taylor, Ph.D.	Professor of Neurobiology; Senior Research Career Scientist, VAGLAHS	Neuroendocrine, neuroimmunology, fetal and adult alcoholism, traumatic brain injury
David B. Teplow, Ph.D.	Professor of Neurology; Director, Biopolymer Laboratory	Biology and biochemistry of human neurodegenerative disorders

Bruce Teter, Ph.D.	Adjunct Associate Professor of Medicine	Alzheimer's disease with focus on genetics and metabolic effects; translational research developing drugs like fish oil/DHA and curcumin for both prevention and treatment
Paul Thompson, Ph.D.	Professor of Neurology, and Psychiatry and Biobehavioral Sciences	Brain imaging in Alzheimer's, brain development, HIV/AIDS, schizophrenia, bipolar, and childhood neurogenetic disorders
James G. Tidball, Ph.D.	Distinguished Professor of Integrative Biology and Physiology, and Pathology & Laboratory Medicine	Pathophysiology of muscular dystrophy
Niranjala Tillakaratne, Ph.D.	Researcher, Department of Integrative Biology & Physiology, and the Brain Research Institute	Identification of locomotor circuits following spinal cord injury
Seema Tiwari-Woodruff, Ph.D.	Associate Professor of Neurology	Aspects of demyelination-induced neurodegeneration and neuroprotection by various therapeutic interventions in mouse models of demyelination
Arthur W. Toga, Ph.D.	Distinguished Professor of Neurology; Director, Laboratory of Neuro Imaging; Associate Director, Brain Mapping	Development and application of scientific approaches for the comprehensive mapping of brain structure and function in health and disease
Ligia Toro, Ph.D.	Professor and Dorothy and Leonard Straus Scholar of Anesthesiology, and Professor of Molecular and Medical Pharmacology	Smooth muscle and mitochondrial K-channels
Nim Tottenham, Ph.D.	Associate Professor of Psychology	Neurobiology of emotional development and the effects of early life stress on neuro-affective development
Wallace W. Tourtellotte, M.D., Ph.D.	Distinguished Professor of Neurology	Etiopathogenesis of multiple sclerosis
Joshua T. Trachtenberg, Ph.D.	Associate Professor of Neurobiology	Cortical learning, memory and plasticity

Robert B. Trelease, Ph.D.	Professor of Pathology and Laboratory Medicine; Associate Director, Instructional Design and Technology Unit, Dean's Office, David Geffen School of Medicine	Artificial intelligence, virtual reality, and anatomical informatics
Cho-Lea Tso, Ph.D.	Associate Professor of Surgery	Molecular/tumorigenic pathways and therapeutic targets of brain cancer stem cells
John D. Van Horn, Ph.D., M.Eng.	Associate Professor of Neurology	Human neuroimaging
Julio L. Vergara, Ph.D.	Professor of Physiology	Skeletal muscle excitation-contraction coupling; synaptic transmission at the neuromuscular junction
Eric Vilain, M.D., Ph.D.	Professor of Human Genetics, Pediatrics, and Urology	Biology of sex differences and sexual development
J. Pablo Villablanca, M.D.	Associate Professor of Radiological Sciences; Chief, Neuroradiology	Diagnostic neuroradiology (stroke)
Harry V. Vinters, M.D.	Professor of Pathology and Laboratory Medicine, and Neurology; Daljit S. & Elaine Sarkaria Chair in Diagnostic Medicine; Director, Neuropathology Laboratory	Cellular and molecular pathogenesis of human neurologic diseases
Rhonda R. Voskuhl, M.D.	Professor of Neurology; Director, Multiple Sclerosis Program; Chair, Jack H. Skirball Chair in MS Research	Multiple sclerosis
Roi Ann Wallis, M.D.	Associate Professor of Neurology; Associate Chief of Neurology, VA GLAHS	Mechanisms of neuronal injury from trauma and stroke
Martin Wallner, Ph.D.	Assistant Professor of Molecular & Medical Pharmacology	Pharmacology and physiology of extra synaptic GABA(A) receptors
Danny Jiong Jiong Wang, Ph.D.	Associate Professor of Neurology, and Radiology	Development and applications of functional and physiological MRI
James A. Waschek, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences	Biological functions of neuropeptides, neuroimmunology, multiple sclerosis

Kate M. Wassum, Ph.D.	Assistant Professor of Psychology	Use and advance sophisticated behavioral paradigms, coupled with neuropharmacology and neurochemical monitoring techniques to elucidate the precise neural mechanisms and systems that underlie discrete aspects of motivated learning and decision-making
Claude G. Wasterlain, M.D.	Distinguished Professor of Neurology; Vice Chair Neurology, West Los Angeles VAMC	The basic science of epilepsy and status epilepticus
Joseph B. Watson, Ph.D.	Professor of Psychiatry and Biobehavioral Sciences; Associate Dean, Graduate Division, College of Letters and Science	Synaptic dysfunction in the neurodegenerative disorders Parkinson's disease and Huntington's disease
Nancy L. Wayne, Ph.D.	Professor of Physiology; Associate Vice Chancellor for Research	Neurophysiological control of reproduction
Geraldine A. Weinmaster, Ph.D.	Professor of Biological Chemistry	Defining the molecular mechanisms underlying Notch signaling in mammalian cells
Stephanie A. White, Ph.D.	Professor of Integrative Biology & Physiology	Neural basis for socially learned vocal communication
Julian P. Whitelegge, Ph.D.	Adjunct Professor of Psychiatry and Biobehavioral Sciences	Neurodegeneration and biological mass spectrometry
Peter C. Whybrow, M.D.	Director, Semel Institute for Neuroscience and Human Behavior at UCLA; Judson Braun Distinguished Professor and the Executive Chair of the Department of Psychiatry and Biobehavioral Sciences, David Geffen School of Medicine at UCLA	Depression and manic-depressive disease and the effects of thyroid hormone on the brain and human behavior
Martina Wiedau-Pazos, M.D., Ph.D.	Associate Professor of Neurology	Motor neuron degeneration in amyotrophic lateral sclerosis (ALS)
David S. Williams, Ph.D.	Jules and Doris Stein Research to Prevent Blindness Professor of Ophthalmology; Professor of Neurobiology	Intracellular trafficking in photoreceptor and RPPE cells
Roger P. Woods, M.D.	Professor of Neurology, and Psychiatry and Biobehavioral Sciences	Structural and functional brain imaging

Ernest M. Wright, D.Sc.	Professor of Physiology, Mellinkoff Professor of Medicine	Membrane transport (SLC5 gene family)
Allan D. Wu, M.D.	Associate Professor of Neurology	Noninvasive transcranial neuromodulation, brain mapping, and plasticity in patients with movement disorders
Benjamin M. Wu, D.D.S., Ph.D.	Assistant Professor of Bioengineering	Biomaterials and tissue engineering
Hong M. Wu, M.D., Ph.D.	Professor of Molecular and Medical Pharmacology	Neuronal stem cells and tumorigenesis
Cui-Wei (Tracy) Xie, M.D., Ph.D.	Professor of Psychiatry and Biobehavioral Sciences	Synaptic plasticity, learning and memory
Hong Yang, M.D., Ph.D.	Research Physiologist, Department of Medicine (Digestive Diseases)	Brainstem mechanism of autonomic disorders in type 2 diabetes
Xiangdong William Yang, M.D., Ph.D.	Professor of Psychiatry and Biobehavioral Sciences	Pathogenesis of neurodegenerative diseases
Xian-Jie Yang, Ph.D.	Professor of Ophthalmology	Development and repair of the neural retina
William H. Yong, M.D.	Professor of Pathology and Laboratory Medicine	Pathology of brain tumors and biorepository science
Alan Yuille, Ph.D.	Professor of Statistics, and Psychology	Vision as Bayesian inference
Dahlia Zaidel, Ph.D.	Adjunct Professor of Psychology	Neuroscience of beauty in faces and art, and hemispheric specialization in memory for faces and objects
Eran Zaidel, Ph.D.	Professor of Psychology (Behavioral Neuroscience and Cognition)	Cognitive neuroscience of attention, perception, language and social relations
Guido A. Zampighi, D.D.S., Ph.D.	Professor of Neurobiology	Structure and function of chemical and electrical synapses
Richard K. Zimmer, Ph.D.	Professor of Ecology and Evolutionary Biology	Chemical communication and sensory ecology
S. Lawrence Zipursky, Ph.D.	Distinguished Professor of Biological Chemistry; Investigator, Howard Hughes Medical Institute	The molecular mechanisms underlying the formation of precise patterns of synaptic connections

New Members

During the 2012-2013 academic year, three new members joined the BRI:

Alicia Izquierdo, Ph.D.	Associate Professor of Psychology
Erika L. Nurmi, M.D., Ph.D.	Assistant Professor-in-Residence of Psychiatry & Biobehavioral Sciences
Rebecca A. Stockton, Ph.D.	Assistant Professor of Pediatrics

Emeritus Members

A number of emeritus members continue to contribute to the field of neuroscience through their own research, and through the education and research training of our students and postdoctoral fellows.

Claude F. Baxter, Ph.D.	Emeritus Professor of Psychiatry and Biobehavioral Sciences
Jackson T. Beatty, Ph.D.	Emeritus Professor of Psychology
Jennifer S. Buchwald, Ph.D.	Emeritus Professor of Physiology
Anthony T. Campagnoni, Ph.D.	Emeritus Professor of Neuroscience, Department of Psychiatry and Biobehavioral Sciences
Pasquale A. Cancilla, M.D.	Emeritus Professor of Pathology
Carmine D. Clemente, Ph.D.	Emeritus Professor of Neurobiology
Robert C. Collins, M.D.	Emeritus Professor of Neurology
Donald D. Dirks, Ph.D.	Emeritus Professor of Surgery (Head and Neck)
Wilfrid J. Dixon, Ph.D.	Emeritus Professor of Biomathematics, Biostatistics, and Psychiatry and Biobehavioral Sciences
George Eisenman, M.D.	Emeritus Professor of Psychiatry and Biobehavioral Sciences
Earl Eldred, M.D.	Emeritus Professor of Neurobiology
Thelma Estrin, Ph.D.	Emeritus Professor of Computer Science, School of Engineering and Applied Science
M. David Fairchild, Ph.D.	Emeritus Associate Professor of Molecular and Medical Pharmacology
Bernard K.K. Fung, Ph.D.	Emeritus Professor of Ophthalmology, and Molecular and Medical Pharmacology
Roger A. Gorski, Ph.D.	Distinguished Emeritus Professor of Neurobiology
Vicente Honrubia, M.D., D.M.Sc.	Emeritus Professor of Surgery (Head and Neck)
Chester D. Hull, Ph.D.	Emeritus Professor of Psychiatry and Biobehavioral Sciences
Donald J. Jenden, B.Sc., M.B., B.S.	Emeritus Professor of Molecular and Medical Pharmacology
Margaret H. Jones, M.D.	Emeritus Professor of Pediatrics, Neurology, and Rehabilitation
Douglas Junge, Ph.D.	Emeritus Professor of Dentistry (Oral Biology and Medicine)
Franklin B. Krasne, Ph.D.	Emeritus Professor of Psychology
Sally Krasne, Ph.D.	Emeritus Associate Professor of Physiology
Lawrence Kruger, Ph.D.	Distinguished Emeritus Professor of Neurobiology
Charles H. Markham, M.D.	Emeritus Professor of Neurology
James T. Marsh, Ph.D.	Emeritus Professor of Psychiatry and Biobehavioral Sciences

Michael T. McGuire, M.D.	Emeritus Professor of Psychiatry and Biobehavioral Sciences
Linda D. Nelson, Ph.D.	Emeritus Professor of Psychiatry and Biobehavioral Sciences
Elizabeth F. Neufeld, Ph.D.	Emeritus Professor of Biological Chemistry
Ernest P. Noble, M.D., Ph.D.	Distinguished Emeritus Professor of Psychiatry and Biobehavioral Sciences
Edward M. Ornitz, M.D.	Emeritus Professor of Psychiatry and Biobehavioral Sciences
Kent M. Perryman, Ph.D.	Emeritus Associate Research Physiologist, Department of Psychiatry and Biobehavioral Sciences
Michel Philippart, M.D.	Emeritus Professor of Neurology, Pediatrics, and Psychiatry and Biobehavioral Sciences
Robert W. Porter, M.D., Ph.D.	Emeritus Professor of Neurosurgery, University of California, Irvine
Robert W. Rand, M.D., Ph.D., J.D.	Emeritus Professor of Neurosurgery
Sidney Roberts, Ph.D.	Emeritus Professor of Biological Chemistry
Arnold B. Scheibel, M.D.	Emeritus Distinguished Professor of Neurobiology, and Psychiatry and Biobehavioral Sciences
John D. Schlag, M.D.	Emeritus Professor of Neurobiology
Madeleine Schlag-Rey, Ph.D.	Emeritus Research Neurobiologist
José P. Segundo, M.D.	Emeritus Professor of Neurobiology
Margret I. Sellers, Ph.D.	Emeritus Professor of Microbiology and Immunology
Eustace A. Serafetinides, M.D., Ph.D.	Emeritus Professor of Psychiatry and Biobehavioral Sciences
Margaret N. Shouse, Ph.D.	Emeritus Professor of Neurobiology
Yvonne S. Sininger, Ph.D.	Emeritus Professor of Surgery (Head & Neck)
Grant G. Slater, Ph.D.	Emeritus Researcher, Department of Psychiatry and Biobehavioral Sciences, and School of Public Health
Ralph R. Sonnenschien, M.D., Ph.D.	Emeritus Professor of Physiology
M. Barry Serman, Ph.D.	Emeritus Professor of Neurobiology, and Psychiatry and Biobehavioral Sciences
Bradley R. Straatsma, M.D.	Emeritus Professor of Ophthalmology
James P. Thomas, Ph.D.	Emeritus Professor of Psychology
Allan J. Tobin, Ph.D.	Emeritus Professor of Neurology, and Integrative Biology & Physiology
M. Anthony Verity, M.D.	Emeritus Professor of Pathology (Neuropathology)
Jacques J. Vidal, Ph.D.	Emeritus Professor of Computer Science
Jaime R. Villablanca, M.D.	Emeritus Distinguished Professor of Neurobiology, and Psychiatry and Biobehavioral Sciences
Jen Yu Wei, Ph.D.	Emeritus Professor of Medicine
Bernice M. Wenzel, Ph.D.	Emeritus Professor of Physiology
Charles L. Wilson, Ph.D.	Emeritus Professor of Neurology
Charles D. Woody, M.D.	Emeritus Professor of Psychiatry and Biobehavioral Sciences, and Neurobiology
Arthur Yuwiler, Ph.D.	Emeritus Professor of Psychiatry and Biobehavioral Sciences

Corresponding Members

The national and international reputation of the Brain Research Institute attracts a number of prominent scientists as corresponding members in the Institute. These members include:

Filomena Bovet-Nitti, D.Sc.	Laboratorio di Psicobiologia e Psicofarmacologia, Consiglio Nazionale delle Ricerche, Rome, Italy
Anthony Kales, M.D.	Emeritus Professor, Department of Psychiatry, Pennsylvania State University, Hershey Medical Center
David F. Lindsley, Ph.D.	Associate Professor of Physiology, University of Southern California
Arnold J. Mandell, M.D.	Emeritus Professor of Psychiatry, University of California, San Diego
James L. McGaugh, Ph.D.	Professor of Psychobiology, University of California, Irvine
George P. Moore, Ph.D.	Professor of Biomedical Engineering and Physiology, University of Southern California
Eberhardt K. Sauerland, M.D.	Emeritus Professor of Anatomy, University of Texas, Medical Branch, Galveston
Marianne E. Schlaefke, M.D., Ph.D.	Institut für Physiologie, Ruhr-Universität, Bochum, West Germany
Oscar U. Scremin, M.D, Ph.D.	Professor of Physiology, VA Greater LA Healthcare

INSTITUTE ACTIVITIES

PROGRAMS AND CENTERS

In addition to the research funded by grants to individual members of the Institute, several collaborative centers and research programs are supported by endowments and grants administered by the Brain Research Institute. The following brief reports indicate the nature and accomplishments of each of these programs.

INTEGRATIVE CENTERS FOR NEUROSCIENCE EXCELLENCE (ICNE)

The launch of six new Integrative Centers for Neuroscience Excellence (ICNE) will bring different areas of research excellence into the forefront and highlight the specific strengths of UCLA's neuroscience activities. The UCLA neuroscience community is very large, and research is conducted within a number of schools, institutes, departments and organized research units (ORUs) which can make it difficult to envision how all the components contribute to the whole. The ICNE, by giving an institutional "face" to different areas of neuroscience, will remedy this situation by providing a focused profile highlighting the diverse activities of the neuroscience community to potential students and the public. The proposed ICNE represent communities of scientists who share an interest in similar topics or techniques, and correspond roughly to the focused areas of research (FARs) that guide curriculum options for the Interdepartmental Ph.D. Program for Neuroscience. Each ICNE will develop its own identity. Each will have its own website, and receive endowment support to organize symposia and seminars, as well as facilitate coordination and cooperation in its particular field. There are six Integrative Centers for Neuroscience Excellence. Two ICNE have launched (the Integrative Center for Learning and Memory, and the Integrative Center for Neurogenetics) and four are in the process of development. The next center to be launched will be the Integrative Center for Neural Repair and will represent research concentrations in neural development, degeneration and repair. Future ICNE will be concentrated on neuroimaging, synapses, cells and circuits, and addiction neurobiology.

The six Integrative Centers for Neuroscience Excellence include:

- Integrative Center for Learning & Memory (Launched March, 2012)
- Integrative Center for Neurogenetics (Launched, February, 2013)
- Integrative Center for Neural Repair (Launching, October 2013)
- Integrative Center for Addiction Research (planned)
- Integrative Center for Neuroimaging/Cognition (planned)
- Integrative Center for Synapses, Cells & Circuits (planned)

LABORATORY OF NEUROENDOCRINOLOGY (Supported by NIH Grant-HD-07228)

The Laboratory of Neuroendocrinology (LNE) is a unit of the UCLA Brain Research Institute comprising 17 faculty laboratories with a common interest in neuroendocrinology, sex differences, and reproduction. The LNE fosters education and collaborative research in neuroendocrinology and sex differences, especially in areas concerning reproduction. The activities of the LNE include graduate and undergraduate courses in neuroendocrinology, the weekly brown-bag seminar on current topics in neuroendocrinology, exchange of research ideas and methods among member laboratories, active research collaboration among labs, opportunities for students at all levels, and the annual Charles Sawyer lectureship in neuroendocrinology.

The educational activities of the LNE have been funded continuously since 1980 by an NIH training grant, "Neuroendocrinology, Sex Differences, and Reproduction." Research of the faculty spans all analytical levels, from the molecular to the behavioral. Research interests include sex determination and sexual differentiation, hormonal regulation of neural function, gender differences in disease, cellular and molecular analysis of neural development, circadian rhythms, neural regulation of gonadal and adrenal function, glial neurobiology, stress, aging, neuroendocrine immunology, growth factors and cytokines, molecular genetics of

the sex chromosomes, and genetic approaches. Although the main focus is on basic research in neuroendocrinology, some faculty are also involved in direct analysis of human disease and clinical trials to develop new neuroendocrine therapies.

Annual research and training support awarded to the LNE faculty is more than \$16 million. Including faculty, postdoctoral scholars, graduate and undergraduate students, and staff, more than 70 individuals are associated with this laboratory.

The faculty of the Laboratory of Neuroendocrinology include Arthur P. Arnold (Integrative Biology & Physiology), Marie-Francoise Chesselet (Neurobiology and Neurology), Christopher S. Colwell (Psychiatry and Biobehavioral Sciences), Hong-Wei Dong (Neurology), Mansoureh Eghbali (Anesthesiology), Roger Gorski (Neurobiology), Aldons (Jake) Lusic, (Microbiology, Immunology and Molecular Genetics, and Human Genetics), Allan Mackenzie-Graham (Neurology), Paul E. Micevych (Neurobiology), Kathrin Plath (Biological Chemistry), Barney A. Schlinger (Integrative Biology & Physiology), Anna N. Taylor (Neurobiology), Seema K. Tiwari-Woodruff (Neurology), Eric Vilain (Human Genetics and Pediatrics), Rhonda Voskuhl (Neurology), Nancy L. Wayne (Physiology), and Stephanie S. White (Integrative Biology & Physiology).

Major research themes include gonadal steroid actions on the brain or other tissues (virtually all faculty); sex differences, sex determination, and sexual differentiation (all faculty); cellular and molecular analysis of development (Arnold, Chesselet, Dong, Micevych, Plath, Schlinger, Tiwari-Woodruff, Vilain, Wayne, White); endocrine regulation including ovulation and pregnancy (Eghbali, Dong, Micevych, Schlinger, Voskuhl, Wayne); neuroendocrine immunology (Mackenzie-Graham, Voskuhl, Tiwari-Woodruff); cellular physiology of hormone action (Eghbali, Micevych, Schlinger, Wayne); hormonal neuroprotection (Dong, Chesselet, Micevych, Schlinger, Tiwari-Woodruff, Voskuhl); comparative neuroendocrinology (Arnold, Schlinger, Wayne, White); genetics, gene networks, genetic models (Arnold, Chesselet, Lusic, Micevych, Plath, Vilain, Voskuhl); neurobiology of glia (Schlinger, Tiwari-Woodruff, Voskuhl); hormones, genes, gender, and behavior (Arnold, Lusic, Micevych, Schlinger, Vilain, Wayne, White), cardiovascular and metabolic disease and obesity (Arnold, Dong, Eghbali, Lusic), neuroimaging (Mackenzie-Graham), molecular genetics of X-inactivation (Plath).

NEUROSCIENCE HISTORY ARCHIVES

The Neuroscience History Archives (NHA) continues to sponsor activities in four major areas: archival collection and consultation; teaching and advising; public outreach; and ongoing and future activities.

Archival Collection and Consultation

Archival efforts have centered on the identification and preservation of BRI and NPI researchers' papers and significant institutional records. In addition to maintaining our collaboration with national and international organizations, we have expanded our collaborations with local institutions. Reference activity in person and via email and letter post continued apace throughout the year, averaging one query (information requests, photographic or photocopy orders, research referrals, etc.) per day. The NHA also maintains and develops major internet resources: HISTNEUR-L (the History of Neuroscience Internet Forum and its online archives); and websites for the NHA (<http://www.NeuroscienceArchives.org>) and the International Society for the History of the Neurosciences (ISHN: <http://www.ishn.org>).

The History of Psychoanalysis website (www.rangell.org), honoring noted Los Angeles psychoanalyst and UCLA clinical professor Leo Rangell, will be introduced at the first Rangell Visiting Lectureship in November 2013. Also, in 2013-14, we will begin a new project, helping the Society for Neuroscience to document and present its history since its founding in 1969. We will be using materials in SfN's own archives, as well as materials included in the NHA collections.

We have continued to develop the NHA's archival website, "Transforming Tragedy," on the history of public mental health in California, (<http://histpub.semel.ucla.edu/DMH>). In 2013, we have added two new videos on Arts and Music Programs at DMH and National Alliance for Mental Illness programs for families, a

new client composite video, "Stories of Hope and Recovery," and four new oral histories with mental health leaders in Orange, Riverside, San Bernardino and San Diego Counties. In 2013-14, we will use the videos and our archival collections as the basis for a modular physical exhibit, to be presented at several venues in LA County and perhaps elsewhere. Also, we will be collaborating with Patton State Hospital to catalog and develop access to the collection of artefacts there and will be collecting oral histories from leaders in health care reform and integration in Los Angeles County.

In conjunction with the Charles Drew School of Medicine Library and UCLA-Harbor, NHA in 2011 received a two-year grant from the National Library of Medicine to archive materials associated with the Community Partners in Care, a NIMH-funded Semel Institute program to develop tools for community-based treatments for depression. The archival materials have been digitized and will be presented on a new website, "Depression Connect LA," which will also present training videos on depression care for health care providers.

Teaching and Advising

In 2013, we are formally launching the Social Sciences Track in the Medical Student Training Program (MSTP) and are planning a core interdisciplinary seminar for these new trainees and interested graduate students. Currently, through our Translational Fellowship Program with USC and the LA County Department of Mental Health (LACDMH), which began in July 2013, we are mentoring junior scholars Erin Kelly, Howard Padwa, Sarah Starks and Andrew Subica. Dr. Braslow continues to mentor the work of MSTP Fellow Arielle Lasky, and of history graduate students Alexander Kertzner, on post-polio disability and rehabilitation, and Christine Tarleton, on autism.

Dr. Joel Braslow, NHA Director, has continued his new seminar course for graduate students in the Interdepartmental Ph.D. Program for Neuroscience (NSIDP). This course reflects the NHA's emphasis on using history as a means to understand contemporary issues in the neurosciences. Dr. Braslow is developing a new seminar on the history of schizophrenia, which will also be the topic of his upcoming book.

In 2012-13, Dr. Marcia Meldrum began teaching an Interdisciplinary Cluster Course, "Mind Games: The History, Science, and Philosophy of the Brain," with colleagues from the Departments of Integrative Biology & Physiology, Philosophy and Psychology. The course was highly successful and will be repeated with 160 incoming students in 2013-14. Dr. Meldrum also taught a spring seminar on the History of Psychology.

Public Outreach

The NHA continues to work actively to develop its collaboration with LACDMH, to provide data and analysis to assist the County to provide better services, as well as to gather material which will enrich the historical and archival record for future generations. Our current projects include an evaluation of the Low Income Health Plan, launched in July 2011.

In collaboration with the Program for Medical History and the Medical Humanities, the NHA co-sponsors a monthly research forum, hosted in the Rare Book Room of the History and Special Collections Division for the Sciences of the Biomedical Library. Faculty, graduate students, and local scholars are invited to present their work-in-progress and initial drafts of conference presentations. Speakers this year included Dr. Howard Padwa on opiate control in 19th-20th century Europe; Dr. Alice Wexler on genetic risks in popular culture; Dr. Robert Frank on yellow fever epidemics in the 18th century US; and Dr. Emily Abel on the care of the chronically ill and dying in America.

Grants and Contracts

Grants: Dr. Braslow and Dr. John Brekke of USC and their research team have received an Administrative Cost Supplement from NIMH of \$255,655 to support the continued analysis of data from their NIMH R01 (direct costs, \$ 2,045,877) to study the impact of California's Mental Health Services Act on care in Los Angeles County. This project has involved the NHA in that the act is of major historical significance for the care of those with severe mental illness and the NHA will assist the County in documenting this major policy intervention.

Dr. Braslow and Dr. Brekke also are co-PIs on a Robert Wood Johnson Independent Principal Investigator, Robert Wood Johnson Investigator Award in Health Policy Research (direct costs-\$335,000).

With this grant, we plan to use much of the rich archival material we have collected to examine contemporary mental health policy from a historical perspective.

Contracts: Since 2010, we have received more than \$580,000 in contracts with the Department of Mental Health to develop the "Transforming Tragedy" website and support the Translational Research Fellowships (described above).

The Neuroscience History Archives will continue to sponsor lectures and conferences that examine the historical, cultural, and sociological aspects of the neurosciences.

RESEARCH EDUCATION

One of the principal goals recognized by the Brain Research Institute is the education of investigators for independent careers in research. Research aspirants at the undergraduate, predoctoral, and postdoctoral levels of development benefit from the same combination of departmental and interdisciplinary experience that characterizes the research activities of the Institute. A curriculum of courses is sponsored by the Institute that emphasizes interdisciplinary science education. These include both departmental courses approved for undergraduate life science majors and the Graduate Division for credit, and less formal seminars and lectures. All members of the Institute have major responsibilities as mentors of graduate students and postdoctoral fellows who are developing careers in neuroscience.

UNDERGRADUATE EDUCATION

The undergraduate major in neuroscience is now in its nineteenth year. Officially established in the 1992-93 academic year after several years of planning and developing by the UCLA College Neuroscience Group, its majors now number approximately six hundred and fifty students.

The goal of the major is to provide an undergraduate introduction to the study of the nervous system at all levels of analysis. This concept is embodied in the core of the curriculum, the year-long series "Neuroscience: From Molecules to Mind." The courses in this series, as well as others in the major, emphasize critical thinking and analysis, and an introduction to laboratory research. Students are encouraged to complete an independent research project in a faculty member's laboratory and present their work in the annual Neuroscience Undergraduate Poster Session. The poster session was initiated in 1999, and this year 78 students presented posters and six students were awarded prizes for their projects. Students also have the option to complete a Neuroscience Laboratory course, which provides hands-on experience with important methodology and experimental approaches in neuroscience.

This interdisciplinary major avails itself of the wealth of neuroscience resources at UCLA, and receives teaching contributions from Integrative Biology & Physiology, Psychology, and Molecular, Cell & Developmental Biology in the College of Letters and Science, and Biological Chemistry, Neurobiology, Neurology, Psychiatry and Biobehavioral Sciences, Medicine, and the Brain Research Institute in the School of Medicine. In total, over sixty faculty from the College of Letters and Science and the School of Medicine participate in the major. Their enthusiasm and generosity have been essential to the success of this program.

To date, there are 650 students enrolled in the program; 170 students earned their Bachelor of Science degree, and 10 students received a minor from the undergraduate neuroscience program in 2013; nearly 1790 Bachelor of Science degrees in neuroscience have been awarded since 1994.

GRADUATE EDUCATION

A large number of Ph.D. candidates work in BRI laboratories by virtue of the fact that their departmental supervisors are members of the Institute. There were nearly 350 graduate students engaged in Institute activities during 2012-2013. Much of their educational activity is organized departmentally and all degrees are awarded by departments or interdepartmental programs. Generous interdepartmental experience is provided for most graduate students through preceptors' participation in collaborative research as well as by means of the broadly interdisciplinary seminars and lectures.

The following training programs utilize resources of the Brain Research Institute:

- (1) Interdepartmental Program leading to the Ph.D. in Neuroscience;
- (2) Program of instruction leading to both an M.D. and Ph.D. in Neuroscience.

Interdepartmental Program for Neuroscience

Organized Research Units (ORUs) themselves do not conduct graduate training within the University of California. The BRI has therefore undertaken to organize and foster the Interdepartmental Ph.D. Program for Neuroscience. This program, inaugurated in 1968, takes advantage of facilities and resources of the BRI as well as of ongoing educational activities sponsored by the Institute. The program provides for: (1) core instruction for all students in the anatomy, physiology, and chemistry of the nervous system; (2) instruction, in depth, for students with special interests in neuroanatomy, neurochemistry, neurophysiology, behavior, neurocybernetics and communication, neuroendocrinology, neuropharmacology, neuroimmunology, molecular neurobiology, neuropathology, neuroimaging, neurogenetics, neural repair, and neuroengineering; and (3) assistance and supervision in conducting dissertation research in all those fields. Trainees, in general, come from backgrounds in the life and biomedical sciences, but the program is sufficiently flexible to accommodate qualified students with other educational experiences and it is anticipated that increasing numbers of students will be attracted from physics, chemistry, mathematics, and engineering. During 2012-2013, 74 graduate students participated in the program, 12 of whom were new students selected from over 220 applicants. Since its inception, the Program has granted 309 degrees, of which 11 were awarded during the 2012-2013 academic year.

Program of Instruction Leading to Both the M.D. and Ph.D. Degrees in Neuroscience

This program was inaugurated in the fall quarter, 1968. It permits selected applicants to the School of Medicine to obtain both M.D. and Ph.D. degrees in a period of time substantially below that normally required. It combines the Interdepartmental Program for Neuroscience, described above, with the curriculum of the School of Medicine, revised to permit increased attention to student electives. It takes advantage of a decision of the University that permits students to register in more than one school concurrently. It is anticipated that instruction may be coordinated in such a way that a student may complete work leading to both degrees in as short a time as seven years. During 2012-2013, thirteen students participated in this program.

Training Programs Administered Through the Brain Research Institute

In addition to the training programs described above, five training grants were administered through the Brain Research Institute during the academic year 2012-2013:

- (1) Training Program in Cellular Neurobiology (P.I. Tom O'Dell, NIH grant NS 07101);
- (2) Training Program in Neural Repair (P.I. Marie Françoise Chesselet, NIH grant NS 07449);
- (3) Training Program in Neuroendocrinology, Sex Differences and Reproduction (P.I. Art Arnold, NIH grant HD 07228);
- (4) UCLA Clinical Pharmacology Training Program (P.I. Barbara Levey, NIH T32 grant GM 75776),

- (5) UCLA-Caltech Medical Scientist Training Program (P.I.s Kelsey Martin and Stephen Smale, NIH GM 008042)

Training Program in Cellular Neurobiology

This program for predoctoral and postdoctoral trainees, directed by Dr. Tom O'Dell, seeks to expose students to the fundamental problems in neurobiology and then to give them an intensive interdisciplinary training in modern research techniques. Research interests of the training supervisors include membrane biophysics, cellular electrophysiology, molecular neurobiology, developmental neurobiology, intercellular interactions, sensory physiology, and central nervous processing. The program is designed to be flexible, exposing trainees to many different aspects of neurobiology while providing maximal opportunity to pursue a particular research interest. A thorough curriculum of basic science and introductory and specialized neurobiology courses is available, as are specialized lecture and technique courses in a wide variety of related disciplines. Four postdoctoral trainees participated in this program in 2012-2013.

Training Program in Neural Repair

This program for predoctoral and postdoctoral trainees, directed by Dr. Marie-Françoise Chesselet, draws on the unique strength of a group of training faculty at UCLA to train young investigators in the basic aspects of neural repair. Recent years have seen tremendous progress in the understanding of the mechanisms of neuronal death and neural plasticity, leading to new perspectives for neural repair in the central nervous system. This program trains investigators to meet the challenges of the field in the next century. The program enrolls postdoctoral fellows and outstanding graduate students from the Interdepartmental Graduate Program for Neuroscience and other graduate programs at UCLA. The curriculum for predoctoral trainees in the Interdepartmental Graduate Program for Neuroscience includes training in broad areas of cellular, molecular and system neuroscience, specialized courses in neural repair, and exposure to relevant clinical situations. Students with a primary interest in neural repair are selected for support at the end of the second quarter of their first year in the program. Students are exposed to interactions with a variety of faculty and students investigating the nervous system from many perspectives, both basic and clinical. These interactions occur in courses, seminars, and activities organized by postdoctoral fellows or students, and the annual neuroscience student retreat. During the 2012-2013 academic year, two predoctoral and two postdoctoral trainees participated in this program.

Training Program in Neuroendocrinology, Sex Differences and Reproduction

The objectives of this program, directed by Dr. Arthur Arnold, are to foster the training of predoctoral and postdoctoral investigators in the didactic components of, and research approaches to, the neuroendocrine regulation of reproduction. Research training available spans the discipline and includes neuroanatomical, neurochemical, physiological, molecular, and behavioral approaches. Educational goals are met through a formal course that includes background material, general lectures and research seminars given by both students and faculty, a weekly journal club, and frequent meetings of individual laboratory groups. During 2012-2013, five predoctoral and two postdoctoral trainees participated in this program.

UCLA Interdepartmental Clinical Pharmacology Training Program

The UCLA Interdepartmental Clinical Pharmacology Training Program (ICPTP) is a thriving, highly structured mentored clinical scholar program in patient-oriented research that is broad, interdisciplinary and focused on the area of clinical pharmacology and experimental therapeutics. This field bridges molecular

medicine and health care and covers all areas of clinical medicine. The renewed T32 Clinical Pharmacology Training Program grant from the National Institute of General Medical Sciences (NIGMS) provides each participant with salary support and career development for a minimum of two years. During 2012-2013, four postdoctoral trainees were supported by the T32 training grant. Concurrent with the ICPTP is the K30 Training Program, which is now part of the UCLA Clinical Translation Science Award held by the David Geffen School of Medicine, which offers a curriculum in translational investigation, principally designed for residents and clinical faculty interested in research.

UCLA-Caltech Medical Scientist Training Program (MSTP)

The MSTP is dedicated to educating and training exceptionally qualified individuals for careers in the biomedical sciences. To fulfill this mission, we recruit exceptionally bright and accomplished students who exhibit a passion for scientific knowledge and a life-long commitment to research and leadership. The average time to degree for students in the UCLA-Caltech MSTP is eight years. The traditional course of study begins with the first two years of medical school, followed by four years of PhD graduate training, and concluding with the third and fourth years of medical school. In 1997, an affiliation was formed with the California Institute of Technology (Caltech), which made it possible for an average of two students each year to perform their PhD thesis research at this world-renowned research institution. The NIH funded MSTP at UCLA was established in 1983. Since that time, 140 students have graduated from the program and 102 students are currently enrolled. The vast majority of alumni who have completed their postgraduate training are actively involved in biomedical research as physician-scientists at outstanding research institutions across the country. Kelsey Martin, M.D., Ph.D. and Stephen Smale, Ph.D. currently direct the UCLA-Caltech MSTP. Drs. Martin and Smale run active research programs in molecular neurobiology and immunology, respectively. They became co-directors of the program in 2005 and are devoted to providing guidance and support to students throughout their MSTP training. Thirty-three predoctoral students were supported in 2012-2013, of these, nine were newly appointed this academic year.

Ph.D. Degrees Awarded

During the 2012-2013 academic year, eleven students completed their doctoral studies and filed their dissertation. Students receiving their degrees, their mentors, and the titles of their dissertations include:

Jesse Brown

Mentor: Susan Bookheimer

“Multimodality MRI-based Brain Network Analysis: Applications to Genetic Risk for Alzheimer’s Disease”

Katy Cross

Mentor: Marco Iacoboni

“Neural Systems for Preparatory and Reactive Imitation Control”

David Johnston

Mentor: Carlos Portera-Cailliau

“Chronic In Vivo Imaging of Dendritic Plasticity and Functional Remapping after Cortical Stroke”

Sangmok Kim

Mentor: Kelsey Martin

“Spatial Regulation of Gene Expression in Neurons During Synapse Formation and Synaptic Plasticity”

Kimberly LeBlanc

Mentor: Nigel Maidment

“A Tale of Two Addiction Theories: The Effects of Cocaine on Incentive Motivation and Action Control”

Ray Luo

Mentor: Thomas Otis

“Fast Times: Excitatory Effect of GABA in Axonal Compartments in the Cerebellar Molecular Layer”

Kelley O’Donnell

Mentor: Alvaro Sagasti

“Mitochondrial Transport and Function in Axon Degeneration”

Wei Song Ong

Mentor: James Bisley

“Testing Neural Mechanisms that May Underlie Spatiotopic Processing in Area MT”

Ryan Schmidt

Mentor: Kelsey Martin & Kathrin Plath

“The Role of Klf4 in Somatic Cell Reprogramming”

Elif Sozmen

Mentor: S. Thomas Carmichael

“Remyelination Failure Following White Matter Stroke: New Targets for Repair Identified by Oligodendrocyte Progenitor Cell Transcriptome Database”

Andrew Vosko

Mentor: Christopher Colwell

“Vasoactive Intestinal Peptide Shapes Photic Communication Across the Circadian Visual System”

2012-2013 Graduate and Undergraduate Interdepartmental Neuroscience Programs Committee Service

Graduate Neuroscience Interdepartmental Program Committee

Dean Buonomano
S. Thomas Carmichael
Ellen Carpenter
Marie-Françoise Chesselet
Christopher Evans
David Glanzman
Cameron Gundersen
Ming Guo
Karen Gylys
Frank Krasne
Michael Levine, Chair
Kelsey Martin
Tom O'Dell
Thomas Otis
Alvaro Sagasti
Melissa Sherlock (NSIDP Student Affairs Officer)
Sarah Madsen (Student Representative, year 2)
Martina De Salvo (Student Representative, year 1)

Graduate Neuroscience Interdepartmental Program Neuroadmissions Committee

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Adriana Galván
Peyman Golshani
Neil Harris
Bal Khakh
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Chris Ching (NSIDP Student Representative)
Rachel Jonas (NSIDP Student Representative)

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Susan Bookheimer
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Felix Schweizer, Chair
Patrick Chen (Student Representative)

Graduate Neuroscience Interdepartmental Program Advising Committee

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Sotiris Masmanidis

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Michael Levine, Chair
Nigel Maidment

Graduate Neuroscience Interdepartmental Written Qualifying Exam Committee

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Sandra Loo (Systems, year 1)
Carlos Portera-Cailliau (Cellular, year 1)

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Chris Ching	Don Julien
Martina De Salvo	

Undergraduate Neuroscience Interdepartmental Program Executive Committee

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Scott Chandler, Chair	Joseph Watson
David Glanzman	Stephanie White
Carlos Grijalva	

Undergraduate Neuroscience Interdepartmental Program Curriculum Committee

Scott Chandler, Chair	J. David Jentsch
Ellen Carpenter	Thomas O'Dell
Chris Colwell	

**INTERDEPARTMENTAL Ph.D. PROGRAM FOR NEUROSCIENCE
GRADUATE STUDENTS**

<u>Trainee</u>	<u>Sponsor</u>	<u>Department</u>
Daya Alexander	Prins, M.	Neuroscience
Matt Anderson	Basso	Neuroscience
Jacob Aptekar	Frye	Neuroscience/MSTP
Scott Arno	Mody	Neuroscience
Erica Arroyo	Portera-Cailliau	Neuroscience
James Ashenhurst	Jentsch	Neuroscience
Aida Attar	Bitan	Neuroscience
Kosstya Bakhurin	Masmanidis	Neuroscience
Amy Baohan	Trachtenberg	Neuroscience/MSTP
Jamee Bomar (Berg)	Geschwind	Neuroscience
Shivan Bonanno	Krantz	Neuroscience
Jesse Brown	Bookheimer	Neuroscience
Andrew Brumm	Carmichael	Neuroscience
Jeffrey Cante	Yang, X. William	Neuroscience
Daniel Cantu	Portera-Cailliau	Neuroscience
Patrick Chen	Martin	Neuroscience
Chris Ching	Thompson	Neuroscience
Jaehoon Choe	Edgerton	Neuroscience
Leo Christov-Moore	Bookheimer	Neuroscience
Cortney Crego	Silva	Neuroscience
Katy Cross	Iacoboni	Neuroscience/MSTP
Anthony Daggett	Yang, X. W.	Neuroscience/MSTP
Emily Dennis	Thompson	Neuroscience
Martina DeSalvo	Martin	Neuroscience
Micky Einstein	Krantz	Neuroscience

<u>Trainee</u>	<u>Sponsor</u>	<u>Department</u>
Adam Frank	Silva	Neuroscience/MSTP
Joel Frohlich	Krantz	Neuroscience
Matt Garrett	Kornblum	Neuroscience
Ryan Guglietta	O'Dell	Neuroscience
Yoon (Albert) Han	Novitch	Neuroscience/MSTP
Nick Hardy	Krantz	Neuroscience
Tessa Harrison	Bookheimer	Neuroscience
Leanna Hernandez	Krantz	Neuroscience
Sarah Hersman	Fanselow	Neuroscience
Jon Heston	White	Neuroscience
David Ho	Mehta	Neuroscience
Victoria Ho	Martin	Neuroscience/MSTP
Ruyi Huang	Lu	Neuroscience
David Johnston	Portera-Cailliau	Neuroscience
Rachel Jonas	Bearden	Neuroscience
Don Julien	Sagasti	Neuroscience
Ashley Kees	Mehta	Neuroscience
Sangmok Kim	Martin	Neuroscience
Milky Kohno	London	Neuroscience
Jennifer Kong	Novitch	Neuroscience
Maria Lazaro	Geschwind	Neuroscience
Thuc Le	Fan/Faull	Neuroscience
Kim LeBlanc	Maidment	Neuroscience
Wei Li	Feusner	Neuroscience
Jia Liu	Otis	Neuroscience
Ray Luo	Otis	Neuroscience
Sarah Madsen	Thompson	Neuroscience

<u>Trainee</u>	<u>Sponsor</u>	<u>Department</u>
Laurel Martin-Harris	Bookheimer	Neuroscience
Whitney McDonald	Harris	Neuroscience
Kevin McEvoy	Jeste	Neuroscience/MSTP
Jason Moore	Mehta	Neuroscience
Lisa Moore	Lu	Neuroscience
Angelica Morales	London	Neuroscience
Katherine Myers	Schweizer	Neuroscience
Daniel Nachun	Krantz	Neuroscience
Esther Nie	Carmichael	Neuroscience/MSTP
Nik Novak	Toga	Neuroscience
Kelley O'Donnell	Sagasti	Neuroscience/MSTP
Andrew O'Keeffe	Krantz	Neuroscience
Wei Song Ong	Bisley	Neuroscience
Anna Parievsky	Levine	Neuroscience
Neelroop Parikshak	Geschwind	Neuroscience/MSTP
Chang Sin (Chris) Park	Yang, X.W.	Neuroscience
Alex Reeves	Otis	Neuroscience
Ryan Schmidt	Martin/Plath	Neuroscience/MSTP
Matthew Schreiner	Bearden	Neuroscience
Andrew Segal	Krantz	Neuroscience
Wes Smith	Masmanidis	Neuroscience
Elif Sozmen	Carmichael	Neuroscience/MSTP
Andrew Thompson	Andrews	Neuroscience
Salvatore Torrisi	Altshuler	Neuroscience
Derek Verley	Harris	Neuroscience
Andrew Vosko	Colwell	Neuroscience
Donna Marie Werling	Geschwind	Neuroscience

<u>Trainee</u>	<u>Sponsor</u>	<u>Department</u>
Shayna Williams	Arnold	Neuroscience
Alice Zhang	Geschwind	Neuroscience/MSTP

Sources of support include:

ARCS Foundation

Dean's Office Stipend, College of Letters and Science

Dean's Office Stipend, School of Medicine

Graduate Division Fellowship Program

National Institute of Mental Health Individual Research Fellowship Award

National Science Foundation Individual Fellowships

Frances Keddie O'Malley Endowment Fund

Training Program in Neuroendocrinology, Sex Differences and Reproduction

Training Program in Neural Repair

POSTDOCTORAL EDUCATION

Postdoctoral research instruction is another major activity of the BRI, and over 300 participants who hold the Ph.D., M.D., D.D.S. or D.V.M. degree, or the equivalent of one of these degrees, occupied Institute members' laboratories during 2012-2013. Four of them were part of a Training Program in Cellular Neurobiology awarded to Dr. Tom O'Dell, two were sponsored by the Training Program in Neural Repair awarded to Dr. Marie-Françoise Chesselet, two were sponsored by the Training Program in Neuroendocrinology, Sex Differences and Reproduction headed by Dr. Arthur Arnold, and four were sponsored by the UCLA Clinical Pharmacology Training Programs awarded to Barbara Levey. Much of the experience offered these fellows and trainees is preceptorial, although most participate in interdisciplinary courses and seminars as well.

EXTRAMURAL AND FOREIGN ASSOCIATIONS

The Brain Research Institute has always endeavored to provide its members with the opportunity to exchange information with colleagues from other institutions, here and abroad. Early in the history of the Institute, extramural research associations were established to conduct collaborative research in laboratories of the regional Veterans Administration Medical Centers in Long Beach, Brentwood, Sepulveda, and West Los Angeles. These associations have been particularly gratifying and productive for BRI members. In addition, scientific communication has been enhanced by inviting scientists to visit BRI laboratories and by holding conferences.

VISITING SCIENTISTS

As in past years, the BRI has been able to offer space to a large number of mature and distinguished investigators from UCLA and elsewhere that have conducted independent research activities at the Institute or joined programs already established at the BRI. Some of these investigators, particularly those from foreign countries, returned to their home laboratories after completing research in Institute programs. Others remained as associates of BRI members for prolonged periods, or even permanently as resident investigators.

Historically, the BRI hosts nearly 100 scientists with whom Institute members have enjoyed extended periods of association during the academic year.

BRAIN RESEARCH INSTITUTE ADMINISTRATION

The Brain Research Institute operates under a director and three associate directors, one for research, one for education and training, and one for science outreach. Smooth and efficient operation of the Brain Research Institute depends to a very large extent on the guidance provided by its associate directors, program and administrative directors, committees, and participation of individual members. The BRI members who serve in these capacities give freely of their time, and their services are greatly appreciated.

During 2012-2013 the following people played a central role in the administrative activities of the Brain Research Institute:

Administration:

Christopher J. Evans, Director
J. David Jentsch, Associate Director for Research
Michael S. Levine, Associate Director for Education
Ellen M. Carpenter, Associate Director for Science Outreach
Terry Novorr: Chief Administrative Officer

Director's administrative staff consisted of five full-time positions, and six part-time positions:

Personnel

Steve Antonie	Student Affairs Officer, Undergraduate Neuroscience IDP
Vaishnavi Govind	Clerk
Lisa Joe Keefer	Student Affairs Officer, Graduate Neuroscience IDP
Debra Kozel	Administrative Specialist
Patricia Lowe	Chief Financial Officer
Linda Maninger	Senior Administrative Analyst
Huy Pham	Programmer Analyst
Polly Segal	Administrative Analyst
Alys Shanti	Principal Writer/Editor
Melissa Sherlock	Student Affairs Officer, Graduate Neuroscience IDP
Eddie Songtanin	Programmer Analyst

Committee Service

BRI Executive Committee

Scott Chandler (*ex officio*: Chair, Undergraduate Interdepartmental Neuroscience Program)
Reggie Edgerton
Christopher Evans (*ex officio*: BRI Director)
Joaquin Fuster
Michael Levine (*ex officio*: BRI Associate Director for Education; Chair, Graduate Interdepartmental Neuroscience Program)
Terry Novorr (*ex officio*; BRI Chief Administrative Officer)
Felix Schweizer
Rhonda Voskuhl
Peter Whybrow
Larry Zipursky

BRI Faculty Advisory Committee

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Joel Braslow
Scott Chandler (*ex officio*: Chair, Undergraduate Interdepartmental Neuroscience Program)
Marie-Françoise Chesselet, Chair
Michael Fanselow
Debra Farber
Daniel Geschwind
David Glanzman
Michael Levine (*ex officio*; BRI Associate Director for Education; Chair, Graduate Interdepartmental Program for Neuroscience)
Arthur Toga
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Magoun Lecture Committee

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Daniel Geschwind
Ronald Harper
David Jentsch, Chair
Kelsey Martin

Eiduson and Kavan Student Awards Committee

Ellen Carpenter
Tom Otis
Michael Levine, Chair

Brain Research Institute Predoctoral and Postdoctoral Awards Committee

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Carrie Bearden
J. David Jentsch, Chair
Laura Ray
Alvaro Sagasti
Kate Wassum
Seema Tiwari-Woodruff

Joint Seminars in Neuroscience Committee

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Carrie Bearden
Tad Blair
Dean Buonomano
J. David Jentsch
Baljit Khakh, Chair

David Krantz
Tom Otis
Carlos Portera-Cailliau
Alvaro Sagasti
Felix Schweizer
Stephanie White

Neuroscience Training Grant Committee

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Marie-Françoise Chesselet
Mark Cohen
Jack Feldman
Nelson Freimer
Daniel Geschwind
Michael Levine, Chair
Edythe London
Thomas O'Dell
Dwayne Simmons

"Friends of BRI" Committee

Carmine Clemente	Michael Levine
Christopher Evans	Arnold Scheibel
Alan Han	Joseph Watson
J. David Jentsch	Abe Zarem

Training Grant Directors

Training Grant

Cellular Neurobiology (T32)

Clinical Pharmacology Training
Program (T32)

Neural Repair (T32)

Neuroendocrinology, Sex Differences, and
Reproduction (T32)

UCLA-Caltech Medical Scientist Training
Program (T32)

Faculty Coordinator

Tom O'Dell

Barbara Levey

Marie-Françoise Chesselet

Arthur P. Arnold

Kelsey Martin and Stephen Smale

Integrative Centers for Neuroscience Excellence (ICNE)

The launch of six new Integrative Centers for Neuroscience Excellence (ICNE) will bring different areas of research excellence into the forefront and highlight the specific strengths of UCLA's neuroscience activities.

<u>Integrative Center for Neuroscience Excellence</u>	<u>Faculty Leader(s)</u>
Integrative Center for Learning & Memory (Launched March, 2012)	Alcino Silva, Michael Fanselow and David Glanzman
Integrative Center for Neurogenetics (Launched, February, 2013)	Nelson Freimer and Daniel Geschwind
Integrative Center for Neural Repair (Launching, October 2013)	Marie Françoise Chesselet and Tom Carmichael
Integrative Center for Addiction Research (Planned)	Edythe London
Integrative Center for Neuroimaging/Cognition (Planned)	Susan Bookheimer
Integrative Center for Synapses, Cells & Circuits (Planned)	Jack Feldman

Affinity Groups (*upcoming ICNE)

Interdisciplinary affinity groups include:

<u>Affinity Group</u>	<u>Leader(s)</u>
Addictions Research Consortium*	Edythe London & Igor Spigelman
Astrocyte Biology	Baljit Khakh & Michael Sofroniew
Autism	Daniel Geschwind
Brain-Mind-Body Interactions	Michael Irwin
Circadian and Sleep Medicine	Christopher Colwell
Computational Neuroscience	Ladan Shams
Immunology in Neuroscience	James Waschek
Inner Ear	Felix Schweizer
Neural Repair*	Marie-Françoise Chesselet
Neural Stem Cells	Harley Kornblum
Neurobiology of <i>Drosophila melanogaster</i> and <i>C. Elegans</i>	David Krantz
Neuroendocrinology	Arthur Arnold
Neuroimaging/Cognition*	Susan Bookheimer
Neuronuclear Imaging Affinity Group	Daniel Silverman
Neurophysics & Neuroengineering	Mayank Mehta
Neuroscience History	Joel Braslow & Russell Johnson
Songbird	Stephanie White
Stress, Pain and Emotion	Emeran Mayer
Synapse to Circuit Club*	Kelsey Martin & Larry Zipursky
Undergraduate Researchers in Parkinson's Disease	Marie-Françoise Chesselet
Zebra Fish	Alvaro Sagasti

UCLA BRAIN RESEARCH INSTITUTE CORE FACILITIES

The UCLA Brain Research Institute Imaging Core Facilities provide microscopic imaging and specimen preparation services for Institute members and other members of the biomedical community at UCLA. The Imaging Core consists of three components: the Carol Moss Spivak Cell Imaging Facility (primarily confocal and multiphoton microscopy), the Microscopic Techniques laboratory (for preparation of all types of specimens for light microscopy), and the Electron Microscopy Laboratory (for preparation and imaging of ultrastructural specimens by transmission electron microscopy). Another core facility, the Pasarow Mass Spectrometry Laboratory, is also associated with the Brain Research Institute.

The Carol Moss Spivak Cell Imaging Facility

The Carol Moss Spivak Cell Imaging Facility, the Institute's microscope laboratory, moved to the California Nanosystems Institute (CNSI) in 2008 and joined with another imaging facility from the Department of Chemistry to form the CNSI Advanced Light Microscopy/Spectroscopy Facility, located in Rooms B145 and 2144 of the CNSI. The new facility has five point scanning confocal microscopes: two Leica TCS-SP MP Confocal and 2-Photon Microscopes one inverted and one upright fixed-stage, two Leica TCS-SP2 AOBS confocal microscopes, one with multiphoton capability and finally a Leica TCS-SP5 STED confocal-multiphoton microscope. The latter is a STimulated Emission Depletion laser-scanning superresolution microscope which allows fluorescence scanning below the limit of light resolution (60-90 nm as opposed to 200-300nm). The Facility also has a widefield fluorescence microscope dedicated to FISH (fluorescence in situ hybridization) imaging, and a home-built system for ALEX (alternating laser excitation spectroscopy). Another lab in the facility is more dedicated to macroscale imaging and has one upright and one inverted microscopes set up for microinjection as well as fluorescence widefield timelapse (inverted) and multispectral unmixing (upright). The Facility also has a Yokogawa laser-scanning spinning disk microscope system with a Leica DMI6000 inverted microscope and an Andor EMCCD camera as well as two small animal imaging systems, a Maestro (CRi) for multispectral fluorescence unmixing and an Optix (ART) for lifetime imaging by time domain. The Facility also will soon have a Nikon TIRF (total internal reflection) microscope. In the past six months, the Facility upgraded its Leica LMD7000 laser microdissection system with a new computer and advanced software. This system is used for isolation of cells within tissues for downstream processing and analysis. Technologies available include fluorescence point-scanning and spinning disk laser-scanning confocal microscopy, fluorescence lifetime imaging (FLIM), fluorescence resonance energy transfer (FRET), fluorescence correlation spectroscopy (FCS), alternating laser excitation spectroscopy (ALEX), microscopic multispectral fluorescence and widefield color unmixing, microinjection and most recently, laser microdissection. Drs. Laurent Bentolila and Matt Schibler (originally in charge of the facility in the Gonda Center) are responsible for training, operation and upkeep of the facility.

Microscopic Techniques Laboratory

The Microscopic Techniques Laboratory, located in room 78-177 CHS, is directed by Sirius Kohan, Ph.D. This facility provides equipment for general histology for frozen, paraffin, vibratome and plastic sectioning. The facility also provides instruction and service in preparing tissue specimens for all aspects of light microscopic observation. Staining methods available include immunohistochemistry (immunofluorescence, immunoperoxidase and other enzyme-immune complex techniques), routine histological stains: (e.g., Nissl and hematoxylin/eosin), special stains (e.g., Kluver and iron reaction, Trichrome stains) and in situ hybridization. Procedures offered are paraffin sectioning, slide preparation for in situ hybridization, frozen sectioning and semi-thin plastic sectioning. The laboratory also provides staining setups and a Nikon photomicroscope and digital imaging system for use by trained personnel. The facility also houses an Applied Biosystems 7900HT Sequence Detection System. This system is a second-generation sequence detection system instrument

designed for automated, high-throughput detection of fluorescent PCR-related chemistries. The instrument is capable of real-time, end-point, and dissociation curve analysis of assays arrayed on multiple formats.

Electron Microscopy Services Center

The Electron Microscopy Services Center, located in room 63-377 CHS, is run by Sirius Kohan, Ph.D. This facility houses a JEOL 100CX transmission electron microscope, Reichert Ultracut and RMC MT-X ultramicrotomes. Balzers vacuum evaporator is also available for use by trained personnel. This facility provides service and training in fixation and embedding of specimens, thin sectioning, and use of the electron microscopes (with or without assistance), negative stain, and examination and interpretation at the EM level. The facility offers advice on appropriate preparatory procedures and other technical matters, including EM immunohistochemistry. Training and assistance in the use of the electron microscope are also offered.

Pasarow Mass Spectrometry Laboratory

The Pasarow Mass Spectrometry Laboratory (PMSL) performs teaching and research functions for the entire UCLA community and beyond by making available a range of mass spectrometric and chromatographic equipment and expertise. Virtually no week passes without a new contact made with one or another UCLA research group who seek access to the expertise and facilities of the PMSL. Some of these interactions are short-lived and involve analysis of only a few samples. Some of these contacts develop into long-term research collaborations with important teaching components and eventually result in joint grant applications. Often the visiting group initially seeks to collect pilot data to support a forthcoming grant application. Many of these collaborations result in joint publications, and the publication records of both the director, co-director and staff members reflect this wide diversity of research exposure.

The mass spectrometric equipment currently available in the PMSL includes: an Agilent 6540 hybrid quadrupole-TOF mass spectrometer with an Agilent 1290 Affinity UHPLC system and an Agilent 1260 Infinity nanoLC/Chip Cube system; a Waters (Micromass) combined gas chromatograph-TOF mass spectrometer (GCT); three Agilent 6460 triple quadrupole mass spectrometers, one equipped with an Agilent 1290 Affinity UHPLC system and the other attached to an Agilent 1200 nanoLC with a Chip Cube system; a Sciex API III+ triple quadrupole electrospray mass spectrometer with a dedicated ABI HPLC; a Finnigan LTQ linear ion trap electrospray mass spectrometer with HPLC and software for multidimensional protein identification technology experiments (currently located in the laboratory of Dr. Nigel Maidment). In addition, through the Molecular Instrumentation Center, an IonSpec Ultima Fourier Transform mass spectrometer with a 7 Tesla magnet and ESI and LD sources, and a combined gas chromatograph-TOF (Micromass/Waters GCT) equipped with EI/CI and positive/negative ion capability, are also available. The available stand-alone HPLC equipment includes two computer controlled HP 1090 Chemstations.

The laboratory is directed by Professor Dr. Kym Faull and co-directed by Adjunct Professor Dr. Julian Whitelegge.

Animal Facilities

The BRI moved its facilities from the Center for the Health Sciences to the Gonda (Goldschmied) Neuroscience and Genetics Research Center in 1998.

Administrative Support Services

This service provides preparation of proposals and progress reports; budget consultation and preparation; student advising services; grant and/or resource administration, such as accounting, purchasing, personnel management, receiving and delivery of supplies; symposium, seminar, and event coordination, publications management; editorial assistance; and clerical support.

INSTRUCTIONAL ACTIVITY

JOINT SEMINARS IN NEUROSCIENCE

The Joint Seminars in Neuroscience series was initiated Fall, 1995. It is organized and coordinated by the BRI, and is sponsored by the Brain Research Institute, the Semel Institute for Neuroscience & Human Behavior, and the David Geffen School of Medicine at UCLA. The participation of numerous departments and ORUs campus-wide reflects the truly interdisciplinary nature of neuroscience at UCLA. This weekly seminar series brings scientists of national and international repute to UCLA to meet with faculty, postdoctoral fellows, and students, and to present a lecture to the neuroscience community. Below is a list of this year's speakers and the title of their presentations.

Fall 2012

Gentry Patrick, Ph.D., Neurobiology Section, Division of Biological Sciences, University of California, San Diego

“Activity-Dependent Protein Degradation at CNS Synapses”

Marcus Meister, Ph.D., Division of Biology, California Institute of Technology, Pasadena, California

“Neural Computations in the Retina”

Charles W. Bradberry, Ph.D., Department of Psychiatry, University of Pittsburgh, Pennsylvania

“Who’s Doing the Talking? A Comparison of Prefrontal Cortex and Striatum in the Behavioral Impact of Cocaine Cues”

Susan Voglmaier, M.D., Ph.D., Department of Psychiatry, University of California, San Francisco

“Cargo Drives the Synaptic Vesicle Cycle”

Michael Mauk, Ph.D., Center for Learning & Memory, and Section of Neurobiology, The University of Texas at Austin

“Trying to Understand the Cerebellum Well Enough to Build One”

Paul Mathews, Ph.D., Department of Neurobiology, and the Integrative Center for Learning & Memory, UCLA

The Arnold Scheibel Distinguished Postdoctoral Fellow in Neuroscience Lecture

“Shining Light on the Role of the Climbing Fiber Pathway in the Cerebellar Cortex”

Larry J. Young, Ph.D., William P. Timmie Professor of Psychiatry; Director, Center for Translational Social Neuroscience, Emory University, Atlanta, Georgia

“Neurobiology of Social Bonding: Implications for Novel Therapies for Autism”

J. Anthony Movshon, Ph.D., Center for Neural Science, New York University, New York
The Brain Research Institute Neuroscience

“Cortical Mechanisms of Visual Perception”

Paul Gray, Ph.D., Interdepartmental Ph.D. Program for Neuroscience Graduate, 2001, Department of Anatomy and Neurobiology, Washington University School of Medicine, St. Louis, Missouri

“Selfish Networks: Development and Evolution of Simple Behaviors”

Winter 2013

David Ginty, Ph.D., Department of Neuroscience, Howard Hughes Medical Institute, The Johns Hopkins University School of Medicine, Baltimore, Maryland

“The Development and Organization of Neurons that Underlie the Sense of Touch”

Stephen M. Strittmatter, M.D., Ph.D., Vincent Coates Professor of Neurology and Neurobiology, Program in Cellular Neuroscience, Neurodegeneration and Repair, Yale University School of Medicine, New Haven, Connecticut

“Stability and Repair of Neuronal Connectivity in the Adult Central Nervous System”

Michael N. Shadlen, M.D., Ph.D., Professor of Neuroscience, Investigator, Howard Hughes Medical Institute, Columbia University Medical Center, New York, New York

“Believing and Time: A Neural Mechanism for Decision Making”

Mark G. Baxter, Ph.D., Friedman Brain Institute and Department of Neuroscience, Mount Sinai School of Medicine, New York, New York

“Animal Models of Cognitive Impairment after General Anesthesia: From the Grave to the Cradle”

Nigel Unwin, Ph.D., Medical Research Council (MRC) Laboratory of Molecular Biology, Cambridge, United Kingdom

“Gating Movement of the Acetylcholine Receptor Caught by Plunge-Freezing”

Jonathan A. Javitch, M.D., Ph.D., Lieber Professor of Experimental Therapeutics in Psychiatry; Professor of Pharmacology, College of Physicians & Surgeons, Columbia University; Chief, Division of Molecular Therapeutics, New York State Psychiatric Institute, New York, New York

“Delineating Molecular Mechanisms of Amphetamine Action using Drosophila Melanogaster”

Charles Chavkin, Ph.D., Allan & Phyllis Treuer Professor of Pharmacology, University of Washington, Seattle

“Ligand-Directed Signaling at Mu and Kappa Opioid Receptors”

Rafael Yuste, M.D., Ph.D., Professor, Department of Biological Sciences; Co-Director, Kavli Institute for Brain Science, Columbia University, New York, New York

“A Blanket of Inhibition: The Logic of Inhibitory Connectivity in the Neocortex”

Jane M. Sullivan, Ph.D., Department of Physiology & Biophysics, University of Washington School of Medicine, Seattle

“Synapse Dysfunction in Alzheimer’s Disease”

Thomas R. Clandinin, Ph.D., Department of Neurobiology, Stanford University

“Dissecting the Neural Mechanisms of Motion Estimation in the Fruit Fly”

Elissa A. Hallem, Ph.D., Department of Microbiology, Immunology & Molecular Genetics, UCLA

“Function, Evolution, and Development of Olfactory Circuits in Nematodes”

Spring 2013

Melissa Hines, Ph.D., Department of Psychology, University of Cambridge, United Kingdom
Charles H. (Tom) Sawyer Distinguished Lecture

“Does Testosterone Shape the Gender of the Human Brain?”

Christine Petit, Ph.D., Unité de Génétique et Physiologie de l'Audition, INSERM UMRS 1120, Institut Pasteur, Paris, France

“How do the Auditory Sensory Cells Process Sound? Genetics of Deafness as the Gateway to Their Molecular Physiology”

Wesley Grueber, Ph.D., Departments of Physiology and Cellular Biophysics and Neuroscience, Columbia University, New York, New York

“Control of Neuronal Morphogenesis and Maintenance in the Drosophila Somatosensory System”

Anatol Kreitzer, Ph.D., Gladstone Institute of Neurological Disease, University of California, San Francisco

“Mechanisms of Motor Control and Reinforcement in the Basal Ganglia”

V. Reggie Edgerton, Ph.D., Distinguished Professor of Integrative Biology & Physiology, Neurobiology, and Neurosurgery, University of California, Los Angeles

The Brain Research Institute Twenty-Fourth Annual H.W. Magoun Lecture

“Novel Principles of Motor Control: Shackled by Tradition, Released by Data”

Roberto Malinow, Ph.D., Department of Neurosciences and Section on Neurobiology, University of California, San Diego

“Synapses in Health and Disease”

Jesse Brown, Laboratory of Dr. Susan Bookheimer, Interdepartmental Ph.D Program for Neuroscience, University of California, Los Angeles

The 21st Annual Samuel Eiduson Student Lecture

“Multimodality MRI-based Brain Network Analysis: Applications to Genetic Risk for Alzheimer’s Disease”

Edwin R. Chapman, Ph.D., Howard Hughes Medical Institute, and Department of Physiology, University of Wisconsin-Madison

“Transducing Ca²⁺ Signals to Exocytosis”

THE TWENTY-FOURTH ANNUAL BRAIN RESEARCH INSTITUTE NEUROSCIENCE POSTER SESSION

The BRI Neuroscience Poster Session, featuring the research of all UCLA neuroscientists, including predoctoral students and postdoctoral fellows, was initiated in 1989. This year, the 24th Annual Neuroscience Poster Session was held on December 4, 2012. The Poster Session was attended by well over 300 neuroscientists comprised of graduate students, postdoctoral fellows, and faculty members that represent a multitude of departments on campus. Over 150 posters were presented, many of which had been presented at the 42nd Annual Meeting of the Society for Neuroscience. The guest speaker this year was J. Anthony Movshon, Ph.D. from the Center for Neural Science, New York University, New York. He presented, “Cortical Mechanisms of Visual Perception,” to a standing-room-only crowd. This yearly poster session represents continuing efforts to educate investigators about state-of-the-art neuroscience research being conducted at UCLA.

H.W. MAGOUN DISTINGUISHED LECTURESHIP

The H.W. Magoun Lecture was instituted in 1989 as an annual lecture both to honor the BRI's founder, Dr. Horace (Tid) Magoun, and to recognize outstanding achievements by BRI members. The lecturer is selected by a faculty committee, which evaluates nominations from the membership at large.

V. Reggie Edgerton, Ph.D., Distinguished Professor of Integrative Biology & Physiology, Neurobiology, and Neurosurgery, University of California, Los Angeles, was selected as the Twenty-Fourth Annual H.W. Magoun Lecturer. Dr. Edgerton's lecture, "Novel Principles of Motor Control: Shackled by Tradition, Released by Data," was presented to the neuroscience community on April 30, 2013.

Dr. Edgerton has made the exciting discovery that the implantation of an electrode array into the dura of the spinal cord can permit a paraplegic patient to stand on his full weight for many minutes and to recover some central control of leg movement. These experiments have given new hope to paralyzed patients around the world and were published in the prestigious journal *Lancet* (377:1938-47, 2011). In addition, Dr. Edgerton has been given a well-deserved "Breakthrough Award" by *Popular Mechanics* magazine, which has wide circulation among the general public. His group has worked on the basic idea of how epidural stimulation can facilitate treadmill stepping in paralyzed rats for many years. Now they have successfully translated that research into the clinical setting. This is a well-deserved recognition of an outstanding scientist and citizen of the UCLA neuroscience community.

Previous H.W. Magoun Distinguished Lecturers include:

- First Annual H.W. Magoun Distinguished Lecturer: William H. Oldendorf, M.D.
- Second Annual H.W. Magoun Distinguished Lecturer: Arnold B. Scheibel, M.D.
- Third Annual H.W. Magoun Distinguished Lecturer: Joaquin Fuster, M.D.
- Fourth Annual H.W. Magoun Distinguished Lecturer: Francisco Bezanilla, Ph.D.
- Fifth Annual H.W. Magoun Distinguished Lecturer: John C. Liebeskind, Ph.D.
- Sixth Annual H.W. Magoun Distinguished Lecturer: Elizabeth F. Neufeld, Ph.D.
- Seventh Annual H.W. Magoun Distinguished Lecturer: Enrico Stefani, M.D., Ph.D.
- Eighth Annual H.W. Magoun Distinguished Lecturer: Lutz Birnbaumer, Ph.D.
- Ninth Annual H.W. Magoun Distinguished Lecturer: Lawrence Kruger, Ph.D.
- Tenth Annual H.W. Magoun Distinguished Lecturer: William M. Pardridge, M.D.
- Eleventh Annual H.W. Magoun Distinguished Lecturer: S. Lawrence Zipursky, Ph.D.
- Twelfth Annual H.W. Magoun Distinguished Lecturer: Debora Farber, Ph.D., D.Ph.hc.
- Thirteenth Annual H.W. Magoun Distinguished Lecturer: Anthony Campagnoni, Ph.D.
- Fourteenth Annual H.W. Magoun Distinguished Lecturer: Arthur P. Arnold, Ph.D.
- Fifteenth Annual H.W. Magoun Distinguished Lecturer: Allan J. Tobin, Ph.D.
- Sixteenth Annual H.W. Magoun Distinguished Lecturer: Jack L. Feldman, Ph.D.
- Seventeenth Annual H.W. Magoun Distinguished Lecturer: Jerome M. Siegel, Ph.D.
- Eighteenth Annual H.W. Magoun Distinguished Lecturer: Richard W. Olsen, Ph.D.
- Nineteenth Annual H.W. Magoun Distinguished Lecturer: Diane M. Papazian, Ph.D.
- Twentieth Annual H.W. Magoun Distinguished Lecturer: Michael S. Fanselow, Ph.D.
- Twenty-First Annual H.W. Magoun Distinguished Lecturer: Ronald M. Harper, Ph.D.
- Twenty-Second Annual H.W. Magoun Distinguished Lecturer: Kelsey C. Martin, M.D., Ph.D.
- Twenty-Third Annual H.W. Magoun Distinguished Lecturer: Daniel H. Geschwind, M.D., Ph.D.

DR. EVA MARY KAVAN PRIZE FOR EXCELLENCE IN RESEARCH ON THE BRAIN

The Eva Mary Kavan Prize for Excellence in Research on the Brain was established in 1999 by a generous endowment from Dr. Eva Kavan. Dr. Kavan earned her doctorate degree in medicine at Charles University in her native Prague, Czechoslovakia. She came to UCLA in 1956 at a time when there were only five hospitals performing open-heart surgery with a heart-lung machine; UCLA had one of the first teams to do open-heart surgery in the West. Dr. Kavan was a pioneer in the administration of anesthesia, utilizing the electroencephalogram to perform important research on the effects of the heart-lung machine on brain function during open-heart operations. Dr. Kavan created this award, which is to be announced at the H.W. Magoun Lecture, to encourage a talented young scholar to pursue scientific research on the brain.

Each year a prize is given to one graduate student who has demonstrated excellence in his or her field of basic research in neuroscience. The awardee is selected by a faculty committee, which evaluates nominations solicited from the UCLA neuroscience community. One student from any neuroscience research department at UCLA receives a cash prize and a certificate of merit.

This year, Sangmok Kim was chosen as the recipient of the 15th Eva Mary Kavan Prize for Excellence in Research on the Brain. Sangmok is a senior graduate student in the Interdepartmental Program for Neuroscience. In the laboratory of Dr. Kelsey Martin he has completed a very elegant piece of work, which is being revised for *Cell*, with Sangmok as the first of only two authors.

Sangmok received a BS and MS in biochemistry from Kangwon University in Korea, spent two years as a research assistant in David Linden's lab at John Hopkins University, and then joined the NSIDP graduate program at UCLA in 2006. With specific interests in the cell biology of learning-related neuronal plasticity, he completed rotations in the Martin and O'Dell laboratories, where it became clear that Sangmok was a particularly gifted experimentalist. In his PhD research, Sangmok has focused on the question of how gene expression is spatially regulated within neurons during synapse formation and synaptic plasticity. He has addressed these questions in the *Aplysia californica* sensory-motor neuron culture system, where he can monitor synapse formation and plasticity at the level of individual neurons. In the first part of his thesis research, Sangmok collaborated with postdoctoral fellow Ohtan Wang and graduate student Elliott Meer to develop methods to study the mechanisms underlying mRNA localization to synapses and to visualize local translation during synaptic plasticity. This work was based on previous studies from the Martin lab showing that mRNAs localized to distal sensory neurites where their translation was critical to synapse-specific forms of neuronal plasticity. The Martin lab previously reported the identification of a large population of localized mRNAs (Moccia et al 2003), and discovered that one of the mRNAs that localized to sensory neurites, encoding the sensorin neuropeptide, underwent regulated localization upon synapse formation. Specifically, the lab found that sensorin mRNA localized diffusely to neurites in synaptically unconnected neurons, but concentrated at synapses following pairing with motor neurons. Together with Dr. Wang and Elliott Meer, Sangmok developed a series of sensorin reporter mRNAs to dissect the mechanisms underlying its synaptic localization and to directly monitor sensorin translation during long-term facilitation of sensory-motor synapses. They discovered that the 3'UTR of sensorin mediates its transport from soma into the neurite, while the 5'UTR is required for concentration of the mRNA at synapses. Using mutagenesis and structural analysis by chemical probing, they were able to identify a 66 nucleotide-long stemloop structure that is both necessary and sufficient for synaptic mRNA localization. These findings were published in a *PNAS* article in March 2012, with Sangmok as second author (Wang and Meer were co-first authors). Sangmok and Ohtan used a reporter containing the 5' and 3' UTR of sensorin fused to the photoconvertible fluorescent protein dendra2 to visualize local translation during plasticity. By expressing the reporter in sensory neurons, and photoconverting from green to red, they were able to monitor translation in real-time by imaging the appearance of newly translated green signal. These studies showed that localized stimulus led to spatially restricted translation that was synapse and stimulus-specific. Moreover, they discovered that stimulus-induced translation only occurred at the synapse, and required a calcium-dependent retrograde signal from the motor neuron. The results of these

studies were published as a full-length article in *Science* in June 2009, with Sangmok as second author. In his more recent work, Sangmok has addressed the fundamental question of whether the spatial regulation of gene expression is mediated primarily by RNA localization or by regulated translation. He uses a beautiful culture system in which a single bifurcated neuron is plated with a target motor neuron, with which it forms a glutamatergic synapse, and a nontarget motor neuron, with which it fasciculates but does not form a chemical synapse. This system allowed him to determine whether and how synaptogenic signals regulate the transport of RNAs out of the soma and how they regulate translation. Sangmok showed that rRNA, RNA binding proteins and mRNAs are transported equally well to both branches. However, he found that protein synthesis was very significantly enriched in branches contacting synaptic contacts. These results indicate that the spatial regulation of gene expression during synapse formation is mediated at the level of translation, rather than at the level of RNA targeting. He went on to show that this translational regulation requires the calcium-dependent release of netrin-1 from the postsynaptic motor neuron, with binding to the netrin-1 receptor DCC on the sensory neuron. A manuscript describing these results is under revision for *Cell*, with Sangmok as the first author. Sangmok's work is beautiful, technically challenging and elegant, and the finding is important for understanding how gene expression is regulated during wiring of the nervous system. He is currently extending this approach to determine whether this principle of generalized RNA localization but localized translational regulation extends to synaptic plasticity. Finally, Sangmok is a fantastic molecular biologist, electrophysiologist and cell biologist, and does not shy away from technical challenges. He is a dedicated, creative and highly effective neuroscientist who has made major contributions during his graduate training, and very deserving of the Kavan Prize.

Previous Eva Kavan Prize Recipients		
Year	Student	Mentor and Research Project
1999 1 st Eva Kavan Prize Recipient	Albert Cha	Francisco Bezanilla Laboratory Research Project: Ion channels
2000 2 nd Eva Kavan Prize Recipient	U. Valentin Nägerl	Istvan Mody Laboratory Research Project: Calbindin and other intracellular calcium-binding proteins in the calcium-buffering capacity of central neurons and the role of these proteins in temporal lobe epilepsy
2001 3 rd Eva Kavan Prize Recipient	Michael Zeineh	Susan Bookheimer Laboratory Research Project: Novel methods of increasing the resolution of functional magnetic resonance imaging
2002 4 th Eva Kavan Prize Recipient	Christine Bredfeldt	Dario Ringach Laboratory Research Project: Focused on one of the basic transformations in visual processing observed between the lateral geniculate nucleus and primary visual cortex (area V1)
2003 5 th Eva Kavan Prize Recipient	Jeffrey Gotts	Marie-Françoise Chesselet Laboratory Research Project: Mechanism by which cortical lesions induce a large increase in cell numbers in the subependymal layer of adult rats
2004 6 th Eva Kavan Prize Recipient	Alison Burggren	Susan Bookheimer Laboratory Research Project: Alzheimer's Disease
2005 7 th Eva Kavan Prize Recipient	Kim Thompson	Kelsey Martin Laboratory Research Project: Pioneering studies on the mechanisms whereby signals are retrogradely

Previous Eva Kavan Prize Recipients		
Year	Student	Mentor and Research Project
		transported from distal synapses to the nucleus in neurons
2006 8 th Eva Kavan Prize Recipient	Mary Kay Lobo	X. William Yang Laboratory Research Project: Application of molecular genetic tools to study basal ganglia biology and disease
2007 9 th Eva Kavan Prize Recipient	Joshua Johansen	H. Tad Blair Laboratory Research Project: Groundbreaking work on the circuit and computational mechanisms of teaching signal processing in the fear conditioning system
2008 10 th Eva Kavan Prize Recipient	Michael Oldham	Daniel Geschwind Laboratory Research Project: Foundational research on the organization of the human brain transcriptome
2009 11 th Eva Kavan Prize Recipient	Tiago Carvalho	Dean Buonomano Laboratory Research Project: How excitatory and inhibitory synaptic plasticity interact in a concerted manner to govern neuron behavior
2010 12 th Eva Kavan Prize Recipient	Kate Wassum	Nigel Maidment Laboratory Research Project: Identifying dissociable roles for endogenous opioids in mediating reward palatability and incentive learning.
2011 13 th Eva Kavan Prize Recipient	Erin Gray	Thomas O'Dell Laboratory Research Project: Electrophysiological and molecular studies of the role of AMPA receptor phosphorylation in synaptic plasticity.
2012 14 th Eva Kavan Prize Recipient	Austin Hilliard	Stephanie White Laboratory Research Project: Human cognitive abilities that are articulated in the domains of music and language; neuromolecular networks involved in how the brain accomplishes vocal learning, such as speech, using the songbird as a model system.
2013 15 th Eva Kavan Prize Recipient	Sangmok Kim	Kelsey Martin Laboratory Research Project: How gene expression is spatially regulated within neurons during synapse formation and synaptic plasticity; addressing these questions in the <i>Aplysia californica</i> sensory-motor neuron culture system, in order to monitor synapse formation and plasticity at the level of individual neurons.

SAMUEL EIDUSON STUDENT LECTURESHIP

The Samuel Eiduson Student Lectureship was initiated in 1993 to recognize extraordinarily meritorious contributions by a neuroscience graduate student. This lectureship was named in honor of Dr. Samuel Eiduson for his many years of dedication to the Neuroscience Program and the Brain Research Institute. Dr. Eiduson served as the Chairman of the Interdepartmental Program for Neuroscience from its inception in 1972 until 1985, and was instrumental in forwarding the careers of many UCLA neuroscientists and graduates. Each year one student who has conducted especially commendable research during his/her thesis study is selected to deliver a lecture to the neuroscience community.

This year the Twenty-First Samuel Eiduson Student Lecture, “Multimodality MRI-based Brain Network Analysis: Applications to Genetic Risk for Alzheimer’s Disease,” was presented May 14, 2013, by Jesse Brown, a senior graduate student working in the laboratory of Dr. Susan Bookheimer, in the Interdepartmental Ph.D Program for Neuroscience.

Jesse entered the NSIDP in the fall of 2007, and defended his dissertation in March of this year, and has already accepted a post-doctoral position at UCSF with William Seeley, a recent recipient of a McArthur “genius” award. From the start, it was clear that Jesse was going to excel in neuroscience. During his undergraduate years at Berkeley, he majored in cognitive science. He studied a range of specialized areas including neuroscience, linguistics, philosophy and artificial intelligence. Upon graduation, he spent several years gaining research experience before applying to graduate school. He worked with Scott Makeig at UCSD, where he worked on analyzing data from combined fMRI/EEG studies, which are highly innovative and technically extremely challenging. He then worked at Scripps in Dr. Francisco Asturias’ structural biology laboratory. One project focused on resolving the structure of the E. coli holoenzyme using electron microscopy; this project involved resolving the structure of human RNA polymerase II, obtaining images of human RNAP II at 11.5Å using electron microscopy; this work was published in *PLoS Biology*; a second project involved a subcomplex of the transcriptional protein mediator, which resulted in authorship on a paper in *Molecular Cell*. All of this was accomplished in only two years at Scripps.

On entering the NSIDP, Jesse expressed a strong interest in applying his research skills to patients with disorders of aging. At first, Jesse rotated in Russ Poldrack’s lab, where he began working on machine learning approaches to fMRI classification. I was delighted when he agreed to join my laboratory to work on imaging studies in genetic risk for AD. Jesse excelled in the laboratory way beyond my expectations. He brought his excellent knowledge of machine learning statistics into my lab, and since joining has worked on a series of projects using various imaging modalities. His research has focused on connectivity, developing our capabilities in diffusion tensor imaging and ultimately developing graph theoretical analytic approaches to functional and structural imaging data in AD.

In particular, Jesse has spent the last three years becoming an expert in whole brain connectivity mapping using high-resolution structural MRI, fMRI, and diffusion tensor imaging (DTI). He was awarded an NRSA fellowship from the National Institute of Health to design and utilize connectivity tools for assessment of impaired myelin connectivity in subjects at genetic risk for Alzheimer’s disease (APOE-4). He has subsequently designed a pipeline for fusing data processing from MRI, fMRI, and DTI in order to perform multimodal network analyses. He has made important findings regarding impaired APOE-4 functional connectivity. He quantitatively compared the network topography based on cortical thickness and axonal fiber measurements and found that these two types of networks provide different “snapshots” based on different underlying anatomical substrates. This work has important implications at two levels: clinically, the assessment of brain network topological alterations is a valuable biomarker that becomes more informative when derived from two independent and complementary imaging modalities; developmentally, this work strengthens our understanding of the relationship between cortical thickness and axonal fiber density, and how they may be controlled by genetic factors or experience-dependent plasticity. Jesse published a first-authored paper on his APOE-4 connectivity studies using DTI in *PNAS*. This exciting paper demonstrated age-related interactions in

several graph theory metrics in APOE-4 carriers in DTI data, showing that small-world connectivity breaks down more rapidly in AD risk gene carriers.

As Jesse developed his skills in graph theory, he began to develop tools to simplify analysis, ultimately creating a website with tools that anyone can access and large datasets volunteered by our group and others for investigators to mine. He published a paper on this graph theory toolbox in *Frontiers in Neuroscience* in December. One of the pioneers in graph theory applications in neuroscience, Olaf Sporns, met Jesse and commented to me how deep his knowledge of the field was and what a tremendous contribution his online tools will make to this field of study. This website is featured on the Human Connectome project website (<http://umcd.humanconnectomeproject.org/>).

For his dissertation, Jesse designed a new memory paradigm focused on memory consolidation and changes in network connectivity following learning. He is writing another paper on high resolution connectivity in APOE-4 carriers using a psychophysiological interaction analysis of functional MRI data. Surprisingly, in healthy APOE-4 carriers, he found increased connectivity within HC structures, particularly in the connectivity between entorhinal cortex and the CA fields during memory encoding, a finding which links memory stability in the pre-clinical state to adaptive changes in functional connections within the hippocampal circuit. This finding both adds to our understanding of brain dynamics in early Alzheimer’s and also may suggest a potential biomarker of disease risk.

Jesse has also developed collaborations outside of the Bookheimer lab. With Dr. Mark Cohen’s group, he worked on a machine learning analysis of dyslexia data developing an approach to classification using imaging data. He also collaborates with Dr. Jack VanHorn from the Laboratory of NeuroImaging (LONI) applying an information theoretical framework to the integration of fMRI and DTI modalities. In individual subject analysis on combined data, his results suggest a relationship of functional and structural connectivity for individual subjects, where the mutual information between regions falls off sharply as a function of increasing distance and/or decreasing fiber density between regions. He has worked with Dr. Danielle Basses from UC Santa Barbara using the connectivity techniques he helped develop.

Jesse’s work as a whole is highly technical and has required him to learn, and ultimately develop, very sophisticated mathematical tools, which he has successfully used across a range of applications and in clinical populations. He has shared his unique knowledge and skill set with individuals not only in the Bookheimer lab but in several others, earning authorship on papers in the Dapretto, Feusner, Altshuler and Thompson labs. His remarkable leadership is demonstrated in other ways as well, including creating a neuroimaging journal club that continues to thrive after 3 years, and teaching annually in our NITP summer intensive course.

Dr. Bookheimer states: “In my 20 years serving as an IDP mentor at UCLA I have been privileged to have truly outstanding students, virtually all of whom have gone on to successful academic careers. However even among this amazing group, Jesse Brown stands out as the best student I have had. Through his own work and his collaborations, Jesse has 11 published papers, two as first author, with another two expected to be published soon. This is a truly outstanding graduate record. Jesse is destined to become an outstanding, innovative independent neuroscientist. It has been an honor for me to serve as his mentor.” Jesse is a truly remarkable student and this award is truly well-deserved.

Previous Samuel Eiduson Student Lecturers		
Year	Student	Lecture Title
1993 1 st Eiduson Student Lecturer	David Rector	“Illuminating the Brain: Neural Activation Produces Changes in Light Scattering”
1994 2 nd Eiduson Student Lecturer	Michael DeRosa	“Why Do Children Seize? What Epileptic Brain Tissue Tells Us”
1995 3 rd Eiduson Student Lecturer	Kerry Thompson	“Focal Status Epilepticus in the Immature Brain”

Previous Samuel Eiduson Student Lecturers		
Year	Student	Lecture Title
1996 4 th Eiduson Student Lecturer	Li-Tao Zhong	“A Novel Type of Cell Death Receptor in Neocortical Neurons”
1997 5 th Eiduson Student Lecturer	Christine Schulteis	“Aspects of Shaker Potassium Channel Biogenesis Revealed by Analysis of Mutant Subunits”
1998 6 th Eiduson Student Lecturer	Paul Thompson	“Mathematical/Computational Strategies for Human Brain Mapping and Pathology Detection”
1999 7 th Eiduson Student Lecturer	Albert Cha	“Using Optical Probes to Study the Behavior of Voltage-Gated Ion Channels”
2000 8 th Eiduson Student Lecturer	Paul Gray	“Every Breath You Take: Looking for the Respiratory Rhythm Generator”
2001 9 th Eiduson Student Lecturer	Holly Carlisle	“The Role of NMDA Receptor Associated Proteins in Hippocampal LTP”
2002 10 th Eiduson Student Lecturer	Robert Agate	“Sex Chromosomes as Carriers for Genes Involved in Sex Specific Brain Development”
2003 11 th Eiduson Student Lecturer	Christopher Cain	“Overcoming Fear: Behavioral Pharmacology and Physiology of Fear Extinction in Mice”
2004 12 th Eiduson Student Lecturer	Spencer Smith	“The Role of Spontaneously Firing Neurons and New Tools for Exploring Them”
2005 13 th Eiduson Student Lecturer	Keri Martinowich	“Epigenetic Gene Regulation in Mental Retardation Disorders”
2006 14 th Eiduson Student Lecturer	John Ohab	“A Novel Neurovascular Niche for Neurogenesis after Stroke”
2007 15 th Eiduson Student Lecturer	Louisa Wang	“The Circadian Regulation of Learning and Memory”
2008 16 th Eiduson Student Lecturer	Woj Wojtowicz	“A Role for Molecular Diversity and Specificity in Wiring the Fly Brain”
2009 17 th Eiduson Student Lecturer	Doris Payer	“Neural Correlates of Emotion and Inhibitory Control During Early Abstinence from Methamphetamine”
2010 18 th Eiduson Student Lecturer	David Rousso	“Successive Actions of FoxP Transcription Factors in Spinal Cord Neurogenesis and the Establishment of Motor Circuits”
2011 19 th Eiduson Student Lecturer	Jason Stein	“Searching for Genetic Influences on Brain Structure”
2012 20 th Eiduson Student Lecturer	Stephanie Groman	“Dopamine D ₂ -Like Receptors: At the Nexus between Self Control and Addiction”
2013 21 st Eiduson Student Lecturer	Jesse Brown	“Multimodality MRI-based Brain Network Analysis: Applications to Genetic Risk for Alzheimer’s Disease”

The Brain Research Institute is proud to have created a lecture series designed to spotlight the achievements of its neuroscience graduate students.

ARNOLD SCHEIBEL DISTINGUISHED POSTDOCTORAL FELLOW IN NEUROSCIENCE LECTURE

In 2004 the Brain Research Institute initiated the Arnold Scheibel Distinguished Postdoctoral Fellow in Neuroscience Lecture. This annual lecture honors one postdoctoral fellow for outstanding research in neuroscience, and includes presentation of a lecture in the Joint Seminars in Neuroscience series, and a cash prize to attend a scientific meeting during the year.

This year, the Tenth Annual Distinguished Postdoctoral Lecturer was Paul Mathews, Ph.D., a postdoctoral fellow working in the laboratory of Dr. Tom Otis in the Department of Neurobiology, and the Integrative Center for Learning & Memory, UCLA. His lecture, “Shining Light on the Role of the Climbing Fiber Pathway in the Cerebellar Cortex,” was presented to the neuroscience community on November 13, 2012.

Previous Arnold Scheibel Distinguished Postdoctoral Fellow in Neuroscience Lecture		
Year	Postdoctoral Fellow	Lecture Title
2004 1 st Scheibel Distinguished Postdoctoral Fellow in Neuroscience Lecture	Bingbing Song, M.D., Ph.D.	“Release of Endogenous Opioids in the Spinal Cord Measured Through Mu-opioid Receptor Internalization”
2005 2 nd Scheibel Distinguished Postdoctoral Fellow in Neuroscience Lecture	Sheila Fleming, Ph.D.	“Behavioral Phenotyping of Genetic Mouse Models of Parkinson’s Disease”
2006 3 rd Scheibel Distinguished Postdoctoral Fellow in Neuroscience Lecture	Catalina Abad, Ph.D.	“VIP and PACAP: Two Neuropeptides with Therapeutic Prospects”
2007 4 th Scheibel Distinguished Postdoctoral Fellow in Neuroscience Lecture	Bruno Bianchi, Ph.D.	“Deciphering Neurological Disorder Mechanisms Using Genetically Modified Human Neurons Derived from Human Embryonic Stem Cells”
2008 5 th Scheibel Distinguished Postdoctoral Fellow in Neuroscience Lecture	Grégoire Courtine, Ph.D.	“Regaining Stepping Capacities Following a Severe Spinal Cord Injury”
2008 6 th Scheibel Distinguished Postdoctoral Fellow in Neuroscience Lecture	Arne Ekstrom, Ph.D.	“Correlation Between Navigational Performance and Place Cell Recruitment in the Human Hippocampal Area”
2009 7 th Scheibel Distinguished Postdoctoral Fellow in Neuroscience	Dan Ohtan Wang, Ph.D.	“Visualizing New Protein Synthesis at Synapses During Neuronal Plasticity”
2010 8 th Scheibel Distinguished Postdoctoral Fellow in Neuroscience	Eiji Shigetomi, Ph.D.	“Astrocyte Calcium Dynamics Revealed by a Refined Genetically Encoded Calcium Indicator”
2011 9 th Scheibel Distinguished Postdoctoral Fellow in Neuroscience	Kate Wassum, Ph.D.	“Liking, Learning and Longing: Exploring the Role of Mesolimbic Dopamine Signaling in Reward Seeking Actions”
2012 10 th Scheibel Distinguished Postdoctoral Fellow in Neuroscience	Paul Mathews, Ph.D.	“Shining Light on the Role of the Climbing Fiber Pathway in the Cerebellar Cortex”

SPECIAL LECTURE SERIES (Sponsored or Co-Sponsored by the Brain Research Institute)

Neurogenetics Affinity Group & Consortium for Neuropsychiatric Phenomics Lectures

Fall 2012

Gary W. Small, M.D., Parlow-Solomon Professor on Aging, Professor of Psychiatry & Biobehavioral Sciences, Director, UCLA Longevity Center, Director, Geriatric Psychiatry Division, Semel Institute for Neuroscience & Human Behavior, UCLA

“Early Detection and Prevention of Alzheimer's Dementia”

Carlos Portera-Cailliau, M.D., Ph.D., Departments of Neurology, and Neurobiology, UCLA

“Cortical Circuits and Sensory Overload in Fragile X Syndrome”

Barbara Natterson-Horowitz, M.D., Clinical Professor of Medicine, Division of Cardiology, UCLA

“Zoobiquity: What Comparative Psychopathology can Teach us about Mental Health in Humans”

William Yang, M.D., Ph.D., Department of Psychiatry & Biobehavioral Sciences, UCLA

“Genetic Dissection of Pathological Neurocircuit in Mice”

Winter 2013

Beth Stevens, Ph.D., Assistant Professor, Harvard Medical School, FM Kirby Program in Neurobiology Children's Hospital Boston

“Pruning CNS Synapses: An Active Role for Glia and Immune Molecules”

David Jentsch, Ph.D., Departments of Psychology, and Psychiatry & Biobehavioral Sciences, UCLA

“Reward, Interrupted: Inhibitory Control and Its Relevance for Addictions”

Jacob Vorstman, M.D., Ph.D., Assistant Professor Psychiatry, University of Utrecht, The Netherlands

“Lessons Learned from the 22q11.2 Deletion”

Suzanne Leal, Ph.D., Director, Center for Statistical Genetics; Professor, Department of Molecular and Human Genetics, Baylor College of Medicine

“Rare Variant Complex Trait Association: Application to Next Generation Sequence Data”

Giovanni Coppola, M.D., Departments of Psychiatry & Biobehavioral Sciences, and Neurology, UCLA

“Genetic and Genomic Studies in Neurodegeneration”

David Holmes Morton, II, M.D., D.Sc., Pediatrician & Director, Clinic for Special Children, Strasburg, Pennsylvania

“Neuro-Genomic Medicine in Small Populations”

Spring 2013

Amanda J. Myers, Ph.D., Assistant Professor, Department of Psychiatry & Behavioral Sciences, Division of Neuroscience, Department of Human Genetics and Genomics, Miller School of Medicine, University of Miami

“Expression Quantitative Trait Loci, RNA/Protein Networks and Natural Antisense Transcripts in Alzheimer's Disease”

Louis J. Ptáček, M.D., Professor, Department of Neurology, Howard Hughes Medical Institute, University of California, San Francisco

“Reciprocal Regulation of Circadian Clock through GSK3 β and O-linked N-acetylglucosaminylation”

Daniel Geschwind, M.D., Ph.D., Gordon and Virginia MacDonald Distinguished Chair, Professor of Neurology, Psychiatry & Biobehavioral Sciences, and Human Genetics, UCLA

“Transcriptional Networks in Neurological Disease”

Marcel Dinger, Ph.D., Group Leader, Head of Clinical Genomics, Garvan Institute of Medical Research; Conjoint Associate Professor, University of New South Wales, Sydney, Australia

“Lighting Up the Dark Matter of the Human Genome: Unravelling the Roles of Noncoding DNA in Disease and Development”

Nelson Freimer, M.D., Maggie G. Gilbert Professor of Psychiatry and Biobehavioral Sciences; Director, Center for Neurobehavioral Genetics, UCLA

“The Genetic Architecture of Bipolar Disorder and Its Component Traits”

Synapse to Circuit Club Affinity Group

Fall 2012

Matt Pecot, Ph.D., Larry Zipursky laboratory, Department of Biological Chemistry, UCLA

“Mechanisms Underlying Synaptic Layer Formation in the Drosophila Visual System”

William Yang, M.D., Ph.D., Department of Psychiatry and Biobehavioral Sciences, UCLA

“Genetic Analyses of Novel Bidirectional Molecular Pathogenic Switch in Huntington’s Disease”

Pierre-Olivier Polack, Ph.D., Peyman Golshani laboratory, Department of Neurology, UCLA

“Neuromodulation Tunes the Gain of Visual Cortical Neurons to Behavior”

David Krantz, M.D., Ph.D., Department of Psychiatry and Biobehavioral Sciences, UCLA

“Vesicular Transporters as Probes for Synaptic Transmission”

Mayra Carrillo, Elissa Hallem laboratory, Department of Microbiology, Immunology, and Molecular Genetics, UCLA

“Investigating the Regulation of Carbon Dioxide Response in C. elegans”

Yi Chen, Larry Zipursky laboratory, Department of Biological Chemistry, UCLA

“Selectively Marking Synapses in Identified Cell Types Using Light Microscopy”

Brenda Bloodgood, Ph.D., Biological Sciences, University of California, San Diego

“Activity Dependent Transcription and the Regulation of Synapses”

Kelley O’Donnell and Mauricio Vargus, M.D., Ph.D., Alvaro Sagasti laboratory, Department of Molecular, Cell and Developmental Biology, UCLA

“Mitochondrial Transport and Calcium Dynamics during Axon Degeneration”

Winter 2013

Fang Wang, Ph.D., Alvaro Sagasti laboratory, Department of Molecular, Cell and Developmental Biology, UCLA

“A Genomic Approach to Investigate the Interactions between Peripheral Axons and Skin Cells”

Sika Zheng, Ph.D., Doug Black laboratory, Department of Microbiology, Immunology & Molecular Genetics, UCLA

“Genetic Control of Synaptogenesis by Alternative premRNA Splicing”

Satoru Miura, Larry Zipursky laboratory, Department of Biological Chemistry, UCLA

“Dynamic and Probabilistic Splicing of Dscam1 Revealed at the Single Cell Resolution In Vivo”

Sangmok Kim, Kelsey Martin laboratory, Department of Biological Chemistry, UCLA

“Spatial Regulation of Gene Expression in Neurons during Synapse Formation and Synaptic Plasticity”

Mayank Mehta, Ph.D., Departments of Physics & Astronomy, Neurology, and Neurobiology, UCLA

“Hippocampus: Synapse to Circuit and Behavior”

A. P. “Sam” Sampath, Ph.D., Zilkha Neurogenetic Institute, University of Southern California

“Optimization of Retinal Signaling Near Absolute Visual Threshold”

Tom Otis, Ph.D., Department of Neurobiology, UCLA

“Circuit Mechanisms of Cerebral Learning”

Kang Shen, Ph.D., Howard Hughes Medical Institute, Department of Biology, Stanford University

“Extrinsic Control of Dendritic Morphogenesis in C. elegans”

Spring 2013

Kenta Asahani, Ph.D., Division of Biology, California Institute of Technology

“Toward the Understanding of Neuronal and Molecular Basis of Fly Social Interactions”

Michael Reiser, Ph.D., Howard Hughes Medical Institute, and Janelia Farm Research Campus

“Probing the Function of the Drosophila Early Visual System”

Don Arnold, Ph.D., Department of Molecular & Computational Biology, University of Southern California

“Now You See ‘Em; Now You Don’t. Novel Tools for Visualizing and Ablating Endogenous Proteins in Living Neurons”

Jason McEwen, Ph.D., Department of Biological Chemistry, UCLA

“TRAPing a Genetic Program for Synapse Formation”

Mayank R. Mehta, Ph.D., Departments of Physics & Astronomy, Neurology, and Neurobiology, UCLA

“The BRAIN Initiative: Status Report”

Joshua Trachtenberg, Ph.D., Department of Neurobiology, UCLA

“The Key to Learning is Less Inhibition”

Maria Lazaro, Peyman Golshani laboratory, Department of Neurology, UCLA
"Synaptic and Intrinsic Excitability Deficits in a Mouse Model of Autism"

Daniel Colon-Ramos, Ph.D., Assistant Professor of Cell Biology, Yale University
"Glia in Synapse Formation and Maintenance of Synaptic Positions during Growth: Lessons from C. elegans"

Training Program in Neural Repair

Fall 2012

Joshua Trachtenberg, Ph.D., Department of Neurobiology, UCLA
"Disinhibition Initiates Competitive Plasticity in Adolescent Cortex"

Peyman Golshani, M.D., Ph.D., Department of Neurology, UCLA
"Membrane Potential Dynamics Underlying Changes in Brain State in Awake Behaving Mice"

Monica Carson, Ph.D., Department of Biomedical Sciences, Director, Center for Glial-Neuronal Interactions, University of California, Riverside
"The Role of TREM Family Receptors in Brain Development and Neuroinflammation"

Linda Liau, M.D., Ph.D., Department of Neurosurgery, Director, Brain Tumor Program, UCLA
"Brain Tumor Oncogenesis: New Targets for Therapy"

Neil Harris, Ph.D., Department of Neurosurgery, UCLA
"Overcoming Axon Growth-Inhibition after Traumatic Brain Injury: Is it Enough?"

Andre Obenaus, Ph.D., Director, Non-Invasive Imaging Laboratory, Division of Biochemistry, School of Medicine, Loma Linda University; Department of Cell Biology & Neuroscience, UC Riverside
"Therapeutic Potential of Neural Stem Cells for Neonatal Hypoxia-Ischemic Injury"

Guoping Fan, Ph.D., Department of Human Genetics, UCLA
"Cell Replacement Therapy for Eye Disorders: Promise and Challenge"

Kelley O'Donnell, MSTP Trainee, Sagasti Laboratory, Department of Molecular, Cell and Developmental Biology, UCLA
"Effects of Axonal Injury on Mitochondrial Transport and Function"

Winter 2012

Douglas Black, Ph.D., Department of Microbiology, Immunology and Molecular Genetics, UCLA
"Alternative Splicing and the Regulation of Neuronal Gene Expression"

Milan Fiala, M.D., David Geffen School of Medicine, UCLA
"Biologics and Lipid Mediators: Reprogramming Innate Immune Responses in Alzheimer and ALS Patients"

Jesse Cushman, TPNR Trainee, Mehta Laboratory, Department of Physics & Astronomy, and Neurology, and Neurobiology, UCLA
"Multimodal Virtual Reality Simultaneously Dissociates Spatial Navigation from Pavlovian Conditioning"

Terrence Town, Ph.D., Ben Winters Endowed Chair in Regenerative Medicine, Regenerative Medicine Institute, Cedars-Sinai Medical Center, and David Geffen School of Medicine at UCLA
“Targeting ‘Good’ Neuroinflammation in Alzheimer’s Disease”

Sotiris Masmanidis, Ph.D., Department of Neurobiology, UCLA
“Probing Basal Ganglia Function with Large-Scale Electrophysiology”

Gal Bitan, Ph.D., Department of Neurology, UCLA
“Molecular Tweezer Inhibitors of Protein Aggregation and Toxicity - Progress Toward Therapy”

Alain Prochiantz, Ph.D., Collège de France, Paris
“Homeoproteins: 200 More Signaling Factors in Health and Disease”

Var Tan, Ph.D., Department of Psychiatry & Biobehavioral Sciences, UCLA
“VPAC2 Receptor Diminishes Experimental Autoimmune Encephalomyelitis Disease by Modulating the Th/Treg Responses”

Alex Bonnin, Ph.D., Department of Cell & Neurobiology, USC
“Placental Serotonin and Prenatal Programming of Mental Disorders”

Spring 2013

Fernando Gómez-Pinella, Ph.D., Department of Integrative Biology & Physiology, UCLA
“The Metabolic Road to Preserving Cognition in CNS Injury”

Victoria M. Ho, TPNR trainee, MSTP trainee, Martin Laboratory, Department of Biological Chemistry, UCLA
“Post-Transcriptional Mechanisms of Gene Regulation in Mature Neurons”

Bal Khakh, Ph.D., Department of Physiology, UCLA
“Neuromodulation by Astrocytes”

Giovanni Coppola, M.D., Department of Psychiatry & Biobehavioral Sciences, and Neurology, UCLA
“Functional Genomic Studies of Peripheral Nerve Regeneration”

David Glanzman, Ph.D., Departments of Integrative Biology & Physiology, and Neurobiology, UCLA
“Mechanisms of Long-Term Memory Maintenance in Aplysia”

Bill Lowry, Ph.D., Department of Molecular, Cell and Developmental Biology, UCLA
“Manipulating the Developmental Maturity of Human Pluripotent Derivatives”

Anthony Linares, TPNR trainee, Black Laboratory, Department of Microbiology, Immunology & Molecular Genetics
“PTB and nPTB Regulated Splicing Events during Neural Progenitor Maintenance and Motor Neuron Development”

Kim McDowell, Ph.D., TPNR trainee, Chesselet Laboratory, Department of Neurology, UCLA
“Sleep Dysfunction in Mice Overexpressing Alpha-Synuclein under the Thy1 Promoter”

UCLA Center for Autism Research and Treatment (CART) Affinity Group Seminars

Fall 2012

Ted Hutman, Ph.D., UCLA Semel Institute; Adjunct Assistant Professor & CART Faculty

“Infant Sibling Studies Grow Up: New and Future Work from the UCLA CART Study of Infants at Risk for Autism Spectrum Disorder”

Catherine Lord, Ph.D., Institute for Brain Development, New York Autism Center; New York Presbyterian Hospital New York, Weill Cornell Medical College, Columbia University Medical Center

“Trajectories in Development of Autism Spectrum Disorders”

Peter Mundy, Ph.D., University of California at Davis; M.I.N.D. Institute

“Attention and the Social-Cognitive Phenotype of Autism”

Winter 2013

Jacqueline Crawley, Ph.D., University of California at Davis; M.I.N.D. Institute

The 1st Annual Marian D. Sigman Memorial Lecture

“Mouse Models of Autism for Therapeutic Discovery”

Karen Pierce, Ph.D., University of California, San Diego

“The Early Identification of Autism: Insights from Brain and Behavior”

Spring 2013

Charles Nelson, Ph.D., Boston Children’s Hospital, Harvard Medical School

“A Cognitive Neuroscience Approach to the Early Identification of Autism”

Matthew Goodwin, Ph.D., Northeastern University, Boston

“Computational Behavioral Science: Developing Innovative Technology to Enhance Research and Practice”

Alice Kuo, M.D., Ph.D., CART Faculty; Associate Professor of Internal Med., Pediatrics & Health Services

“Early Identification and Services for Autism Spectrum Disorder (ASD): Primary Care and Public Health Considerations”

UCLA Center for the Study of Parkinson’s Disease (CSPD) Colloquium

Fall 2012

Iddo Magen, Ph.D., Chesselet Laboratory, Department of Neurology, UCLA

“Cognitive Dysfunction and Social Interaction Deficits in a Mouse Model of Parkinson’s Disease”

Andrew Steele, Ph.D., Broad Fellow in Brain Circuitry, California Institute of Technology, Pasadena

“Dopamine Receptor 1 Neurons in the Dorsal Striatum Mediate the Circadian Timing of Food Anticipatory Activity in Mice”

Bruce Gerratt, Ph.D., Department of Head & Neck Surgery; Director of Audiology & Speech Pathology, UCLA

“Voice and Speech Disorders Associated with Parkinson’s Disease”

Michele Basso, Ph.D., Director, Fuster Laboratory of Cognitive Neuroscience; Professor, Department of Psychiatry and Biobehavioral Sciences, UCLA
“Cognition, Movement, and Parkinson’s Disease”

David Teplow, Ph.D., Department of Neurology, UCLA
“Alzheimer’s Disease~Why PD Researchers Should Care (and show up for the Colloquium!)”

Ming Guo, M.D., Ph.D., Associate Professor of Neurology, and Molecular & Medical Pharmacology, UCLA
“Molecular Pathways to Parkinson’s Disease”

Winter 2013

Lars Dreier, Ph.D., Department of Neurobiology, UCLA
“The Role of Parkin and VDACs in the Degradation of Defective Mitochondria”

Liana Apostolova, M.D., MSc, Associate Professor of Neurology, UCLA
“Imaging Biomarkers for Cognitive Decline in PD”

Christine Fontanilla, Ph.D., Indiana University
“Neuroprotective Studies on the MPTP and SOD1 Mouse Models of Neurodegenerative Disease”

Sophie Sokolow Ph.D., MPharm, Center for the Advancement of Gerontological Nursing Sciences, and School of Nursing, UCLA
“Role of the Sodium-Calcium Exchanger 3 in Ziram-Induced Toxicity, Relevance to PD”

Matthew Blurton-Jones, Ph.D., Department of Neurobiology & Behavior, University of California, Irvine
“Examining the Effects of Neural Stem Cell Transplantation in Transgenic Models of Alzheimer’s and Parkinson’s Disease”

Carlos Portera-Cailliau, M.D., Ph.D., Department of Neurology, UCLA
“Alterations in Synapses with Normal Aging”

Nader Pouratian, M.D., Department of Neurosurgery, UCLA
“Invasive Recordings of Human Basal Ganglia Oscillatory Patterns in Parkinson’s Disease”

Kim McDowell, Ph.D., Chesselet Laboratory, Department of Neurology, UCLA
“The Cycad Hypothesis: The Role of Dopamine and Orexin in a Rodent Model of Parkinsonism”

Spring 2013

Hakeem Lawal, Ph.D., Krantz Laboratory, Department of Psychiatry & Biobehavioral Sciences, UCLA
“Using Drosophila to Screen for Neuroprotective Drugs Against Parkinson’s Disease and Other Neurological Disorders”

Desmond Smith, M.D., Ph.D., Department of Molecular and Medical Pharmacology, UCLA
“Dissecting Genetic Circuits for Behavior and Cancer”

Carla Koehler, Ph.D., Department of Chemistry and Biochemistry, UCLA
“Strategies to Attenuate Mitochondrial Dysfunction in Neurodegenerative Diseases”

Dawn Loh, Ph.D., Colwell Laboratory, Department of Psychiatry & Biobehavioral Sciences, UCLA
“Do the Genetic Mutations that Underlie Neurodegenerative Diseases also Cause Sleep and Circadian Disruption?”

Karen Gyls, Ph.D., School of Nursing, UCLA
“Where Amyloid, Tau, and apoE Intersect: Synaptic Pathology in Alzheimer’s Disease”

Felix Schweizer, Ph.D., Department of Neurobiology, UCLA
“Ubiquitin as a Regulator of Synaptic Transmission”

Eric Hayden, Ph.D., Teplow Laboratory, Department of Neurology, UCLA
“Polyphenolic Fractions from Grape Seed-Derived Extract Inhibit Amyloid β -Protein Oligomerization: Shared Therapeutic Mechanism for Alzheimer’s and Parkinson’s Disease”

Nick Franich, Ph.D., Chesselet Laboratory, Department of Neurology, UCLA
“Antisense Oligonucleotide Knockdown of Alpha-Synuclein after Deficit Onset Improves Behavior and Neuropathology in Over-Expressing Mice”

SPECIAL LECTURES (Sponsored or Co-Sponsored by the Brain Research Institute)

Noah Gray, Nature Senior Editor, Biology, New York
Assessing Neuroscience at Nature
(Special Lecture Sponsored by the UCLA Integrative Center for Learning & Memory)

Gregor Majdic, Ph.D., Head, Center for Animal Genomics, Veterinary Faculty, University of Ljubljana, Ljubljana, Slovenia
Brain, Sex and Steroidogenic Factor 1
(Laboratory of Neuroendocrinology Special Lecture)

Michael Mauk, Ph.D., Professor of Neurobiology, Center for Learning and Memory, Institute for Neuroscience, University of Texas at Austin
Working Memory and Cerebellum Working Together
(Special Lecture Sponsored by the UCLA Integrative Center for Learning and Memory)

Konrad Talbot, Ph.D., Research Assistant Professor in Neurobiology, Center for Neurobiology and Behavior, Department of Psychiatry, Translational Research Laboratories, University of Pennsylvania
A New Perspective on Cognitive Deficits in Schizophrenia: Dysbindin-1 Regulation of NMDA Signaling and Arc Expression
(Special Lecture Sponsored by the Department of Psychology and the Brain Research Institute)

SPECIAL CONFERENCES (Sponsored or Co-Sponsored by the Brain Research Institute)

The UCLA Integrative Center for Neurogenetics Inaugural Symposium

The Inaugural Symposium of the UCLA Integrative Center for Neurogenetics was held on February 21, 2013. The UCLA Integrative Center for Neurogenetics (ICNG) focuses on discovering the genetic basis of major psychiatric and neurological disorders, and genetically dissecting additional traits that will shed light on the development, function, or degeneration of the central nervous system. Lack of understanding of the causes of brain diseases limits our capacity to develop better treatments and for prevention. We now have the research tools necessary to identify and characterize the specific genetic variations that predispose to brain disorders or that are associated with important nervous system traits in a wide range of model organisms.

Investigators in the ICNG utilize – and in some cases helped to develop – state of the art genomic and genetic methodologies including high throughput genotyping and DNA sequencing, gene expression analysis, genetic manipulation of model organisms, as well as bioinformatics, statistics, and cell biology. The investigations within the ICNG depend on sophisticated approaches for assessing brain and behavioral phenotypes in humans and model organisms. The development and application of such assessments provide the basis for numerous collaborations with investigators outside of the ICNG. The ICNG also occupies an important niche in the educational mission of UCLA. It is the focal point on campus for training graduate students and postdoctoral fellows in the genetic investigation of complex traits.

Symposium Schedule

Welcome and Opening Remarks

Nelson B. Freimer, M.D., Professor of Psychiatry & Biobehavioral Sciences, UCLA

“Fragile X Syndrome: Molecular Mechanisms and Therapeutic Approaches”

Stephen T. Warren, Ph.D., William P. Timmie Professor of Human Genetics; Charles Howard Candler Chair in Human Genetics; Chairman, Department of Human Genetics; Professor of Pediatrics; Professor of Biochemistry, Emory University School of Medicine

“Understanding Genetics of Neurodegeneration: SCA1”

Harry T. Orr, Ph.D., Director, Institute for Translational Neuroscience, University of Minnesota

“The Neurogenetics of Innate Behavior”

Leslie B. Vosshall, Ph.D., HHMI Investigator and Robin Chemers Neustein Professor, Laboratory of Neurogenetics & Behavior, The Rockefeller University

“The Relationship Between Genes and Social Behavior: Lessons from the Honey Bee”

Gene E. Robinson, Ph.D., Director, Institute for Genomic Biology, Swanlund Chair, University of Illinois at Urbana-Champaign

“Transcriptional Architecture and Chromatin Dynamics of the Circadian Clock in Mammals”

Joseph S. Takahashi, Ph.D., Professor and Chair, Department of Neuroscience, Howard Hughes Medical Institute, University of Texas Southwestern Medical Center

“Investigating Human Sleep Behavior Traits”

Ying-Hui Fu, Ph.D., Professor, Department of Neurology, University of California, San Francisco

“Genetic Analysis of Major Depression in 12,000 Chinese Women”

Jonathan Flint, M.D., Wellcome Trust Principal Fellow and Honorary Consultant Psychiatrist, Michael Davys Professor of Neuroscience, University of Oxford

“Genetics of Narcolepsy”

Emmanuel Mignot, M.D., Ph.D., Craig Reynolds Professor of Sleep Medicine, Professor of Psychiatry and Behavioral Sciences, Stanford University Center For Sleep Sciences, The Division Chief of Stanford Center for Sleep Sciences and Medicine

Closing Remarks

Daniel H. Geschwind, M.D., Ph.D., Gordon and Virginia MacDonald Distinguished Professor in Human Genetics; Professor of Neurology, and Psychiatry & Biobehavioral Sciences, UCLA

The 11th Annual Center for Neurobiology of Stress Basic and Translational Science Symposium

The 11th Annual Center for Neurobiology of Stress Basic and Translational Science Symposium, “Systems Biological Approaches to Gut-Brain Interactions in Health and Disease- From Molecular to Social Networks,” was held on April 26, 2013.

Schedule

Introduction

Symposium Chairs: Bruce Naliboff, Ph.D. (Co-Director, Program in Mind-Body Research, Gail and Gerald Oppenheimer Family Center for Neurobiology of Stress, Division of Digestive Diseases, David Geffen School of Medicine at UCLA; VA Greater Los Angeles Healthcare System) and Sylvie Bradesi, Ph.D. (Gail and Gerald Oppenheimer Family Center for Neurobiology of Stress and CURE: Digestive Diseases Research Center, Division of Digestive Diseases, David Geffen School of Medicine at UCLA; VA Greater Los Angeles Healthcare System)

Alan Fogelman, M.D., Executive Chair, Department of Medicine, David Geffen School of Medicine at UCLA

Session I: Adipocyte-Related Networks and Systems Biology

Session Chairs: Sylvie Bradesi, Ph.D. and Mete Civelek, Ph.D. (Division of Cardiology, David Geffen School of Medicine at UCLA)

Mesenteric Adipocyte Networks and Gastrointestinal Diseases

Charalabos Pothoulakis, M.D., Director, UCLA Research Center for Inflammatory Bowel Diseases, Division of Digestive Diseases, David Geffen School of Medicine at UCLA

Chronic Psychological Stress Regulates Visceral Adipocyte-Mediated Glucose Metabolism and Inflammatory Circuits

Iordanis Karagiannidis, Ph.D., Assistant Researcher, UCLA Research Center for Inflammatory Bowel Diseases, Division of Digestive Diseases, David Geffen School of Medicine at UCLA

The Genetic Regulation of Adipose Tissue Transcript Expression in Humans and Mice

Mete Civelek, Ph.D., Division of Cardiology, David Geffen School of Medicine at UCLA

Systems Biology Approach to Gastrointestinal Diseases

Dimitrios Iliopoulos, Ph.D., Director, Center for Systems Biomedicine, Division of Digestive Diseases, David Geffen School of Medicine at UCLA

Session II: Sex Differences in Brain Networks

Session Chairs: Andrea Rapkin, M.D. (Director, UCLA Pelvic Pain Program, Professor, Department of Obstetrics and Gynecology, David Geffen School of Medicine at UCLA) and Paul Macey, Ph.D. (School of Nursing and Brain Research Institute, UCLA)

Sex-Related Differences in Structural and Functional Brain Networks

Kirsten Tillisch, M.D., Director, Neuroimaging Core, Gail and Gerald Oppenheimer Family Center for Neurobiology of Stress, Division of Digestive Diseases, David Geffen School of Medicine at UCLA

Sex Differences in Emotion-Related Cognitive Processes

Arpana Gupta, Ph.D., Gail and Gerald Oppenheimer Family Center for Neurobiology of Stress, Division of Digestive Diseases, David Geffen School of Medicine at UCLA

State of the Center

Emeran Mayer, M.D., Director, Gail and Gerald Oppenheimer Family Center for Neurobiology of Stress and Co-Director, CURE: Digestive Diseases Research Center, Division of Digestive Diseases, David Geffen School of Medicine at UCLA

Session III: Social Networks

Session Chair: Lin Chang, M.D. (Director, Center for Neurovisceral Sciences and Women’s Health, Gail and Gerald Oppenheimer Family Center for Neurobiology of Stress and CURE: Digestive Diseases Research

Center, Division of Digestive Diseases, David Geffen School of Medicine at UCLA)

Social Networks Related to Chronic Intestinal Disorders

Martijn van Oijen, Ph.D., Associate Director, Quality Initiative Program, VA/UCLA Center for Outcomes Research and Education (CORE), Division of Digestive Diseases, Geffen School of Medicine at UCLA

Poster Session

Session IV: Gene and Brain Networks

Session Chairs: Jack Van Horn, Ph.D. (Laboratory of Neuro Imaging, Department of Neurology, UCLA) and Jen Labus, Ph.D. (Gail and Gerald Oppenheimer Family Center for Neurobiology of Stress, Division of Digestive Diseases, David Geffen School of Medicine at UCLA)

Large Scale Brain Networks

Jack Van Horn, Ph.D., Laboratory of Neuro Imaging, Department of Neurology, UCLA

Alterations in Prefrontal-Limbic Activation and Structurally-Linked Functional Connectivity in Chronic Stress-Induced Visceral Hyperalgesia

Daniel Holschneider, M.D., Associate Professor, Keck School of Medicine, Dept. of Psychiatry and the Behavioral Sciences, University of Southern California

Systems Biological Approach to Genetics of Complex Diseases

James Weiss, M.D., Chief, Division of Cardiology; Director, Cardiovascular Research Laboratory, David Geffen School of Medicine at UCLA

Joseph Pisegna, M.D., Chief, Division of Gastroenterology and Hepatology, VA Greater Los Angeles Healthcare System; Professor of Medicine, Division of Digestive Diseases, David Geffen School of Medicine at UCLA

Poster Award

Closing Comments

Lin Chang, M.D., Co-Director, Gail & Gerald Oppenheimer Family Center for Neurobiology of Stress and CURE: Digestive Diseases Research Center, Division of Digestive Diseases, David Geffen School of Medicine at UCLA

(Sponsored by the UCLA Brain Research Institute, the UCLA Division of Digestive Diseases, the VA Greater Los Angeles Healthcare System/Brentwood Biomedical Research Institute, the Gail and Gerald Oppenheimer Family Foundation and the Morris A. Hazan Family Foundation. Additional information about the Center can be found on the Center's website: www.uclacns.org.)

Neural-Immune Interactions in Neurodegenerative Diseases: Innate and Adaptive Neuroprotective and Regenerative Mechanisms

The 3rd UCLA Immunology in Neuroscience Mini-Symposium/Poster Gala, "Neural-Immune Interactions in Neurodegenerative Diseases: Innate and Adaptive Neuroprotective and Regenerative Mechanisms," was held on May 7, 2013. The program featured four invited speakers who have made major contributions to the understanding of how neuroinflammatory responses potentiate or restrict the pathologies of neurodegenerative diseases and/or contribute to their repair. To provide an opportunity for informal scientific exchange, a poster session was held immediately following the mini-symposium.

Scientific Program

Introduction, James A. Waschek, Ph.D., UCLA

Blood-Brain Barrier and Neurodegeneration

Berislav Zlokovic, M.D., Ph.D., University of Southern California

Mitochondria Permeability Transition Pore Activation and Axonal Deneration: Implication for the Treatment of Multiple Sclerosis

Dennis Bourdette, M.D., University of Oregon

T Cells Step up to the Plate in Lou Gehrig's Disease

Stanley Appel, M.D., Methodist Hospital Research Institute, Houston, Texas

Immune System - Guardian of the Brain: Implications for Neurodegenerative and Neurodevelopmental Diseases

Jonathan Kipnis, Ph.D. University of Virginia

Poster Session

(Co-Sponsored by the CTSI, Brain Research Institute, and Intellectual and Developmental Disabilities Research Center, UCLA)

The 7th Annual Neural Microcircuits Training Program Symposium, “Dynamics of Neural Microcircuits”

The 7th Annual Neural Microcircuits Training Program Symposium, “Dynamics of Neural Microcircuits” was held on May 9, 2013.

Schedule

Introduction: Jack Feldman, UCLA

A New Rule for Topographic Map Formation

Hollis Cline, UCSD

Genetic Dissection of Cortical GABAergic Circuits: Chandeliers Light up the Path

Z. Josh Huang, Cold Spring Harbor Laboratory

Neural Correlates of Target Selection in Rat Prefrontal Cortex and Primary Auditory Cortex in a Purely Auditory Selective Attention Task

Michael DeWeese, UC Berkeley

Regulation of Defensive Response Strategies by Neural Circuits in Medial Prefrontal Cortex and Periaqueductal Gray

Lindsay Halladay, Graduate Student & Training Grant Fellow, Blair Lab, UCLA

Poster Session

Shaping of Cortical Receptive Fields by Inhibition

Christoph Schreiner, UCSF

Neural Adaptations to a Brain-Machine Interface

Jose Carmena, UC Berkeley

Utilizing Memory Allocation Mechanisms to Trap and Activate Emotional Memories

Thomas Rogerson, Graduate Student & Training Grant Fellow, Silva Lab, UCLA

Imaging Macro- and Micro-Functional Architecture in the Visual Cortex

Ed Callaway, Salk Institute

(Sponsored by the UCLA Department of Neurobiology and the Brain Research Institute at UCLA)

20th Annual Joint Symposium on Neural Computation

In 1994, the Institute for Neural Computation at the University of California, San Diego hosted the first Joint Symposium on Neural Computation with the California Institute of Technology in Pasadena. This Symposium brought together students and faculty for a day of short presentations. Since then, this Symposium has rotated between San Diego, Caltech, UCI, UCLA, USC and UCR. This year, the 20th Annual Joint Symposium on Neural Computation was held at the California Institute of Technology on June 1, 2013.

Schedule

Keynote Address Session Chair: Pietro Perona

Keynote Address

The Purpose of the Retina: Coding or Computation?

Markus Meister, Caltech

Session I Chair: D. Ringach

Large-Scale Model of Mammalian Visual System

Micah Richert

Neural Computations for Social Learning and Decision

John O'Doherty

Plasticity and Maturation of Responses in Inhibitory Neurons

Sunil Gandhi

Brain-State-Dependent Gain Modulation in Visual Cortex

Peyman Golshani

Posters I

Session II Chair: T. Sejnowski

Principles in Learning and Decision-Making

Tatanya Sharpee

Human-Robot Interaction in Socially Assistive Robotics

Maja Mataric

Multi-Electrode Stimulation for Recovery after Spinal Cord Injury

Joel Burdick

Oscillation-Based Neural Maps of Space in Humans

Howard Poizner

Posters II

Session III Chair: V. de Sa)

El Balance is Overrated: Disinhibition Regulates Plasticity

Josh Trachtenberg

The Origin of Scale Invariance in Natural Images

Terry Sejnowski

Visual Search, a Bayesian Exploration

Pietro Perona

Panel Discussion: How Should We Spend Obama's Money? The Top-Three Projects for the Brain Initiative

The Integrative Center for Learning and Memory

12th Annual Southern California Learning and Memory Symposium

The Twelfth Annual Southern California Learning & Memory Symposium was held on June 3, 2013. This symposium is a yearly meeting primarily for Southern California laboratories interested in plasticity and learning. This year's annual symposium was supported by the Brain Research Institute, and the Clinical and Translational Science Institute.

Schedule

Welcome and Opening Remarks

Alcino J. Silva, Ph.D., Departments of Neurobiology, Psychiatry & Biobehavioral Sciences, and Psychology, University of California, Los Angeles

Session 1 Chair: Michael Fanselow, Ph.D., Departments of Psychology, and Psychiatry & Biobehavioral Sciences, University of California, Los Angeles

Noradrenergic Control of Cortical Membrane Potential Dynamics in Awake Behaving Mice

Peyman Golshani, M.D., Ph.D., Department of Neurology, University of California, Los Angeles

Information-Theoretic Principles in Learning and Decision-Making

Tatiana Sharpee, Ph.D., Computational Neurobiology Laboratory, Salk Institute for Biological Studies, La Jolla, California

Strategies for Maintaining Cognitive Health

Gary Small, M.D., Department of Psychiatry & Biobehavioral Sciences, UCLA Longevity Center, University of California, Los Angeles

Session 2 Chair: Dean Buonomano, Ph.D., Departments of Neurobiology, and Psychology, University of California, Los Angeles

Deep Brain Stimulation, Memory Enhancement, and Hippocampal Theta-Gamma Coupling

Nanthia Suthana, Ph.D., Departments of Psychology, and Neurosurgery, University of California, Los Angeles

The Reactivation of Cortical Plasticity by Inhibitory Neuron Transplantation

Sunil Gandhi, Ph.D., Department of Neurobiology and Behavior, University of California, Irvine

Regulation of Inhibitory Synapses by the Transcription Factor Npas4

Brenda Bloodgood, Ph.D., Biological Sciences, University of California, San Diego

Session 3 Chair: David Glanzman, Ph.D., Departments of Integrative Biology & Physiology, and Neurobiology, University of California, Los Angeles

Dissecting a Learning Circuit in C. elegans

Sreekanth Chalasani, Ph.D., Molecular Neurobiology Laboratory, Salk Institute for Biological Studies, La Jolla, California

Synaptic Signaling Networks and Neurodevelopmental Disease

Marcelo Coba, Ph.D., Department of Psychiatry and the Behavioral Sciences, Zilkha Neurogenetic Institute, Keck School of Medicine, University of Southern California, Los Angeles

Optogenetics: Deconstruction of Diseased Brain Circuitry and Tool Development

Viviana Gradinaru, Ph.D., Division of Biology, California Institute of Technology, Los Angeles

Session 4 Chair: Tom O'Dell, Ph.D., Department of Physiology, University of California, Los Angeles

The Role of Hippocampal Adult Neurogenesis in Context Discrimination

Fred (Rusty) Gage, Ph.D., Laboratory of Genetics, Salk Institute for Biological Studies, La Jolla, California

Network-Level Analysis of Basal Ganglia Circuitry during Reward-Based Learning

Sotiris Masmanidis, Ph.D., Department of Neurobiology and California NanoSystems Institute, University of California, Los Angeles

Neuron-Specific Nucleosome Remodeling: A Missing Link in Our Understanding of Intellectual Disability Disorders

Marcelo Wood, Ph.D., Department of Neurobiology and Behavior, Center for the Neurobiology of Learning & Memory, University of California, Irvine

Prion-Like Pathogenesis in Neurodegenerative Diseases

The Prion-Like Pathogenesis in Neurodegenerative Diseases symposium was held on June 13, 2013. This symposium was sponsored by the CHDI Foundation, the UCLA Department of Neurology, and the UCLA Brain Research Institute.

Schedule

Pontifications on Prions, Proteins, and Pathology

Dave Teplow, UCLA

The Huntingtin Exon-1 (Mis)folding Landscape: Energetically Plausible Candidates for the HD Toxic Species

Ron Wetzel, University of Pittsburgh

Prion-Like and Non-Prion-Like Protein Folding Problems: From Yeast to Neurons

Susan Lindquist, Whitehead Institute for Biomedical Research

General Discussion - William Yang, UCLA

An Unexpected Natural Ally in Neurodegenerative Disease: Inhibiting Aggregation In Vivo and In Vitro

Joel Buxbaum, Scripps Research Institute

Transmission of α Synuclein in Parkinson's Disease

Virginia Lee, University of Pennsylvania

Prion-Like Cytoplasmic Transfer of Polyglutamine Aggregates

Ron Kopito, Stanford

General Discussion - Anne Messer, Wadsworth Center

CAROL MOSS SPIVAK CELL IMAGING FACILITY

In March 2008, the BRI Cell Imaging Facility moved to the California Nanosystems Institute (CNSI) to join with the CNSI Advanced Light Microscopy Facility. The joined facility has since served over 1400 users representing over 250 labs at UCLA, LABioMed, Harbor-UCLA and Cedars Sinai Health Center as well as several industry laboratories (e.g. Nestlé, NanoH2O, Sonendo Inc., Agensys Inc.). The facility houses five Leica spectral confocal microscopes, three of which have multiphoton laser scanning ability. The facility now has a Spinning Disk Confocal microscope, a Laser Microdissection System and will soon have a TIRF (Total Internal Reflectance) microscope online. Additional techniques now available include: FRET (fluorescence resonance energy transfer) FLIM (fluorescence lifetime imaging), FRAP (fluorescence recovery after photobleaching) and STED (scanning transmission depletion microscopy, which allows imaging below the diffraction limit of normal light resolution) and spectral unmixing both on microscopic and macroscopic (small animal) imaging scales. Dr. Laurent Bentolila is the scientific director of the facility.

Dr. Matt Schibler, former director of the BRI Cell Imaging Facility and now a Microscopy Staff Scientist in the combined CNSI/BRI Advanced Light Microscopy/Spectroscopy Facility, has primary responsibility for training new users in the facility and has taught over 200 individuals (in groups of 3-7) how to use the joined facility's confocal microscopes and other instruments. Training sessions are held on the average of once every ten days depending on demand. Each confocal microscopy training session includes three hours of confocal microscope theory and instruction in the use of the microscope software. Dr. Schibler also continues instruction for all of these users beyond the initial class. Dr. Schibler has been a member of UCLA's Laser Safety committee responsible for reviewing and setting laser safety policy at UCLA. Dr. Schibler also coordinates the collection of images for the annual BRI calendar.

The combined facility has hosted many tours during the current period which included: 1) student visitors from local secondary schools (such as the Harvard-Westlake School), colleges (such as College of the Canyons), and UCLA class groups in electrical engineering, microscopy and microbiology; 2) distinguished faculty members from universities worldwide (e.g., faculty members from the National University of Singapore); 3) and industry leaders in nanotechnology and members of committees and delegations from programs for neuroscience, nanoscience and nanotechnology.

The facility also acts as a bridge between UCLA researchers and the vendors of imaging technologies. In this capacity during the 2012-2013 academic year, the facility hosted demonstrations and workshops that were open to all UCLA researchers such as "Optogenetics: An Overview including Current Probes, Techniques and Equipment" presented by Leica Microsystems and Andor Technology and "New Fluorescent and Labeling Technologies" presented by Molecular Probes by Life Technologies.

INTEGRATIVE CENTERS FOR NEUROSCIENCE EXCELLENCE (ICNE)

The launch of six new Integrative Centers for Neuroscience Excellence (ICNE) will bring different areas of research excellence into the forefront and highlight the specific strengths of UCLA's neuroscience activities. The UCLA neuroscience community is very large, and research is conducted within a number of schools, institutes, departments and organized research units (ORUs) which can make it difficult to envision how all the components contribute to the whole. The ICNE, by giving an institutional "face" to different areas of neuroscience, will remedy this situation by providing a focused profile highlighting the diverse activities of the neuroscience community to potential students and the public. The proposed ICNE represent communities of scientists who share an interest in similar topics or techniques, and correspond roughly to the focused areas of research (FARs) that guide curriculum options for the Interdepartmental Ph.D. Program for Neuroscience. Each ICNE will develop its own identity. Each will have its own website, and receive endowment support to organize symposia and seminars, as well as facilitate coordination and cooperation in its particular field. There are six Integrative Centers for Neuroscience Excellence. Two ICNE have launched (the Integrative Center for Learning and Memory, and the Integrative Center for Neurogenetics) and four are in the process of development. The next center to be launched will be the Integrative Center for Neural Repair and will represent research concentrations in neural development, degeneration and repair. Future ICNE will be concentrated on neuroimaging, synapses, cells and circuits, and addiction neurobiology.

AFFINITY GROUPS (*upcoming ICNE)

A variety of interdisciplinary affinity groups, developed to provide scientific exchange on specific research topics, meet at regular intervals. A number of these groups have developed program project, center, and training grant proposals. These groups represent one of the greatest strengths of the Institute, that is, the scientific depth and diversity of its membership, and their collaborative interaction. These affinity groups include:

<u>Affinity Group</u>	<u>Leader(s)</u>
Addictions Research Consortium*	Edythe London & Igor Spigelman
Astrocyte Biology	Baljit Khakh & Michael Sofroniew
Autism	Daniel Geschwind
Brain-Mind-Body Interactions	Michael Irwin
Circadian and Sleep Medicine	Christopher Colwell
Computational Neuroscience	Ladan Shams
Immunology in Neuroscience	James Waschek
Inner Ear	Felix Schweizer
Neural Repair*	Marie-Françoise Chesselet
Neural Stem Cells	Harley Kornblum
Neurobiology of <i>Drosophila melanogaster</i> and <i>C. Elegans</i>	David Krantz
Neuroendocrinology	Arthur Arnold
Neuroimaging/Cognition*	Susan Bookheimer
Neuronuclear Imaging Affinity Group	Daniel Silverman
Neurophysics & Neuroengineering	Mayank Mehta
Neuroscience History	Joel Braslow & Russell Johnson
Songbird	Stephanie White
Stress, Pain and Emotion	Emeran Mayer
Synapse to Circuit Club*	Kelsey Martin & Larry Zipursky
Undergraduate Researchers in Parkinson's Disease	Marie-Françoise Chesselet
Zebra Fish	Alvaro Sagasti

SCIENTIFIC and EDUCATIONAL OUTREACH PROGRAMS

Brain Awareness Week March 2013

(Held in conjunction with the Society for Neuroscience Brain Awareness Week)

The UCLA Chapter of the Society for Neuroscience recognized Brain Awareness Week (BAW) with a number of special events during a busy, educational and exciting week at the UCLA Brain Research Institute (BRI).

The focus of BAW is “Community-to-Campus Outreach,” bringing over 300 students from Los Angeles area middle schools and high schools to the UCLA Brain Research Institute (BRI). This program provides students the opportunity to visit the UCLA BRI and participate in neuroscience educational activities, lab and campus tours, and career/mentoring workshops. With over 100 faculty and student volunteers from numerous groups (Project Brainstorm, Interaxon, STEMPLEDGE, Neuroscience Undergraduate Society) full-day events included brain demonstrations, hands-on activities and presentations, lab tours, campus tours, and career/mentorship workshops.

During Brain Awareness Week, a number of teachers from local schools are invited to bring their class on a very special field trip to the UCLA Brain Research Institute. Each day, visiting students arrived in front of the Gonda (Goldschmied) Neuroscience and Genetics Research Center to join “Project Brainstorm” leader, Daya Alexander. (Project Brainstorm is the ongoing science outreach program organized by graduate students in the Interdisciplinary Program for Neuroscience at UCLA.) The tour began with a brief overview on the structure and function of the brain, and then graduate students from Project Brainstorm conducted presentations on the brain, including some hands-on activities, and educational, age-appropriate presentations ranging from brain injury, two-point discrimination testing, sensation, synaptic function, hemispheric differences, motor system and lobe functions set up by the Interaxon group. The students then visited research laboratories in the Gonda Center where they heard presentations about a number of research topics. The day concluded with a campus tour, and a career/mentoring workshop. In the morning session the goal was to inspire excitement and educate our youth audience, specifically focusing on neuroscience hands-on activities. In the afternoon session, the campus tour had two benefits: 1) Introduce K-12 students to the UCLA campus, and 2) Expose students to the ethnic diversity of the UCLA community. In the career/mentoring panels students had the opportunity to meet a diverse graduate student panel. Graduate students from multiple ethnic and socioeconomic backgrounds described their personal paths to graduate education, and the hardships and successes they have experienced. Students expressed a lot of curiosity, insight, and interest throughout the entire day while being guided through the fascinating neuroscience research environment at UCLA. Before departing, the students all received a Brain Research Institute pencil and brain eraser as souvenirs of their visit to UCLA. This year, our BAW was sponsored by the UCLA Brain Research Institute, the Center for Student Programming, Campus Programs Committee, the Graduate Student Association’s Discretionary Funds, and the Biological Sciences Council.

Project Brainstorm

Project Brainstorm is the current outreach project of the Brain Research Institute and Neuroscience Interdepartmental Educational Programs. Project Brainstorm grew out of the former SPARCS (Special Achievement Rewards for College Scholars) Program that was developed by Dr. Arnold Scheibel and Ms. Norma Bowles of the ARCS Foundation (Achievement Rewards for College Scientists).

The goal of Project Brainstorm is to stimulate interest in science for children and young adults by emphasizing the function and importance of the brain. Students in the Interdepartmental Graduate and Undergraduate Neuroscience Programs devote a great deal of time to this outreach program. Teams of graduate and undergraduate students participate in the program and visit private and public schools in the Los Angeles area throughout the academic year. On a typical visit, a team of two predoctoral and two undergraduate students teach two classrooms of students at the elementary level. Through group participation,

interactive games, and hands-on exercises, the young students receive instruction in the basic science of the brain. With each visit, new techniques and strategies are learned for effectively reaching the children. Topics such as "What does the brain do? What is it made of? Does size matter? Are there sex differences in brains? What happens as your brain grows? What is good for your brain? and What is bad for your brain?" ~ are all topics the children love to explore. The teaching teams often get some surprisingly accurate answers from even the first- and second-graders!

Project Brainstorm participants carry a combined body of knowledge into the classroom with a few teaching props, a plastic model of the brain, one or two real human brains, skulls, and a spinal cord, and a few animal brains for comparison. The children respond with enthusiasm and show a great deal of interest in the brain. Hopefully this interest will survive, be nurtured, and grow until the children are able to pursue an educational path that will lead them to careers in science.

Interaxon

Interaxon is an Undergraduate Neuroscience Educational Outreach Group founded at UCLA (<http://Interaxon.scienceontheweb.net>) and affiliated with the BRI. Interaxon was founded in 2006 by Shanna Fang, who was among the first group of students to take the NS195 Project Brainstorm course. Interaxon has grown and now consists of 30 or more members from freshmen to seniors, as well as some alumni, from a wide variety of majors encompassing not only the sciences (neuroscience, biology, integrative biology & physiology, molecular & cell biology) but also economics, philosophy, foreign language, and international development. Interaxon has been a huge success in the Los Angeles area, reaching out to a large number of 1st-12th grade student groups with as many as 6 presentations per quarter to as many as 150 students in a single visit to a school. Interaxon meets weekly to schedule their activities and practice their presentations for upcoming venues. They use approaches such as stations, brain models, props to talk about the brain in a simple way, as is done in Project Brainstorm, but with more senior graduate students and faculty supervising when human brains are shown. Interaxon excels in developing novel interactive games such as "Pirates of the Crrrrrrranium." Presentations have included: Human/Animal Brain Lab, Lobe Functions, Sensory Systems, Neurons/Neurotransmitters, Brain Injury, Learning and Memory, Neurological Disorders, Effects of Drugs on the Brain, and Alcohol and the Brain. Interaxon also holds career panels for high school students to encourage them to pursue higher education and interests towards careers in science and medicine.

Interaxon made numerous presentations during the 2012-2013 academic year. Venues included: Promoting Individuality Through the Arts (PITA), Brain Awareness Week (in collaboration with Project Brainstorm), Early Academic Outreach Program (EAOP) at UCLA, and a number of visits to schools within the Los Angeles United School District.

New Initiatives

NeuroCamp

NeuroCamp was initiated in the summer of 2010. NeuroCamp invites students, drawn mainly from local high schools, to enjoy a crash course of lectures and hands-on exercises covering many aspects of the fundamentals of neuroscience. Students spend several hours attending lectures by UCLA professors and mastering a wide variety of laboratory techniques crucial to modern science. This intensive two-week course exposes students to the basics of neuroanatomy and molecular biology.

NeuroCamp is the brainchild of Dr. Joe Watson, the BRI's former Associate Director for Outreach. Students intern in UCLA neuroscience labs for two weeks and meet every afternoon in a teaching lab in Franz Hall for instruction from Professors Bill Grisham, Jim Boulter, and Jack Van Horn. Dr. Watson has expanded NeuroCamp, each year enrolling more students from schools in disadvantaged areas. For more information, please see: http://www.bri.ucla.edu/bri_education/scienceoutreach.asp.

The BRI Outreach Program also sponsors science fairs off campus at local high schools and also at the state level. The BRI sponsors prizes at the Annual California State Science Fair, awarding multiple Neuroscience prizes for both the senior (grades 9-12) and junior (grades 6-8) levels. The BRI also sponsors prizes at the Los Angeles County Science Fair, and co-sponsors the LA BRAIN BEE (<http://www.losangelesbrainbee.com>). During the summer the BRI also places as many as 20 local high school students in research labs in the UCLA neuroscience community. The BRI also sponsors winners of local high school fairs as part of the Summer Internship Program.

NEUROSCIENCE NEWS, the BRI's newsletter, provides a quarterly update on Institute news and events, including new members in the BRI, and graduate students in the Interdepartmental Program for Neuroscience, fellowships and awards currently available, and laboratory personnel and positions available in the UCLA neuroscience community.

UCLA NEUROSCIENCE RESEARCH SEMINARS AND LECTURES calendar is published bi-monthly and is a summary of all neuroscience-related lectures and activities on the entire campus.

BRI ANNUAL NEUROSCIENCE CALENDAR includes major national and international neuroscience conferences as well as UCLA neuroscience events throughout the year.

BRAIN RESEARCH INSTITUTE FUNDING

STATISTICAL DATA

1.	Number of Graduate and Postdoctoral Students Directly Contributing to BRI's Work	
	(a) Who are on payroll	0
	(b) Who participate through assistantships, traineeships, fellowships or otherwise	
	(1) BRI fellowships from ARCS Predoctoral	7
	(2) Interdepartmental Ph.D. Program in Neuroscience (including fellowships from ARCS)	
	Candidates for Ph.D.	74
	Candidates for M.D.-Ph.D.	13
	(c) Total number of graduate and postdoctoral students under supervision of BRI members	
	(1) Predoctoral	332
	(2) Postdoctoral	317
2.	Number of Faculty Members Actively Engaged in BRI's Research or Its Supervision	
	Total number of members	343
	Regular members	277
	Emeritus members	57
	Corresponding members	9
3.	Extent of Faculty Participation from Other Campuses	0
4.	Number of FTEs of Professional, Technical, Administrative, and Clerical Personnel Employed	
	(a) Positions supported by grants and contracts administered by the BRI	
	(1) Academic	0
	(2) Non-academic (administrative, technical, and clerical)	0
	(3) Total	0
	(b) Positions supported by UC 19900 budget	
	(1) Academic	0.18
	(2) Non-academic	4.35
	(3) Total	4.43

5. List of Publications Issued by the BRI
 - (a) Publications of individual members and BRI affiliates and programs (1515)
 - (b) BRI Annual Report
(30 copies distributed free of charge)
 - (c) Joint Seminars in Neuroscience flyers
(E-mail distribution only)
 - (d) UCLA Neuroscience Research Seminars and Lectures 2012 #13-21; 2013 #1-12
(E-mail distribution only)
 - (e) Neuroscience News Vol. 21, # 3, Fall 2012/Winter 2013 and Vol. 21 # 4, Spring 2013
(E-mail distribution and limited mailings (development, alumni, etc.))
 - (f) BRI Annual Calendar
(Distribution to the neuroscience community, donors and guest speakers)

RESEARCH AND TRAINING SUPPORT

Substantial support continued to be provided from the ARCS Foundation (Achievement Rewards for College Scientists) for scholarships given to a number of talented graduate students in neuroscience.

Evidence of a broadening base was also apparent in efforts to acquire additional funds for the endowment, the nucleus of which was formed by the Leslie Fund in 1974. The BRI continues to aim at achieving a large stabilizing fund in order to assure the potential productivity of which it is capable.

The amount and sources of extramural funding administered by the BRI are listed in the table below. These figures do not include gift and endowment principal. BRI members have additional research funding administered through their home departments.

Brain Research Institute Contracts & Grants Administration Sources of Extramural Financial Support 2012-2013			
Agency	Title	Total Direct Cost	Principal Investigator
National Institutes of Health			
National Institute of Child Health & Human Development HD-07228	Training Program in Neuroendocrinology, Sex Differences, and Reproduction	\$282,258	A. Arnold (Life Sciences)
National Institute of Neurological Disorders & Stroke NS07449	Training Program in Neural Repair	\$160,120	M. Chesselet (Neurology)
NS-07101	Cellular Neurobiology Training Program	\$194,656	T. O'Dell (Physiology)
National Institute of General Medical Sciences GM 75776	Clinical Pharmacology Training	\$270,130	B. Levey (Pharmacology)
GM 08042	Medical Scientist Training Program	\$1,064,640	S. Smale (Microbiology, Immunology & Molecular Genetics)
Federal		\$1,971,804	
Total Funding Administered Through BRI		\$1,971,804	

PUBLICATIONS

BRI Members' Total Number of Peer Reviewed Publications: 1515.

Total Number of Collaborative Publications with one or more BRI Member: 750.

To view publications by member please search PubMed at: <http://www.ncbi.nlm.nih.gov/pubmed/>.