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

<p>| | |</p>
<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Members</td>
<td>343</td>
</tr>
<tr>
<td>Number of Member Publications</td>
<td>1515</td>
</tr>
<tr>
<td>Collaborative Publications</td>
<td>750</td>
</tr>
<tr>
<td>between two or more BRI members</td>
<td></td>
</tr>
<tr>
<td>Predoctoral Students under Supervision of BRI Members</td>
<td>332</td>
</tr>
<tr>
<td>Postdoctoral Students under Supervision of BRI Members</td>
<td>317</td>
</tr>
<tr>
<td>Total Funding Administered through the BRI Fiscal Office (BRI Training Grants)</td>
<td>$ 1.97 million</td>
</tr>
</tbody>
</table>

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 cosponsored 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., Agenysys 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 Reflection) 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:

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

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Research Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jeffry R. Alger, Ph.D.</td>
<td>Professor of Neurology, and Radiological Sciences</td>
<td>Magnetic resonance imaging, magnetic resonance spectroscopy and diffusion tensor imaging of the brain</td>
</tr>
<tr>
<td>Lori Altshuler, M.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences; Director, UCLA Mood Disorders Research Program</td>
<td>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</td>
</tr>
<tr>
<td>Anne M. Andrews, Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences, and Chemistry and Biochemistry</td>
<td>Understanding how the serotonin neurotransmitter system modulates complex behaviors including anxiety, mood, stress responsiveness, and learning and memory</td>
</tr>
<tr>
<td>Liana G. Apostolova, M.D.</td>
<td>Associate Professor of Neurology</td>
<td>Memory disorders and dementia</td>
</tr>
<tr>
<td>Arthur P. Arnold, Ph.D.</td>
<td>Distinguished Professor of Integrative Biology &amp; Physiology; Director, Laboratory of Neuroendocrinology, Brain Research Institute</td>
<td>Hormonal and sex chromosomal factors that cause sex differences in physiology and disease, as a strategy for finding factors that protect from disease</td>
</tr>
<tr>
<td>Utpal Banerjee, Ph.D.</td>
<td>Professor and Chair of Molecular, Cell &amp; Developmental Biology; Professor of Biological Chemistry</td>
<td>Signaling and metabolic control of development</td>
</tr>
</tbody>
</table>
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
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Research Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Douglas L. Black, Ph.D.</td>
<td>Professor of Microbiology, Immunology &amp; Molecular Genetics; Investigator, Howard Hughes Medical Institute</td>
<td>Regulation of pre-mRNA splicing and the biochemical mechanisms that control changes in splice sites</td>
</tr>
<tr>
<td>Hugh T. Blair, Ph.D.</td>
<td>Associate Professor of Psychology (Behavioral Neuroscience)</td>
<td>Neurobiology of learning, memory and motivation with an emphasis on the role of neural oscillations in the storage and processing of information</td>
</tr>
<tr>
<td>Aaron Blaisdell, Ph.D.</td>
<td>Professor of Psychology</td>
<td>Comparative psychology and animal cognition</td>
</tr>
<tr>
<td>Gene D. Block, Ph.D.</td>
<td>Professor of Psychiatry &amp; Biobehavioral Sciences, and Integrative Biology &amp; Physiology; Chancellor, UCLA</td>
<td>Circadian rhythms and aging</td>
</tr>
<tr>
<td>Ruben J. Boado, Ph.D.</td>
<td>Professor of Medicine/Endocrinology</td>
<td>Blood-brain barrier genomics, genetic engineering of fusion proteins and plasmid DNA for non-viral gene therapy to the brain</td>
</tr>
<tr>
<td>Dean Bok, Ph.D.</td>
<td>Distinguished Professor of Neurobiology, and Dolly Green Professor of Ophthalmology</td>
<td>Cell and molecular biology of the retina in health and disease</td>
</tr>
<tr>
<td>Susan Y. Bookheimer, Ph.D.</td>
<td>Joaquin Fuster Professor of Cognitive Neuroscience, Department of Psychiatry and Biobehavioral Sciences</td>
<td>Functional magnetic resonance imaging to understand disruptions in brain systems in patients with a range of neurological developmental and neuropsychiatric disorders</td>
</tr>
<tr>
<td>Yvette M. Bordelon, M.D., Ph.D.</td>
<td>Assistant Professor of Neurology</td>
<td>Identification of biomarkers, including the use of PET imaging ligands, and clinical trials in Huntington disease, Parkinson disease and other movement disorders</td>
</tr>
<tr>
<td>James R. Boulter, Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Molecular neurobiology of neuronal nicotinic acetylcholine receptors</td>
</tr>
<tr>
<td>Anatol Bragin, Ph.D.</td>
<td>Professional Research Neurologist</td>
<td>Basics mechanisms of epilepsy</td>
</tr>
<tr>
<td>Joel T. Braslow, M.D., Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences, and History; Director, Neuroscience History Archives</td>
<td>History of the neurosciences and psychiatry</td>
</tr>
</tbody>
</table>
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
<table>
<thead>
<tr>
<th>Name</th>
<th>Position and Affiliation</th>
<th>Research Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marie-Françoise Chesselet, M.D., Ph.D.</td>
<td>Charles H. Markham Professor of Neurology; Chair and Distinguished Professor, Department of Neurobiology</td>
<td>Molecular mechanisms of neurodegenerative diseases and neural repair in the basal ganglia</td>
</tr>
<tr>
<td>Francesco Chiappelli, Ph.D.</td>
<td>Professor of Oral Biology, School of Dentistry</td>
<td>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-osteoimmunology</td>
</tr>
<tr>
<td>Jacobo W. Chodakiewitz, M.D.</td>
<td>Assistant Professor of Neurosurgery</td>
<td>Neurostimulation of brain and spinal cord and/or ablation for pain control; involuntary movements</td>
</tr>
<tr>
<td>Steven G. Clarke, Ph.D.</td>
<td>Distinguished Professor of Chemistry and Biochemistry</td>
<td>Role of protein methylation reactions in the repair of age-damage and in the regulation of biological function</td>
</tr>
<tr>
<td>Timothy F. Cloughesy, M.D.</td>
<td>Professor of Neurology; Director, Neuro-Oncology Program; Co-Director, Henry Singleton Brain Cancer Research Program</td>
<td>Human brain tumors</td>
</tr>
<tr>
<td>Mark S. Cohen, Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Applications and technology of neuroimaging</td>
</tr>
<tr>
<td>John Colicelli, Ph.D.</td>
<td>Professor of Biological Chemistry</td>
<td>Signal transduction in cancer and neurobiology</td>
</tr>
<tr>
<td>Christopher S. Colwell, Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Circadian and sleep medicine</td>
</tr>
<tr>
<td>Ian A. Cook, M.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences</td>
<td>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</td>
</tr>
<tr>
<td>Edwin L. Cooper, Ph.D., Sc.D.</td>
<td>Distinguished Professor of Neurobiology</td>
<td>Evolutionary development of the neuroimmune system; Evidence-based complementary and alternative medicine</td>
</tr>
</tbody>
</table>
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
<table>
<thead>
<tr>
<th>Name</th>
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<th>Research Focus</th>
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<tbody>
<tr>
<td>Joseph J. DiStefano, III, Ph.D.</td>
<td>Distinguished Professor of Computer Science, Medicine, and Biomedical Engineering</td>
<td>Computational systems biology</td>
</tr>
<tr>
<td>Bruce H. Dobkin, M.D.</td>
<td>Professor of Neurology; Medical Director, Neurologic Rehabilitation and Research Unit</td>
<td>Rehabilitation interventions and monitoring and outcome measurements to improve motor skills after brain and spinal cord lesions</td>
</tr>
<tr>
<td>Hong-Wei Dong, M.D., Ph.D.</td>
<td>Assistant Professor of Neurology</td>
<td>Construction of a three dimensional connectivity atlas to characterize neuronal networks in the mouse brain</td>
</tr>
<tr>
<td>Lars Dreier, Ph.D.</td>
<td>Assistant Professor of Neurobiology</td>
<td>The function of ubiquitin ligases in the formation of synapses and neurodegenerative disease in the genetic model organism C. Elegans and mammalian systems</td>
</tr>
<tr>
<td>V. Reggie Edgerton, Ph.D.</td>
<td>Distinguished Professor of Integrative Biology &amp; Physiology, Neurobiology, and Neurosurgery</td>
<td>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</td>
</tr>
<tr>
<td>Jerome Engel, Jr., M.D., Ph.D.</td>
<td>Jonathan Sinay Distinguished Professor of Neurology, Neurobiology, and Psychiatry and Biobehavioral Sciences; Director, UCLA Seizure Disorder Center</td>
<td>Epilepsy</td>
</tr>
<tr>
<td>Christopher J. Evans, Ph.D.</td>
<td>Stefan Hatos Professor of Psychiatry and Biobehavioral Sciences; Director, Brain Research Institute</td>
<td>Neurobiology of drugs of abuse and neuroimmune interactions</td>
</tr>
<tr>
<td>Gordon L. Fain, Ph.D.</td>
<td>Distinguished Professor of Integrative Biology &amp; Physiology, and Ophthalmology</td>
<td>Physiology of vertebrate photoreceptors</td>
</tr>
<tr>
<td>Guoping Fan, Ph.D.</td>
<td>Professor of Human Genetics</td>
<td>Epigenetic mechanisms in neural development and stem cell regulation</td>
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<tr>
<td>Michael S. Fanselow, Ph.D.</td>
<td>Distinguished Professor of Psychology, and Psychiatry and Biobehavioral Sciences</td>
<td>Neural mechanisms of learning, memory and emotion</td>
</tr>
<tr>
<td>Name</td>
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<td>Research Interests</td>
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<td>-----------------------------</td>
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<tr>
<td>Debora B. Farber, Ph.D.</td>
<td>Distinguished Professor of Ophthalmology</td>
<td>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</td>
</tr>
<tr>
<td>Kym F. Faull, Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences; Director, Pasarow Mass Spectrometry Laboratory</td>
<td>Monitoring compounds that are important in cellular communication, and relating their concentrations and turnover to cellular homeostasis</td>
</tr>
<tr>
<td>Jack L. Feldman, Ph.D.</td>
<td>Distinguished Professor of Neurobiology</td>
<td>Neural control of movement</td>
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<tr>
<td>Jamie D. Feusner, M.D.</td>
<td>Associate Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Phenotypes of perception, emotion, and obsession across body image and anxiety disorders</td>
</tr>
<tr>
<td>Robin S. Fisher, Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences, and Neurobiology</td>
<td>Forebrain neurogenesis and establishment of axonal connectivity</td>
</tr>
<tr>
<td>L. Jaime Fitten, M.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Attentional dysfunction in Alzheimer's disease and its implications for motor vehicle operation</td>
</tr>
<tr>
<td>Brent L. Fogel, M.D., Ph.D.</td>
<td>Assistant Professor of Neurology</td>
<td>Molecular pathogenesis of neurodevelopmental and neurodegenerative disease</td>
</tr>
<tr>
<td>Nelson B. Freimer, M.D.</td>
<td>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 &amp; Human Behavior</td>
<td>The genetic basis of complex traits, particularly neurobehavioral phenotypes such as bipolar disorder, Tourette Syndrome, and temperament</td>
</tr>
<tr>
<td>Itzhak Fried, M.D., Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences, and Neurosurgery</td>
<td>Neuronal basis of cognitive processing in the human brain</td>
</tr>
<tr>
<td>Mark A. Frye, Ph.D.</td>
<td>Professor of Integrative Biology &amp; Physiology, and Neurobiology</td>
<td>Sensory neurobiology, motor control, and behavior</td>
</tr>
</tbody>
</table>
Denson G. Fujikawa, M.D.  Clinical Professor of Neurology  In vivo 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. Grimalva, 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 Drosophila

Zhefeng Guo, Ph.D.  Assistant Professor of Neurology  Structural biology of amyloid-related neurodegenerative diseases

Karen H. Gylys, 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  
Drosophila 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<sub>A</sub> 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
<table>
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<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Wayne L. Hubbell, Ph.D.</td>
<td>Jules Stein Professor of Ophthalmology; Distinguished Professor of Chemistry and Biochemistry</td>
<td>Molecular basis of membrane excitation</td>
</tr>
<tr>
<td>Marco Iacoboni, M.D., Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Human systems neuroscience using brain imaging and neuromodulation</td>
</tr>
<tr>
<td>Louis J. Ignarro, Ph.D.</td>
<td>Professor of Molecular and Medical Pharmacology; Jerome J. Belzer Chair—Medical Research</td>
<td>Nitric oxide, vascular physiology, cellular proliferation</td>
</tr>
<tr>
<td>Michael R. Irwin, M.D.</td>
<td>Cousins Professor of Psychiatry and Biobehavioral Sciences; Director, Cousins Center for Psychoneuroimmunology; Professor of Psychology</td>
<td>Interactions between behavior and immunity, consequences of major depression on immune processes relevant to infectious disease and inflammatory disorders</td>
</tr>
<tr>
<td>Alicia Izquierdo, Ph.D.</td>
<td>Associate Professor of Psychology</td>
<td>Brain mechanisms of optimal choices</td>
</tr>
<tr>
<td>Joanna C. Jen, M.D., Ph.D.</td>
<td>Professor of Neurology</td>
<td>Disease mechanisms, diagnosis, and treatment for neurological disorders affecting balance, coordination, and eye movement control</td>
</tr>
<tr>
<td>J. David Jentsch, Ph.D.</td>
<td>Professor of Psychology, and Psychiatry and Biobehavioral Sciences; Associate Director for Research, Brain Research Institute</td>
<td>Genetic and neurochemical influences on cognitive and executive functions in laboratory animals</td>
</tr>
<tr>
<td>Shafali Spurling Jeste, M.D.</td>
<td>Assistant Professor of Psychiatry and Biobehavioral Sciences, and Neurology</td>
<td>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</td>
</tr>
<tr>
<td>H. Ronald Kaback, M.D.</td>
<td>Distinguished Professor of Physiology</td>
<td>Structure and function of membrane transport proteins</td>
</tr>
<tr>
<td>Bruce L. Kagan, M.D., Ph.D.</td>
<td>Clinical Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Amyloid peptide channels: role in pathophysiology of disease</td>
</tr>
<tr>
<td>Daniel L. Kaufman, Ph.D.</td>
<td>Professor of Molecular and Medical Pharmacology</td>
<td>Neuroimmunology, neurodevelopment, immunotherapeutics for neurodegenerative disease</td>
</tr>
<tr>
<td>Name</td>
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<tr>
<td>Baljit S. Khakh, Ph.D.</td>
<td>Professor of Physiology, and Neurobiology; Executive Vice Chair of Physiology</td>
<td>ATP signaling and glial biology in neuronal circuits</td>
</tr>
<tr>
<td>Barbara J. Knowlton, Ph.D.</td>
<td>Professor and Vice Chair for Undergraduate Programs, Department of Psychology</td>
<td>Cognitive neuroscience of memory and executive function</td>
</tr>
<tr>
<td>Carla M. Koehler, Ph.D.</td>
<td>Professor of Chemistry and Biochemistry</td>
<td>Protein import into mitochondria; understanding how mitochondrial dysfunction contributes to disease</td>
</tr>
<tr>
<td>Brian J. Koos, M.D., Ph.D.</td>
<td>Professor and Vice Chair (Academic Affairs) of Obstetrics and Gynecology</td>
<td>Fetal behavior and cardiovascular responses to hypoxia</td>
</tr>
<tr>
<td>Harley I. Kornblum, M.D., Ph.D.</td>
<td>Professor of Psychiatry &amp; Biobehavioral Sciences, Molecular &amp; Medical Pharmacology, and Pediatrics</td>
<td>Neural stem cells and brain tumors</td>
</tr>
<tr>
<td>David E. Krantz, M.D., Ph.D.</td>
<td>Associate Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Molecular mechanisms that regulate neurotransmitter release with a focus on the function of neurotransmitter transporters using the model organism <em>Drosophila melanogaster</em></td>
</tr>
<tr>
<td>Carol A. Kruse, Ph.D.</td>
<td>Adjunct Professor of Neurosurgery</td>
<td>Immune and gene therapy for brain tumors</td>
</tr>
<tr>
<td>Ira Kurtz, M.D.</td>
<td>Professor of Medicine (Nephrology); Chief, Division of Nephrology; Factor Chair in Molecular Nephrology</td>
<td>Physiological and biophysical studies of acid-base transport proteins in sensory and extrasensory organs</td>
</tr>
<tr>
<td>Jennifer S. Labus, Ph.D.</td>
<td>Adjunct Assistant Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Delineating the neural networks underlying the neurobiology of stress with a specific emphasis on models of functional and persistent pain and brain-body interactions</td>
</tr>
<tr>
<td>Albert Lai, M.D., Ph.D.</td>
<td>Associate Professor of Neurology</td>
<td>Correlation of genomics/epigenomics with phenotype to identify prognostic and predictive biomarkers for malignant gliomas</td>
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<tr>
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<tr>
<td>Joseph L. Lasky, III, M.D.</td>
<td>Associate Clinical Professor of Pediatrics (Hematology/Oncology), and Neurosurgery</td>
<td>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</td>
</tr>
<tr>
<td>Jin-Jyung Lee, Ph.D.</td>
<td>Assistant Professor of Electrical Engineering, and Psychiatry and Biobehavioral Sciences</td>
<td>Optogenetics; functional and molecular brain imaging</td>
</tr>
<tr>
<td>Andrew F. Leuchter, M.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences; Director, Laboratory of Brain, Behavior and Pharmacology; Director, Office of Professional and Community Education</td>
<td>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</td>
</tr>
<tr>
<td>Michel F. Lévesque, M.D.</td>
<td>Associate Clinical Professor of Neurosurgery</td>
<td>Endogenous and autologous neural stem cell repair of neurodegenerative disorders</td>
</tr>
<tr>
<td>Barbara A. Levey, M.D.</td>
<td>Professor of Medicine, and Molecular &amp; Medical Pharmacology; Assistant Vice Chancellor of Biomedical Affairs</td>
<td>Graduate education; clinical pharmacology and clinical research</td>
</tr>
<tr>
<td>Michael S. Levine, Ph.D.</td>
<td>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</td>
<td>The mechanisms underlying neuronal dysfunction in the basal ganglia and cortex in neurodegenerative disorders</td>
</tr>
<tr>
<td>Linda M. Liau, M.D., Ph.D.</td>
<td>Professor of Neurosurgery</td>
<td>Brain tumor molecular biology, and immunology</td>
</tr>
<tr>
<td>Shuo Lin, Ph.D.</td>
<td>Professor of Molecular, Cell and Developmental Biology</td>
<td>Developmental biology of the nervous system and regulation of neural gene expression</td>
</tr>
<tr>
<td>Walter Ling, M.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Development and evaluation of pharmacotherapy-based and behavioral therapies for treatment of drug dependence; pain</td>
</tr>
</tbody>
</table>
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
<table>
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<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Thomas R. Minor, Ph.D.</td>
<td>Professor of Psychology</td>
<td>Animal models of anxiety and depression; stress resilience; hormetric stress</td>
</tr>
<tr>
<td>Istvan Mody, Ph.D.</td>
<td>Tony Coelho Professor of Neurology, and Professor of Physiology</td>
<td>GABAergic neurotransmission in health and disease</td>
</tr>
<tr>
<td>Bartly J. Mondino, M.D.</td>
<td>Bradley R. Straatsma Professor of Ophthalmology; Chair, Director, Jules Stein Eye Institute; Chief, Cornea-External Disease Division</td>
<td>Cornea-external disease</td>
</tr>
<tr>
<td>Martin M. Monti, Ph.D.</td>
<td>Assistant Professor of Psychology</td>
<td>The relationship between language and thought; consciousness after severe brain injury</td>
</tr>
<tr>
<td>Norman S. Namerow, M.D.</td>
<td>Clinical Professor of Neurology, and Psychiatry</td>
<td>Chronic pain</td>
</tr>
<tr>
<td>Peter M. Narins, Ph.D.</td>
<td>Distinguished Professor of Integrative Biology &amp; Physiology, and Ecology and Evolutionary Biology</td>
<td>Auditory neurophysiology and behavior</td>
</tr>
<tr>
<td>Katherine L. Narr, Ph.D.</td>
<td>Assistant Professor of Neurology</td>
<td>Applied neurobiological imaging in psychiatric disorders</td>
</tr>
<tr>
<td>Valeriy Nenov, Ph.D.</td>
<td>Adjunct Associate Professor of Neurosurgery, and Biomedical Engineering</td>
<td>Development of Java-based telemedical applications for remote monitoring of patients in intensive care; computational modeling of memory functions of the hippocampus</td>
</tr>
<tr>
<td>Bennett G. Novitch, Ph.D.</td>
<td>Assistant Professor of Neurobiology</td>
<td>Molecular mechanisms controlling neural stem cell maintenance and differentiation</td>
</tr>
<tr>
<td>Erika L. Nurmi, M.D., Ph.D.</td>
<td>Assistant Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Neuropsychiatric genetics</td>
</tr>
<tr>
<td>Marc R. Nuwer, M.D., Ph.D.</td>
<td>Professor of Neurology</td>
<td>New clinical applications for EEG and evoked potentials, demonstrations of usefulness, creation of new public policy, and outcome studies</td>
</tr>
<tr>
<td>Thomas J. O'Dell, Ph.D.</td>
<td>Professor and Executive Vice Chair of Physiology; Interim Chair of Physiology</td>
<td>Cellular and molecular mechanisms underlying activity-dependent forms of synaptic plasticity</td>
</tr>
<tr>
<td>Name</td>
<td>Position and Department</td>
<td>Research Focus</td>
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<tr>
<td>-----------------------------</td>
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</tr>
<tr>
<td>Paul H. O'Lague, Ph.D.</td>
<td>Associate Professor of Molecular, Cell &amp; Developmental Biology</td>
<td>Mathematical modeling of osmoregulation using phase transition physics to model osmoregulation in cells</td>
</tr>
<tr>
<td>Riccardo Olcese, Ph.D.</td>
<td>Professor of Anesthesiology, and Physiology</td>
<td>Physiology and biophysics of ion channels and their role in cell function and cardiac arrhythmias</td>
</tr>
<tr>
<td>Richard W. Olsen, Ph.D.</td>
<td>Distinguished Professor of Molecular and Medical Pharmacology</td>
<td>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</td>
</tr>
<tr>
<td>Roel A. Ophoff, Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences, and Human Genetics</td>
<td>Identification of genetic susceptibility of complex traits, in particular neuropsychiatric illnesses such as schizophrenia and bipolar disorder</td>
</tr>
<tr>
<td>Thomas Otis, Ph.D.</td>
<td>Professor and Vice Chair of Neurobiology</td>
<td>Cerebellar physiology, spinocerebellar ataxies</td>
</tr>
<tr>
<td>Diane M. Papazian, Ph.D.</td>
<td>Professor of Physiology</td>
<td>Research focuses on the role of electrical excitability in neurodevelopmental and neurodegenerative diseases</td>
</tr>
<tr>
<td>William M. Pardridge, M.D.</td>
<td>Distinguished Professor of Medicine (Endocrinology)</td>
<td>Blood-brain barrier; brain drug and gene targeting</td>
</tr>
<tr>
<td>Michael E. Phelps, Ph.D.</td>
<td>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</td>
<td>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</td>
</tr>
<tr>
<td>Patricia E. Phelps, Ph.D.</td>
<td>Professor and Vice Chair of Integrative Biology &amp; Physiology</td>
<td>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</td>
</tr>
<tr>
<td>Name</td>
<td>Title</td>
<td>Research Focus</td>
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</tr>
<tr>
<td>Natik Piri, Ph.D.</td>
<td>Associate Professor of Ophthalmology</td>
<td>Retinal ganglion cells and optic neuropathies</td>
</tr>
<tr>
<td>Whitney B. Pope, M.D., Ph.D.</td>
<td>Assistant Professor of Radiological Sciences (Neuroradiology)</td>
<td>Advanced imaging of brain tumor</td>
</tr>
<tr>
<td>Carlos Portera-Cailliau, M.D., Ph.D.</td>
<td>Associate Professor of Neurology, and Neurobiology</td>
<td>The assembly and plasticity of cortical circuits in health and disease</td>
</tr>
<tr>
<td>Nader Pouratian, M.D., Ph.D.</td>
<td>Assistant Professor of Neurosurgery</td>
<td>Brain mapping, neuromodulation, and neural prostheses</td>
</tr>
<tr>
<td>Mayumi L. Prins, Ph.D.</td>
<td>Associate Professor of Neurosurgery</td>
<td>Traumatic brain injury</td>
</tr>
<tr>
<td>Robert M. Prins, Ph.D.</td>
<td>Associate Professor of Neurosurgery, and Molecular and Medical Pharmacology</td>
<td>Immune-based therapies for brain tumors</td>
</tr>
<tr>
<td>Javier Quintana, M.D., Ph.D.</td>
<td>Associate Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Neural bases of social cognition deficits in schizophrenia</td>
</tr>
<tr>
<td>Richard Rawson, Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences; Associate Director, Integrated Substance Abuse Programs (ISAP)</td>
<td>Research on addiction medications, psychosocial traits and dissemination of research findings nationally and internationally</td>
</tr>
<tr>
<td>Lara A. Ray, Ph.D.</td>
<td>Associate Professor of Psychology (Clinical Area), and Psychiatry &amp; Biobehavioral Sciences</td>
<td>The etiology and treatment of substance use disorders, integrating experimental psychopathology, behavioral genetics, and pharmacology</td>
</tr>
<tr>
<td>Dario L. Ringach, Ph.D.</td>
<td>Professor of Neurobiology, and Psychology</td>
<td>Visual electrophysiology and psychophysics, mathematical modeling of receptive field function, cortical dynamics</td>
</tr>
<tr>
<td>Jesse A. Rissman, Ph.D.</td>
<td>Assistant Professor of Psychology, and Psychiatry and Biobehavioral Sciences</td>
<td>Functional neuroimaging studies of human memory and cognitive control</td>
</tr>
<tr>
<td>Leonard H. Rome, Ph.D.</td>
<td>Professor of Biological Chemistry</td>
<td>The study of biogenesis and function of novel subcellular organelles called vaults</td>
</tr>
<tr>
<td>Roland R. Roy, Ph.D.</td>
<td>Researcher, Brain Research Institute, and Integrative Biology &amp; Physiology</td>
<td>Plasticity of the neuromuscular system under chronic conditions of increased or decreased neuromuscular activity</td>
</tr>
<tr>
<td>Eduardo H. Rubinstein, M.D., Ph.D.</td>
<td>Professor of Physiology, and Anesthesiology</td>
<td>Techniques for brain protection during ischemia</td>
</tr>
<tr>
<td>Name</td>
<td>Title</td>
<td>Research Focus</td>
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<tr>
<td>Fred W. Sabb, Ph.D.</td>
<td>Assistant Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Novel technological approaches to cognitive neuroscience and neuroinformatics in order to elucidate the biological origins of major mental illness</td>
</tr>
<tr>
<td>Alvaro Sagasti, Ph.D.</td>
<td>Associate Professor of Molecular, Cell &amp; Developmental Biology</td>
<td>Development and plasticity of somatosensory neuron axon arbors in larval zebrafish</td>
</tr>
<tr>
<td>Albert Sattin, M.D.</td>
<td>Associate Clinical Professor of Psychiatry and Biobehavioral Sciences: Chief, Antidepressant Neuropharmacology Laboratory, West Los Angeles VAMC</td>
<td>The role of TRH and related peptides in CNS function</td>
</tr>
<tr>
<td>Stan Schein, M.D., Ph.D.</td>
<td>Professor of Psychology</td>
<td>Retinal circuits and color vision; retinal synapses and synaptic release processes; endocytosis and fullerene self-assembly</td>
</tr>
<tr>
<td>Barnett A. Schlinger, Ph.D.</td>
<td>Professor and Chair of Integrative Biology &amp; Physiology; Professor of Ecology and Evolutionary Biology</td>
<td>Neurosteroid synthesis and actions; neuroethology</td>
</tr>
<tr>
<td>Felix E. Schweizer, Ph.D.</td>
<td>Professor of Neurobiology</td>
<td>Physiological and molecular mechanisms of neuronal communication at synapses</td>
</tr>
<tr>
<td>Ladan Shams, Ph.D.</td>
<td>Associate Professor of Psychology</td>
<td>Multisensory integration, visual perception, perceptual learning</td>
</tr>
<tr>
<td>Steven Shoptaw, Ph.D.</td>
<td>Professor of Family Medicine, and Psychiatry and Biobehavioral Sciences; Vice Chair for Academic Affairs</td>
<td>Clinical trials of medications for stimulant dependence</td>
</tr>
<tr>
<td>Nancy L. Sicotte, M.D.</td>
<td>Associate Professor of Neurology, Division of Brain Mapping</td>
<td>Multimodal imaging in multiple sclerosis</td>
</tr>
<tr>
<td>Jerome M. Siegel, Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences; Chief, Neurobiology Research, Veterans, Sepulveda VAMC</td>
<td>Sleep, arousal and the function of orexin (hypocretin) neurons</td>
</tr>
<tr>
<td>Alcino J. Silva, Ph.D.</td>
<td>Professor of Neurobiology, Psychiatry &amp; Biobehavioral Sciences, and Psychology</td>
<td>Molecular and cellular mechanisms underlying learning and memory and its disorders, including age-related cognitive decline, autism and schizophrenia</td>
</tr>
<tr>
<td>Name</td>
<td>Title</td>
<td>Research Area</td>
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</tr>
<tr>
<td>Daniel H. Silverman, M.D., Ph.D.</td>
<td>Professor of Molecular and Medical Pharmacology</td>
<td>Neurological basis for, and optimizing evaluation and management of, cognitive dysfunction secondary to a wide array of insults (neurodegenerative, hormonal, pharmacologic, traumatic)</td>
</tr>
<tr>
<td>Dwayne D. Simmons, Ph.D.</td>
<td>Professor of Integrative Biology &amp; Physiology; Director, Minority Access to Research Careers Program</td>
<td>Synapse formation and sensory cell development</td>
</tr>
<tr>
<td>Elyse J. Singer, M.D.</td>
<td>Professor of Neurology</td>
<td>NeuroAIDS</td>
</tr>
<tr>
<td>Gary W. Small, M.D.</td>
<td>Parlow-Solomon Professor on Aging; Professor of Psychiatry and Biobehavioral Sciences; Director, Longevity Center; Director, Geriatric Psychiatry Division, UCLA</td>
<td>Early detection and prevention of age-related memory loss and dementia</td>
</tr>
<tr>
<td>Desmond J. Smith, M.D., Ph.D.</td>
<td>Professor of Molecular and Medical Pharmacology</td>
<td>Genetics of behavioral, neuropsychiatric and neurodegenerative disorders</td>
</tr>
<tr>
<td>Judith L. Smith, Ph.D.</td>
<td>Professor of Integrative Biology &amp; Physiology; Vice Provost for Undergraduate Education, College of Letters and Science</td>
<td>Neural control of stereotypic limb motions</td>
</tr>
<tr>
<td>Michael V. Sofroniew, M.D., Ph.D.</td>
<td>Professor of Neurobiology</td>
<td>Astrocyte biology in health and disease</td>
</tr>
<tr>
<td>Sophie Sokolow, Ph.D.</td>
<td>Assistant Professor of Nursing</td>
<td>Alzheimer's disease</td>
</tr>
<tr>
<td>Elizabeth R. Sowell, Ph.D.</td>
<td>Associate Professor of Neurology</td>
<td>Developmental neuroimaging</td>
</tr>
<tr>
<td>Igor Spigelman, Ph.D.</td>
<td>Professor of Oral Biology &amp; Medicine, School of Dentistry</td>
<td>Neurobiology of disease; mechanisms of chronic pain, seizures, stroke, brain trauma, and addiction</td>
</tr>
<tr>
<td>Francis F. Steen, Ph.D.</td>
<td>Associate Professor of Communication Studies/Speech</td>
<td>The nature of cognitive processes involved in interpersonal, computer-mediated, and mass communication</td>
</tr>
<tr>
<td>Name</td>
<td>Position and Affiliations</td>
<td>Research Focus</td>
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<tr>
<td>Enrico Stefani, M.D., Ph.D.</td>
<td>John Bartley Dillon Endowed Chair in Anesthesiology;</td>
<td>Stimulation emission depletion super-resolution microscopy, heart protection and mitochondria channels</td>
</tr>
<tr>
<td></td>
<td>Distinguished Professor of Anesthesiology and Physiology; Dorothy and Leonard Strauss</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scholar; Associate Director, Cardiovascular Research Laboratories</td>
<td></td>
</tr>
<tr>
<td>Catia Sternini, M.D.</td>
<td>Professor of Medicine, and Neurobiology</td>
<td>Mechanisms that govern receptor-mediated responses in the enteric nervous system and chemosensing in the gastrointestinal tract</td>
</tr>
<tr>
<td>Ronald Stevens, Ph.D.</td>
<td>Professor of Microbiology, Immunology and Molecular Genetics; Director, IMMEX Project</td>
<td>EEG measures of workload and engagement to model the neurodynamic complexity of submarine piloting and navigation teams</td>
</tr>
<tr>
<td>Rebecca A. Stockton, Ph.D.</td>
<td>Assistant Professor of Pediatrics</td>
<td>Cerebrovascular disease, vascular medicine</td>
</tr>
<tr>
<td>Hui Sun, Ph.D.</td>
<td>Associate Professor of Physiology, and Ophthalmology; Early Career Scientist, Howard Hughes Medical Institute</td>
<td>A novel membrane transport system in physiology and mechanism of macular degeneration</td>
</tr>
<tr>
<td>Yi E. Sun, Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences, and Molecular and Medical Pharmacology</td>
<td>Epigenetic regulation of stem cells</td>
</tr>
<tr>
<td>Yvette Taché, Ph.D.</td>
<td>Professor of Medicine (Digestive Diseases); Director, Animal Core, CURE: Digestive Diseases Research Center; Co-Director, Center for Neurovisceral Sciences &amp; Women’s Health</td>
<td>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 good intake and gastric transit</td>
</tr>
<tr>
<td>Anna N. Taylor, Ph.D.</td>
<td>Professor of Neurobiology; Senior Research Career Scientist, VAGLAHS</td>
<td>Neuroendocrine, neuroimmunology, fetal and adult alcoholism, traumatic brain injury</td>
</tr>
<tr>
<td>David B. Teplow, Ph.D.</td>
<td>Professor of Neurology; Director, Biopolymer Laboratory</td>
<td>Biology and biochemistry of human neurodegenerative disorders</td>
</tr>
<tr>
<td>Name</td>
<td>Title</td>
<td>Research Focus</td>
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<tr>
<td>Bruce Teter, Ph.D.</td>
<td>Adjunct Associate Professor of Medicine</td>
<td>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</td>
</tr>
<tr>
<td>Paul Thompson, Ph.D.</td>
<td>Professor of Neurology, and Psychiatry and Biobehavioral Sciences</td>
<td>Brain imaging in Alzheimer’s, brain development, HIV/AIDS, schizophrenia, bipolar, and childhood neurogenetic disorders</td>
</tr>
<tr>
<td>James G. Tidball, Ph.D.</td>
<td>Distinguished Professor of Integrative Biology and Physiology, and Pathology &amp; Laboratory Medicine</td>
<td>Pathophysiology of muscular dystrophy</td>
</tr>
<tr>
<td>Niranjala Tillakaratne, Ph.D.</td>
<td>Researcher, Department of Integrative Biology &amp; Physiology, and the Brain Research Institute</td>
<td>Identification of locomotor circuits following spinal cord injury</td>
</tr>
<tr>
<td>Seema Tiwari-Woodruff, Ph.D.</td>
<td>Associate Professor of Neurology</td>
<td>Aspects of demyelination-induced neurodegeneration and neuroprotection by various therapeutic interventions in mouse models of demyelination</td>
</tr>
<tr>
<td>Arthur W. Toga, Ph.D.</td>
<td>Distinguished Professor of Neurology; Director, Laboratory of Neuro Imaging; Associate Director, Brain Mapping</td>
<td>Development and application of scientific approaches for the comprehensive mapping of brain structure and function in health and disease</td>
</tr>
<tr>
<td>Ligia Toro, Ph.D.</td>
<td>Professor and Dorothy and Leonard Straus Scholar of Anesthesiology, and Professor of Molecular and Medical Pharmacology</td>
<td>Smooth muscle and mitochondrial K-channels</td>
</tr>
<tr>
<td>Nim Tottenham, Ph.D.</td>
<td>Associate Professor of Psychology</td>
<td>Neurobiology of emotional development and the effects of early life stress on neuro-affective development</td>
</tr>
<tr>
<td>Wallace W. Tourtellotte, M.D., Ph.D.</td>
<td>Distinguished Professor of Neurology</td>
<td>Etiopathogenesis of multiple sclerosis</td>
</tr>
<tr>
<td>Joshua T. Trachtenberg, Ph.D.</td>
<td>Associate Professor of Neurobiology</td>
<td>Cortical learning, memory and plasticity</td>
</tr>
</tbody>
</table>
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
<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Position</th>
<th>Research Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kate M. Wassum, Ph.D.</td>
<td>Assistant Professor of Psychology</td>
<td>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</td>
</tr>
<tr>
<td>Claude G. Wasterlain, M.D.</td>
<td>Distinguished Professor of Neurology; Vice Chair Neurology, West Los Angeles VAMC</td>
<td>The basic science of epilepsy and status epilepticus</td>
</tr>
<tr>
<td>Joseph B. Watson, Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences; Associate Dean, Graduate Division, College of Letters and Science</td>
<td>Synaptic dysfunction in the neurodegenerative disorders Parkinson’s disease and Huntington’s disease</td>
</tr>
<tr>
<td>Nancy L. Wayne, Ph.D.</td>
<td>Professor of Physiology; Associate Vice Chancellor for Research</td>
<td>Neurophysiological control of reproduction</td>
</tr>
<tr>
<td>Geraldine A. Weinmaster, Ph.D.</td>
<td>Professor of Biological Chemistry</td>
<td>Defining the molecular mechanisms underlying Notch signaling in mammalian cells</td>
</tr>
<tr>
<td>Stephanie A. White, Ph.D.</td>
<td>Professor of Integrative Biology &amp; Physiology</td>
<td>Neural basis for socially learned vocal communication</td>
</tr>
<tr>
<td>Julian P. Whitelegge, Ph.D.</td>
<td>Adjunct Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Neurodegeneration and biological mass spectrometry</td>
</tr>
<tr>
<td>Peter C. Whybrow, M.D.</td>
<td>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</td>
<td>Depression and manic-depressive disease and the effects of thyroid hormone on the brain and human behavior</td>
</tr>
<tr>
<td>Martina Wiedau-Pazos, M.D., Ph.D.</td>
<td>Associate Professor of Neurology</td>
<td>Motor neuron degeneration in amyotrophic lateral sclerosis (ALS)</td>
</tr>
<tr>
<td>David S. Williams, Ph.D.</td>
<td>Jules and Doris Stein Research to Prevent Blindness Professor of Ophthalmology; Professor of Neurobiology</td>
<td>Intracellular trafficking in photoreceptor and RPPE cells</td>
</tr>
<tr>
<td>Roger P. Woods, M.D.</td>
<td>Professor of Neurology, and Psychiatry and Biobehavioral Sciences</td>
<td>Structural and functional brain imaging</td>
</tr>
<tr>
<td>Name</td>
<td>Position</td>
<td>Research Area</td>
</tr>
<tr>
<td>-------------------------------------------</td>
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</tr>
<tr>
<td>Ernest M. Wright, D.Sc.</td>
<td>Professor of Physiology, Mellinkoff Professor of Medicine</td>
<td>Membrane transport (SLC5 gene family)</td>
</tr>
<tr>
<td>Allan D. Wu, M.D.</td>
<td>Associate Professor of Neurology</td>
<td>Noninvasive transcranial neuromodulation, brain mapping, and plasticity in patients with movement disorders</td>
</tr>
<tr>
<td>Benjamin M. Wu, D.D.S., Ph.D.</td>
<td>Assistant Professor of Bioengineering</td>
<td>Biomaterials and tissue engineering</td>
</tr>
<tr>
<td>Hong M. Wu, M.D., Ph.D.</td>
<td>Professor of Molecular and Medical Pharmacology</td>
<td>Neuronal stem cells and tumorigenesis</td>
</tr>
<tr>
<td>Cui-Wei (Tracy) Xie, M.D., Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Synaptic plasticity, learning and memory</td>
</tr>
<tr>
<td>Hong Yang, M.D., Ph.D.</td>
<td>Research Physiologist, Department of Medicine (Digestive Diseases)</td>
<td>Brainstem mechanism of autonomic disorders in type 2 diabetes</td>
</tr>
<tr>
<td>Xiangdong William Yang, M.D., Ph.D.</td>
<td>Professor of Psychiatry and Biobehavioral Sciences</td>
<td>Pathogenesis of neurodegenerative diseases</td>
</tr>
<tr>
<td>Xian-Jie Yang, Ph.D.</td>
<td>Professor of Ophthalmology</td>
<td>Development and repair of the neural retina</td>
</tr>
<tr>
<td>William H. Yong, M.D.</td>
<td>Professor of Pathology and Laboratory Medicine</td>
<td>Pathology of brain tumors and biorepository science</td>
</tr>
<tr>
<td>Alan Yuille, Ph.D.</td>
<td>Professor of Statistics, and Psychology</td>
<td>Vision as Bayesian inference</td>
</tr>
<tr>
<td>Dahlia Zaidel, Ph.D.</td>
<td>Adjunct Professor of Psychology</td>
<td>Neuroscience of beauty in faces and art, and hemispheric specialization in memory for faces and objects</td>
</tr>
<tr>
<td>Eran Zaidel, Ph.D.</td>
<td>Professor of Psychology (Behavioral Neuroscience and Cognition)</td>
<td>Cognitive neuroscience of attention, perception, language and social relations</td>
</tr>
<tr>
<td>Guido A. Zampighi, D.D.S., Ph.D.</td>
<td>Professor of Neurobiology</td>
<td>Structure and function of chemical and electrical synapses</td>
</tr>
<tr>
<td>Richard K. Zimmer, Ph.D.</td>
<td>Professor of Ecology and Evolutionary Biology</td>
<td>Chemical communication and sensory ecology</td>
</tr>
<tr>
<td>S. Lawrence Zipursky, Ph.D.</td>
<td>Distinguished Professor of Biological Chemistry; Investigator, Howard Hughes Medical Institute</td>
<td>The molecular mechanisms underlying the formation of precise patterns of synaptic connections</td>
</tr>
</tbody>
</table>
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. Siningger, 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 Sterman, 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:

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution and Details</th>
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</thead>
<tbody>
<tr>
<td>Filomena Bovet-Nitti, D.Sc.</td>
<td>Laboratorio di Psicobiologia e Psicofarmacologia, Consiglio Nazionale delle Ricerche, Rome, Italy</td>
</tr>
<tr>
<td>Anthony Kales, M.D.</td>
<td>Emeritus Professor, Department of Psychiatry, Pennsylvania State University, Hershey Medical Center</td>
</tr>
<tr>
<td>David F. Lindsley, Ph.D.</td>
<td>Associate Professor of Physiology, University of Southern California</td>
</tr>
<tr>
<td>Arnold J. Mandell, M.D.</td>
<td>Emeritus Professor of Psychiatry, University of California, San Diego</td>
</tr>
<tr>
<td>James L. McGaugh, Ph.D.</td>
<td>Professor of Psychobiology, University of California, Irvine</td>
</tr>
<tr>
<td>George P. Moore, Ph.D.</td>
<td>Professor of Biomedical Engineering and Physiology, University of Southern California</td>
</tr>
<tr>
<td>Eberhardt K. Sauerland, M.D.</td>
<td>Emeritus Professor of Anatomy, University of Texas, Medical Branch, Galveston</td>
</tr>
<tr>
<td>Marianne E. Schlaefke, M.D., Ph.D.</td>
<td>Institut für Physiologie, Ruhr-Universität, Bochum, West Germany</td>
</tr>
<tr>
<td>Oscar U. Scremin, M.D, Ph.D.</td>
<td>Professor of Physiology, VA Greater LA Healthcare</td>
</tr>
</tbody>
</table>
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) Lusis, (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, Lusis, Micevych, Plath, Vilain, Voskuhl); neurobiology of glia (Schlinger, Tiwari-Woodruff, Voskuhl); hormones, genes, gender, and behavior (Arnold, Lusis, Micevych, Schlinger, Vilain, Wayne, White), cardiovascular and metabolic disease and obesity (Arnold, Dong, Eghbali, Lusis), 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),
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 Sozman
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

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   S. Thomas Carmichael
   Ellen Carpenter
   Marie-Françoise Chesnelet
   Christopher Evans
   David Glanzman
   Cameron Gundersen
   Ming Guo
   Karen Gylys
   Frank Krasne
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   Thomas Otis
   Alvaro Sagasti
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   Sarah Madsen (Student Representative, year 2)
   Martina De Salvo (Student Representative, year 1)

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   Adriana Galván
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   Neil Harris
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   Rachel Jonas (NSIDP Student Representative)

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   Ben Novitch
   Felix Schweizer, Chair
   Patrick Chen (Student Representative)
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David Hovda
David Krantz, Chair
Sotiris Masmanidis

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David Krantz
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David Glanzman  Stephanie White
Carlos Grijalva

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Ellen Carpenter  Thomas O’Dell
Chris Colwell
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<th>Trainee</th>
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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

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
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<tbody>
<tr>
<td>Steve Antonie</td>
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<tr>
<td>Vaishnavi Govind</td>
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<td>Lisa Joe Keefer</td>
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<td>Debra Kozel</td>
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<td>Patricia Lowe</td>
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<tr>
<td>Linda Maninger</td>
<td>Senior Administrative Analyst</td>
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<tr>
<td>Huy Pham</td>
<td>Programmer Analyst</td>
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<td>Polly Segal</td>
<td>Administrative Analyst</td>
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<tr>
<td>Alys Shanti</td>
<td>Principal Writer/Editor</td>
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<td>Eddie Songranin</td>
<td>Programmer Analyst</td>
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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
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Michael Fanselow
Debora Farber
Daniel Geschwind
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Michael Levine (ex officio; BRI Associate Director for Education; Chair, Graduate Interdepartmental Program for Neuroscience)
Arthur Toga
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Magoun Lecture Committee
Michael Fanselow
Daniel Geschwind
Ronald Harper
David Jentsch, Chair
Kelsey Martin

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Tom Otis
Michael Levine, Chair

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Carrie Bearden
J. David Jentsch, Chair
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Alvaro Sagasti
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Baljit Khakh, Chair

David Krantz
Tom Otis
Carlos Portera-Cailliau
Alvaro Sagasti
Felix Schweizer
Stephanie White
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Mark Cohen  
Jack Feldman  
Nelson Freimer  
Daniel Geschwind  
Michael Levine, Chair  
Edythe London  
Thomas O'Dell  
Dwayne Simmons

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

**Training Grant Directors**

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**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.

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<th>Faculty Leader(s)</th>
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<tr>
<td>Integrative Center for Learning &amp; Memory</td>
<td>Alcino Silva, Michael Fanselow and David Glanzman</td>
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<td>Integrative Center for Neurogenetics</td>
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**Affinity Groups** (*upcoming ICNE*)

Interdisciplinary affinity groups include:

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<td>Addictions Research Consortium*</td>
<td>Edythe London &amp; Igor Spigelman</td>
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<td>Astrocyte Biology</td>
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<td>Autism</td>
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<td>Brain-Mind-Body Interactions</td>
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<td>Circadian and Sleep Medicine</td>
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<td>Neurobiology of <em>Drosophila melanogaster</em> and <em>C. Elegans</em></td>
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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 lasers-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 DM16000 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 Sirus 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 Sirus 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.
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.
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.
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 dendr2 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.

<p>| Previous Eva Kavan Prize Recipients |
|-------------------------------|-------------------------------|----------------------------------|
| <strong>Year</strong>                       | <strong>Student</strong>                   | <strong>Mentor and Research Project</strong>  |
| 1999 1st Eva Kavan Prize Recipient | Albert Cha                  | Francisco Bezanilla Laboratory  |
|                                |                               | Research Project: Ion channels   |
| 2000 2nd 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 3rd Eva Kavan Prize Recipient | Michael Zeineh               | Susan Bookheimer Laboratory      |
|                                |                               | Research Project: Novel methods of increasing the resolution of functional magnetic resonance imaging |
| 2002 4th Eva Kavan Prize Recipient | Christine Bredfelt           | 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 5th 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 6th Eva Kavan Prize Recipient | Alison Burggren             | Susan Bookheimer Laboratory      |
|                                |                               | Research Project: Alzheimer’s Disease |
| 2005 7th Eva Kavan Prize Recipient | Kim Thompson              | Kelsey Martin Laboratory        |
|                                |                               | Research Project: Pioneering studies on the mechanisms whereby signals are retrogradely |</p>
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<th>Year</th>
<th>Student</th>
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<tr>
<td>2006</td>
<td>8th Eva Kavan Prize Recipient</td>
<td>Mary Kay Lobo, X. William Yang Laboratory, Application of molecular genetic tools to study basal ganglia biology and disease</td>
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<tr>
<td>2007</td>
<td>9th Eva Kavan Prize Recipient</td>
<td>Joshua Johansen, H. Tad Blair Laboratory, Groundbreaking work on the circuit and computational mechanisms of teaching signal processing in the fear conditioning system</td>
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<td>2008</td>
<td>10th Eva Kavan Prize Recipient</td>
<td>Michael Oldham, Daniel Geschwind Laboratory, Foundational research on the organization of the human brain transcriptome</td>
</tr>
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<td>2009</td>
<td>11th Eva Kavan Prize Recipient</td>
<td>Tiago Carvalho, Dean Buonomano Laboratory, How excitatory and inhibitory synaptic plasticity interact in a concerted manner to govern neuron behavior</td>
</tr>
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<td>2010</td>
<td>12th Eva Kavan Prize Recipient</td>
<td>Kate Wassum, Nigel Maidment Laboratory, Identifying dissociable roles for endogenous opioids in mediating reward palatability and incentive learning</td>
</tr>
<tr>
<td>2011</td>
<td>13th Eva Kavan Prize Recipient</td>
<td>Erin Gray, Thomas O'Dell Laboratory, Electrophysiological and molecular studies of the role of AMPA receptor phosphorylation in synaptic plasticity</td>
</tr>
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<td>2012</td>
<td>14th Eva Kavan Prize Recipient</td>
<td>Austin Hilliard, Stephanie White Laboratory, 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</td>
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<tr>
<td>2013</td>
<td>15th Eva Kavan Prize Recipient</td>
<td>Sangmok Kim, Kelsey Martin Laboratory, How gene expression is spatially regulated within neurons during synapse formation and synaptic plasticity; addressing these questions in the <em>Aplysia californica</em> sensory-motor neuron culture system, in order to monitor synapse formation and plasticity at the level of individual neurons</td>
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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 AOE-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.

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<thead>
<tr>
<th>Year</th>
<th>Student Lecture Title</th>
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<tbody>
<tr>
<td>1993</td>
<td>1st Eiduson Student Lecturer</td>
<td>&quot;Illuminating the Brain: Neural Activation Produces Changes in Light Scattering&quot;</td>
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<td>1994</td>
<td>2nd Eiduson Student Lecturer</td>
<td>&quot;Why Do Children Seize? What Epileptic Brain Tissue Tells Us&quot;</td>
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<td>1995</td>
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<td>&quot;Focal Status Epilepticus in the Immature Brain&quot;</td>
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<td>1996</td>
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<td>Li-Tao Zhong</td>
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<td>1997</td>
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<td>Christine Schulteis</td>
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<td>Albert Cha</td>
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<td>2012</td>
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<td>Stephanie Groman</td>
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<tr>
<td>2013</td>
<td>21st Eiduson Student Lecturer</td>
<td>Jesse Brown</td>
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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.

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<tr>
<th>Year</th>
<th>Postdoctoral Fellow</th>
<th>Lecture Title</th>
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<tbody>
<tr>
<td>2005</td>
<td>Sheila Fleming, Ph.D.</td>
<td>“Behavioral Phenotyping of Genetic Mouse Models of Parkinson’s Disease”</td>
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<td>2006</td>
<td>Catalina Abad, Ph.D.</td>
<td>“VIP and PACAP: Two Neuropeptides with Therapeutic Prospects”</td>
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<td>2008</td>
<td>Grégoire Courtine, Ph.D.</td>
<td>“Regaining Stepping Capacities Following a Severe Spinal Cord Injury”</td>
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<td>2008</td>
<td>Arne Ekstrom, Ph.D.</td>
<td>“Correlation Between Navigational Performance and Place Cell Recruitment in the Human Hippocampal Area”</td>
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<td>2009</td>
<td>Dan Ohtan Wang, Ph.D.</td>
<td>“Visualizing New Protein Synthesis at Synapses During Neuronal Plasticity”</td>
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<td>2010</td>
<td>Eiji Shigetomi, Ph.D.</td>
<td>“Astrocyte Calcium Dynamics Revealed by a Refined Genetically Encoded Calcium Indicator”</td>
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<td>2011</td>
<td>Kate Wassum, Ph.D.</td>
<td>“Liking, Learning and Longing: Exploring the Role of Mesolimbic Dopamine Signaling in Reward Seeking Actions”</td>
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<tr>
<td>2012</td>
<td>Paul Mathews, Ph.D.</td>
<td>“Shining Light on the Role of the Climbing Fiber Pathway in the Cerebellar Cortex”</td>
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</table>
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 GSK3β 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

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., College 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 Gylys, 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)
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](http://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 Matarić
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)
EI 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 I 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
Tatyana 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 Reflection) 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:

<table>
<thead>
<tr>
<th>Affinity Group</th>
<th>Leader(s)</th>
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<tr>
<td>Addictions Research Consortium*</td>
<td>Edythe London &amp; Igor Spigelman</td>
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<td>Astrocyte Biology</td>
<td>Baljit Khakh &amp; Michael Sofroniew</td>
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<td>Autism</td>
<td>Daniel Geschwind</td>
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<td>Brain-Mind-Body Interactions</td>
<td>Michael Irwin</td>
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<td>Circadian and Sleep Medicine</td>
<td>Christopher Colwell</td>
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<td>Computational Neuroscience</td>
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<td>Immunology in Neuroscience</td>
<td>James Waschek</td>
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<td>Inner Ear</td>
<td>Felix Schweizer</td>
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<td>Neural Repair*</td>
<td>Marie-Françoise Cheseelet</td>
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<td>Neural Stem Cells</td>
<td>Harley Kornblum</td>
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<td>Neurobiology of Drosophila melanogaster and C. Elegans</td>
<td>David Krantz</td>
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<td>Neuroendocrinology</td>
<td>Arthur Arnold</td>
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<td>Neuroimaging/Cognition*</td>
<td>Susan Bookheimer</td>
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<td>Neuroneuclear Imaging Affinity Group</td>
<td>Daniel Silverman</td>
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<td>Neurophysics &amp; Neuroengineering</td>
<td>Mayank Mehta</td>
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<tr>
<td>Neuroscience History</td>
<td>Joel Braslow &amp; Russell Johnson</td>
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<td>Songbird</td>
<td>Stephanie White</td>
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<td>Stress, Pain and Emotion</td>
<td>Emeran Mayer</td>
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<tr>
<td>Synapse to Circuit Club*</td>
<td>Kelsey Martin &amp; Larry Zipursky</td>
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<td>Undergraduate Researchers in Parkinson’s Disease</td>
<td>Marie-Françoise Cheseelet</td>
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<tr>
<td>Zebra Fish</td>
<td>Alvaro Sagasti</td>
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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](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](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 
   (b) Who participate through assistantships, traineeships, fellowships or otherwise 
      (1) BRI fellowships from ARCS 
          Predoctoral 
      (2) Interdepartmental Ph.D. Program in Neuroscience (including fellowships from ARCS) 
          Candidates for Ph.D. 
          Candidates for M.D.-Ph.D. 
   (c) Total number of graduate and postdoctoral students under supervision of BRI members 
      (1) Predoctoral 
      (2) Postdoctoral 

2. Number of Faculty Members Actively Engaged in BRI's Research or Its Supervision
   Total number of members 
   Regular members 
   Emeritus members 
   Corresponding members 

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 
      (2) Non-academic (administrative, technical, and clerical) 
      (3) Total 
   (b) Positions supported by UC 19900 budget 
      (1) Academic 
      (2) Non-academic 
      (3) Total
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.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Title</th>
<th>Total Direct Cost</th>
<th>Principal Investigator</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Institutes of Health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Institute of Child Health &amp; Human Development</td>
<td>Training Program in Neuroendocrinology, Sex Differences, and Reproduction</td>
<td>$282,258</td>
<td>A. Arnold (Life Sciences)</td>
</tr>
<tr>
<td>National Institute of Neurological Disorders &amp; Stroke</td>
<td>Training Program in Neural Repair</td>
<td>$160,120</td>
<td>M. Chesselet (Neurology)</td>
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<tr>
<td></td>
<td>Cellular Neurobiology Training Program</td>
<td>$194,656</td>
<td>T. O'Dell (Physiology)</td>
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<tr>
<td>National Institute of General Medical Sciences</td>
<td>Clinical Pharmacology Training</td>
<td>$270,130</td>
<td>B. Levey (Pharmacology)</td>
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<td></td>
<td>Medical Scientist Training Program</td>
<td>$1,064,640</td>
<td>S. Smale (Microbiology, Immunology &amp; Molecular Genetics)</td>
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<tr>
<td>Federal</td>
<td></td>
<td>$1,971,804</td>
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<tr>
<td>Total Funding Administered Through BRI</td>
<td></td>
<td>$1,971,804</td>
<td></td>
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</tbody>
</table>
PUBLICATIONS

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

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