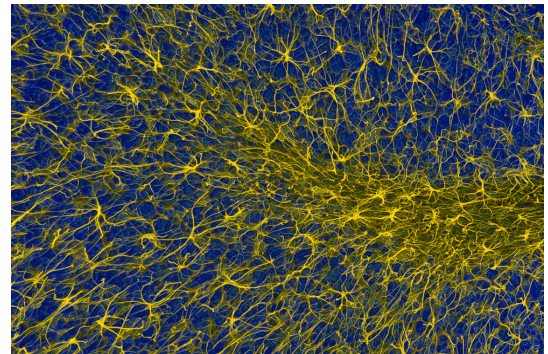


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## Four UC San Diego Faculty Win ‘Early Concept’ Grants from Obama’s BRAIN Initiative

Four scientists at UC San Diego are among 36 recipients nationwide who have been awarded early concept grants for brain research from the National Science Foundation, the agency announced today.

The awards were made to fund research projects that the federal science agency determined could produce “potentially transformative insights into understanding the brain.” The funding comes from the agency’s allocation for President Obama’s BRAIN Initiative, a multi-agency research effort that seeks to accelerate the development of new neurotechnologies that promise to help researchers answer fundamental questions about how the brain works.



*Glial cells surround neurons in the central nervous system.  
Credit Thomas Deerinck, National Center for Microscopy  
and Imaging Research at UC San Diego*

The four awards to UC San Diego faculty add to the growing portfolio of neuroscience research programs establishing the campus as one of the world’s major centers for brain research. UC San Diego faculty, for example, played a major role in the creation of Obama’s BRAIN initiative in April 2013 and also led a similar state initiative that, two months ago, was awarded \$2 million in the budget signed into law by Gov. Jerry Brown. The state’s research grant effort, known as Cal-BRAIN – short for California Blueprint for Research to Advance Innovations in Neuroscience – aims to “accelerate the development of brain mapping techniques, including the development of new technologies.”

“These awards are yet another manifestation of the excellence of our neuroscience faculty and our long tradition in neuroscience research, which were key factors in building the number one ranked neuroscience graduate program in the nation and establishing our Kavli Institute for Brain and Mind,” said UC San Diego Chancellor Pradeep K. Khosla.

The NSF's 36 early concept grant awards, which total \$10.8 million, are intended to "enable new technologies to better understand how complex behaviors emerge from the activity of brain circuits," the agency said.

The four UC San Diego principal investigators who will receive the awards and their projects are:

Brenda Bloodgood, assistant professor of biology, for "A Novel Toolkit for Imaging Transcription in vivo." "This project will develop a new genre of genetically encoded, fluorescent transcription factor reporters that enable the visualization and manipulation of endogenous transcription factor in individual neurons, in real time, and within the brain of behaving animals," she said. "These reporters will have widespread utility for the studies investigating the molecular and cellular substrates that underlie learning and behavior." Her two collaborators at UC San Diego on the grant are Takaki Komiyama, assistant professor of neuroscience, and Geoffrey Chang, professor of pharmacology.

Andrea Chiba, associate professor of cognitive science, for "Socially Situated Neuroscience: Creating a Suite of Tools for Studying Sociality and Interoception." "The "interoceptive" system is said to be a neural system that is critical to our physiological self-awareness and the feelings we share with others," said Chiba. "This project aims to co-develop light, wireless, flexible recording sensors, an iRat (a robotic 'animat' with rat-like social behavior) and a set of experiments to interrogate the 'interoceptive system' by simultaneously examining physiological measures, neural activity and complex social behavior." Primary researchers on the grant, in addition to Chiba, are Laleh Quinn, Todd Coleman and Marcelo Aguilar-Rivera of UC San Diego and Janet Wiles of the University of Queensland Australia.

David Kleinfeld, professor of physics, for "Closed Loop Computing in the Brainstem." Kleinfeld studies how sensation guides actions at the most basic level of control within the vertebrate animal brain and shares the award with long-time collaborator Ehud Ahissar, professor of neurobiology at the Weizmann Institute of Science in Israel. Kleinfeld and Ahissar study behaviors as basic as breathing and as complex as vocalization that are controlled by the brain stem where neural processing centers are closely connected to both sensors and muscles. "The tight proximity provides opportunity to reverse engineer the system to reveal nature's secrets for the kind robust neural computing animals need to sense and respond to changing environments," said Kleinfeld.

Charles Stevens, professor of molecular neurobiology at the Salk Institute for Biological Studies, and adjunct professor of pharmacology at UC San Diego, for “A Proposed New Principle of Brain Organization.”

Each of these Early Concept Grants for Exploratory Research, or EAGER, awards will receive \$300,000 over a two-year period to “develop a range of conceptual and physical tools, from real-time whole brain imaging, to new theories of neural networks, to next-generation optogenetics,” the NSF said.

“Progress towards the goals of The BRAIN Initiative and our comprehension of the brain and behavior requires that scientists and engineers from diverse disciplines work together,” said NSF Director France Córdova. “NSF is proud to invest in collaborative, fundamental projects that incubate innovative ideas in this exciting area of inquiry.”

More information on the EAGER awards and NSF’s support for the BRAIN Initiative can be found at [NSF.gov/brain](https://www.nsf.gov/brain).

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