

UC SANTA BARBARA

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Pioneer Award Winner

UC Santa Barbara's Craig Montell is the recipient of a 2015 National Institutes of Health (NIH) Director's Pioneer Award worth \$500,000 per annum over five years. The Pioneer Award supports individual scientists of exceptional creativity, who propose pioneering and transforming approaches to major challenges in biomedical science.

Montell will use the funding for research that ultimately could greatly reduce the spread of insect-borne diseases, which affect hundreds of millions of people per year. "Our plan has enormous potential for curtailing diseases such as dengue fever, which is on the rise," said Montell, the Patricia and Robert Duggan Professor of Neuroscience in the Department of Molecular, Cellular, and Developmental Biology (MCDB).

"Our campus is honored and I am personally just thrilled by the exciting news that Duggan Professor Craig Montell has received the prestigious Pioneer Award from NIH," said Chancellor Henry Yang. "This well-deserved award recognizes Professor Montell's fundamental discoveries at the frontiers of biological sciences. His research on mosquitos is leading to the launch of a new field in curtailing insect-borne diseases, which will have rich consequences in improving quality of life across the globe."

The current approach to dealing with the spread of dengue fever involves the release of transgenic male mosquitoes bearing mutations that upon mating render indigenous females either sterile or unable to reproduce the flavivirus that causes

the disease. However, transgenic males do not compete adequately with native males, limiting the feasibility of this otherwise promising approach.

“I have worked for many years on sensory signaling,” Montell said. “However, working on male courtship drive in mosquitoes not only represents a completely new area for me but also launches a new field. It’s exciting and challenging to be able to work on an important problem using a whole new organism that I’ve never worked with before.”

Until now, Montell has used the fruit fly (*Drosophila melanogaster*) to focus on how changes in temperature, light input, gustatory and olfactory cues, and mechanical forces influence animal behaviors. His discovery of transient receptor potential (TRP) channels in fruit flies changed the scientific understanding of how animals perceive and respond to a changing environment. In many animals, including mammals, TRP channels function in light sensation, taste, olfaction, hearing, touch and thermosensation.

“I am thrilled that Craig Montell has received this award, which supports pioneering approaches to major challenges in biomedical and behavioral research and recognizes him as a scientist of exceptional creativity,” said Pierre Wiltzius, the Susan and Bruce Worster Dean of Science. “Since only about a dozen Pioneer Awards are given each year nationwide, this puts Craig and UCSB among a highly rarified group.”

Montell, who came to UC Santa Barbara in 2013, received his Bachelor of Arts from UC Berkeley and his Ph.D. from UCLA. In 1988, he joined the faculty of the Department of Biological Chemistry at the Johns Hopkins University School of Medicine, where his group identified the founding mammalian TRP channel, TRPC1. He is the recipient of numerous honors and awards, including a National Science Foundation Presidential Young Investigator Award and an American Cancer Society Junior Faculty Award. He has received honorary doctorates from the Katholieke Universiteit in Leuven, Belgium, and from the Baylor College of Medicine. In 2013, he was elected a fellow of the American Association for the Advancement of Science.

Montell is the third faculty member to receive a Pioneer Award. Leda Cosmides, a professor in the Department of Psychological & Brain Sciences, won the award in 2005, for her work on the development of evolutionary and computational approaches for studying motivational and developmental neuroscience. Last year,

MCDB professor (and Craig's wife) Denise Montell was awarded the prize for her work in determining whether "anastasis" — the ability of cells to return from the brink of death — is a mechanism by which cancer develops.

"The MCDB department is honored to have our second Pioneer Award in as many years," said department chair Steve Poole. "Craig's transformative proposal for eliminating insect-borne diseases in an environmentally responsible manner by manipulating mosquito behavior is a natural outcome of his overall creative approach to science."

"Thanks to a postdoc in my lab, Chao Liu, who did his graduate work on mosquitoes, we have the know-how to move forward on this new project right away," Craig Montell said. "I've also been networking and learning from mosquito experts at other UC campuses, such as Anthony James at UC Irvine. Our mosquito insectary is nearly complete, and I can't wait to get started."

About UC Santa Barbara

The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.