

2010 Packard Fellowships in Science and Engineering Awarded to Seventeen Researchers

October 15, 2010

LOS ALTOS, California—The Packard Foundation has named 17 extraordinarily talented faculty members as the 2010 recipients of Packard Fellowships for Science and Engineering. Each Fellow will receive an unrestricted research grant of \$875,000 over five years.

The Fellowship Program was established in 1988 and arose out of David Packard's commitment to strengthening research groups that are the heart of university-based science and engineering programs. By supporting unusually creative professors early in their careers, the Foundation hopes to develop scientific leaders, to further the work of promising scientists and engineers, and to support efforts to attract talented graduate students into university research in the United States.

"Each year, we are inspired by the early career science and engineering faculty we are able to support through these fellowships," said Lynn Orr, Keleen and Carlton Beal Professor at Stanford University, and Chairman of the Packard Fellowship Advisory Panel. "These professors are tackling some of the critical research questions of our time, and we know they will have a big impact not just on their fields but also on the students who are fortunate enough to work with them."

Over the past 22 years, the Packard Fellowship Program has awarded 457 fellowships, totaling \$288 million, to faculty members at 52 top national universities. It is among the nation's largest nongovernmental fellowships, through a competition that is designed to seek out and reward the pursuit of creative engineering and scientific research with minimal constraints on how the funding is used to carry out the research. The Packard Fellowship Program funds research in a broad range of disciplines that includes physics, chemistry, mathematics, biology, astronomy, computer science, earth science, ocean science, and all branches of engineering.

The 2010 Fellows were nominated by presidents of 50 universities that participate in the Packard Fellowship program. The 100 nominations were reviewed by the Fellowship Advisory Panel, a group of nationally recognized scientists, which then recommended 17 Fellows for approval by the Packard Foundation Board of Trustees.

The recipients of the 2010 Packard Fellowships in Science and Engineering are:

Rajdeep Dasgupta

Department of Earth Science, Rice University

Geosciences; to better understand the Earth's interior processes, such as magma generation and associated chemical exchanges, and how such processes affect the dynamic feedbacks between the interior and the exterior in terms of volatile cycles and evolution.

David Fike

Department of Earth and Planetary Sciences, Washington University, St. Louis

Geosciences; to use stable isotopic signatures of carbon and sulfur species to reconstruct the presence and activity of specific metabolic pathways and processes in natural environments to probe (micro)-biological activity and its dependence on the ambient geochemical environment.

Michael Gordon

Chemical Engineering Department, University of California, Santa Barbara

Engineering - Chemical or Biological; to develop a scanning chemical microscope (SCM) that uses optical nano-antennas and vibrational spectroscopy for label-free detection, identification and imaging of biomolecules and surfaces at spatial resolutions from 10 μm to 1 nm .

Michael Hermele

Department of Physics, University of Colorado, Boulder

Physics; to identify, classify and characterize phases of matter in quantum many-body systems, both in the context of solid-state materials and ultracold atomic gases.

Christopher Hirata

Division of Physics, Mathematics, Astronomy, California Institute of Technology

Astronomy, Astrophysics, Cosmology; to use cosmological observables, such as galaxy clustering, gravitational lensing and the fluctuations in the cosmic microwave background (CMB) to answer basic questions about the Universe.

Bo Huang

Department of Pharmaceutical Chemistry, University of California, San Francisco

Biological Sciences; to create new technologies based on super-resolution microscopy and single-molecule spectroscopy to directly visualize cellular structures and dynamic processes at the molecular scale.

William Jones

Department of Physics, Princeton University

Astronomy, Astrophysics, Cosmology; to test models of the genesis and evolution of the early Universe through observations of the Cosmic Microwave Background (CMB) and to determine the shape of the primordial scalar power spectrum and the ionization history of the Universe.

Benjamin Lev

Department of Physics, University of Illinois, Urbana-Champaign

Physics; to study unexplored exotic quantum phases which combine properties of everyday matter, solids, liquids and liquid crystals with superfluidity: the supersolid, superglass and superstripe phases.

Ruth Ley

Department of Microbiology, Cornell University

Biological Sciences; to use genotyped twins to determine the heritable components of the microbiome and to relate human and microbial genetic variation to investigate how human gene variations driven by cultural changes in diet affect the composition and function of the microbiome.

Antonio Montalban

Department of Mathematics, University of Chicago

Mathematics; to use Computability Theory and Proof Theory to analyze the notion of robust construction, or robust complexity level, in order to address important questions on the foundations of mathematics.

Beth Shapiro

Department of Biology, Pennsylvania State University

Biological Sciences; to understand how life evolves through time, what triggers genetic diversification, why new mutations arise and persist, and how environment or host factors drive evolution over different timescales.

Emily Troemel

Section of Cell and Developmental Biology, University of California, San Diego

Biological Sciences; to study microsporidia pathogens—intracellular fungal pathogens that cause serious disease in agricultural and medical settings—and to provide molecular insights that will have significant impact on how to control them, as well as many other kinds of pathogenic microbes.

Benjamin Tu

Department of Biochemistry, University of Texas Southwestern Medical Center

Biochemistry; to understand how fundamental cellular processes, such as cell growth and proliferation, transcription and mitochondria homeostasis, are coupled to metabolism and the metabolic state of a cell, which will ultimately lead to a better understanding of complex metabolic diseases such as cancer.

Feng Wang

Physics Department, University of California, Berkeley

Physics; to study the novel relativistic behavior of Dirac fermions in graphene using tabletop measurements and to investigate phonon lasing in graphene based on the new ability to tune the coupling between electrical and vibrational excitations.

Emily Weiss

Department of Chemistry, Northwestern University

Chemistry; to discover fundamentally new ways that charge moves through matter in the presence of rationally designed defects, and to thereby transform insulating soft materials (films of molecules, polymers and nanoparticles) into conducting materials.

Li Zhang

Computer Sciences Department, University of Wisconsin, Madison

Computer/information sciences; to develop techniques to sense and interpret visual, audio and EMG data in order to restore stereo 3D vision for blind people by developing new computational imaging and vision techniques that work with artificial retinas.

Martin Zwierlein

Department of Physics, Massachusetts Institute of Technology

Physics; to employ ultracold atomic gases, a million times colder than interstellar space, to study strongly interacting systems in a fully controllable environment and to investigate models of high-temperature superconductivity by confining fermionic superfluids in lower dimensions and in optical lattices, artificial crystals of light.

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The David and Lucile Packard Foundation is a private family foundation created in 1964 by David Packard (1912–1996), cofounder of the Hewlett-Packard Company, and Lucile Salter Packard (1914–1987). The Foundation provides grants to nonprofit organizations in the following program areas: Conservation and Science; Population and Reproductive Health; and Children, Families, and Communities. The Foundation makes national and international grants and also has a special focus on the Northern California Counties of San Benito, San Mateo, Santa Clara, Santa Cruz, and Monterey. Foundation grantmaking includes support for a wide variety of activities including direct services, research and policy development, and public information and education. The Foundation does not make grants intended to influence legislation or support candidates for political office. Foundation grant awards totaled approximately \$268 million in 2009. The Foundation expects grantmaking awards of up to \$236 million in 2010.

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