



Press Release 14-055

EARLY CAREER SCIENTISTS AND ENGINEERS RECEIVE HIGHEST HONOR FROM THE WHITE HOUSE

Twenty NSF-funded scientists recognized for strengthening America's scientific enterprise



President Obama talks with PECASE recipients at the White House.
Credit and Larger Version

April 16, 2014

On Monday, 102 men and women received the United States government's highest honor for scientists and engineers in the early stages of their independent research careers--the Presidential Early Career Award for Scientists and Engineers (PECASE). The National Science Foundation (NSF) nominated 20 of the awardees.

They received their awards from NSF Director France Córdoba at a morning ceremony presided over by John P. Holdren, assistant to the president for science and technology and director of the Office of Science and Technology Policy.

The awardees come from universities around the country and excel in research in a variety of scientific disciplines: biology, computer and information sciences, education and human resources, geosciences, the physical sciences including mathematics,



NSF Director France Córdoba and Deputy Director Cora Marrett meet with 2014 PECASE awardees.
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NSF Director France Córdoba addresses 2014 PECASE awardees at a gathering at NSF.
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2014 PECASE awardee Jeffrey Karpicke meets with NSF's EHR Assistant Director Joan Ferrini-Mundy.
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chemistry, physics and materials research, engineering and social, behavioral and economic sciences.

"The PECASE awardees embody America's high priority of producing outstanding scientists and engineers to advance the nation's goals, tackle grand challenges and contribute to all sectors of the economy," said NSF Director France Córdova. "I salute the creativity, ingenuity, dedication and generosity of this year's PECASE winners. I commend them for shouldering the responsibilities to inspire and mentor the next generation and to help America sustain global leadership in science and technology."

All NSF PECASE awardees are from a pool of individuals whose research has been vetted by NSF's rigorous peer review process and have received five-year grants from the Faculty Early Career Development (CAREER) Program. CAREER awardees have proven themselves exemplary in integrating research and education within the context of the mission of their organization and selection is highly competitive: 20 percent or 525 of the nearly 2,600 CAREER award applicants were funded in 2012. Of those, just shy of 4 percent were PECASE winners, the cream of the crop.

The Office of Science and Technology Policy within the Executive Office of the President coordinated the awards, which were established by President Clinton in February 1996. Awardees are selected on the basis of two criteria: pursuit of innovative research at the frontiers of science and technology and a commitment to community service as demonstrated through scientific leadership, public education or community outreach.

This year's NSF recipients are:

Theodor Agapie, California Institute of Technology

For the creative design of model complexes for active sites that catalyze the formation and cleavage of O-O bonds relevant to alternative-energy and sustainability; exemplary teaching, mentoring and outreach activities; and a commitment to increase participation of underrepresented groups in science.

Javier Arce-Nazario, University of Puerto Rico, Cayey

For ambitious interdisciplinary research advancing the frontiers of sustainability science related to water issues in extreme climate conditions, and for direct involvement in bringing science into the homes of Puerto Rican people in rural areas of the La Plata watershed.

Sarah Bergbreiter, University of Maryland, College Park

For designing and fabricating ant-scale microrobots with the ability to navigate on rough terrain in order to deepen our understanding of



Several 2014 PECASE awardees received CAREER Awards from NSF's CISE Directorate. **Credit and Larger Version**

to navigate on rough terrain in order to deepen our understanding of insect biomechanics and locomotion, and for work to increase participation in this field of research.

Moises A. Carreon, Colorado School of Mines

For fundamental research aimed at developing a novel family of crystalline porous membranes for carbon dioxide capture, and for international collaboration and minority student recruitment.

Sigrid Close, Stanford University

For profound discoveries related to the effects of meteoroid impacts on the atmosphere and spacecraft, and for extraordinary informal science education and outreach efforts to bring space science to K-12 students and to the general public.

Raffaella De Vita, Virginia Polytechnic Institute & State University

For outstanding research into female pelvic floor disorders based on engineering-based knowledge on the structural and mechanical properties of associated supporting tissues.

Abigail Doyle, Princeton University

For the development of innovative approaches to incorporating fluorine into organic compounds, impacting synthetic and medicinal chemistry and chemical biology, and for mentoring young scientists, broadening participation in STEM disciplines and engaging middle-school teachers and community college students.

Daniel I. Goldman, Georgia Institute of Technology

For dynamic, multi-disciplinary studies of the neuromechanics of locomotion on granular substrates, and for the creative use of robots to generate interest in and teach the principles of science to students, teachers and the public.

Joel Griffitts, Brigham Young University

For creative experimental approaches to studying the molecular negotiations between nitrogen-fixing bacteria and their plant hosts that allow productive symbiotic associations to arise, and for the Symbiosis Learning Consortium that brings undergraduates and high-school students into the research effort as key participants.

Samantha Hansen, University of Alabama

For innovative research that will provide critical constraints on the geodynamic evolution of the Antarctic continent as well as information to better constrain evolution of the Antarctic ice sheets, and for developing novel approaches to introduce underrepresented students to the geosciences

students to the geosciences.

Jeffrey D. Karpicke, Purdue University

For innovative contributions at the intersection of cognitive science and education to advance our understanding of learning and memory, for applying those insights to practical challenges in science classrooms and for ensuring that classroom teachers learn from these scientific findings. (Also nominated by the Department of Education.)

Rouslan Krechetnikov, University of California, Santa Barbara

For outstanding work combining applied mathematics, analytical mechanics and challenging experimental and theoretical fluid mechanics including geophysics, micro-hydrodynamics and physics of complex interfaces.

Tamara J. Moore, Purdue University

For transformative research on how young students learn engineering concepts and how to integrate those practices into K-12 teacher development in order to have a transformative impact on underrepresented minority and underprivileged urban K-12 students.

Daniela A. Oliveira, Bowdoin College

For pioneering disruptive approaches to cybersecurity that are enabling transformative solutions to serious financial and economic threats, and for novel outreach activities that successfully encourage the participation of underrepresented groups in cybersecurity-related research issues.

Jonathan W. Pillow, The University of Texas at Austin

For foundational advances in probabilistic methods for understanding how populations of neurons encode and process information, and for leadership in education and broadening participation in computational neuroscience and related fields.

Benjamin Recht, University of California, Berkeley

For visionary research on scalable computational tools for large-scale data analysis and machine learning, and for initiating paradigm shifts in several related disciplines with enormous scientific and societal impact.

David Savitt, University of Arizona

For work on the p -adic Langlands program and generalizations of Serre's modularity conjecture, and for educational activities including organizing the high-school summer program Canada/USA

Mathcam, running graduate workshops, and helping students from underrepresented groups reach their full potential.

Noah Snavely, Cornell University

For innovative research in developing new computer-vision algorithms for scalable 3-D reconstruction; camera location estimation from diverse unknown cameras; and innovations in STEM education.

Junqiao Wu, University of California, Berkeley

For leading-edge research on nanomaterials with phase transitions, and for creating a comprehensive program to educate students and the general public about science and nanotechnology.

Ahmet Yildiz, University of California, Berkeley

For developing state-of-the-art single-molecule approaches for visualization and quantitation of the behavior of molecular motors responsible for cellular traffic, and for outstanding outreach providing innovative educational and research activities to underrepresented groups at local charter high schools.

Note to regional reporters: For more information about, or interviews with, local winners of the Presidential Early Career Award for Scientists and Engineers, please contact the awardees' home institution or agency.

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Related Websites

CAREER and PECASE Information:

http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503214

Presidential Early Career Awards for Scientists and Engineers:

<http://nsf.gov/awards/pecase.jsp>

The National Science Foundation (NSF) is an independent federal agency that supports fundamental research and education across all fields of science and engineering. In fiscal year (FY) 2014, its budget is \$7.2 billion. NSF funds reach all 50 states through grants to nearly 2,000 colleges, universities and other institutions. Each year, NSF receives about 50,000 competitive requests for funding, and makes about 11,500 new funding awards. NSF also awards

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