



National Science Foundation
WHERE DISCOVERIES BEGIN



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NSF AT WORK

NSF Initiates New Science Communication Workshop Series

Today's scientists are increasingly called upon to present their research to public audiences. While this task may seem simple, it can be quite challenging for researchers accustomed to using highly technical terminology. NSF is teaching science communication techniques by providing a series of intensive workshops to researchers across the country. These workshops, called "Science: Becoming the Messenger," equip scientists and engineers with the ability to craft messages that describe their research in terms that connect with general audiences. The workshops are led by Dan Agan, president of marketing communications firm Panthera Group LLC.

NSF kicked-off its two-day inaugural workshop on November 17, 2010 at the George Washington University in Washington, D.C., with over 100 participants, including both scientists and public information officers. The day began with a Q&A discussion that brought together a diverse group of science communicators: bestselling co-author of *Unscientific America*, Chris Mooney; former NBC producer and Mattmar Productions president, Joe Schreiber; former CNN executive producer and current executive producer of "Planet Forward," Fuzz Hogan; and Albert Einstein Distinguished Educator Fellow, Buffy Cushman-Patz. Participants then learned the art of creating and distilling an effective science message. They worked individually, in groups and with workshop facilitators to craft meaningful, relevant descriptions of their research and the importance to non-scientists.

Afternoon breakout sessions were specifically tailored to participants needs and interests. The sessions included: a writing-for-the-public workshop, an audio/video media boot camp tutorial, and a guide to delivering public presentations. On day two of the workshop, a select group of participants gathered for an intensive message development seminar and a presentation practice session. Over the next three years, "Science: Becoming the Messenger" workshops will be held in NSF Experimental Program to Stimulate Competitive Research (EPSCoR) jurisdictions throughout the U.S.



Scientists and public information officers participate in a session on using video to communicate science. Credit: NSF

Subatomic Particle Detector Collaboration Announced

NSF has signed a five-year, \$34.5-million

Earthquake Impact System Identified





This Digital Optical Module is part of the new IceCube Neutrino Observatory. Credit: Glenn Grant/NSF

agreement with the University of Wisconsin-Madison to operate a unique telescope buried in the Antarctic ice sheet. The IceCube Neutrino Observatory, slated for completion in December 2010, will record interactions between elusive subatomic particles known as neutrinos. These particles come from the sun, cosmic rays, and exploding stars and trillions of neutrinos stream through the human body at any given

moment. However, neutrinos are difficult to study since they rarely interact with regular matter. IceCube's unique location and size is expected to allow better observation of these rare events. For more information about IceCube, watch this Science Nation **episode** and visit the IceCube **homepage**.



Santiago Pujol, assistant professor of civil engineering at Purdue University in Indiana, at far left, surveys a building damaged in Haiti's earthquake. From field research in Haiti, Pujol and colleagues identified a system to rapidly and efficiently assess building vulnerability to earthquakes. The research behind this system is funded by NSF. Read **more** about this work. Credit: Purdue University photo/Kari T. Nasi

Students at Tribal Colleges Embark on New Pathways Towards Engineering Degrees

Institutions serving Native Americans (many of them tribal colleges) and state universities are partnering to increase the number of Native American students who successfully complete bachelor's degrees in engineering. Through the NSF Tribal Colleges and Universities program, new Pre-engineering Education Collaboratives (PEEC) began this fall in four states: Hawaii, North Dakota, South Dakota, and Wisconsin.

One important goal of these joint activities is to strengthen pre-engineering curricula at two-year colleges. Another aim is to provide student internships, research experiences and extramural learning opportunities, as well as faculty development. The last objective is to smooth student transfers from two-year colleges to four-year universities. The grantees expect that the close collaboration between the tribal colleges and state universities will transform all of the institutions involved.

In **Hawaii**, the collaborative is led by Kapiolani Community College with partners Honolulu Community College, Leeward Community College, Maui Community College, Windward Community College and University of Hawaii at Manoa (Award abstract number: **1037827**).

In **North Dakota**, the collaborative is led by Cankdeska Cikana Community College with partners Fort Berthold Community College, Sitting Bull College, Turtle Mountain Community College and North Dakota State University (Award abstract numbers: **1038067**, **1038127**, **1038079**, **1038186** and **1038080**).

In **South Dakota**, the collaborative is led by Oglala Lakota College with partners South Dakota School of Mines and Technology and South Dakota State University (Award abstract numbers: **137661**, **1037797** and **1037708**).

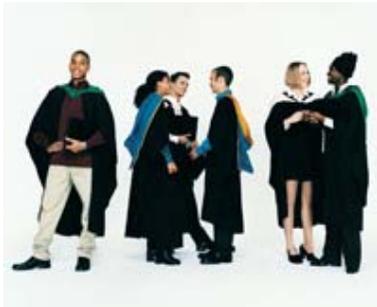
In **Wisconsin**, the collaborative is led by the College of Menominee Nation with partners University of Wisconsin–Madison and University of Wisconsin–Platteville (Award abstract numbers: **1037595**, **1037597** and **1037626**).



Pre-engineering students at Oglala Lakota College are getting new research opportunities to help prepare them for bachelor's degrees. Credit: Tawa Ducheneaux, Oglala Lakota College

DID YOU KNOW?

In 2009, U.S. academic institutions awarded the highest number of research doctorate degrees ever reported by NSF's Survey of Earned Doctorates (SED). 49,562 doctorates were awarded, which reflects a 1.6 percent increase over 2008's total of 48,802.



Credit: © 2010 JupiterImages Corporation

Doctorates awarded in science and engineering (S&E) fields were up 1.9 percent over 2008, owing entirely to growth in numbers of female S&E doctorate recipients.

Among doctorate recipients reporting definite employment commitments, a growing number of graduates are taking postdoctoral (postdoc) positions. During the 2004–09 period, 2009 marked the largest single-year increase in the proportion of doctorate recipients taking postdoc positions.

More information from this report is available in the **InfoBrief** available on the NSF website.

FACES OF NSF RESEARCH

Nineteen NSF-nominated Researchers Win PECASE Awards

In November, President Barack Obama announced the recipients of the Presidential Early Career Award for Scientists and Engineers (PECASE). Of the 85 researchers who will receive this award, 19 were nominated by NSF.

This award is the U.S. government's highest honor for early career scientists and engineers. It was created in 1996 by the National Science and Technology Council (NSTC) to specifically recognize exceptionally promising scientists and engineers during the beginning of their independent research careers.

Awardees are selected not only for their innovative research, but also for their commitment to furthering the scientific community through leadership, public education, or community outreach. For example, 2010 PECASE winner Jayne Garno of Louisiana State University not only leads a robust research program in nanoengineering, but also actively engages undergraduate students in her laboratory's work. Students in her laboratory have their own projects and present their work at meetings.

"I find that when undergraduates present at meetings, they more seriously consider graduate school and a career in chemistry," Garno notes.

For Garno, who recently joined academia after working in industry, this award affirms her choice to leave industry and teach and mentor undergraduate and graduate students, a career move that she describes as "the best professional decision I've made."

Additionally, Garno describes the PECASE as not only an award for her laboratory group, but also for her school and her state. It was only her second year of research when Hurricane Katrina, then Hurricane Rita hit. Garno commented, "Despite all of these events in our state, we are able to perform top-notch research. ... PECASE has been the bright star in all of this."

More information on all of the NSF-nominated winners can be found on the NSF Office of Integrative Activities **website**.



Jayne Garno (left), associate professor of chemistry at Louisiana State University, is one of the 19 NSF-nominated researchers who won the 2010 PECASE. Credit: Louisiana State University

NSF IN THE NEWS

Degree Geared to Science Pros (*Omaha World-Herald*) A NSF program at the University of Nebraska-Lincoln will help science researchers interested in becoming teachers through coursework and training for a master's degree and secondary science teacher certification.

Project Aims to Convert Car Exhaust to Electricity (*Chicago Tribune*) Purdue University researchers, in collaboration with General Motors, are taking on the challenge of converting a car's heat into electricity. This research is supported by NSF and the Department of Energy.

A Conversation With the New NSF Director (*National Public Radio*) Subra Suresh talks about his priorities as he begins his work as director of NSF.

See Me, Obi-Wan Kenobi: Scientists Seek 3-D Video (*Associated Press, MSNBC, USA Today and others*) New findings moves researchers and engineers closer to creating live, life-like 3-D video. This work was funded by NSF, and the research announcement was the subject of an NSF webcast.

THE RIPPLE EFFECT

Innovation Nation Launched on the Science Channel



Credit: NSF

In November, NSF launched the first in a series of video programs called Innovation Nation. The series is hosted by veteran science and technology correspondent Miles O'Brien, and is currently airing nationally on the Science Channel.

Innovation Nation explores "when genius meets possibility." The stories feature NSF-funded inventions and research shaping our world. For instance, the **first episode** showcases a robot that has overcome a major robotics challenge and can manipulate shape-changing objects, as demonstrated by towel folding.

The 26-part video series is produced by CBS News Productions, in partnership with the National Science Foundation and Discovery Science. Each episode is one minute and airs within various Science Channel programs throughout the week. In addition to the Science Channel, Innovation Nation can also be found on **YouTube** and on NSF's science and engineering multimedia portal **Science360**.

National Medals Awarded



Credit: Sandy Schaeffer for NSF

Amnon Yariv of the California Institute of Technology receives the National Medal of Science from the President. Yariv was one of ten researchers who accepted the award on Nov. 17, 2010.

The National Medal of Science is administered for the White House by NSF and it is the highest technical and scientific award given by the United States. Read more and view more photos from the ceremony **online**.

Green Holidays on Facebook

Environmentally conscious consumers are faced with tough questions during the holiday season, such as how to make gift giving as eco-friendly as possible. To answer these questions, NSF is connecting its fans with experts in "green" practices. The "Green Holidays" Facebook campaign will feature NSF grantees in a series of video interviews. NSF Facebook fans can then suggest other questions for scientists and researchers, as well as share their tips for conserving natural resources while celebrating the holidays.

The first video interview features **Ecovative Design**, a Small Business Innovation Research (SBIR) grant awardee that produces biodegradable and home compostable packaging made from mushrooms.

View the NSF page in **Facebook**.



*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 2010, its budget is \$6.9 billion. NSF funds reach all 50 states through grants to over 1,900 universities and institutions. Each year, NSF receives about 48,000 competitive requests for funding, and makes over 11,300 new funding awards. NSF also awards over \$400 million in professional and service contracts yearly. Contact **NSF's Office of Legislative and Public Affairs** for more information or for permission to reuse newsletter images.*



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