

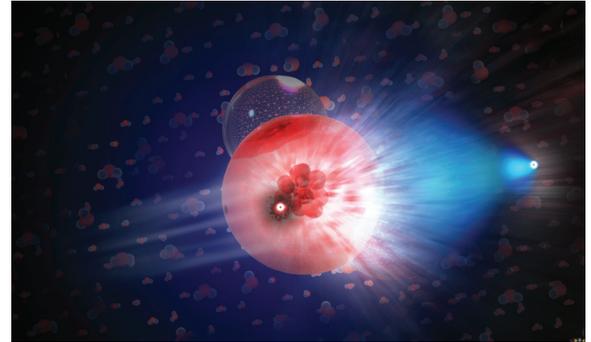


August 9, 2018

01

Neutrino observation points to one source of high-energy cosmic rays

Observations made by researchers using an NSF detector at the South Pole and verified by ground- and space-based telescopes have produced the first evidence of one source of high-energy cosmic neutrinos. These ghostly subatomic particles can travel unhindered for billions of light-years, journeying to Earth from some of the most extreme environments in the universe. Data gathered by NSF's IceCube Neutrino Observatory at the foundation's Amundsen-Scott South Pole Station in Antarctica point to an answer to a more than century-old riddle about the origins of high-energy cosmic rays. Find out more in this NSF [news release](#).



02

The NSF 2026 Idea Machine

The NSF 2026 Idea Machine is a competition to help set the U.S. agenda for fundamental research in science and engineering. Participants can earn prizes and receive public recognition by suggesting the pressing research questions that need to be answered in the coming decade, the next set of "Big Ideas" for future investment by NSF. It's an opportunity for researchers, the public and other interested stakeholders to contribute to NSF's mission to support basic research and enable new discoveries that drive the U.S. economy, enhance national security and advance knowledge to sustain the country's global leadership in science and engineering. Learn more in this NSF [Special Report](#).



03

Pollinator biodiversity

Bees are some of the most important crop pollinators. They increase production of about 75 percent of crop species. Researchers have found that this staggering biodiversity -- besides making gardens and the countryside beautiful -- is critical for many types of ecological services, including pollination. NSF-funded researcher Rachael Winfree and her team at Rutgers University revealed just how important pollinator biodiversity is for crops in a recent study, conducted across dozens of watermelon, cranberry and blueberry farms in the mid-Atlantic United States. Though many farmers use domesticated, nonnative honeybee colonies to help with crop pollination, researchers estimate that wild pollinators provide half of the crop pollination services worldwide. Learn more in this NSF [Discovery](#).



04

Scientists study connection between Great Plains precipitation and agricultural irrigation

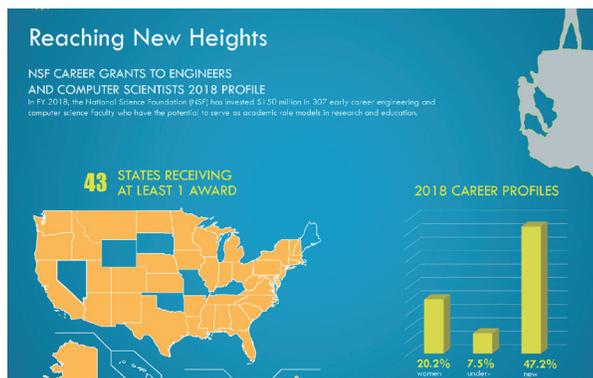
To further understand how irrigation may be affecting precipitation, scientists from several institutions have teamed up for an NSF-funded project known as the Great Plains Irrigation Experiment, or GRAINEX. “Prior studies have found that the Great Plains is a hotspot where soil moisture plays an important role in cloud formation and precipitation,” said Nick Anderson, a program director in NSF’s Division of Atmospheric and Geospace Sciences, which funded the research. Learn more in this [NSF news release](#).



05

NSF awards more than \$150 million to early career researchers in engineering and computer science

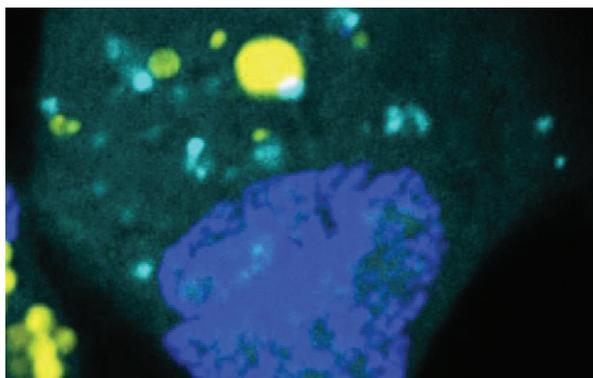
NSF has invested \$150 million in 307 early career engineering and computer science faculty to advance fields from intelligent infrastructure and collaborative robots to secure communications and brain-related technologies. Over the next five years, each researcher will receive up to \$500,000 from NSF to build a firm scientific footing for solving challenges and scaling new heights for the nation, as well as serve as academic role models in research and education. Find out more in this [NSF news release](#).



06

Scientists create nano-size packets of genetic code aimed at brain cancer ‘seed’ cells

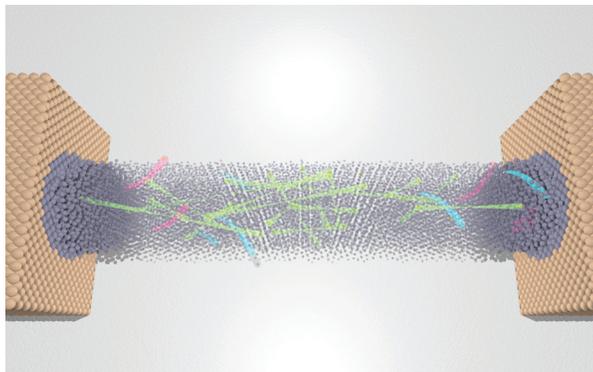
In a “proof of concept” study, scientists at Johns Hopkins Medicine say they have successfully delivered nano-size packets of genetic code, called microRNAs, to treat human brain tumors implanted in mice. The contents of the super-small containers were designed to target cancer stem cells, a kind of cellular “seed” that produces countless progeny and is a relentless barrier to ridding the brain of malignant cells. Read the full story in this [NSF News From the Field](#) item.



07

Physicists uncover why nanomaterial loses superconductivity

A study by a group of physicists, led by University of Utah professor Andrey Rogachev, has discovered that superconducting nanowires made of MoGe alloy undergo quantum phase transitions from a superconducting to a normal metal state when placed in an increasing magnetic field at low temperatures. The study is the first to uncover the microscopic process by which the material loses its superconductivity. The findings are fully explained by the critical theory proposed by co-author Adrian Del Maestro. Learn more in this [NSF News From the Field](#) item.



08

Distant quasar providing clues to early universe conditions

The sharp radio “vision” of the Very Long Baseline Array gives astronomers a detailed look at a galaxy as it appeared when the universe was a small fraction of its current age, providing clues about conditions at that early time. Find out more in this NSF [News From the Field](#) item.



09

More than a hobby: How volunteers support science

New research finds that the most common reasons people cite for participating in citizen science projects are to contribute to science; involvement in society and communities; learning; enjoyment; and discovery. Read the full story and learn more in this [NSF News From the Field](#) item.



10

'4 Awesome Discoveries You Probably Didn't Hear About This Week' – Episode 8

Something special in seal blood; a whole new angle on prosthetic ankles; a nanotech inspiration from single-celled architects; and sure, there may be “gold in them thar hills,” but there’s a quadrillion tons of diamonds in the Earth’s interior. It’s your weekly briefing on the latest discoveries you might not hear about anywhere else, all with funding from NSF. Learn more in this NSF [video](#).



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