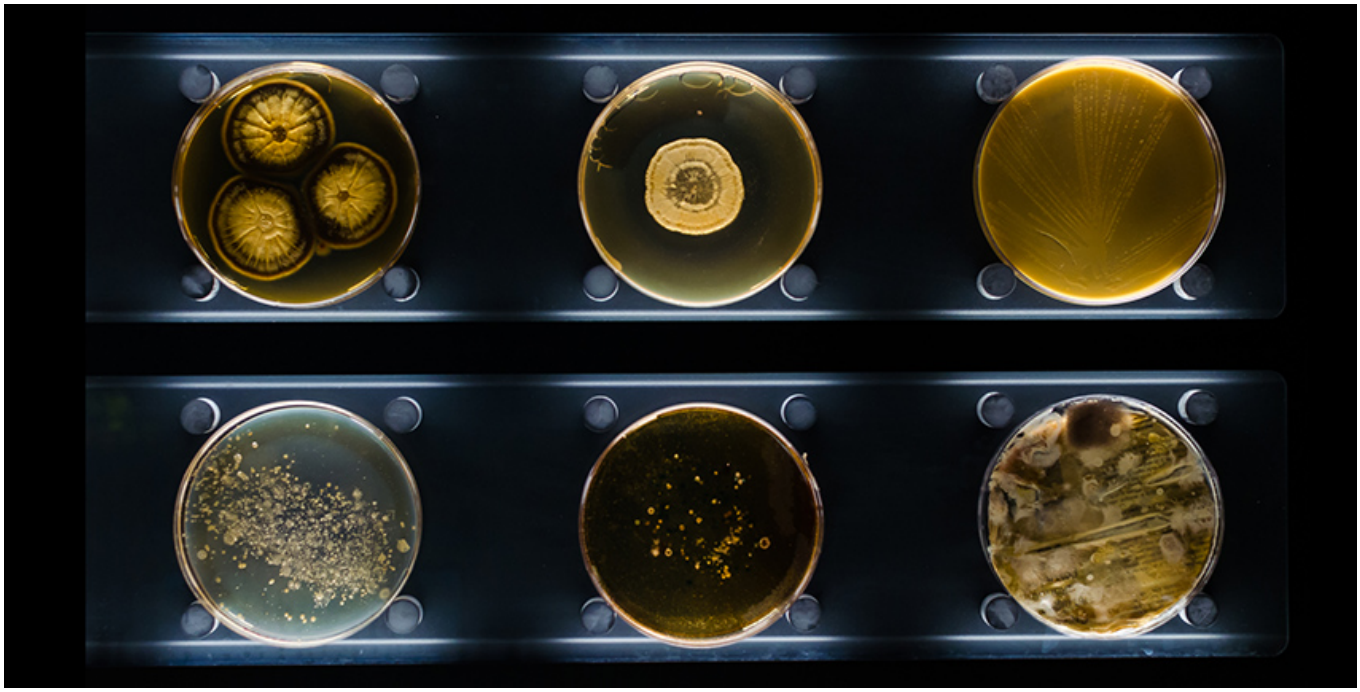
U.S. DEPARTMENT OF ENERGY

Office of Science

communique

29 June 2020

*Comm*unique provides a biweekly review of recent Office of Science Communications and Public Affairs work, including feature stories, science highlights, social media posts, and more. This is only a sample of our recent work promoting research done at universities, national labs, and user facilities throughout the country. *Please note that some links may expire after time.*



Next Frontier in Bacterial Design

A decades-old bacterial engineering technique called recombineering (recombination-mediated genetic engineering) allows scientists to scarlessly swap pieces of DNA of their choosing for regions of the bacterial genome. But this valuable and versatile approach has remained woefully underused because it has been limited mainly to *Escherichia coli*—the lab rat of the bacterial world—and to a handful of other bacterial species.

Now a new genetic engineering method, developed by investigators in the Blavatnik Institute at Harvard Medical School and the Biological Research Center in Szeged, Hungary, promises to super-charge recombineering and open the bacterial world at large to this underutilized approach.

Click here to read more about how Harvard scientists are using “recombineering” to help refine modern medicine.

NEWS CENTER

The Office of Science posted 41 news pieces between 6/16/2020 and 6/28/2020, including 17 university articles and 18 pieces from the labs and user facilities.

Researchers from SLAC National Accelerator Laboratory have combined two powerful microscopy techniques to pinpoint locations of individual molecules in cells and to answer fundamental questions in biology and materials science.

Researchers at Oak Ridge National Laboratory have described how the unique architecture of "nanobrushes" drives ions across interfaces to transport energy or information.

A Stanford team working with the Molecular Foundry is developing a gene-targeting antiviral agent to combat COVID-19.

Supercomputers, including those at the Texas Advanced Computing Center, are enabling scientists to conduct research and to collect and analyze data at a vastly accelerated pace in the search for a COVID-19 vaccine.

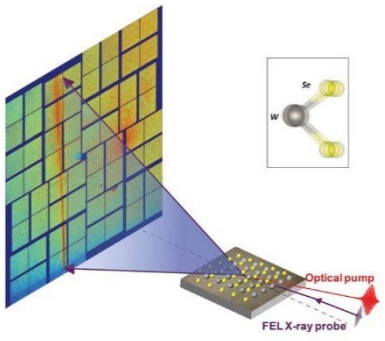
Researchers led by Arizona State University have determined that a class of stellar explosions are responsible for the majority of lithium in the galaxy, improving understanding of an element important to batteries and other common applications.

A team of researchers led by the University of Virginia has developed a new way to manufacture pharmaceuticals that could reduce dosage amounts and side effects, improving safety and efficacy.

SCIENCE HIGHLIGHTS

The Office of Science posted new highlights spotlighting BES between 6/16/2020 and 6/28/2020.

Using the Linac Coherent Light Source X-ray laser, scientists from Argonne National Laboratory have developed a technique that uses X-ray pulses to measure how atoms move in a sheet of material just one molecule thick.



IN THE NEWS

Forbes: Will the LHC Be Humanity's Last Gasp for Particle Physics?

This article about the Large Hadron Collider at CERN mentions the Tevatron at Fermilab as an example of past particle physics experiments and notes the Tevatron's benchmarks to contextualize the present capabilities of the Large Hadron Collider.

Voice of America: U.S. Lab Renowned for Nuclear Research Using High Tech to Fight COVID-19

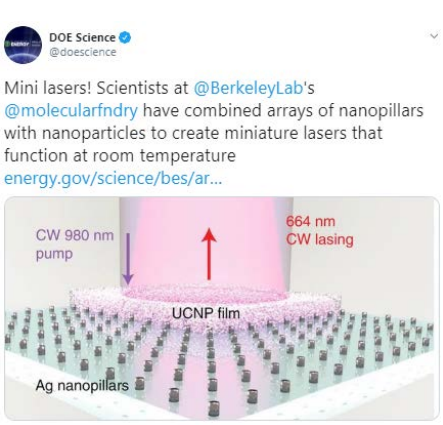
Argonne National Laboratory, historically known as a nuclear research center, is using some of the world's most sophisticated technology for a critical present-day mission—combatting COVID19.

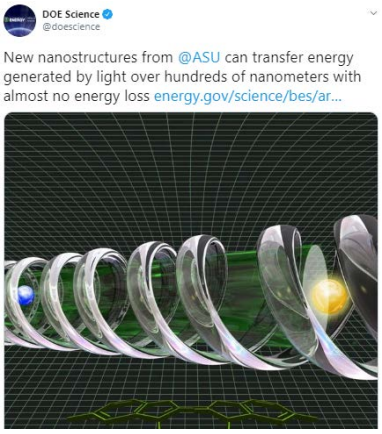
Technology: New Efforts to Link Plant Genes to Functions in Bioenergy Crops

An initiative led by Brookhaven National Laboratory aims to decode the functions of genes and their impact on productivity to guide the engineering of sustainable bioenergy crops.

TOP TWEETS

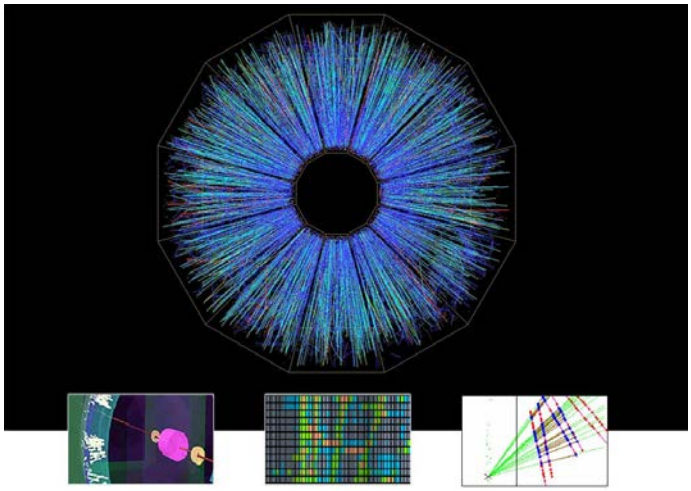
The Office of Science sent out 52 tweets between 6/16/2020 and 6/28/2020. Here are our two most popular from the past two weeks:





BY THE NUMBERS

20 Years of RHIC



Around 9 p.m. on June 12, 2000, “fireworks” lit up display monitors in the control room of the Relativistic Heavy Ion Collider’s (RHIC) STAR detector as gold ions smashed into one another at nearly the speed of light. With collisions recreating the conditions of the early universe and exploring unprecedented aspects of the colliding particles’ properties, RHIC has made surprising discoveries and opened new areas of inquiry about nuclear matter—including the “perfect” liquid nature of the quark-gluon plasma and the sources of proton spin. After two decades, RHIC is poised to dive deeper into the fundamental structure of nuclear matter with its final set of measurements before a major collaborative effort transforms its foundational components into a brand-new nuclear physics research facility.

END NOTES

2020 Office of Science Early Career Research Program

76 scientists—26 from national laboratories and 50 from universities—from across the country have been selected to receive significant funding for their research as part of the Department of Energy Office of Science’s Early Career Research Program. Under this program, now in its 11th year, researchers receive grants for five years that will cover salary and research expenses. This effort is designed to bolster the nation’s scientific workforce by providing support to exceptional researchers during crucial early career years, when many scientists do their most formative work.

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