



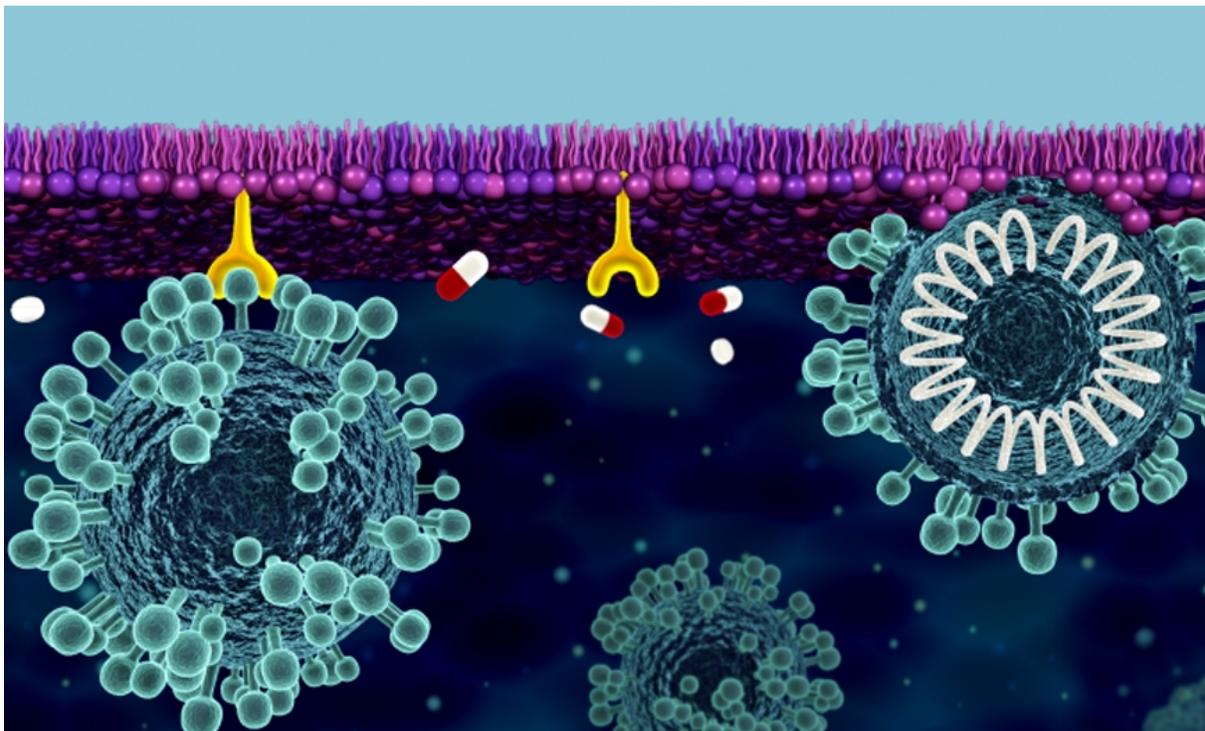
U.S. DEPARTMENT OF
ENERGY

Office of Science

COMMUNIQUE

January 11, 2020

Communique 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.



Mobilizing Science to Tackle COVID-19

The COVID crisis is unlike any other event the nation and the world have faced in nearly a century. The Department of Energy's (DOE) Office of Science has not only invested in areas that support our laboratories and researchers, we lead the Department's research and development response to COVID. This effort is ensuring that our 17 national labs are working in tandem to support the nation. The ability of

researchers across the country at national labs, at universities, and in industry to work together is crucial to fighting this pandemic.

[Click here to read more about the Office of Science's collaborations to confront COVID-19.](#)

NEWS CENTER

The Office of Science posted 88 news pieces between 12/14/2020 and 1/11/2021.

Scientists at [Fermilab](#) and their partners took a significant step in the direction of realizing a quantum internet, demonstrating for the first time a sustained, long-distance teleportation of qubits of photons with fidelity greater than 90%.

Researchers from [Columbia University](#) have discovered that a variety of exotic electronic states, including a rare form of magnetism, can arise in a three-layer graphene structure.

Scientists at the [Princeton Plasma Physics Laboratory](#) have learned new details of the process that occurs when fast-moving particles from the sun strike the Earth's magnetic field. This research could lead to better forecasting of this so-called space weather.

Physicists from the [University of Nevada, Las Vegas](#) and the University of Rochester have made a breakthrough in the long sought-after quest for a room-temperature superconductor, what they call the "holy grail" of energy efficiency.

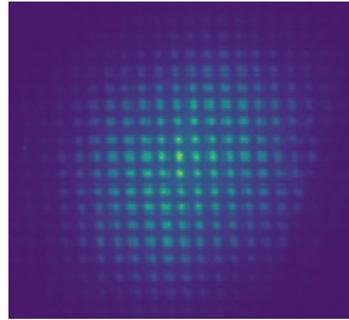
Urban landscapes and human-made aerosols have the potential to start storms sooner and even pull them toward cities, according to new research exploring the impact of urban development on hazardous weather, led by scientists at the [Pacific Northwest National Laboratory](#).

How the diabolical ironclad beetle survives could inspire the development of new materials with the same herculean toughness, as described in a new paper by engineers from [Purdue University](#) and University of California, Irvine.

SCIENCE HIGHLIGHTS

The Office of Science posted six new highlights between 12/14/2020 and 1/11/2021.

Scientists at [SLAC National Accelerator Laboratory](#) recently developed a new X-ray imager with much greater precision and accuracy than possible before. These X-ray imagers are becoming a useful tool in research that uses X-ray free electron lasers.



Hadronization occurs when quarks and gluons combine to form composite particles made of two or three quarks. Nuclear physicists study particles containing heavy “charm” quarks, which are easier to track than lighter particles. Measurements made by scientists from [Berkeley Lab](#) revealed that there are many more three-quark hadrons than expected under a widely accepted explanation of how hadrons can form.

A team including scientists from [Los Alamos National Laboratory](#) determined the radius of a typical neutron star to be close to 11 kilometers. The results suggest that neutron-star black-hole collisions can swallow neutron stars whole.



IN THE NEWS

Wired: [A new field guide for Earth’s wild microbes](#)

This article reports on the effort by the DOE’s Joint Genome Institute to assemble the largest catalog of microbes to date. It has 50,000 genomes from 18,000 species, 12,000 of which have never been documented before.

CNN: [The unhackable computers that could revolutionize the future](#)

This op-ed by Don Lincoln of Fermilab discusses the Department of Energy's efforts to build the quantum internet and the recent accomplishment moving towards that goal.

NextGov: [How supercomputing and advanced X-rays helped the government fight COVID-19](#)

Five potential vaccines for the coronavirus depend on research done at Department of Energy user facilities, including the Advanced Photon Source at Argonne. The article also describes the role of supercomputers and facilities at other DOE national laboratories as well as the launch of the COVID-19 High Performance Computing Consortium.

TOP TWEETS

The Office of Science sent out 125 tweets between 12/14/2020 and 1/11/2021. Here are the two most popular:



A new measurement from @ncatsuaggies scientists fits another piece in the proton radius measurement puzzle energy.gov/science/np/art...



Diversifying the nation's scientific workforce is a high priority. That's why @Energy Office of Science is launching a pilot program to broaden and diversify the nuclear physics research community with \$3 million in traineeships: energy.gov/science/articl...

3:39 PM · Dec 16, 2020 · Sprout Social

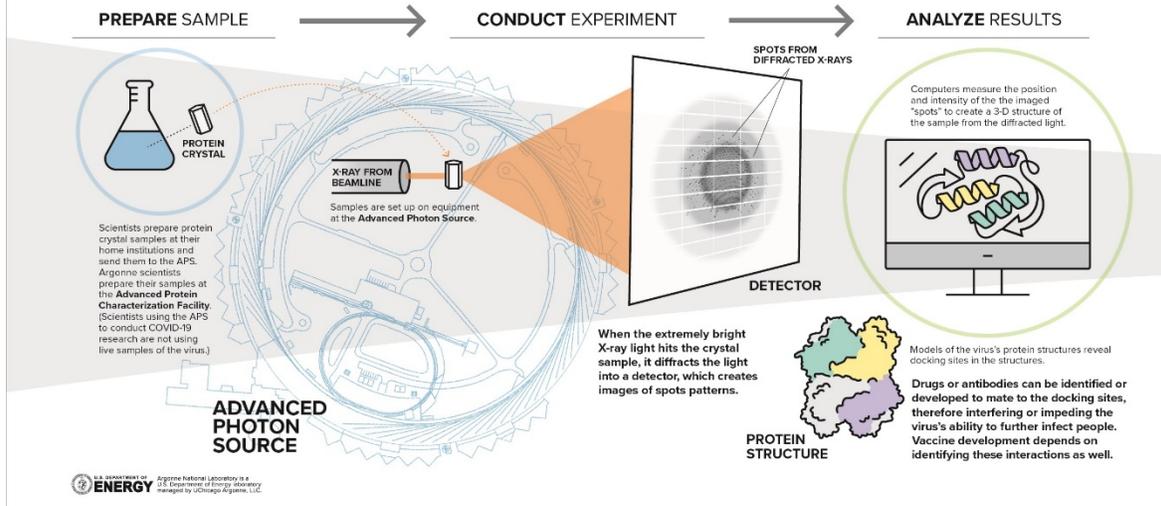
BY THE NUMBERS

[Cracking the COVID-19 Code](#)

CRACKING THE COVID-19 CODE



Finding treatments or vaccines starts with understanding the protein structure of a virus. Here's how it happens at the Advanced Photon Source (APS) at Argonne National Laboratory.



Argonne National Laboratory and the user facilities located there have played a major role in establishing the foundations for the vaccines for COVID-19. To learn more about their efforts, read Argonne's [blog post about its work](#).

END NOTES

A Partnership for Public Engagement



Most people use the results of discovery science every day but aren't aware of the underlying research that created the foundation for technologies ranging from electronics to medicine. While the social science research on science communication has grown tremendously, there's little information on how the greater public engages with basic and fundamental research like that done by the DOE's Office of Science. That's why the Office of Science recently signed a memorandum of understanding to create a new partnership – SciPEP (Science Public Engagement Partnership). To learn more, [read this blog post on the partnership](#). In the coming months, we'll share more information about how to get involved.

Please see the [Communique archive](#) on [Energy.gov](#) for past issues.

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