



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.*



First-Person Science: Christoph Benning on Plant Biochemistry

In the First-Person Science series, scientists describe how they made significant discoveries over years of research. Christoph Benning is the director of the Michigan State University-Department of Energy Plant Research Laboratory.

“We have to show Mr. Benning how to purify chloroplasts. I think the purification wasn’t quite right,” mocked a fellow senior researcher as I stood on the podium. I had just finished a presentation at the International Symposium on Plant Lipids, the major conference in my research area. I had described my laboratory’s finding that a certain type of lipid – a biological molecule that includes fatty acids and sugar – had built up in plant roots. No one had ever found this lipid in roots before. So he was skeptical.

He was also wrong. We published the paper in the Proceedings of the National Academy of Sciences. Later on, other scientists confirmed our findings.

[Click here to read more about Christoph Benning’s work in plant biochemistry.](#)

NEWS CENTER

The Office of Science posted 61 news pieces between 5/4/2020 and 5/18/2020, including 30 university articles and 27 pieces from the labs and user facilities.

In a little over a month, a team from around the world, including physicists from [Fermilab](#), took a simplified ventilator design from concept all the way through approval by the U.S. Food and Drug Administration.

New research conducted at the [Advanced Photon Source](#) shows that it is possible to 3D print metal components without the pores that weaken their structural integrity by using devices that are currently available.

Researchers at the [Environmental Molecular Sciences Laboratory](#), Pacific Northwest National Laboratory, and Berkeley Lab have found a link between genetics, the gut microbiome, and memory in mice.

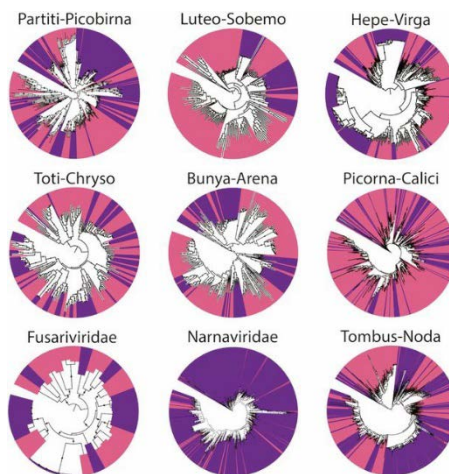
Just to solve a puzzle or play a game, artificial intelligence can require software running on thousands of computers. Engineers from [Purdue University](#) have created hardware to curb its appetite.

Scientists from the [University of Colorado Boulder](#) have gained new understanding about the life cycle and metabolism of compartments within cyanobacteria. This new research could lead to increased plant yields, novel antibiotics, and more efficient renewable fuels.

A team from [UC San Diego](#) has used quantum materials to create “neural trees” that mimic brain synapses.

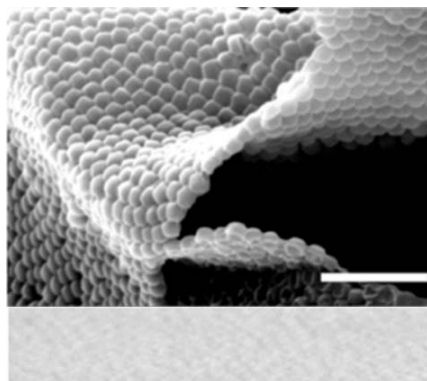
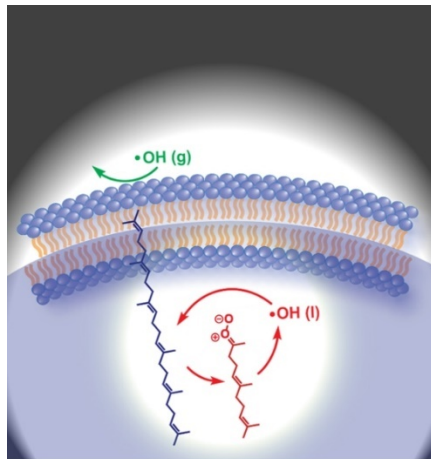
SCIENCE HIGHLIGHTS

The Office of Science posted five new highlights spotlighting BER and BES between 5/4/2020 and 5/18/2020.



Scientists have limited knowledge of the role of viruses in soils. New research from [UC Berkeley](#) found that soils can contain many kinds of viruses. Most are likely to infect fungi, but they could also infect bacteria, plants, and animals. The study found that soil viral populations change quickly, possibly in response to the environment.

Scientists at [Berkeley Lab](#) have identified a new mechanism that can cause the molecular building blocks of cell membranes to break down. This mechanism, which can affect biological cells, foods, plastics, petrochemicals, and fuels, could explain things like why food becomes rancid.



Scientists from [UC San Diego](#) have discovered a new method of producing ultra-thin porous membranes. The nanoparticles can self-assemble into layers one particle thick and into multilayer, self-supporting porous films.

IN THE NEWS

[Forbes: Artificial Intelligence Is Driving A Silicon Renaissance](#)

This article about AI and semiconductor innovation notes that Argonne National Laboratory is using Cerebras Systems's large AI chip to help computing power in the fight against coronavirus.

[Chicago Tribune: Fermilab Physicists Go Outside Comfort Zone to Help Design Low-Cost Ventilator to Fight COVID-19](#)

Physicists from Fermilab have gone outside their comfort zones to help design and roll out a low-cost ventilator for widespread use.

[The Economist: Wireless Charging of Electric Cars Looks Increasingly Promising](#)

A story about wireless charging for electric cars references Oak Ridge National Laboratory's wireless power technology transfer for hands-free charging.

TOP TWEETS

The Office of Science sent out 60 tweets between 5/4/2020 and 5/18/2020. Here are our two most popular from the past two weeks:



At [@ENERGY](#), our national labs are coming together in a fundamentally unique way, bringing their resources and scientific expertise to the fight against [#COVID19](#) - Director Chris Fall [#NatLabsInTheFight](#)

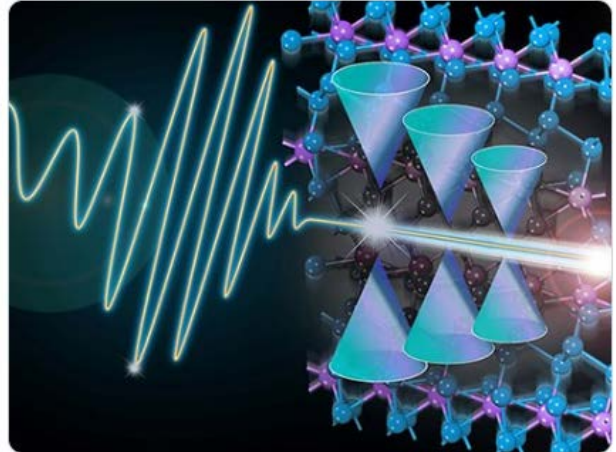


Q&A: DOE's Chris Fall, on a virtual national lab to counter coronavirus
The agency has set up a single point of contact for gaining access to national laboratories' COVID-19 experts and research tools.
[physicstoday.scitation.org](#)



Scientists at [@UABNews](#), [@Ames_Laboratory](#), and [@BrookhavenLab](#) have found a way to control an extremely sensitive exotic material called a Dirac semimetal

[uab.edu/news/research/...](http://uab.edu/news/research/)



BY THE NUMBERS



The Office of Science [Graduate Student Research](#) program aims to prepare graduate students for science, technology, engineering, and mathematics careers by providing thesis research opportunities at Department of Energy national laboratories. The most recent cohort included 62 students from 50 universities across the United States.

END NOTES

University of Chicago and Argonne: Homemade Masks Made of Silk and Cotton May Boost Protection



A study by the [University of Chicago](#) and Argonne National Lab suggests that a combination of masks made of high thread-count cotton with natural silk fabric or a chiffon weave can effectively filter out aerosol particles—if the fit is good.

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No. 35: 18 May 2020