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Editors' Choice

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CONSERVATION

Killing promotes killing

Sacha Vignieri





Legal hunting of protected wolves appears to increase poaching rather than tolerance.

PHOTO: © AGE FOTOSTOCK/ALAMY STOCK PHOTO

As a way to reduce poaching and promote tolerance of endangered species, some governments have implemented policies allowing the legal killing of large carnivores. Chapron and Treves investigated this controversial idea by studying the relationship between wolf population growth and announcements of legal hunting periods (either for individuals or as government-led culls) in the states of Michigan and Wisconsin. Contrary to the oft-stated argument that legal hunting reduces poaching, they found that population growth declined after both the announcements and the killing events. This suggests that legal killing may actually promote illegal killing, not tolerance.

Proc. R. Soc. London Ser. B, 10.1098/rspb.2015.2939 (2016).

PLURIPOTENCY

Pluripotency factor opens chromatin

Beverly A. Purnell

All cells in an organism share the same genome. Differences in form and function arise from cells varying the specific genes they express. Temporal and spatial cues trigger changes in chromatin condensation: An open arrangement supports, whereas a closed conformation blocks, gene expression. Lopes Novo *et al.* report a chromatin-opening role for the pluripotency transcription factor NANOG, even in typically condensed areas of the genome, such as repetitive sequences. To do this, NANOG works with the SALL1, a protein associated with condensed chromatin. When embryonic stem cells differentiate, they compact their chromatin and simultaneously reduce NANOG expression. This work highlights how pluripotent cells link their pluripotency network with chromatin organization.

Genes Dev. **30**, 1101 (2016).

AUTOIMMUNE DISEASE

Lupus: subdivide in order to conquer?

Paula A. Kiberstis

For some diseases such as cancer, doctors routinely use molecular profiling to match patients to the most effective drugs, leading to improved patient care. With this goal in mind, Banchereau *et al.* explore the molecular heterogeneity of systemic lupus erythematosus, an autoimmune disease in which patients produce autoantibodies to nucleic acids. Through longitudinal profiling of blood samples from 158 children with lupus, they found a transcriptional signature in plasmablasts (a type of antibody-secreting cell) that strongly correlates with disease activity. Notably, a rise in neutrophil transcripts marked the onset of kidney inflammation. Overall, this approach revealed that lupus patients fall into seven subgroups, who conceivably would show different responses to treatment.

Cell **165**, 551 (2016).

CITIZEN SCIENCE

Crowd-sourcing craters on the Moon

H. Jesse Smith

Citizen science harnesses thousands of volunteers to perform tasks that are difficult to automate but too large for individual researchers. Bugiolacchi *et al.* present results from Moon Zoo, a website that asks users to identify the positions and sizes of lunar craters. Unfortunately, it is necessary to discard the majority of users' data during quality control, because most didn't correctly classify enough craters to become reliable at the task. Nevertheless, the project did result in crater counts comparable to those from experts, and it identified methods for future citizen science projects, such as how to weight users' expertise and combine all their results into a single catalog.

Icarus **271**, 30 (2016).

PHYSICS

Watching phonons propagate

Jelena Stajic

In crystalline materials, atoms are arranged in an ordered lattice but can still wiggle around their equilibrium positions in concert with one another. These collective oscillations—phonons—are easy to describe in perfect crystals. In the real world, however, materials have nanoscale defects that can influence how phonons move through the crystal. To see these effects directly, Cremons *et al.* optically excited phonons in samples of WSe² and Ge and watched them propagate. The phonons caused minute rearrangements of the lattice, which were captured by an ultrafast electron microscope. The resulting movies indicate that the phonons were generated at the step edges of the samples and that their motion was influenced by the local morphology.

GLOBAL FRESH WATER

The wet and the dry

H. Jesse Smith

If predicting the availability of water during the next century were as easy as the phrase “the wet get wetter and the dry get drier” would seem to suggest, then planning for it also would be easy. However, although that simple formulation is useful when considering latitudinal averages, detailed predictions are more difficult, because atmospheric circulation patterns will change as the world warms, and so moisture will be delivered to different areas on a regional scale. Wills *et al.* examine this issue in more detail and conclude that moisture flux variations in the tropics will occur mostly because of changes in stationary-eddy circulations, whereas transient eddies will be most important in the extratropics.

Geophys. Res. Lett. 10.1002/2016GL068418 (2016).

MICROBIOLOGY

A secret(e) weapon for food poisoning

Caroline Ash

Listeria monocytogenes secrete a toxin that allows them to overwhelm good gut microbes.

CREDIT: SCIENCE PICTURE CO/SCIENCE SOURCE

Trillions of microbes reside in our gut, producing essential nutrients and defending gut integrity. So how do a few incoming pathogens compete against these masses to establish an infection? Some strains of the bacteria *Listeria monocytogenes* cause gastroenteritis, which can be fatal in the immunocompromised and in pregnant women. Studying mice, Quereda *et al.* found that a virulent strain of *L. monocytogenes* produces a toxin called listeriolysin S, but only when it is in

the gut. The toxin led to changes in the abundance of acetate- and butyrate-producing gut resident microbes in *L. monocytogenes*-infected mice. These short-chain fatty acids can inhibit *L. monocytogenes* growth, implying that *L. monocytogenes* expresses the toxin to overwhelm resident microbial competition.

Proc. Natl. Acad. Sci. U.S.A. 10.1073/pnas.1523899113 (2016).

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