

charge order can be induced even at zero magnetic field. The authors compressed the material along one direction and measured a large inelastic x-ray scattering signal that was consistent with the formation of a 3D order. The measurements suggest that the induced order is associated with an optical lattice mode in the material. —JS

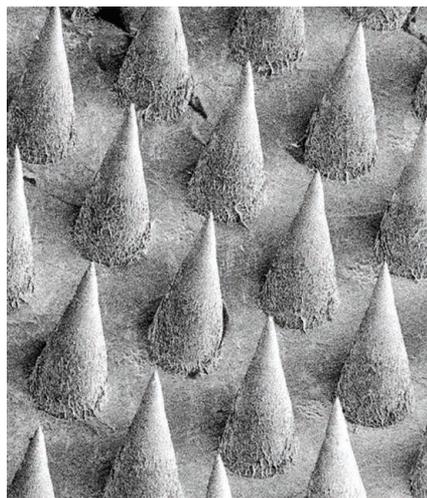
*Science*, this issue p.1040

## CELL BIOLOGY

### A stem cell-integrated microneedle patch

More than 600,000 people in the United States suffer a heart attack each year. Stem cell therapy has been used to improve treatment options for survivors, but so far, cardiac stem cell retention rates have been low. To better integrate the stem cells into viable heart tissue, Tang *et al.* created a microneedle patch. Its biocompatible needles penetrate the skin and serve as communication channels between the patch and the heart, getting nutrients to the heart while delivering stem cells to the injured area. When tested in rats and pigs after acute heart attack, the patch boosted the development of heart tissue, reduced scar size, and increased cardiac functions. —PJB

*Sci. Adv.* 10.1126/sciadv.aat9365 (2018)



Cardiac stem cells growing on a microneedle array

## DISTANT GALAXIES

### Mergers drive a powerful dusty quasar

Massive galaxies in the early Universe host supermassive black holes at their centers. When material falls toward the black hole, it releases energy and is observed as a quasar. Astronomers found a population of powerful distant quasars that are obscured by dust, but it has been unclear how they are formed. Díaz-Santos *et al.* observed the dust-obscured quasar WISE J224607.56–052634.9 at submillimeter wavelengths, finding three small companion galaxies connected to the quasar by bridges of gas and dust. They inferred that galaxy mergers can provide both the raw material to power a quasar and large quantities of dust to obscure it. —KTS

*Science*, this issue p.1034

## CANCER

### Hunting and fishing for cancer genes

Mucosal melanoma is a rare, but deadly, form of melanoma that occurs in sun-protected tissues. Little is known about the genetic alterations that drive the growth of these tumors. Ablain *et al.* sequenced mucosal melanomas from 43 patients and found that a substantial fraction showed inactivation or loss of *SPRED1*, a gene that encodes a negative regulator of RAS–MAPK (mitogen-activated protein kinase) signaling. Using a platform called MAZERATI (Modeling Approach in Zebrafish for Rapid Tumor Initiation), they discovered that *SPRED1* loss may help explain the poor response of melanoma patients to drugs that inhibit the KIT tyrosine kinase. The results suggest that a combination of KIT inhibitors and drugs that inhibit MAPK signaling may be more effective. —PAK

*Science*, this issue p.1055

## IN OTHER JOURNALS

Edited by **Caroline Ash** and **Jesse Smith**



*Aquilegia coerulea* is found widely around the Northern Hemisphere.

## PLANT GENOMICS

### Columbine's puzzling chromosome

The columbine genus *Aquilegia* is found across the Northern Hemisphere and arose through two adaptive radiations, giving rise to 70 extant species. Filiault *et al.* deep sequenced *Aquilegia coerulea* to create a reference genome and compared it to 10 other sequenced *Aquilegia* spp. from Europe, Asia, and North America. Although the genomes generally exhibited low genetic diversity within species, consistent with previous studies, chromosome 4 showed an overall greater diversity, a higher number of older genetic variants, and different phylogenetic relationships among the species. The differences in chromosome 4 relative to the rest of the genome may be due to hybridization among species and a differential reduction in selection after *Aquilegia* diversified for this chromosome. —LMZ

*eLife* 7, e36426 (2018).

## BIOTECHNOLOGY

### Precision genome engineering

Genome editing through CRISPR-Cas systems has the potential to correct genetic mutations that occur in diseased cells, such as cancer cells.

However, the ability to selectively activate CRISPR-Cas systems in diseased cells is important to ensure that gene editing only occurs where it is wanted. Zhu *et al.* developed a system whereby gene editing could be activated by a magnetic field, thus allowing spatial control. The use of



Fish, like these Pacific flatiron herring, are a source of omega-3 fatty acids and vitamin D.

## DISEASE PREVENTION

## Some fishy supplements?

**M**ore than half of the adult population in the United States consumes dietary supplements in the hope of staving off common, life-threatening diseases. Omega-3 fatty acids (fish oil) and vitamin D are especially popular because animal studies and small observational studies hinted that they prevent heart disease and cancer. Manson *et al.* tested these supplements in a randomized placebo-controlled trial of 26,000 people 50 years of age and older. At a median follow-up time of 5 years, there was no evidence that the supplements provided health benefits; the incidences of cancer and cardiovascular disease in the supplement group were similar to those in the placebo group. —PAK

*New Engl. J. Med.* 10.1056/NEJMoa1809944, 10.1056/NEJMoa1811403 (2018).

nanomagnets in their system also improved transduction into target cells in tumor-bearing mouse models. This approach could potentially allow the translocation of CRISPR-Cas systems into therapeutic agents. —GKA

*Nat. Biomed. Eng.* 10.1038/s41551-018-0318-7 (2018).

## PLATELETS

## Transfusions for preterm babies

Platelets are immune cell fragments that act like molecular band-aids to control bleeding and help blood to clot. Premature babies can have abnormally low platelet numbers (thrombocytopenia) in the days after birth and are often given platelet transfusions to help prevent infections. Curley *et al.* studied >600 babies in a randomized clinical trial to determine just how low platelets have to get to warrant intervention. Only those infants with severely low platelet levels (<25,000 per cubic millimeter; normal is around 150,000) benefited from transfusion. By contrast,

thrombocytopenic babies with somewhat higher platelet counts (<50,000 per cubic millimeter) that received more transfusions had poorer outcomes and an increased rate of death. These surprising findings suggest that not all babies with low platelet counts should receive a prophylactic transfusion, which should lead to safer management of premature babies. —PNK

*N. Engl. J. Med.* 10.1056/NEJMoa1807320 (2018).

## LINGUISTICS

## The linguistic expression of senses

In Western cultures, it has been argued that vision and hearing are the senses that are most easily expressed in language. One theory holds that this ease of expression for some senses over others is due to universal features of perception. To test whether there is a universal hierarchy of senses, Majid *et al.* examined how sensory stimuli are linguistically coded across 20 unrelated languages. They found little evidence for a

hierarchy of senses, suggesting that although vision and hearing may be the senses most accessible to English speakers, this may not be true in other cultures. These data have implications for understanding the relative influences of culture and language on perceptual experience. —TSR

*Proc. Natl. Acad. Sci. U.S.A.* 115, 11369 (2018).

## CLIMATE CHANGE

## Energy, rain, and the future

The intensification of precipitation over land owing to rising atmospheric temperature is expected to increase in the 21st century, but there are still many details about why and how much that need to be better understood. Richardson *et al.* used a suite of climate models to analyze the atmospheric energy budget and its effects on the fast (due to atmospheric components like carbon dioxide and sulfate) and slow (due to surface temperature changes) drivers of precipitation change. They discuss likely

future changes over land and sea and the causes of the past and projected trends and find that the increase may become clearly observable by around 2050. —HJS

*J. Clim.* 31, 9641 (2018).

## GEOPHYSICS

## Dropping ferric iron into a low spin

Iron located in lower-mantle bridgmanites undergoes a spin transition that could alter the seismic properties deep in Earth. Liu *et al.* found that ferric iron undergoes a spin transition in one of the cation sites of mantle bridgmanite at mid-mantle pressures. The completion of this now-well-constrained spin-transition pressure range roughly lines up with the point at which the relative viscosity of the lower mantle decreases while not having much impact on the seismic wave properties. These new data help us understand the dynamics and interpret the seismic picture of Earth's inaccessible mantle. —BG

*Nat. Comm.* 9, 1284 (2018).