to subclinical shedding, and reduction in recurrent lesions. — ACC

Sci. Transl. Med. **6**, 265ra169 (2014).

HUMAN CAPITAL

An ounce of prevention is better than violence

Children and adolescents spend a large fraction of their lives in schools. Many discussions about improving adult behavior focus on improving cognitive skills. Nevertheless, retrospective analyses also highlight the importance of noncognitive skills. Heller reports on the positive effects of a Chicago program that offered disadvantaged youths 25 hours per week of summer employment. Youths enrolled in this program committed fewer violent crimes for at least a year after the summer job ended. — GJC

Science, this issue p. 1219

VALLEYTRONICS

Using light to manipulate atomic valleys

The electronic structure of atomic layers of transition-metal dichalcogenides, such as WSe_2, has two distinct valleys with equal energies. Knowing which valley an electron comes from can make it a carrier of information. Kim *et al.* used optical methods to distinguish between the valleys. They shone circularly polarized light on a sample of WSe_2, which caused the energy needed to create an exciton—a bound state of an electron and a hole—to shift in one valley but not the other. The method may enable the manipulation of the valley degree of freedom for use in quantum information processing. — JS

Science, this issue p. 1205

TRANSCRIPTION

Unpacking for travel to the nuclear interior

The position of a gene within the cell nucleus is correlated with its activity. Those near the nuclear periphery are generally repressed, whereas those in the center are (or will be) active. It is not clear whether this relocalization is a cause or a consequence of gene regulation. Therizols *et al*. found that transcriptional activation or simply chromatin decondensation both drove the relocation of genes to the interior of the nucleus. The nuclear position was maintained in daughter cells, suggesting that the cell has an epigenetic memory of the gene's position within the nucleus. — GR

Science, this issue p. 1238

PLANT GENETICS

Dominance cascades in self-incompatibility

Plants often cannot use their own pollen to set seed. This is known as self-incompatibility. Although some of the underlying genetics and mechanisms of self-incompatibility are understood, the evolution and maintenance of the system have remained mysterious. Durand *et al.* identified a collection of small RNAs and their respective matching targets within a self-incompatibility locus in *Arabidopsis halleri*. A subset of these alleles functioned in a dominant manner, which helps to explain how self-incompatibility is maintained. — LMZ

Science, this issue p. 1200

BIOCHEMISTRY

Cancer by activating a binding partner

Some cancers are associated with mutations that increase the activity of members of the EGFR family of tyrosine receptor kinases, such as HER1. Although HER3 has little kinase activity, it can contain cancer-associated mutations. HER3 binds to other EGFR family members that do have kinase activity. Littlefield *et al.* crystallized the kinase domain of HER1 bound to the kinase domain of normal HER3 or HER3 with cancer-associated mutations. Cancer-associated mutations in HER3 increased its binding to and allosteric activation of HER1. — NRG

Sci. Signal. **7**, ra114 (2014)

IN OTHER JOURNALS

Edited by **Kristen Mueller** *and* **Jesse Smith**

A shipworm removed from its wooden burrow

MICROBIOLOGY

Aiding shipworms' appetite for destruction

Shipworms are in fact mollusks that consume wood. They can cause devastation to wooden ships but they also clean up wreckage. Mollusks cannot eat wood unaided (the lack the right enzymes) so O'Connor *et al.* puzzled over the absence of symbiotic wood-digesting organisms in the gut of shipworms. To their surprise, they discovered that the gills of a shipworm called *Bankia setacea* harbored *Teredinibacter turnerae* bacteria, which produce several wood-digesting enzymes. It seems the shipworm's tissues not only tolerate but also selectively transfer these foreign enzymes into their guts for digesting its formidable meals. –CA

Proc. Natl. Acad. Sci. U.S.A. 10.1073/pnas.1413110111 (2014).

STEM CELLS

An inhibitor to expand mouse stem cells

Among their many side effects, treatments such as chemotherapy and radiation deplete stem cells. Therapies to boost their numbers may positively affect patient outcomes. One possible therapeutic target is the protein phosphatase SHIP1. Hematopoietic stem cells expand in mice lacking SHIP1; however, they also develop inflammatory disease. To boost stem cells numbers while hopefully avoiding inflammation, Brooks *et al.* developed a SHIP1 inhibitor. Adult hematopoietic and mesenchymal stem cell numbers increased in normal mice treated transiently with the inhibitor. The inhibitor also helped mice recover their hematopoietic-lineage cells after radiation treatment. — BAP

Stem Cells 10.1002/stem.1902 (2014).

SUPERCONDUCTIVITY

Beefing up thin-film superconductivity

Conventional superconductors, such as lead, owe their exotic properties to the interaction of electrons and lattice vibrations. In contrast, in the more recently discovered iron-based superconductors (IBSs), magnetic interactions are thought to play a major role. Lee *et al.* show that in thin films of the IBS FeSe deposited on $SrTiO_3$, a combination of the two mechanisms may be at play. Using angle-resolved photoemission spectroscopy, they discovered a vibrational mode of the $SrTiO_3$ substrate that interacts with the electrons in FeSe. The interaction roughly doubles the temperature at which the film becomes superconducting, when compared with bulk IBSs with similar electronic structures. — JS

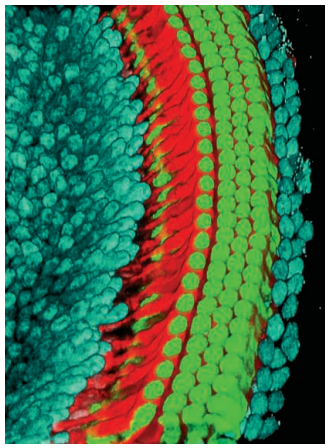
Nature **515**, 245 (2014).

MARINE BIOLOGY

Gray seals: the North Sea's great whites?

Harbor porpoises with missing bellies first appeared on Dutch beaches in 2006; soon, dozens of mutilated porpoises began mysteriously and gruesomely washing ashore each year. Now, Leopold *et al.* have cracked the murderers' identity: gray seals. Photographs and autopsy results of more than 1000 stranded porpoises from 2003 to 2013 revealed torn blubber, scratch marks, and canine teeth marks—all pointing to seals. Finding the smoking gun—seal saliva DNA in the wounds—seemed impossible, as seawater should wash it away. But the team did find seal DNA at the bottom of deep narrow bite marks on three porpoises. Humans may be to blame for the change in seal hunting targets: With rising gas prices, fishermen switched from trawling to cheaper nets anchored to the seabed, which can also trap porpoises. The seals may have stumbled onto them and then gone on to hunt this larger, fattier prey. —JY

Proc. R. Soc. London ser. B, 10.1098/rspb.2014.2429(2014).



Hair cells (green) and supporting cells (cyan) in a neonatal mouse cochlea

HEARING LOSS

Supporting cells take on a starring role

"Supporting cells" in the inner ear have more to offer than their uninspiring name suggests. Studies of deafness often emphasize the role of hair cells, the sensory cells that transmit sound signals to the brain. Loss of hair cells causes permanent deafness, because these cells cannot regenerate. Loss of supporting cells also causes deafness, but a new study suggests that there may be hope. Mellado Lagarde *et al.* found that supporting cells can regenerate during a brief time period after birth. When they selectively eliminated supporting cells in newborn mice, nearby cells rapidly replaced them, thereby preserving hearing. The next step is to find a drug that induces regeneration. — PAK

Proc. Natl. Acad. Sci. U.S.A. 10.1073/pnas.1408064111 (2014).

NANOMATERIALS

Ionic charge manages transformation

One way to create nanoparticles that otherwise are difficult to synthesize de novo is to swap out the cations of existing nanoparticles. De Trizio *et al.* show that the transformation of colloidal copper selenide ($Cu_{2-x}Se$) nanoparticles with tin (Sn) ions leads to vastly different products for Sn^{2+} versus Sn^{4+}. The smaller Sn^{4+} ions move readily through the $Cu_{2-x}Se$ lattice. The homogeneous transformation stops at Cu_2SnSe_3 and retains a cubic lattice. The larger Sn^{2+} cations are blocked, and regions of SnS form at the surface; the stress created at the interface of this heterogeneous nanoparticle drives the distortion of Se anion lattice that allows orthorhombic SnS to form. — PDS

J. Am. Chem. Soc. 10.1021/ja508161c (2014).

TROPICAL PALEOECOLOGY

Revealing the forests of an ancient landmass

The biogeographical history of Southeast Asia is complex. During the Pleistocene glacial cycles, sea levels repeatedly fell, exposing large areas of land and linking islands to the Asian mainland. Especially notable was Sundaland, which united Borneo, Sumatra, and the Malay Peninsula. But what kind of vegetation—forest or savannah—dominated this now-submerged landscape? To find out, Raes *et al.* combined geographical distribution models for species of the dominant dipterocarp tree family with models of past climates. They found that continuous rainforest was the most likely vegetation of much of Sundaland during the Pleistocene glacial cycles. — AMS

Proc. Natl. Acad. Sci. U.S.A. 10.1073/pnas.1403053111 (2014).

Cleaning up after the 2014 Napa, California, earthquake

NATURAL HAZARDS

Getting a bigger jump on earthquakes

Developing better earthquake early warning (EEW) systems, which could help lessen earthquake damage, requires operational testing. Grapenthin *et al.* present a performance analysis of ShakeAlert, an EEW demonstration system along the western coast of the United States, during the 2014 magnitude 6.0 Napa earthquake. The system uses a real-time GPS network to pick up very early shaking and quickly estimate earthquake size and location. ShakeAlert successfully provided a slip model of the earthquake after only half a minute of shaking. The Napa quake shows that ShakeAlert works well and provides vital information on how EEW systems can be improved. — BG

Geophys. Res. Lett. 10.1002/2014GL061923 (2014).

PHOTOS: (TOP TO BOTTOM) GUOQIANG WAN; LIU YILIN XINHUA NEWS AGENCY/NEWSCOM

Getting a bigger jump on earthquakes

Brent Grocholski

Science **346** (6214), 1196.
DOI: 10.1126/science.346.6214.1196-h