molecules restored mitochondrial fusion and activity in the sciatic nerves of mice; they may also help in other diseases linked to mitochondrial trafficking. —PNK

Science, this issue p. 336

HIV

Taking an active interest in HIV latency

HIV cure efforts have been thwarted by an inability to target the latent reservoir, which is thought to be largely composed of resting CD4 T cells. A recent report suggested that the Fcγ receptor CD32 might be a marker of latently infected CD4 T cells. Abdel-Mohsen *et al.* meticulously examined T cells from treated HIV patients across the world. $CD32^+$ HIV-infected T cells had an activated phenotype and HIV RNA, indicating active HIV transcription. In contrast, the majority of HIV DNA resided in $CD32^-$ cells. Thus, targeting $CD32^+$ cells is unlikely to hit the latent HIV reservoir. —LP

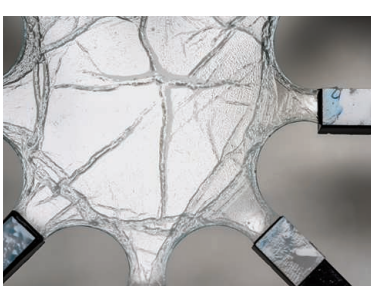
Sci. Transl. Med. **10**, eaar6759 (2018).

MATERIALS SCIENCE

Reserving the right to stretch

Retractable antennae or certain spider silks can stretch well beyond their apparent length because they have a reserve of material that lets them expand and contract over much longer distances. Grandgeorge *et al*. made nonwoven fibrous membranes by electrospinning a block copolymer with varying ratios of two components. They infused these membranes with a liquid that let the fibers buckle and fold without changing the apparent surface area. When the membranes were stretched, this material could unbuckle and slide along the membrane surface, allowing it to extend without breakage. —MSL

Science, this issue p. 296



A designed polymer can stretch like a spring.

CANCER

Earlier detection of ovarian cancer

Ovarian cancer is the fifth leading cause of cancer-related deaths among females in the United States, owing in part to the late stage at which it is often diagnosed. Survival rates increase dramatically when it is detected early, and new methods for advanced detection are greatly needed. Williams *et al.* developed a carbon nanotube–based sensor that optically detects the U.S. Food and Drug Administration–approved ovarian cancer biomarker HE4. When implanted into live cancer-bearing mice, distinct wavelength responses from individual nanotubes in the device rapidly and repeatedly differentiated mice with ovarian cancer from controls. The same was true in tests using samples from ovarian cancer patients. —PJB

Sci. Adv. 10.1126/sciadv.aaq1090 (2018).

QUANTUM GASES

Recurring coherence

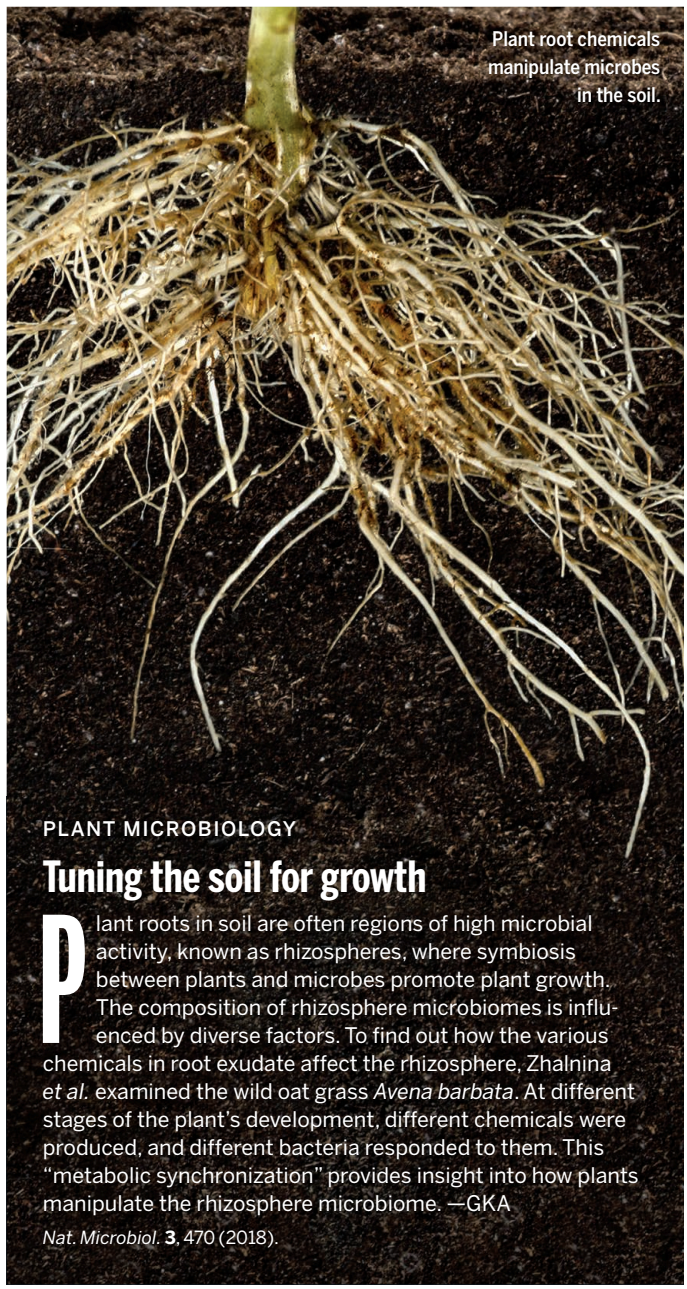
A finite isolated system should return almost to its initial state if it evolves for long enough. For a large system, "long enough" is often unfeasibly long. Rauer *et al*. found just the right conditions to observe the recurrence of the initial state in a system of two one-dimensional superfluids with thousands of atoms in each. The superfluids were initially coupled—locking their quantum mechanical phases together—and then allowed to evolve independently. After the uncoupling, the researchers observed their phases regaining coherence two more times. —JS

Science, this issue p. 307

PHOTOS: (FROM LEFT) SORBONNE UNIVERSITÉ/CNRS; PHIL DEGGINGER/SCIENCE SOURCE

IN OTHER JOURNALS

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



Plant root chemicals manipulate microbes in the soil.

PLANT MICROBIOLOGY

Tuning the soil for growth

Plant roots in soil are often regions of high microbial activity, known as rhizospheres, where symbiosis between plants and microbes promote plant growth. The composition of rhizosphere microbiomes is influenced by diverse factors. To find out how the various chemicals in root exudate affect the rhizosphere, Zhalnina *et al.* examined the wild oat grass *Avena barbata*. At different stages of the plant's development, different chemicals were produced, and different bacteria responded to them. This "metabolic synchronization" provides insight into how plants manipulate the rhizosphere microbiome. —GKA

Nat. Microbiol. **3**, 470 (2018).

SINGLE-CELL GENOMICS

Tying genotype to phenotype, cell by cell

RNA transcripts can now be sequenced within single cells. Such studies identify variants that affect gene expression at a level that may not be detected by bulk sequencing. Van der Wijst *et al*. sequenced ~25,000 individual blood cells from 45 individuals. Expression quantitative trait loci that had previously been identified in bulk studies were found, which helped validate the approach. An additional 287 genes were identified that showed differences in expression in single cells resulting from genetic variation, 48 of which differed among cell types. Furthermore, single-cell sequencing detected variants that affect regulatory networks and revealed

MICROBIOLOGY

Weathering life after death

Life is tough on rock exposed to ultraviolet radiation and extreme desiccation, and food is scarce. But microbial life does get a grip, and it contributes substantially to rock weathering by harvesting minerals for metabolism. Brewer and Fierer sampled 149 gravestones from Europe and the Americas and used marker-gene and shotgun metagenomic sequencing to uncover what was living on them. Geography, climate, and rock type were the main determinants of the microbial communities. Granite-based organisms were genetically geared for acid tolerance and mobility, whereas limestone-based communities tended to live in lichen associations, fix carbon, and resist radiation. Many of the communities were symbiotic or endolithic, indicating that some recourse to food and shelter is available even on the smoothest slab. —CA

Environ. Microbiol. **20**, 958 (2018).

Tombstone encrustation is influenced by rock chemistry.

PHOTO: STAN PRITCHARD/ALAMY STOCK PHOTO

personalized coexpression patterns. —LMZ

Nat. Genet. 10.1038/s41588-018-0089-9 (2018).

ICE SHEETS

Explaining uneven mass loss

The Greenland Ice Sheet, along with the Antarctic Ice Sheet and glaciers worldwide, is melting at an accelerating rate. This melting is not uniform, however, with adjacent fjords often exhibiting quite different behaviors. What can account for those differences? Millan *et al.* present oceanographic observations and bathymetric data from the vicinity of 20 major glaciers in southeast Greenland, which show that retreating glaciers occupy deep valleys exposed to warm Atlantic water, whereas stable ones rest on sills away from warm water. These observations can explain the complex pattern of ice-front positions from the 1930s to the present. —HJS

Geophys. Res. Lett. 10.1002/2017GL076561 (2018).

MAGNETISM

Manipulating an antiferromagnet

Magnetic materials are routinely used in electronic devices, and the ability to change their magnetic state using electric fields is highly desirable. Most devices use ferromagnets—materials in which individual atomic spins all point in one direction—but there are important advantages to developing analogous devices with antiferromagnetic (AFM) materials. Liu *et al.* made thin films of the AFM $MnPt_3$, a material that transitions from a noncollinear to a collinear AFM state a bit above room temperature. The thin films were grown on a ferroelectric substrate; applying an electric field to the substrate near the transition temperature changed the strain in the $MnPt_3$ film, which in turn caused the film to change its spin structure from collinear to noncollinear. —JS

Nat. Electron. **1**, 172 (2018).

METASURFACES

Reconfigurable metasurfaces

The design flexibility in patterning metasurfaces allows many bulk optical components to be replaced with elements just a fraction of their thickness. For integrated optical devices or miniaturized lightweight components, metasurfaces offer a clear advantage over glass-based optics. By combining metasurface designs with arrays of electromechanically actuated microcantilevers, Zhao *et al.* demonstrate the ability to actively control the optical properties of a metasurface. Operating in the terahertz regime, they show that they can manipulate the polarization of transmitted light in real time to form a waveplate. Such active control of metasurface properties will be useful for developing imaging and sensing terahertz technologies. —ISO

Optica **5**, 303 (2018).

CANCER

Even more genes control cell growth

A full understanding of cancer evolution needs a systematic approach. Screening for genes that drive unrestrained proliferation of human cells could answer questions about the relative roles of mutations, gene dose, and tissue specificity in cancer development. To find those for which dosage changes could promote or inhibit cell proliferation, Sack *et al.* screened 16,000 genes in mammary, fibroblast, and pancreatic cells. They found nearly 400 genes that drove cell growth and more than 1000 that suppressed proliferation. Many expected genes that control the cell cycle were detected, but most of the identified genes were not previously known to regulate proliferation. Alterations in the somatic copy number of these genes in cancers indicate that they may contribute to tumorigenesis. Proliferation control depended strongly on cell type. Specific genetic-network architecture may be created during development in different cell types, perhaps through epigenetic control. —LBR

Cell 10.1016/j.cell.2018.02.037 (2018).