methane to methoxy intermediates; they then added water to release methanol and hydrogen while reoxidizing the copper. This inexpensive process could prove useful at gas well sites for producing an easily stored and transported liquid from excess gas that at present is burned away. —JSY

Science, this issue p. 523

NEUROSCIENCE

Give us our daily protein

Protein is an essential component of our food, and protein intake thus must be actively regulated. Liu *et al*. identified a neural circuit that encodes protein-specific hunger in fruit flies. In protein-deprived animals, this circuit acted to simultaneously promote protein consumption and restrict sugar intake. Lack of protein induced changes in the protein-specific, but not sugar-specific, branch of this circuit. —PRS

Science, this issue p. 534

Flies have a neuronal pathway that tells them when to eat protein.

ZIKA VIRUS

LAMP shines a light on Zika virus

Rapid and simple assays to detect infectious agents are key to tracking emerging epidemics. Chotiwan *et al.* describe a loop-mediated amplification (LAMP) assay that detects Zika virus RNA in human biofluids such as serum and semen, as well as in mosquitoes, the insect vector that transmits the disease. The assay successfully distinguished the Asian-lineage Zika virus, which is associated with the current outbreak in the Americas, from the African-lineage Zika virus. This approach should enable tracking of the Asian-lineage strain as it moves into new geographical locations. —OMS

Sci. Transl. Med. **9**, eaag0538 (2017).

DRUG DEVELOPMENT

Finding drugs for fragile X syndrome

The intellectual disability called fragile X syndrome is associated with abnormal synaptic morphology. Kashima *et al*. performed a high-throughput drug screen that used the hyperactive locomotion of a fly model of this disease as a behavioral marker. Inhibitors of LIMK1, a kinase involved in the pathogenesis of the disease, ameliorated the neurological and behavioral phenotypes in the fly model and also reduced hyperactivity in a mouse disease model. This method may aid in future drug development for fragile X syndrome, for which there are few treatment options at present. —LKF

Sci. Signal. **10**, eaai8133 (2017).

POLYMER SCIENCE

When polymers behave like metals

Diblock copolymers, in which two dissimilar chains are chemically linked, can show a rich array of morphologies. These are usually attained by slow cooling to give the chains time to find their thermodynamically preferred arrangements. Rather than using slow cooling, Kim *et al*. rapidly quenched their materials from the disordered state and then annealed at low to moderate temperatures (see the Perspective by Stein). Different processing routes drove assembly into a variety of low-dimensional phases more typical of metal alloys. —MSL

Science, this issue p. 520; see also p. 487

IN OTHER JOURNALS

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

Notch signaling influences cell fate during mammalian eye development.

NEURODEVELOPMENT

RPE cranks it up a Notch

Notch signaling within and between cells is involved in many processes, including cell fate specification. In the retina, high levels of Notch during retinal progenitor cell (RPC) division promote RPC renewal, whereas low levels promote postmitotic neuron differentiation. Ha *et al.* found that retinal pigment epithelium (RPE), a neighboring tissue to the neural retina, influences asymmetric division by localizing Notch components to the apical side of the adjacent dividing RPC. This positioning required an E3 ubiquitin protein ligase, Mib1, which boosts levels of Notch in one sister cell, but not the other. Hence, a neighboring tissue influenced cell-fate specification through Notch signaling, which could also happen in other neural tissues. —MKE

Cell Rep. 10.1016/j.celrep.2017.03.040 (2017).

CELL BIOLOGY

Not making the right contacts

The microtubule-severing enzyme spastin is mutated in the inherited neural disease, or axonopathy, called hereditary spastic paraplegia (HSP). The endoplasmic reticulum (ER) within cells, including neurons, plays a role in defining the position and timing of endosomal tubule fission. Allison *et al.* identified a role for spastin at ER-endosome contact sites during endosomal tubule fission. Failure of this process caused problems in lysosomal enzyme trafficking. Lysosomal abnormalities developed in primary cortical neurons from a spastin-HSP mouse model,

PHOTOS (FROM LEFT): DAVID BITHELL/EYEEM/ALAMY STOCK PHOTO; SCIENCE SOURCE

human stem cell–derived neurons from a spastin-HSP patient, and neurons from mice lacking the ER-shaping protein REEP1. All of these neurons developed pathological axonal swellings associated with accumulations of abnormal lysosomes. Failure to correctly manage lysosome biogenesis may play a role in multiple HSPs and possibly other neurodegenerative conditions. —SMH

J. Cell Biol. 10.1083/jcb201609033 (2017).

NEUROSCIENCE

The three-dimensional world in the brain

We live and navigate easily in a complex three-dimensional world. However, little is known how this three-dimensional space and our movements within it are represented in the human brain. Kim *et al.* scanned participants while they were performing a virtual navigation task. Behaviorally, subjects had similarly accurate memory for vertical and horizontal locations. For a direction judgment task, vertical tilt facilitated performance. A brain region called the right anterior hippocampus contains place information that is sensitive to both horizontal and vertical axes. Vertical directional information, however, is represented in the right posterior hippocampus in an area called the retrosplenial cortex. –PRS

J. Neurosci. **37**, 4270 (2017).

NANOMATERIALS

Short chains for a smart film

Polymer films capable of changing their structural properties at the nanoscale in response to physiological temperature changes could have a number of biological applications. To achieve periodic structures with feature sizes below 10 nm, an amphiphilic polymer must join highly immiscible polymer blocks with short chains. Nowak *et al*. synthesized an amphiphile that joined a disaccharide and a polypropylene oligomer with a triazole linkage. Spin-cast ultrathin films of this material formed "fingerprint" lamellar domains of the blocks that were perpendicular to the surface with a spacing of ~6 nm at room temperature. However, heating to 38°C for 72 hours led to a nanostructure in which the chains were stacked parallel to the surface in head-tail bilayers. —PDS

J. Am. Chem. Soc. 10.1021/jacs.6b13285 (2017).

DIVERSITY IN SCIENCE

Committees, candidates, and gender

Quotas to increase female representation on academic evaluation committees may unexpectedly hamper efforts to narrow gender gaps in the professoriate. Bagues *et al*. studied large-scale national evaluation programs for hiring and promotion in Italy and Spain, which use committees drawn randomly from pools of experts. Although female committee members show no greater statistical preference than males for female candidates, female presence on committees leads male committee members to be less favorable toward female candidates. Higher proportions of women on committees do not increase the number of female candidates promoted, nor do they lead to better identification of candidates who ultimately prove to be more productive. —BW

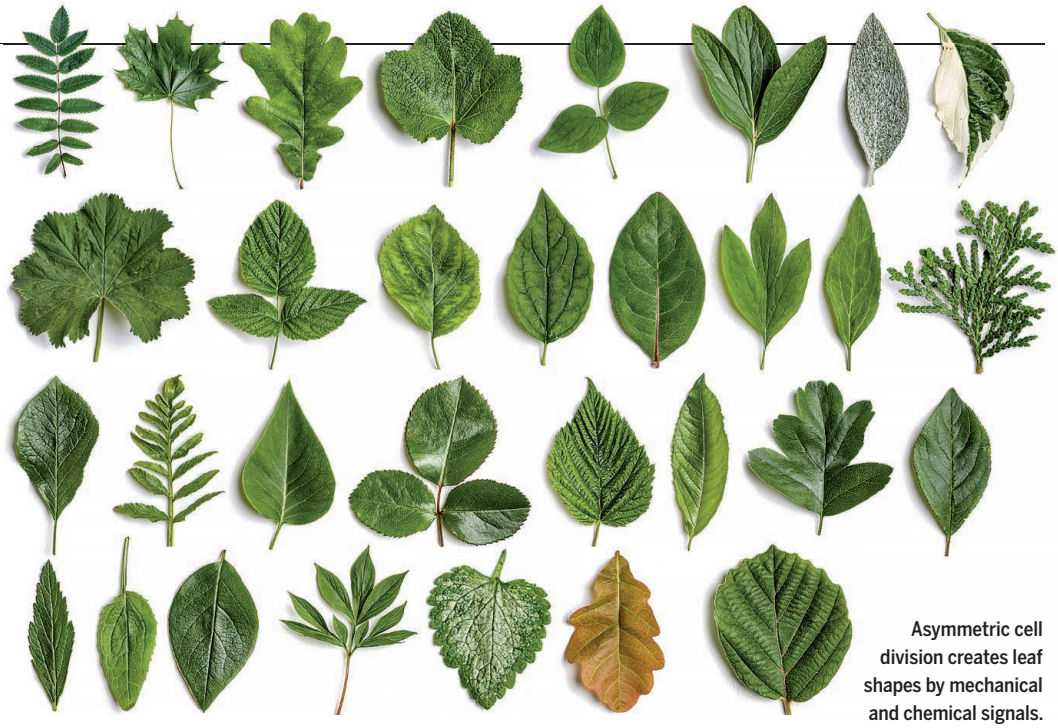
Amer. Econ. Rev. **107**, 1207 (2017).

APPLIED OPTICS

Miniaturizing optical gyroscopes

Gyroscopes are used in many applications and can be found in devices such as position sensors, inertial navigation systems, and motion stabilizers. Science museum toys consisting of spinning wheels and gimbals illustrate the general principle of operation, but decades of research have focused on their miniaturization and developing alternative operating systems. Optical systems based on the interference of counter-propagating laser beams can be extremely sensitive and robust, but they tend to use bulky components. Liang *et al*. and Li *et al*. have developed optical microresonator–based gyroscopes that can fit onto an optical chip. With demonstrated performance better than that of existing microphotonic systems, such components offer the possibility of building more lightweight, robust, and sensitive gyroscopes. —ISO

Optica **4**, 114, 346 (2017).



Asymmetric cell division creates leaf shapes by mechanical and chemical signals.

PHOTO: KAIS TOLMATS/GETTY IMAGES

PLANT SCIENCE

Competing inputs and shifting outcomes build shape

Asymmetric cell division contributes to the development of shape in growing organisms. Bringmann and Bergmann distinguish mechanical from signaling effects as cell division planes are deployed in the developing *Arabidopsis* leaf. Computational growth models reveal that dividing cells are influenced by both. Early in leaf development, as the midvein is rapidly elongating, mechanical stress dominates. Later in leaf development, as the epidermis enlarges and growth of the midvein slows, local ligand-receptor signaling dominates. The balance of inputs shifts through development, and the final shape of the leaf emerges. —PJH

Curr. Biol. **27**, 877 (2017).