

These caspases cleave gasdermin D (GSDMD), whose N-terminal fragments quickly form large permeability pores that induce cell death. However, a large percentage of cells with active inflammasomes are resistant to pyroptosis. Rühl *et al.* found that the membrane-remodeling ESCRT-III machinery was recruited to the plasma membrane upon GSDMD activation. ESCRT-III-dependent membrane repair limited proinflammatory cytokine secretion and pyroptosis after activation of inflammasomes. —STS

Science, this issue p. 956

CANCER

Taking aim at a childhood cancer

Rhabdomyosarcoma is a difficult-to-treat soft tissue pediatric tumor. In a particular subtype of this cancer, a fusion protein generated by a chromosomal abnormality drives chemoresistance and aggressive progression. Bharathy *et al.* investigated why the histone deacetylase inhibitor entinostat shows promise in treating this rhabdomyosarcoma subtype. Entinostat altered epigenetic regulation to inhibit translation of the fusion protein. Without

the fusion protein, rhabdomyosarcoma growth in mouse models slowed, and tumors were sensitized to the chemotherapeutic drug vincristine. —LKF

Sci. Signal. **11**, eaau7632 (2018).

ROBOTIC SENSING

A firm, but gentle, touch

Many seemingly simple manual tasks require the ability to detect force direction as well as magnitude. Boutry *et al.* developed an electronic skin inspired by human skin and nature. Tiny pyramids, similar to hill-like structures in human skin, were arranged in spirals, like the center of a sunflower. These microstructures enabled the sensor array to differentiate pressure applied perpendicularly from pressure applied at an angle—a key feature for dexterity. The pressure information was used to interrupt automatic movement of a robotic arm. The robot was able to touch a fresh raspberry and reverse motion quickly enough to avoid damaging the fruit. —RLK

Sci. Robot. **3**, eaau6914 (2018).

EMERGING INFECTIONS

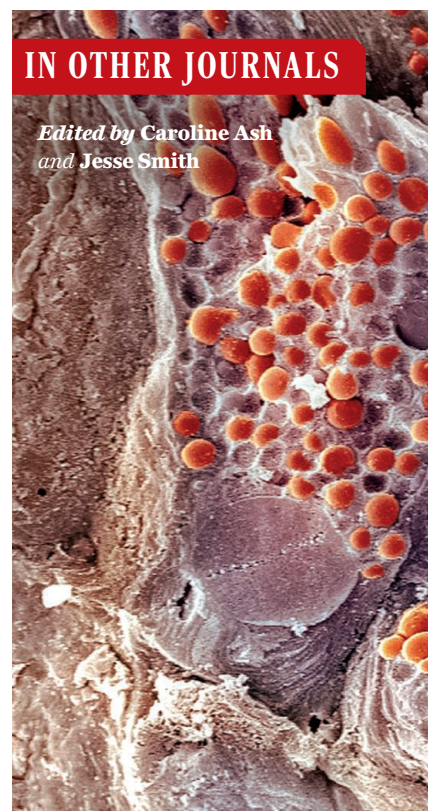
Antibodies to abrogate Andes hantavirus

Andes hantavirus circulates in rodent reservoirs and can cause hantavirus cardiopulmonary syndrome in humans. This results in a potentially lethal disease for which no vaccines or targeted treatments exist. Garrido *et al.* screened memory B cells from people that had been infected with Andes hantavirus. Antibodies were isolated from one individual with a high viral neutralization capacity. Two of these antibodies were fully protective against disease in a hamster model, even when given several days after infection. These antibodies target distinct epitopes on the viral glycoprotein and could be developed for use alone or as a combination therapy. —LP

Sci. Transl. Med. **10**, eaat6420 (2018).

IN OTHER JOURNALS

Edited by Caroline Ash and Jesse Smith



PHYSIOLOGY

Could microbes be diabetogenic?

Microbes that live in the gut secrete metabolites that enter the bloodstream and may influence the health of the host organism. Koh *et al.* found that human gut microbes can produce the amino acid metabolite imidazole propionate, which is abundant in blood from human patients with type 2 diabetes and might contribute to their disease. Germ-free mice injected with imidazole propionate developed glucose intolerance and disrupted insulin signaling, like the diabetic patients. Imidazole propionate appeared to act, at least in part, through the p38γ mitogen-activated protein kinase to activate the mechanistic target of rapamycin complex 1 (mTORC1) protein kinase complex. —LBR

Cell **175**, 947 (2018).

MICROFLUIDICS

Flexibility via fiber drawing

Traditional microfluidic devices are fabricated either by building up layers or by etching solid



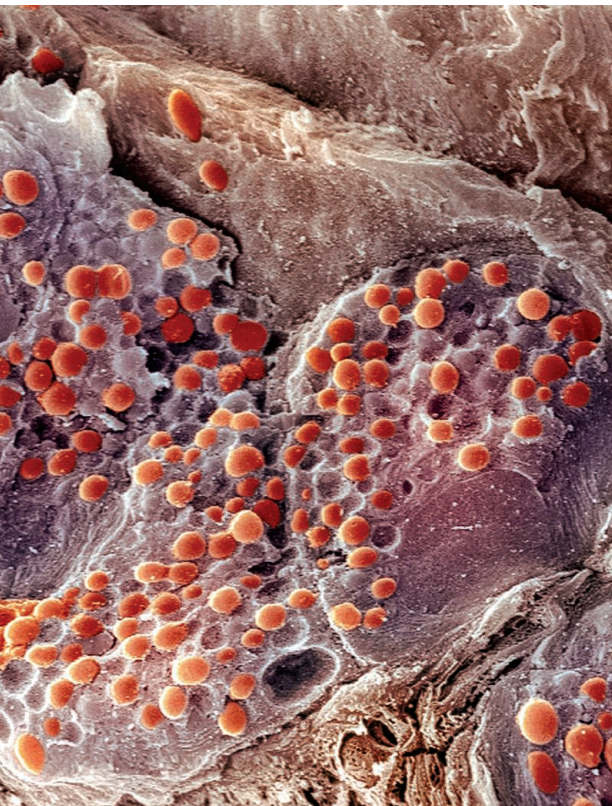
Normally cooperative ants change their behavior toward sick individuals.

EPIDEMIOLOGY

Protecting the colony

When we get a cold and then stay home from work, we are not only taking care of ourselves but also protecting others. Such changes in behavior after infection are predicted in social animals but are difficult to quantify. Stroeymeyt *et al.* looked for such changes in the black garden ant and found that infected workers did alter their behavior—and healthy workers altered their behavior toward the sick. The changed behavior was especially valuable for protecting the most important and vulnerable members of the colony. —SNV

Science, this issue p. 941



REGENERATION

The making of a salivary gland

Several glands in the body generate and release material via a duct. The salivary gland represents one such exocrine gland, which is composed of several cell types and has a specific role in digestion and swallowing. Regenerative therapies are needed for salivary glands because various diseases and medical procedures can compromise their function. Tanaka *et al.* used organoid technology to regenerate salivary gland tissue in mice. Sox9 and Foxc1 were identified as organ-inductive signals that mediated the differentiation of mouse embryonic stem cells into induced salivary gland primordium (iSG). When iSGs were transplanted into mice lacking salivary glands, the transplanted iSGs looked like normal embryonic salivary gland rudiments and secreted saliva. —BAP

Nat. Comm. **9**, 4216 (2018).

Organoids can be used to regenerate salivary gland tissue.

this region are associated with autism spectrum, attention-deficit hyperactivity disorder, and epilepsy. While looking at the development of neurons during formation of the hippocampus in mice, Chung and Bailey found differences between males and females. In the early postnatal period, when hippocampal circuitry is being built, these neurons depend on signaling through nicotinic acetylcholine receptors. Whole-cell electrophysiology showed that these nascent hippocampal neurons in female mice showed greater excitability, higher resting membrane potential, and greater input resistance than neurons of male mice. These sex-dependent differences occurred during development of circuits that, at maturity, facilitate cognitive functions. —PJH

Dev. Neurobiol. **10.1002/dneu.22646** (2018).

MICROBIOTA

Model for maintaining integrity

The relationships between the gut microbiota, host cells, and food are complicated. Dissecting these interactions is impossible in mice, let alone in humans. Shin and Kim developed a human “gut inflammation-on-a-chip” microfluidic model, complete with villi and peristalsis to explore gut biology. They investigated events following application of the irritant dextran sodium sulfate (DSS), which is often used in mice to stimulate gut inflammation. By disrupting the chip epithelium and removing mucus, DSS facilitated contact between the dissociated epithelial cells and peripheral immune cells and triggered oxidative stress. In the presence of *Escherichia coli*, the epithelial cells produced inflammatory cytokines. After removal of DSS, epithelial regrowth and mucus production restored gut barrier function within days, but probiotics were only helpful before DSS was applied. —CA

Proc. Natl. Acad. Sci. U.S.A. **115**, E10539 (2018).

materials, but both ways primarily result in devices with rectangular, triangular, or circular cross sections and limited flow geometries. Yuan *et al.* show that complex shapes like crosses and stars or even arbitrary shapes can be designed into millimeter-scale objects and then reduced in dimension, but not in cross-sectional profile, through a fiber drawing process. Channels with concave cross sections were used to study inertial flow effects, whereas coextrusion of conductive wires allowed for inertial dielectrophoretic particle manipulation. Sorted particles could then be extracted through the addition of a fiber-to-world connector that can split flow streams without disturbing the laminar flow. —MSL

Proc. Natl. Acad. Sci. U.S.A. **115**, E10830 (2018).

DIVERSITY

What's good for me is good for you

U.S. funding agencies are committed to bringing gender equality to STEM. As these

programs begin to mature, is there evidence that they benefit more than just the women involved? Smith *et al.* designed and tested a gender-diversity program that supported the autonomy, relatedness, and competence of female faculty. Over the course of 3 years, researchers collected data from male and female tenure track faculty involved with the program and found positive changes in job satisfaction over time for everyone. Specifically, the more a faculty member felt involved with the project, the more positive changes were reported, suggesting that although diversity programs may target only one group, the results can have positive impacts on everyone who feels involved. —MMc

J. Divers. High. Educ. **10.1037/dhe0000066** (2017).

NANOMATERIALS

Subnanometer WS₂ pores

Nanopores in monolayers of transition metal dichalcogenides such as molybdenum disulfide (MoS₂) and tungsten

disulfide (WS₂) have potential applications in molecular separations, but how small can the pores be made? For example, defects created by removal of single Mo atoms from MoS₂ are refilled by mobile Mo atoms. Ryu *et al.* used electron-beam irradiation in a transmission electron microscope to remove single W atoms from a monolayer WS₂ sheet. At 500°C, which is sufficient to allow some sulfur vacancy migration, bond rearrangements created either smaller triangular or larger circular subnanometer pores that were stabilized in part through W–W bonding and by bond rotations about the pore periphery. The triangular holes were less stable and, under irradiation, evolved into the circular structures. —PDS

ACS Nano **10.1021/acsnano.8b07051** (2018).

NEURODEVELOPMENT

Gender in the brain

The hippocampus of the brain is important for higher-order cognitive function, such as learning and memory. Derangements in