interpretations, such as the long-sought intermediate-mass black holes. Israel *et al*. observed a ULX in the nearby galaxy NGC 5907 and found that it is instead a neutron star. The spinning neutron star is accreting material so fast that its spin period is quickly accelerating. The only way that it can consume enough material to explain these properties is if it has a strong multipolar magnetic field. —KTS

Science, this issue p. 817

PROTEIN DESIGN

Shining a light on cell signaling

Protein kinases are proteins that are used to transmit signals within cells. Zhou *et al*. engineered diverse kinases so that they could be switched on and off with visible light. They modified the fluorescent protein Dronpa so that instead of being tetrameric, it dimerized in violet light and dissociated in cyan light, and they fused two copies to representatives from different families of kinases. The engineered kinases could be photoswitched with spatial and temporal precision and were successfully used to study a variety of signaling pathways. —VV

Science, this issue p. 836

POLYMERS

How to make opposites compatible

Polyethylene (PE) and isotactic polypropylene (*i*PP) are the two most widely used commodity plastics and thus make up a large fraction of the waste stream. However, the two plastics will not mix together, which limits options for dealing with mixed waste and decreases the value of recycled products. Eagan *et al*. report the synthesis of multiblock copolymers of *i*PP and PE by using a selective polymer initiator (see the Perspective by Creton). The high-molecular-weight blocks could be used to reinforce the interface between *i*PP and PE and allow blending of the two polymers. —MSL

Science, this issue p. 814; see also p. 797

INFLAMMATION

How red berries reduce inflammation

Members of the interleukin-17 (IL-17) family of proinflammatory cytokines are important in the immune response to infections. However, too much IL-17 signaling is associated with autoimmune inflammatory diseases, such as asthma, psoriasis, and rheumatoid arthritis. Liu *et al*. performed small-molecule screening to look for compounds that could bind to the IL-17 receptor. They found that cyanidin, a flavonoid found in red berries and other fruits, bound to the IL-17 receptor and blocked the binding of IL-17A. In several mouse models of inflammatory disease, cyanidin alleviated the inflammation induced by IL-17A–producing T cells. —JFF

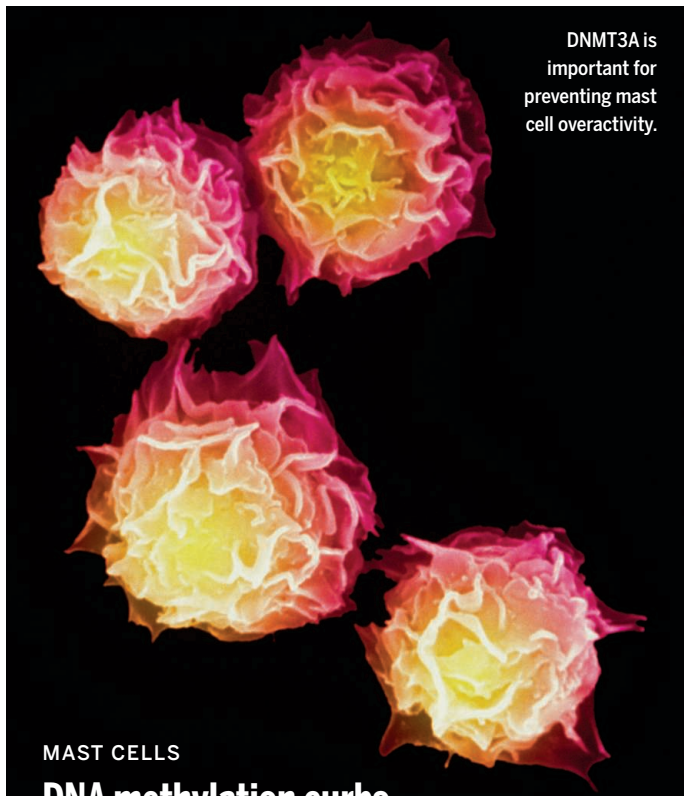
Sci. Signal. **10**, eaaf8823 (2017).

PHOTOS (FROM LEFT): BLACKOUT CONCEPTS/ALAMY STOCK PHOTO; STEM JEMS/SCIENCE SOURCE

A new processing approach helps mixed plastics recycling.

IN OTHER JOURNALS

Edited by **Jesse Smith** *and* **Sacha Vignieri**



DNMT3A is important for preventing mast cell overactivity.

MAST CELLS

DNA methylation curbs mast cell response

Mast cells are white blood cells that are perhaps best known for their role in allergic responses and asthma. Leoni *et al.* now show that the enzyme DNMT3A limits mast cell activity following acute and chronic inflammation. Using mice deficient in DNMT3A, the authors found exaggerated mast cell responses to skin allergy. Inactivation of DNMT3A was associated with increased cytokine production, enhanced mast cell degranulation, and aberrant expression of the IQGAP2 scaffold protein. A number of hematological disorders have been associated with mutations in DNA methylation enzymes, and the current studies highlight a broader role for containing immune responses. —PNK

Proc. Natl. Acad. Sci. U.S.A. 10.1073/pnas.1616420114 (2017).

RNA DESIGN

An old motif with new specificity

RNA aptamers bind to small molecules and, in the context of adjacent regulatory domains, can control cellular processes. Synthetic RNA aptamers can be selected against a target, but it is difficult to integrate these artificial sensors into cells. Porter *et al.* started with scaffolds derived from two different riboswitches and a ribozyme that all contain a recurrent motif. They made libraries designed to maintain the structure, but with sufficient diversity to select sequences that would bind precursors of serotonin and dopamine. They obtained a diverse set of aptamers that selectively bind their target and can be coupled to a fluorophore binding domain for

readout. The suite of aptamers could potentially be combinatorially coupled to communication modules to rapidly screen for sequences with a required activity. —VV

Nat. Chem. Biol. 10.1038/NCHEMBIO.2278 (2017).

STRESS RESPONSE

How tissues can take the heat

Heat shock proteins (HSPs) show a generally conserved stress response, interacting with specific chaperone proteins to maintain cellular homeostasis. However, studies of the heat shock response (HSR) tend to be performed in unicellular organisms or tissue culture. To test whether the HSR is global or tissue-specific, Ma *et al.* examined HSR and specificity in muscle and intestine in *Caenorhabditis elegans*. They observed that the tissue specificity of the HSR was determined by the ratio of the specific proteome of each tissue relative to associated HSP chaperone proteins. On the basis of these findings, the authors suggest that some tissue-specific human disease may be explained by similar mechanisms. —LMZ

G3 10.1534/g3.116.038232 (2017).

ACTIVE GALAXIES

A supermassive black hole awakes

Every large galaxy hosts a supermassive black hole at its center, which grows by consuming passing gas or stars. Most are quiescent, but when the black hole is feeding, an accretion disk forms, causing the galaxy nucleus to shine brightly as a quasar. Gezari *et al*. have discovered a bright quasar in a galaxy that was previously in an unremarkable quiescent state. As the black hole began feeding, the nucleus brightened by at least a factor of 10 in about a year. Such a rapid switch-on is unexpected, challenging theories of how quickly accretion disks can change state. —KTS

Astrophys. J. 10.3847/1538-4357/835/2/144 (2017).

DEVELOPMENT

Polarity reversal during tissue remodeling

The epithelial-mesenchymal transition occurs when epithelial cells lose apicobasal polarity and cell-cell contacts and migrate into surrounding tissues as mesenchymal cells. Migration is crucial for gastrulation, neural tube formation, and cancer metastasis. However, the mechanisms underlying loss of polarity and cell movement are poorly understood. Burute *et al.* show that the centrosome position in epithelial cells changes from the periphery to the center of mesenchymal cells. The change in cell organization results in the transition from apicobasal polarity to front-rear polarity that precedes cell migration. Micropatterned cell culture showed that the mechanism is cell-intrinsic and governed by microtubule reorganization but is not influenced by neighboring cells. —MKE

J. Dev. Cell. 10.1016/j.devcel.12.004 (2016).

ELECTROCHEMISTRY

CO_2 reduction off base

The electrochemical reduction of CO_2 can yield a range of products, including aldehydes, acids, and alcohols, as well as hydrogen formed by the competing hydrogen evolution reaction (HER) at the high cathodic potentials used. Birdja and Koper show in studies with boron-doped diamond electrodes that aldehydes are the direct product of CO_2 reduction and that primary alcohols and carboxylic acids form through Cannizzaro-type disproportionation (thus, methanol and formic acid form from formaldehyde). These reactions are unexpected because they require base, but the HER creates OH^- as a by-product, so regions near the electrode can be at high pH. Such reactions are inhibited in buffered electrolytes, which the authors recommend to sort out direct and indirect product formation mechanisms. —PDS

J. Am. Chem. Soc. 10.1021/jacs.6b12008 (2016).

EVOLUTION

How animals sense CO_2 in blood

High carbon dioxide levels in blood can be lethal to animals, so it is crucial that the body regulates the regular excretion of CO_2. De Wild *et al*. hypothesized that the protein Connexin 26 plays a key role in sensing CO_2 levels in warm-blooded animals. The authors exposed Connexin 26 from four different organisms—human, chicken, rat, and mole rat—to rising levels of CO_2. They found that the sensitivity of the protein to CO_2 matched the organism's tolerance of CO_2. Connexin 26 may thus be a universal CO_2 sensor in warm-blooded animals. —JFU

Proc. R. Soc. B 10.1098/rspb.2016.2723 (2017).

Chickens and other warm-blooded animals may share the same internal carbon dioxide sensor.

PHOTO: WAYNE HUTCHINSON/MINDEN PICTURES

How tissues can take the heat

Laura M. Zahn

Science **355** (6327), 809-810.
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