**SMALL RNA DECAY**

**Breaking down miRNAs**

Although much work has examined microRNA (miRNA) biogenesis, relatively little is known about miRNA decay. Elbarbary et al. now identify Tudor-SN, an endonuclease that interacts with the RNA-induced silencing complex. Tudor-SN targets miRNAs at CA and UA dinucleotides located more than five nucleotides from miRNA ends. Tudor-SN–mediated miRNA decay removes miRNAs that silence genes encoding proteins that are critical for the G1-to-S phase transition in the cell cycle. —BAP

Science, this issue p. 859

**NEUROSCIENCE**

**A neuronal circuit for overeating**

Recurrent binge eating is a common eating disorder. Zhang and van den Pol investigated an understudied brain region known as the zona incerta and found that it projects inhibitory inputs to the paraventricular thalamus, a brain region involved in suppressing feeding behavior. In mice, acute stimulation of this inhibitory projection resulted within seconds in overeating, especially high-fat food. Chronic stimulation induced persistent overeating and weight gain. —PRS

Science, this issue p. 853

**CANCER**

**No safe haven for metastases**

Although targeted therapies for cancer offer great promise, they are often much less effective against brain metastases than against peripheral tumors. This is generally attributed to the drugs’ difficulty in penetrating the blood-brain barrier. Kodack et al. discovered that, at least in breast cancer that has spread to the brain, the brain microenvironment itself plays a role in treatment resistance. In mouse models and human cancer samples, human epidermal growth factor receptor 3 (HER3) expression increased in breast cancer–associated brain lesions. The HER3 facilitated the tumors’ survival in the presence of targeted treatment. Thus, inhibiting HER3 could help overcome tumor resistance to therapy. —YN


**IN OTHER JOURNALS**

*Edited by Caroline Ash and Jesse Smith*

**PROTEIN DYNAMICS**

**Trapping RNA polymerase in the act**

The enzyme RNA polymerase (RNAP) finds promoter elements in the genome, separates (or “melts”) the DNA strands, and transcribes the template DNA strand to give RNA. A mobile clamp in RNAP plays a key role in initiating transcription. Feklistov et al. locked the clamp of bacterial RNAP in distinct conformations by using small molecules. They then used fluorescent probes to monitor binding as the promoter DNA was separated. Unexpectedly, they found that the clamp transiently closed to nucleate DNA melting, opened to load single-stranded DNA into the active site, and then closed around the template strand to start transcription. —VV

Science, this issue p. 863

**OCEANS**

**Risks of reef erosion**

Coral reefs serve as natural barriers that protect coastal regions from storms and erosion, but climate change, ocean acidification, and other stressors from human activities are increasingly causing coral reefs to degrade. Yates et al. report evidence of seafloor erosion in five coral reef ecosystems in the Atlantic, Pacific, and Caribbean. Comparison with historical data shows that over the past few decades, seafloor elevation has decreased by 0.09 to 0.8 m at the study sites—far more than expected on the basis of model predictions. Together with sea level rise from climate change, the seafloor erosion at these sites results in deeper water and puts coastal populations at increased risk. —JFU


**NEURODEVELOPMENT**

**Roadmaps for building the neonatal brain**

In the postnatal mammalian brain, neurons continue to be generated and migrate to their home stations. Often, these neuroblasts travel along pathways defined by the blood vessels or the glial cells that surround and support neurons. García-González et al. also find that serotonergic axons establish neuroblast migratory pathways. Knockout of the serotonin receptor in transit-amplifying cells and neuroblasts of mice misguided and slowed migration of the new cells. The postnatal neuroblasts travel along the serotonergic axons and depend

Science, this issue p. 865

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Mice can be stimulated to binge-eat high-fat food.
ruminants (PPR), a morbillivirus resembling the now eradicated rinderpest, which causes up to 80% mortality in small livestock. There are robust vaccines, but they are not deployed systematically, although PPR has been earmarked by the United Nations Food and Agriculture Organization for eradication by 2030. Baazizi et al. confirm that an East African strain of PPR virus is circulating in northern Algeria, Tunisia, and Morocco. This strain probably originated from an outbreak in Sudan in 2000 but has crossed the Sahara as a result of porous borders and high levels of illegal trade. The threat to Europe comes from two fronts because PPR virus is also present in western Turkey. Among other mammals, cervids are susceptible to the virus, which puts northern Europe at particular risk, owing to the high deer populations in this region. —CA


MOLECULAR MATERIALS
Perovskite ferroelectric bond-switching
Ferroelectric materials are normally inorganic ceramics, such as barium titanate, but for flexible devices, molecular ferroelectrics that could readily form thin films are of interest. Xu et al. report that substitution of organic cations for potassium in an iron cyanide perovskite—[(CH₃)₃NOH][(KFe(CN)₃)]—creates a ferroelectric with a high Curie temperature (402 K), where it undergoes a phase transition through a bond-switching mechanism from a low-temperature monoclinic ferroelectric phase (space group Cc) to a high-temperature cubic paraelectric phase (Fm3m). Thin films of this material showed rectangular polarization—electric field hysteresis loops at a relatively high driving frequency of 5 kHz and could be reversibly poled with the bias field from a probe tip. —PDS

Risks of reef erosion
Julia Fahrenkamp-Uppenbrink

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