

## GLACIERS

### When winter snowfall trumps summer melting

Glaciers in the Karakoram region of Asia are maintaining—or even gaining—mass, in contrast to those in the nearby Himalayas and over the rest of the world, despite global warming. Why are they so different? Kapnick *et al.* combine observations with climate model simulations to infer that the anomaly is a result of the unique meteorological pattern of seasonal snowfall that affects the region. Unlike the Himalayas, snowfall in the Karakoram is caused mostly by non-monsoonal winter precipitation. That also means that the region should be protected from glacial mass loss over the rest of the 21st century. — HJS

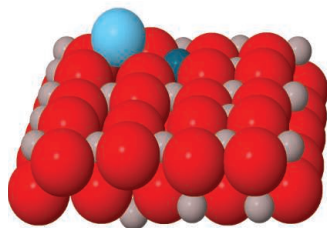
*Nat. Geosci.* 10.1038/ngeo2269 (2014).

## NEUROSCIENCE

### A primate model of Alzheimer's disease

Alzheimer's disease is a progressive brain disease that leads to dementia and eventual death. Soluble aggregates of amyloid- $\beta$  peptides (oligomers) accumulate in Alzheimer's brains and strongly impair cognitive function. Most of our knowledge about the disease comes from studying rodents, which are imperfect models. In an attempt to develop a better disease model, Forny-Germano *et al.* injected amyloid- $\beta$  oligomers into the brain ventricles of macaques. The authors detected the proteins in nerve cells in several memory-related regions of the brain. There they triggered typical Alzheimer's pathologies such as synapse loss and activation of microglia cells and astrocytes. Given the similarities between human and macaque brains, this model may be an important step toward understanding Alzheimer's pathogenesis and developing effective therapies. — PRS

*J. Neurosci.* 34, 13629 (2014).



Alumina surface with La and Pd

## CATALYSIS

### Helping palladium atoms stand apart

Precious metals used in industrial catalysts are dispersed on metal oxide "supports" to increase the number of metal atoms in contact with reactants. Achieving the maximum dispersion—as single atoms or ions—usually requires metals (such as rare earths) that can change their oxidation state, but these oxides can be more expensive than the more common silicon and aluminum oxides. Peterson *et al.* show how lanthanum, added in small amounts to the gamma phase of aluminum oxide to stabilize it at high temperatures, also stabilizes palladium as single Pd<sup>+</sup> ions. For oxidation of CO to CO<sub>2</sub>, this catalyst becomes active at lower temperatures (as low as

40°C) than one made with pure aluminum oxide. Deactivation of the catalysts could be reversed by reoxidation at 700°C. — PDS

*Nat. Commun.* 10.1038/ncomm5885 (2014).

## RADIOIMMUNOTHERAPY

### For radiotherapy, less can be more

Radionuclides attached to antibodies have the potential to target radiation specifically to cancer cells, reducing the damage to noncancerous cells and the side effects of radiotherapy. Clinical trials evaluating antibodies labeled with actinium-225, a radionuclide that emits high-energy  $\alpha$ -particles, are currently under way. However, the two-step method used to label antibodies with actinium-225 is inefficient and expensive. Maguire *et al.* describe an improved one-step method for producing stable and therapeutically active actinium-225 antibodies. They report increases in yield and specific activity of up to 10- and 30-fold, respectively. Through lowering the cost and dose required for actinium-225 targeted therapy,

this method may help to expand the clinical use of actinium-225-labeled antibodies. — MDC

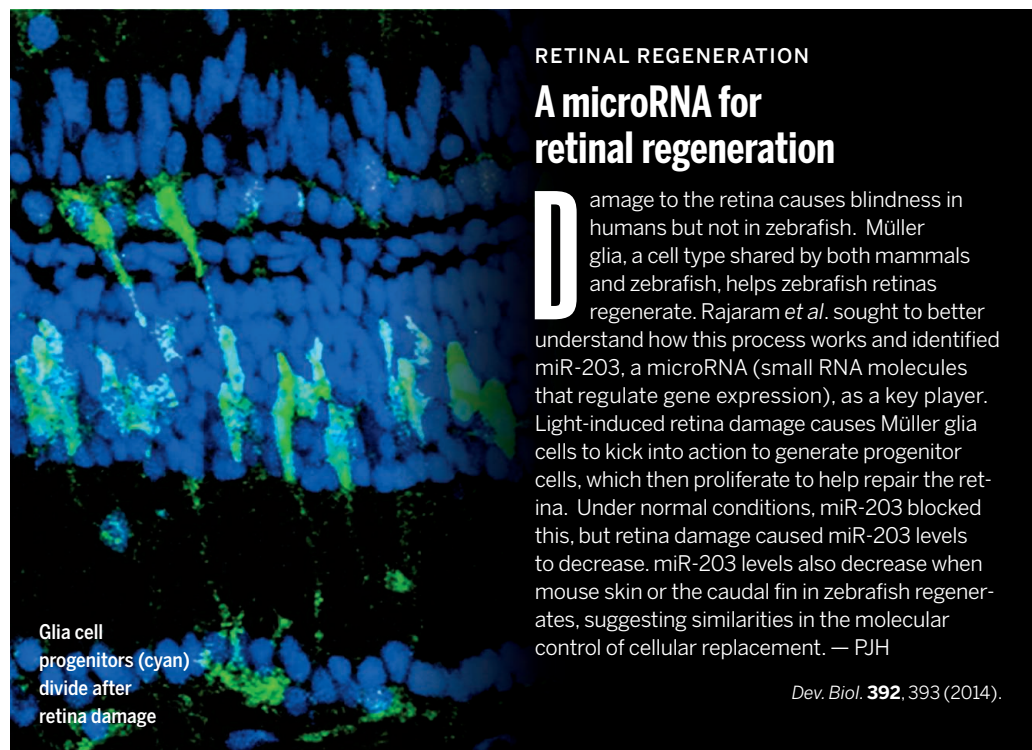
*J. Nucl. Med.* 10.2967/jnumed.114.138347 (2014).

## POLYMERS

### Blending polymers with Janus particles

Blending polymers can be difficult because most don't mix with each other. To overcome that incompatibility, a "compatibilizer" can be added, such as one with chains of the two components, which can be linked by a third component that will dissolve in both. Bahrami *et al.* show that Janus particles, in which chains of the two polymers are attached to a nanoparticle, are superior stabilizers of polymer blends. In addition to the chemical stabilization caused by having the two components linked together, the nanoparticles naturally segregate to the interface due to the Pickering effect. The authors show that the Janus nanoparticles can be made in relatively large quantities and can stabilize mixtures of industrially relevant polymers. — MSL

*ACS Nano* 10.1021/nn502662p (2014).



## RETINAL REGENERATION

### A microRNA for retinal regeneration

Damage to the retina causes blindness in humans but not in zebrafish. Müller glia, a cell type shared by both mammals and zebrafish, helps zebrafish retinas regenerate. Rajaram *et al.* sought to better understand how this process works and identified miR-203, a microRNA (small RNA molecules that regulate gene expression), as a key player. Light-induced retina damage causes Müller glia cells to kick into action to generate progenitor cells, which then proliferate to help repair the retina. Under normal conditions, miR-203 blocked this, but retina damage caused miR-203 levels to decrease. miR-203 levels also decrease when mouse skin or the caudal fin in zebrafish regenerates, suggesting similarities in the molecular control of cellular replacement. — PJH

*Dev. Biol.* 392, 393 (2014).