RESEARCH HIGHLIGHTS

Selections from the scientific literature

GENE EDITING

CRISPR fixes muscle disease

Three teams of researchers have used CRISPR–Cas9 gene editing to treat mice that have the most common and severe form of muscular dystrophy.

Duchenne muscular dystrophy is a fatal disease caused by mutations that disable the gene encoding dystrophin, an important muscle protein. Teams led by Charles Gersbach of Duke University in Durham, North Carolina; Amy Wagers of Harvard University in Cambridge, Massachusetts; and Eric Olson of the University of Texas Southwestern Medical Center in Dallas used the CRISPR–Cas9 gene-editing technique to repair the dystrophin gene in mice that have such mutations.

The three teams used viruses to shuttle the components of the CRISPR–Cas9 system into the muscle cells of infant and adult mice. Treated mice made functional dystrophin and showed improvements in cardiac and skeletal muscle function.

Science **http://doi.org/bbpn (2016);** ***Science*** **http://doi.org/bbps (2016);** ***Science*** **http://doi.org/bbpp (2016)**

PAUL NICKLEN/NATIONAL GEOGRAPHIC CREATIVE

ENERGY

Electricity at risk in a warmer world

Global warming's effects on water availability could hamper electricity production at power plants worldwide in the coming decades.

Michelle van Vliet of Wageningen University in the Netherlands and her colleagues modelled electricity production throughout the twenty-first century at more than 24,000 hydroelectric facilities and at about 1,400 water-cooled thermoelectric plants powered by natural gas, coal or nuclear energy. Decreased stream flow and warmer water temperatures reduced electricity production at mid-latitudes, where most of the world's electricity is generated. Annual usable power capacity decreased by 7–12% for thermoelectric plants and by 1.2–3.6% for hydroelectric plants in the 2050s.

The authors suggest that boosting the efficiency of power plants, along with other adaptation measures, could reduce these impacts.

Nature Clim. Change **http://doi.org/bbsp (2016)**

MATERIALS

Self-folding origami master

Heat can bend a thin polymer film into different shapes inspired by origami.

Previous self-folding materials could either bend themselves into a shape and return to their original form, or permanently change shape. Tao Xie at Zhejiang University in Hangzhou, China, and his colleagues created a material that could do both. At a relatively low temperature of around 80 °C, the polymer's molecular chains shift but chemical bonds in the network remain intact, which causes the material to temporarily fold into a predefined shape. At a higher temperature of around 130 °C, the bonds break and reform, inducing a permanent change in the material's molecular structure.

The same polymer could fold into multiple different shapes, which might eventually be useful in devices that are deployed in the body or in space.

Sci. Adv. 2, **e1501297 (2016)**

ANIMAL BEHAVIOUR

Sharks have a nose for navigation

Sharks use their keen sense of smell for navigation as well as for feeding.

Andrew Nosal at the Scripps Institution of Oceanography in La Jolla, California, and his colleagues plugged the noses of wild leopard sharks (*Triakis semifasciata*) with cotton balls soaked in petroleum jelly, tagged the animals with acoustic transmitters and released them 9 kilometres offshore. Over roughly four hours, sharks without nose plugs swam two-thirds of the way back to shore in relatively straight paths, whereas sharks with plugged noses took more tortuous paths, swimming only one-third of the way back.

The sharks could be detecting gradients of chemicals that are associated with coastal marine life, such