RESEARCH HIGHLIGHTS

Selections from the scientific literature

ENERGY

Rising cost of climate inaction

Increasing temperatures could boost electricity demand and costs over the next several decades, if warming continues unabated.

James McFarland at the US Environmental Protection Agency in Washington DC and his team analysed rising temperature trends and climate policies from 2015 to 2050 using three electricity-sector models for the United States. They found that electricity demand in 2050 would rise by 1.6–6.5% more in scenarios with increasing temperatures than in the case of constant temperatures, owing to factors such as greater use of air conditioning.

Without global action, the cost of electricity generation would grow by 1.7–8.3%, which is comparable to the projected costs of cutting carbon emissions from the power sector by 50% by 2050. ***Climatic Change*** **http://doi.org/5gh (2015)**

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CONSERVATION

Elephant-poaching hotspots pinpointed

DNA analysis of seized ivory suggests that elephants have been poached at high rates in just two regions in Africa.

Samuel Wasser at the University of Washington in Seattle and his team studied genetic material from 28 large ivory seizures between 1996 and 2014 to identify the origins of poached tusks. They found that 86–93% of savannah-elephant tusks seized by authorities since 2006 came from southeastern Tanzania and neighbouring northern Mozambique. A similar proportion of forest-elephant ivory originated from a region in central Africa: the nexus of Gabon, the Republic of Congo and the Central African Republic. The data could help authorities to focus regulatory and law-enforcement efforts on these regions, the authors say. ***Science*** **http://doi.org/5h6 (2015)**

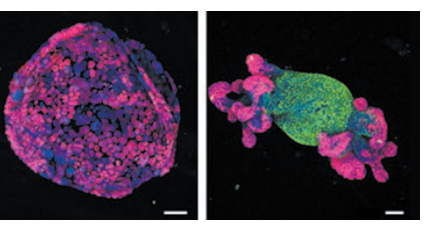
CANCER

Colon-cancer cells made normal

By turning on a particular gene, researchers have made colon-cancer cells in mice revert back to normal ones.

Scott Lowe at the Memorial Sloan Kettering Cancer Center in New York and his colleagues engineered mice so that they could use a small RNA molecule to switch on the *Apc* gene, a tumour suppressor that is mutated in most colorectal cancers. Turning on this gene shrank precancerous polyps in the colon, and cells in the polyps developed and behaved normally. Even reactivating *Apc* in full-blown tumours bearing other cancer-driving mutations made the cells non-cancerous.

Silencing Apc in 3D cultures of mouse colon cells led to cancer-like growth (**pictured**, left; scale bars are 50 μm), whereas switching it back on restored normal cell division (pictured, right).Targeting the cell-signalling pathway to which *Apc* belongs (called Wnt) could be a therapeutic strategy, the authors say. ***Cell*** 161, **1539–1552 (2015)**



MICROSCOPY

Graphene protects cells for imaging

A single-atom-thick mesh of carbon can protect living animal cells from being damaged under an electron microscope, and could lead to better cell images.

Tissue samples are typically dried and chemically treated to protect them from the vacuum of electron microscopes, but this kills cells and can introduce structural artefacts. As an alternative, Ke Xu of the University of California, Berkeley, and his colleagues used graphene — which is conductive but impermeable to gas and liquid — to insulate live, untreated mammalian cells against the microscope's harsh environment. The team obtained images that correlated well with other live-cell imaging methods.

In another study, David Weitz of Harvard University in Cambridge, Massachusetts, and his team used 3–10 layers of graphene sheets to encapsulate liquid samples

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