

Boston, Massachusetts, and his colleagues calculated the effects of growth delays on children born in 2010. About one-third of the 122.9 million children experienced stunted growth, resulting in the overall projected loss of half a year of educational attainment per child. Globally, early growth delays were projected to cost a total of US\$176.8 billion in lost income each year.

If growth delays were eliminated worldwide, the authors estimated, India would benefit the most, with a projected economic gain of \$37.9 billion per year. *Am. J. Clin. Nutr.* 104, 104–112 (2016)

ROBOTICS

Robotic stingray follows the light

A miniature robotic stingray powered by rat heart-muscle cells can swim in a physiological salt solution, guided by light.

Kit Parker at Harvard University in Cambridge, Massachusetts, and his collaborators created the 16-millimetre-long mock-up, weighing just 10 grams, by encasing a gold skeleton mimicking a stingray's shape in an elastic polymer (**pictured**). The stingray can be remotely controlled thanks to a light-activated muscle layer, made from genetically engineered rat cells, which responds to light-pulse frequency.

The artificial fish represents a step towards the development



of adaptive robots with capabilities inspired by nature, the researchers say.

Science 353, 158–162 (2016)

CHEMISTRY

Cosmic rays breed organics in space

Cosmic rays help to form the Universe's complex organic molecules — the building blocks of life on Earth.

The interstellar gas clouds that give birth to stars and planets are rich in organic molecules, but scientists have struggled to explain how these formed. A team led by Ralf Kaiser at the University of Hawaii at Manoa in Honolulu looked into it in the lab, using supercold ices to approximate conditions found in space. They showed that cosmic rays can trigger previously unknown chemical reactions that form sugars and other organic compounds in ice as cold as 10 kelvin. These compounds could sublime into the gas clouds that become stellar nurseries, and eventually lead to the formation of biological molecules.

The discovery should help to explain the origin and evolution of the molecular make-up of the Universe. *Proc. Natl Acad. Sci. USA* <http://doi.org/bk46> (2016)

PRIMATOLOGY

Ancient monkeys used stone tools

Worn rocks may have been used by Brazilian bearded capuchin monkeys hundreds of years ago, marking the earliest evidence for stone-tool use by a species other than humans or chimpanzees.

The oldest stone tools made by ancient human relatives date to 3 million years ago, but the archaeological record for tool use among other primates is scant. Bearded capuchins (*Sapajus libidinosus*; **pictured**) are known to wield rock anvils to rid cashew nuts of their foul-tasting skin. To determine the antiquity of this behaviour,



Michael Haslam at the University of Oxford, UK, and his colleagues excavated a small area in a Brazilian national park populated by capuchins known to use stone anvils.

They found 69 buried stones with surface cut marks similar to those seen on anvil stones. Carbon dating suggested that some of the tools were buried as many as 750 years ago. *Curr. Biol.* 26, R515–R522 (2016)

DEVELOPMENTAL BIOLOGY

Mum's diet affects offspring's genes

Poor nutrition during pregnancy stunts the growth of young mice by modifying their gene expression.

Michelle Holland and Vardhman Rakyen at Queen Mary University of London and their colleagues fed female mice diets containing either 8% or 20% protein throughout pregnancy and until weaning. They analysed patterns of methylation — which can influence gene expression — on the DNA of the rodents' offspring.

Pups from mothers fed the low-protein diet were, on average, 25% smaller at weaning. This effect was further influenced by variation within an animal's many gene copies for ribosomes, the cell's protein-construction machines. The extent of growth restriction depended on the proportion an individual had of a particular gene variant.

Studying the effects of methylation and other chemical marks on ribosomal genes may shed light on some human diseases, the authors say. *Science* <http://doi.org/bk5b> (2016)

METABOLISM

Sweetness–energy mismatch

Regular consumption of the artificial, calorie-free sweetener sucralose causes animals to overeat.

Greg Neely at the University of Sydney in Australia, Herbert Herzog at the Garvan Institute of Medical Research, also in Sydney, and their colleagues fed fruit flies a sucralose-enriched diet for between one and six days. After five days or longer on the sucralose diet, the flies ingested up to 30% more calories than did flies fed a normal diet throughout. The insects also became hyperactive and glucose intolerant.

The group discovered that a neural circuit was activated in the brains of sucralose-fed flies that is normally switched on during fasting, and is known to control hunger and sweet-taste intensity. They found similar responses in mice fed sucralose. *Cell Metab.* <http://dx.doi.org/10.1016/j.cmet.2016.06.010> (2016)

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