

## DISEASE

### Cells turn back clock in diabetes

In type 2 diabetes, the pancreas's  $\beta$  cells stop making insulin because they revert to progenitor cells, rather than because they die, as has been thought.

A team led by Domenico Accili at Columbia University in New York studied mice lacking the *Foxo1* gene, which is involved in cell specialization or differentiation, in their  $\beta$  cells. The animals produced fewer  $\beta$  cells and developed high blood-sugar levels. Moreover, the authors found that the  $\beta$  cells reverted back to endocrine progenitor cells, which are unable to make insulin. Mice in two other models of diabetes also produced such de-differentiated  $\beta$  cells.

Turning these stem cells back into  $\beta$  cells could be a way to treat type 2 diabetes, the authors suggest.

*Cell* 150, 1223–1234 (2012)

## DRUG DEVELOPMENT

### Fragile-X drug in humans and mice

A drug called arbaclofen has shown potential for relieving symptoms of fragile X syndrome — a genetic disease that causes intellectual disability and autism — according to a clinical and an animal study published back-to-back.

Fragile X syndrome is caused by a faulty gene, which leads to excessive protein synthesis at neuronal connections, or synapses, in the brain, and to exaggerated excitatory neurotransmission. Two teams led by scientists from Seaside Therapeutics in Cambridge, Massachusetts, investigated whether

arbaclofen — which promotes inhibitory neurotransmission by activating GABA<sub>A</sub> receptors — could mitigate symptoms.

Paul Wang and his colleagues ran a placebo-controlled clinical trial in 63 people with fragile X. They found no effect on irritability, but social function improved in 27 people who had severe social impairment.

In a study of mice with the condition, Aileen Healy and her colleagues found

that the drug corrected the excessive protein synthesis and associated synaptic abnormalities.

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## NANOTECHNOLOGY

### Pulsating tubes act as pumps

Nanometre-scale tubules made of self-assembled molecules have been designed to expand

and contract with changing temperature, pumping molecules out of their interior.

Nanotubes are normally too rigid to allow major structural changes, thanks to the bonds that hold their shape. Myongsoo Lee at Seoul National University and his colleagues created pulsating nanotubules from bent carbon-based chains that stack together in water. The 'arms' of the chains overlap to form staggered



## ECOLOGY

### Artificial marshes fall short

Man-made salt marshes have less biodiversity than similar naturally occurring habitats, and so are failing to meet European regulations.

Natural salt marshes lost to coastal development or erosion must be replaced with biologically equivalent replicas under European Union law. Hannah Mossman at the University of East Anglia in Norwich, UK, and her team compared the vegetation at 35 salt marshes that had been man-made or created by storm surges with that at 34 naturally occurring marshes across the United

Kingdom. The researchers found that the natural habitats were home to many plants, including sea lavender (*Limonium vulgare*, pictured left), thrift (*Armenia maritima*) and sea plantain (*Plantago maritima*), that were often absent in replica habitats (pictured right).

The authors suggest that management of artificial marshes should be improved using measures such as planting extra species.

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