MICROBIOLOGY

Modified microbes boost weight loss

Ingesting genetically engineered bacteria helps obese mice to lose weight by altering their metabolism.

Sean Davies at Vanderbilt University in Nashville, Tennessee, and his colleagues engineered *Escherichia coli* to produce chemicals called NAPEs, which the body converts into lipids that signal fullness. When the researchers gave these bacteria to mice on a high-fat diet, the animals ate less, gained less weight and were more sensitive to insulin than were mice that did not receive the bacteria.

These effects were maintained for at least four weeks after the bacteria were removed from the animals' drinking water, suggesting that the microbes were incorporated into the gut flora. The approach could be used as a long-term treatment for chronic conditions such as obesity, the authors say.

J. Clin. Invest. **http://doi.org/tf4 (2014)**

BIOTECHNOLOGY

Halting inheritance of genetic disease

Researchers have reported a method to prevent the inheritance of diseases caused by DNA mutations in mitochondria — cellular machinery that is passed down from mother to child through the egg cell.

A possible approach to this problem is to transfer the nucleus of an egg from a woman with mitochondrial disease into a healthy donor egg, but diseased mitochondria can still carry over into the resulting embryos. Hongying Sha and Jianhong Zhu at Fudan University in Shanghai, China, and their colleagues have come up with an alternative method. They transferred the nuclei of polar bodies — small germ cells that are created during the maturation of the egg and that have the same genome — into recipient eggs. The technique resulted in mouse pups with undetectable levels of donor mitochondria.

Polar-body transfer could one day be used to prevent mitochondrial disease, the authors suggest.

Cell 157, **1591–1604 (2014)**

ASTRONOMY

Tiny asteroid in sights for capture

Astronomers have identified an asteroid small enough to be potentially suitable for NASA's mission to capture such a body.

NASA plans to use a robotic spacecraft to either net a small asteroid or grab a rock off a larger one, before dragging the body into lunar orbit for study. Michael Mommert at Northern Arizona University in Flagstaff and his colleagues studied the asteroid known as 2011 MD using the infrared camera on NASA's Spitzer Space Telescope. The team estimated the rocky body to be just 6 metres across and remarkably porous — made up of around 65% empty space, like a pile of rubble.

The mass and density of 2011 MD make it a valid candidate for a mission that grabs a whole asteroid, the third candidate identified so far.

Astrophys. J. Lett. 789, **L22 (2014)**

ENVIRONMENTAL SCIENCE

Less plastic in sea than expected

The amount of plastic floating in the world's oceans is between 6,000 and 31,000 tonnes — an estimate that is much less than expected given current plastic-production levels.

Andrés Cózar at the University of Cadiz in Puerto Real, Spain, and his colleagues studied more than 3,000 surface-water samples collected from oceans around the world in 2011. Nearly 90% of the samples contained plastic debris, with a wide range of concentrations. The team found a lower than expected amount of plastic smaller than five millimetres in size.

The researchers think that a combination of mechanisms might explain the missing plastic: the small pieces could be sinking into the ocean interior, breaking down into even smaller, undetectable particles, or being ingested by zooplankton and small fish.

Proc. Natl Acad. Sci. USA **http://dx.doi.org/10.1073/pnas.1314705111 (2014)**

SOCIAL SELECTION

Popular articles on social media

Sanger's legacy stirs up digital chatter

The late Fred Sanger, famous for work that gained him a pair of chemistry Nobel prizes, is now a social-media celebrity too — thanks to a paper by genome scientist Stanley Fields at the University of Washington, Seattle. Gaps in Sanger's publishing record had led fellow Nobel laureate Sydney Brenner to speculate earlier this year that Sanger wouldn't get research money under today's draconian funding criteria, but Fields argues that Sanger's brand of genius would still thrive. The Twittersphere wasn't wholly reassured. François Gould, a palaeontologist at Northeast Ohio Medical University, tweeted: "I appreciate this article's nuanced take on a complex issue, but [the] problem is still: most of us are not Fred Sanger."

Genetics 197, **435–439 (2014)**

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MATERIALS

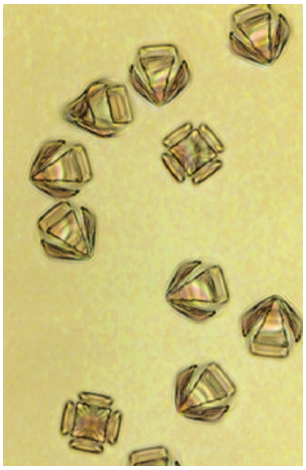
Self-folding device grabs single cells

Tiny silicon-based grippers that can capture single cells using their self-folding arms could be useful in biological assays.

David Gracias at the Johns Hopkins University in Baltimore, Maryland, and his colleagues made their grabbing devices (**pictured**) out of the biocompatible materials silicon monoxide and silicon dioxide. The devices, which range in length from 10 to 70 micrometres when open, have three or four arms that automatically fold up and around their payload. The grippers, when attached to a substrate, were able to grasp an individual mouse cell without killing it. When untethered, they could also capture red blood cells in solution.

The grippers could potentially be used *in vivo* to grab, for example, diseased cells, the authors say.

Nano. Lett. **http://doi.org/tdv (2014)**



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