

are knocked off, weakening the tube until it ultimately breaks.

*Proc. R. Soc. A* doi:10.1098/rspa.2010.0495 (2010)

## GENETICS

## Sex and the social slime mold

A single gene is sometimes all it takes to change a slime mold's sexual identity.

The social amoeba *Dictyostelium discoideum* has three different sexes — members of one sex, or 'mating type', can fuse with either of the other two to form giant, dormant cysts. But little is known about what genes determine the sexual identity of a slime mold.

Gareth Bloomfield of the Medical Research Council molecular biology lab in Cambridge, UK, and his colleagues found a region of the *D. discoideum* genome that differed among sexes. Deleting a gene from this region prevented mating-type I from coupling with mating-type II; reintroducing the gene restored normal sexual orientation. Meanwhile, swapping sex genes from one mating type to another caused the amoebae to switch sexual partners.

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## DEVELOPMENT

## Mother's dinner, daughter's nose

The smell of mouse mothers' food influences the olfactory anatomy of their pups, and primes them to prefer the same flavours as their mothers.

Josephine Todrank at the University of Colorado, Denver, and her colleagues studied lines of mice in which select olfactory sensory neurons that responded to smells such as cherry or mint were tagged with the gene for green fluorescent protein. The mothers were given scented food while either gestating or nursing their

litters, or during both phases. When their pups were tested at 20 days old, fluorescence revealed larger glomeruli — bundles of synapses — formed by neurons specific to the smells added to their mother's food. Pups also preferred the smells of the food their mothers ate.

Such preferences could predispose animals to choose familiar and safe foods, although in humans they could backfire to plant the seed of preference for alcohol or unhealthy foods, the authors say.

*Proc. R. Soc. B* doi:10.1098/rspb.2010.2314 (2010)

## ORGANIC ELECTRONICS

## Currency circuitry

Modern anti-counterfeiting features on banknotes are getting more sophisticated, ranging from complex and colourful watermarks to holograms and foil strips. Now Ute Zschieschang of the Max Planck Institute for Solid State Research in Stuttgart, Germany, and her colleagues have added yet another weapon to the



arsenal: trackable digital circuits.

The researchers fabricated low-voltage organic transistors on the surface of a €5 note (pictured), using a 3-nanometre-thick insulating layer made of aluminium oxide and octadecylphosphonic acid that could be deposited without damaging the surface of the banknote. A total of 92% of the deposited transistors were functional — a high enough proportion for

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## ORGANIC CHEMISTRY

## Making maoecrystal V

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The complex molecule maoecrystal V has been synthesized in the laboratory, after six years of intense effort by high-profile chemists. Zhen Yang and his colleagues at Peking University in Beijing created the sought-after compound — which shows potent activity against cancer cells — in a concise 16-step synthesis. It was originally extracted from a Chinese herb (*Isodon eriocalyx*) that has long been used as a folk medicine to treat flu and inflammation, and has already produced a number of potential anticancer agents. By varying the laboratory synthesis, chemists will be able to make and test closely related structures that may prove better medicines than maoecrystal V itself.

*J. Am. Chem. Soc.* 132, 16745–16746 (2010)

the circuits to work reliably.

*Adv. Mat.* doi:10.1002/adma.201003374 (2010)

## GENETIC TESTING

## It's never too early to get sequenced

A developing baby's entire genome is hidden in its mother's blood, potentially offering a non-invasive test for congenital diseases. Dennis Lo of the Chinese University of Hong Kong and his colleagues sequenced billions of DNA base pairs from the plasma of a pregnant woman and then developed a way to distinguish her DNA sequences from the fetus's.

Both parents carried a single mutation for  $\beta$ -thalassaemia, a rare blood disorder caused by two faulty copies of the gene *HBB*. Lo's analysis demonstrated that the father had passed on his mutation, but the mother had given the fetus a healthy copy of *HBB*, sparing it from  $\beta$ -thalassaemia. Such genetic screening could replace invasive prenatal diagnostic tests such as amniocentesis.

*Sci. Transl. Med.* 2, 61ra91 (2010)  
For a longer story on this research, see go.nature.com/djxvga.

## PLANETARY SCIENCE

## Impacts sent bling to early Earth

Call it a gift. Late in the Solar System's formation, a shower of objects up to the size of Pluto delivered to Earth a large quantity of rock containing gold, platinum and other elements that bind readily with iron. Researchers believe these elements were added to the mantle late in Earth's development, because if they had been present when the planet was molten, they would have sunk to its core, with iron.

William Bottke of the Southwest Research Institute in Boulder, Colorado and his colleagues used abundances of iron-loving elements on Earth, the Moon and Mars to model how later impacts from large objects could have replenished reserves in the planets' mantles. The findings may also explain the sizes of the oldest craters on the Moon and Mars.

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For a longer story on this research, see go.nature.com/bbdewm.

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