variegatus) with those of faster-moving mammals. The structures showed greater variation in shape, size and orientation in sloths than in squirrels, moles or armadillos.
Proc. R. Soc. B **http://dx.doi.org/10.1098/rspb.2012.1212 (2012)**

MATERIALS

Polymers track the Sun

Solar-cell arrays catch more light when they can tilt to follow the Sun's path, but this motion tracking does not have to be driven by power-hungry machinery.

Hongrui Jiang and his colleagues at the University of Wisconsin-Madison mounted a platform of solar cells on top of elastic supporting columns. Each column is coated with films made up of carbon nanotubes embedded in liquid crystal elastomers — rubbery networks composed of ordered polymers. When the nanotubes in the columns nearest the Sun absorb sunlight, they convert the energy to heat, and this changes the orientation of the polymer chains, causing the columns to contract. This contraction tilts the solar-cell platform towards the Sun. As the Sun moves across the sky, different columns contract, changing the platform's tilt to track the Sun's motion.
Adv. Funct. Mater. **http://dx.doi.org/10.1002/adfm.201202038 (2012)**

ZOOLOGY

Beetles walk underwater

A terrestrial leaf beetle can walk underwater, thanks to tiny air bubbles trapped between hair-like structures on its feet.

NAT. INST. MATER. SCI.

Gastrophysa viridula (**pictured**) use these 'hairs', or setae, and the secreted fluid that covers them, to stick to leaves when on land. Naoe Hosoda at the National Institute for Materials Science in Tsukuba, Japan, and Stanislav Gorb at the University of Kiel in Germany found that when the animals walk underwater, air bubbles remain trapped between the setae. The bubbles not only provide adhesion but also de-wet the area around the beetles' feet, enabling the setae to function as they do on land.

On the basis of these principles, the researchers were able to develop an artificial polymer that successfully kept small objects attached to vertical surfaces underwater.
Proc. R. Soc. B **http://dx.doi.org/10.1098/rspb.2012.1297 (2012)**
For a video linked to this research, see go.nature.com/ecyztv

REGENERATIVE MEDICINE

Nanofibres foster blood vessels

Self-assembling nanofibres can help to spur the formation of blood vessels in the hearts of rats and pigs during recovery from experimentally induced heart attacks.

Researchers led by Patrick Hsieh of National Cheng Kung University Hospital in Tainan, Taiwan, injected protein fragments that self-assemble into nanofibres, and VEGF — a protein that promotes blood-vessel formation — into the animals' injured heart muscle. Whereas VEGF alone conveyed no noticeable benefits, animals that received both nanofibres and VEGF had more arteries and stronger heart performance four weeks after the simulated heart attacks. The nanofibres, which degrade slowly over time, seem to function as a scaffold that retains and recruits restorative cells.
Sci. Transl. Med. 4, **146ra109 (2012)**

COMMUNITY CHOICE

The most viewed papers in science

COMPUTATIONAL BIOLOGY

'Whole-cell' computer model

HIGHLY READ
on www.cell.com
9 Jul–8 Aug

By producing a mathematical model of an entire human bacterial pathogen, researchers have made predictions about its cellular behaviour. The model accounts for the functions of the bacterium's known genes and the interactions between its constituent molecules.

Built by Markus Covert at Stanford University in California and his colleagues, the model captures the life cycle of the bacterium *Mycoplasma genitalium*, which has 525 genes. It incorporates data from more than 1,900 experimental measurements and encapsulates 28 groups of cellular processes, from DNA replication to protein folding. Using their tool, the researchers predicted that, on average, there are more than 30,000 collisions between pairs of DNA-binding proteins on the organism's single chromosome per cell cycle — a number that would be difficult to deduce experimentally.

Whole-cell models could speed up biological research and even pave the way for computer-designed organisms, the researchers say.
Cell 150, **389–401 (2012)**

T. SPADY/OSTRANDER LAB

GENETICS

Heady dog genetics

Variation in a handful of genes explains why some dog breeds, such as pugs, have round, thickset heads, whereas others, such as collies, have long, narrow skulls.

Selective breeding by humans has had a strong influence on the shapes of dogs' heads, which vary greatly across the species. Elaine Ostrander at the National Human Genome Research Institute in Bethesda, Maryland, and her colleagues compared the shapes of 533 skulls belonging to 120 dog breeds (**a sample pictured**) and four subspecies of grey wolf with genetic data from many of the same species. Five genomic regions seem to set breeds with round heads apart from those with elongated heads.

Sequencing one of these regions in 11 dog breeds uncovered a mutation in a developmental gene called *BMP3* in round-headed bulldogs and Pekingese. Further analysis revealed this mutation in nearly all breeds with very short heads, including pugs, Boston terriers and Shih Tzus.
PLoS Genetics 8, **e1002849 (2012)**

NATURE.COM
For the latest research published by *Nature* visit:
www.nature.com/latestresearch