but not to resolve details of their interiors.
Phys. Rev. Lett. 105, **217402 (2010)**

MEDICINE

Profiling for blood pressure

Whether the powerful high-blood pressure medicine rostafuroxin will be effective for a particular patient can be predicted from a set of gene variants.

Giuseppe Bianchi at the Prassis sigma-tau Research Institute in Milan, Italy, and his colleagues show how the drug works. It normalizes sodium transport in the kidneys that is disrupted by two specific mechanisms: a mutated version of a protein called adducin and a boost in levels of a hormone called ouabain. The researchers identify several gene variants heralding the faulty mechanisms and, in a second paper, show that patients with certain combinations of variants in five specific genes respond well to rostafuroxin, but not necessarily to two other blood-pressure medicines.

The key combination of variants is present in about 25% of patients.
Science Transl. Med. 2, **59ra86; 59ra87 (2010)**

STEM CELLS

Platelets get a boost

The reprogramming of adult cells to produce induced pluripotent stem (iPS) cells shows promise for tissue repair. c-MYC is one of the proteins used to reprogram cells, but at high levels it also hinders the transformation of iPS cells into platelets, a blood cell important in clotting and wound healing.

Some iPS cells do turn into platelets, however, and Koji Eto at the University of Tokyo, and his colleagues have now found out how. The team created numerous human iPS cell lines by delivering a cocktail of proteins, including c-MYC, to skin cells, and then differentiated these into platelets. The iPS cells that became platelets most efficiently were those that rapidly muffled the expression of c-MYC. In mice, these platelets homed in on damaged blood vessels just like natural platelets.
J. Exp. Med. **doi:10.1084/jem.20100844 (2010)**

MATERIALS

Controlling water on synthetic silk

Tiny water droplets have been made to move in a controlled direction along threads of synthetic spider webs.

Lei Jiang at the Chinese Academy of Sciences in Beijing, Yongmei Zheng of the Beijing University of Aeronautics and Astronautics and their colleagues constructed webs from different polymers and observed the spontaneous movement of micrometre-sized water droplets on their strands. On polymers with a rough surface, drops always migrate towards and coalesce at knots in the silk, regardless of its hydrophobicity. But if the surface is smoother they move away from the knots if the polymer is hydrophobic, and towards them if it is hydrophilic.

These results should allow the design of devices that can drive water droplets in a controllable manner.
Adv. Mater. **doi:10.1002/adma.201003169 (2010)**

DEVELOPMENTAL BIOLOGY

Placenta key to fetal growth rate

Gestation period varies widely in the mammalian world, with some species developing twice as fast as others in the womb. This is largely because of differences in the arrangement of fetal and maternal tissues in the placenta.

Isabella Capellini at Durham University, UK, and her team analysed data from previous studies on neonatal brain mass, body and litter size, and maternal placental morphology from 109 mammalian species. They discovered that animals with placentas where fetal and maternal tissues interlock the most — creating a greater surface area over which nutrients can flow — gestate in less than half the time taken by animals that have placentas with a minimal surface area for nutrient exchange.
Am. Nat. **doi:10.1086/657435 (2010)**

COMMUNITY CHOICE

The most viewed papers in science

CELL BIOLOGY

Genes that make cells move

HIGHLY READ on genesdev.cshlp.org the week beginning 15 November

The movement of cells in the body is important for normal development, but can also be deadly — in metastatic cancer. Researchers have teased out 31 genes whose products belong to various pathways that seem to regulate human cell migration. The pathways converge on a key signalling enzyme called RSK, suggesting that this could be a target for new cancer drugs.

Daniel Haber at the Massachusetts General Hospital in Boston and his co-workers screened roughly 11,000 genes in human cells using 55,000 small RNA molecules that silence specific genes. They used a chamber with a perforated membrane to identify which cells retained their roving abilities.

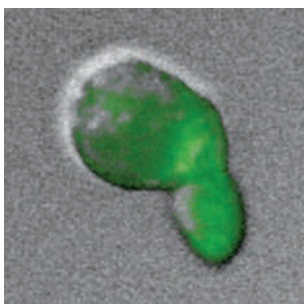
The authors found that many of the 31 genes they identified had not previously been linked to cell motility. Furthermore, when the researchers blocked RSK with a small-molecule inhibitor, single cells moved much more sluggishly.
Genes Dev. **doi:10.1101/gad.1989110 (2010)**

NEUROBIOLOGY

The source of sour taste

The five basic tastes are sensed on the tongue by different sets of cells, but the acidic taste of sour has long defied molecular analysis. Now researchers have genetically engineered mice in which they can fluorescently tag sour-taste cells (**pictured**), and have pinpointed the changes that acid triggers in the cells.

Isolating the cellular mechanisms associated with sour-taste recognition has been challenging because many ion channels in cell membranes respond to acid, whether or not they are involved in sour sensing. Emily Liman and her team at the University of Southern California in Los Angeles tagged not only the sour-taste cells but also those for bitter, sweet and umami, and compared the responses of these cells to acid. They found that the sour-taste cells fired alone when protons were transported across the membrane — but all cells reacted to sodium ions, which were previously thought to mediate sour sensing.
Proc. Natl Acad. Sci. USA **doi:10.1073/pnas.1013664107 (2010)**



NATL. ACAD. SCI.

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