

RESEARCH HIGHLIGHTS

Selections from the scientific literature

STEM CELLS

Robo protein guide for cell transplants

A protein used by blood stem cells to adhere to bone marrow could offer a way to improve the success of blood stem-cell transplants.

Certain illnesses, such as some blood cancers, have long been treated with blood — or haematopoietic — stem-cell transplants, but the procedure is risky. To learn more about how to manipulate these cells, Camilla Forsberg at the University of California, Santa Cruz, and her colleagues studied the Robo4 protein.

They found that, in mice, haematopoietic stem cells lacking Robo4 were fewer in number, and less able to anchor themselves in the bone marrow after transplantation. The authors also revealed that Robo4 works with another protein, Cxcr4, to localize transplanted stem cells to the bone marrow.

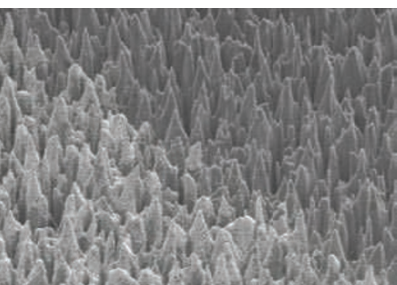
Cell Stem Cell 8, 72–83 (2011)

MATERIALS SCIENCE

Gas keeps drag low

The flow of water on solid surfaces is significantly impeded by frictional forces — which is bad news for, say, marine vehicles. A gas layer can be introduced at the solid–liquid interface as a lubricant, but even slight hydraulic pressure can destroy

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this layer. Choongyeop Lee and Chang-Jin Kim at the University of California, Los Angeles, have devised a way to keep the gas layer intact and cut drag even in underwater conditions.

The duo began with a highly hydrophobic surface studded with 50-micrometre-high pillars and gold-coated nanostructures (pictured), and submerged this in water. The gold coating allowed an electrolytic reaction to occur, generating gas at its surface when water made contact. Bubbles formed only in areas where there had been no gas before, and because of the surface's architecture, the bubbles spread uniformly across the surface.

Phys. Rev. Lett. 106, 014502 (2011)



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CONSERVATION BIOLOGY

Pandas prefer their trees mature

Giant pandas are famous for their love of bamboo, but it seems that they also have a preference for old forests, suggesting that maintaining such habitats is important for conserving this iconic endangered species.

Fuwen Wei at the Chinese Academy of Science in Beijing and his colleagues analysed data collected between 1999 and 2003 on 4,908 plots of land in Sichuan province for signs of

pandas (*Ailuropoda melanoleuca*, pictured).

They found that the presence of old-growing forests was just as good an indicator that pandas live in the area as the presence of bamboo.

The authors suggest that maps and models of suitable habitats for pandas should be revised to prioritize old forests. They also call on the Chinese government to renew its ban on logging. *Biol. Lett.* doi:10.1098/rsbl.2010.1081 (2010)

IMMUNOLOGY

Stronger shields against the flu

People's immune responses to infection with the 2009 H1N1 influenza pandemic virus included neutralizing antibodies effective against many flu virus strains.

Rafi Ahmed at Emory University in Atlanta, Georgia, Patrick Wilson at the University of Chicago in Illinois and their group analysed 86 antibodies made by immune cells from nine patients infected with H1N1. Surprisingly, 63% of the antibodies bound to flu viruses that had appeared before the 2009 pandemic. Some even worked against the 1918 pandemic virus and the H5N1

avian influenza virus. Three antibodies were generated from patients' cells and tested in mice. All three protected the animals against a lethal dose of H1N1, whether given before or after exposure. Such broadly protective antibodies — long sought, but elusive — could aid the design of a 'universal' flu vaccine, the team speculates.

J. Exp. Med. doi:10.1084/jem.20101352 (2011)

ASTRONOMY

The dance of three stars

Researchers have spotted a cosmic ballet — two stars spinning around one another while both orbiting a larger star. The trio, named KOI-126,