# RESEARCH HIGHLIGHTS

## Walking in circles

*Curr. Biol.* doi:10.1016/j.cub.2009.07.053 (2009)

Books, movies and hiker-lore all predict that, unaided by landmarks or celestial objects, people tend to walk in circles. But few have tested whether this happens and, if so, why.

Jan Souman at the Max Planck Institute for Biological Cybernetics in Tübingen, Germany, and his team tracked people's movement through unfamiliar terrains — Bienwald Forest in Germany and the Tunisian Sahara Desert — using the Global Positioning System.

During outings on cloudy days (blue trails pictured in inset), and one on a moonless night, subjects tended to walk in loose, meandering circles, which suggests that external information is key to maintaining course. Blindfolded walkers often veered into tighter circles of less than 20 metres in diameter.

Common explanations for circular walking invoke physiology — handedness or body asymmetries, for example. But the authors found little evidence that people turn consistently in one direction, suggesting a more random process.

J. SOUMAN/MAX PLANCK INST. BIOL. CYBERNETICS

PHYSIOLOGY

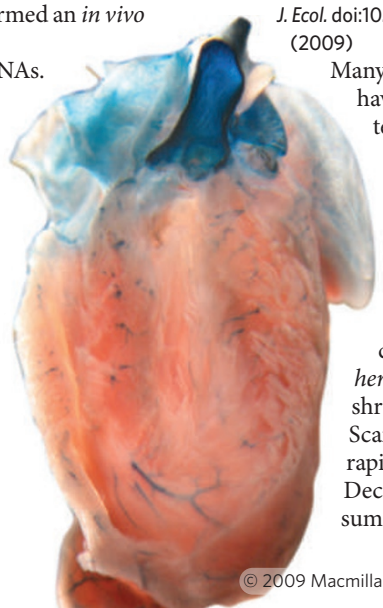
## Smooth transitions

*J. Clin. Invest.* doi:10.1172/JCI38864 (2009)

A pair of short RNA strands known as microRNAs may represent a therapeutic target for some forms of arterial disease.

The smooth muscle cells of arteries can switch between two phenotypes: contractile and synthetic; accumulation of the latter is associated with atherosclerosis. In a search for microRNAs that might control this switch in mice, Thomas Braun and Thomas Boettger at the Max Planck Institute for Heart and Lung Research in Bad Nauheim, Germany, and their collaborators came across two microRNAs — 143 and 145 — that are expressed in smooth muscle cells throughout the body (coloured blue in the heart pictured below). Their sequences are necessary for normal development of contractile smooth muscle cells.

The researchers performed an *in vivo* analysis of the proteins regulated by the microRNAs. Among them was ACE, a protein targeted by a major class of blood-pressure medication.



AM. SOC. CLIN. INVEST.

CANCER BIOLOGY

## A nasty cut

*Cell* **138**, 673–684 (2009)

Cancer progression is often aided by increased expression of particular genes called oncogenes. Although this is often associated with changes in DNA, Christine Mayr and David Bartel of the Whitehead Institute for Biomedical Research in Cambridge have shown that alterations to the messenger RNAs of several oncogenes can also contribute.

These alterations mostly occur as a result of alternative processing in the 3′UTR, an RNA region that doesn't encode protein. The processing involves the way that the end of an RNA strand is cut and the position at which a string of adenine bases is added, resulting in 3′UTRs of different lengths. Shorter than usual 3′UTRs make the mRNA more stable, typically allowing it to produce ten times the normal amount of the oncogene's protein. This overexpression is only partly explained by the loss of sites on the RNA that are recognized for silencing by microRNAs.

ECOLOGY

## Winter warmer

*J. Ecol.* doi:10.1111/j.1365-2745.2009.01544.x (2009)

Many studies of Arctic warming have focused on summer temperatures, but a new study suggests that vegetation can be damaged by unseasonably warm winter weather.

Stef Bokhorst of the University of Sheffield, UK, and his colleagues looked at how the mountain crowberry (*Empetrum hermaphroditum*), the dominant shrub in northwestern Scandinavia, fared after a sudden, rapid warming in the region in December 2007. The following summer, many of the shrubs had dead shoots, and overall vegetation growth across an area of 1,424 square kilometres was 26% lower than in the previous year.

An ecosystem-manipulation experiment that heated the ground produced a similar drop-off in shoot growth.

MODEL ORGANISMS

## A new kind of knock out

*Dis. Models Mech.* doi:10.1242/dmm.003087 (2009)

A new tool to insert, delete and invert genes in a precise fashion could allow more sophisticated animal models of human diseases to be produced.

Francis Stewart at the Technical University of Dresden in Germany and his colleagues validated the potential of a previously discovered enzyme called Dre recombinase that cuts and rearranges DNA at specific target sites called *rox*. They show that it can be used to create mice in which specific gene sequences are disrupted.

The Dre-*rox* system does not cross-react with a commonly used system for genetically engineering mice called Cre-*loxP*, the authors found. Thus, the two systems could be used in combination to create knock-out mice with independent controls for multiple genes.

NANOTECHNOLOGY

## Origami bridge

*Nature Nanotechnol.* doi:10.1038/nnano.2009.220 (2009)

The miniaturization of electronic circuitry is limited by the size of features that can be etched into a surface using conventional lithography. Bridging the gap to the molecular world of self-assembling structures has been a major challenge in nanotechnology.