

## RESEARCH HIGHLIGHTS

T. J. BARKMAN

**Growing flowers***Curr. Biol.* **18**, 1508–1513 (2008)

The world's largest flowers, of the Southeast Asian *Rafflesia* genus, which mimic the smell and appearance of rotting flesh, evolved much more quickly and more often than botanists expected.

Todd Barkman of Western Michigan University in Kalamazoo and his team hypothesized that it would have taken a long time for the *Rafflesia* flowers to evolve from their smaller ancestors to their current maximum size of one metre in diameter because of the many structural and physiological changes required to support such large flowers. To their surprise, they found that the flowers of some *Rafflesia* species have more or less doubled in size during the past one million to two million years. As Barkman points out, it is hard to imagine a giraffe doubling the length of its neck in the same time frame. The scientists suggest that even bigger flowers could evolve in future.

**GEOSCIENCES****Exporting ice***Geophys. Res. Lett.* doi:10.1029/2008GL034813 (2008)

Ice export through the Fram Strait east of Greenland is a crucial determinant of recent Arctic sea-ice loss.

Lars Smetsrud and his colleagues evaluated three factors behind this spectacular ice loss. Since 1990, atmospheric heat transport to the Arctic has declined. More oceanic heat transport contributed to ice loss but, say the researchers, increased ice export was more important, especially in 2007–08.

If oceanic heat transport and ice export decrease, Arctic sea ice could remain robust. But if current patterns continue or strengthen, combined with increasing atmospheric carbon dioxide, a seasonally ice-free Arctic is possible within decades.

**NANOMEDICINE****Disease nanosensors***Nano Lett.* **8**, 3310–3314 (2008)

Yale University scientists have created a detection system that uses sensitive nanowire sensors to allow doctors to diagnose patients with infectious diseases non-invasively.

Unlike current detection techniques, the system does not rely on dyes or radioactivity. The sensors detect the activation of a particular type of immune cell by antigens — signatures of bacterial, viral or cancerous cells. Previously, Tarek Fahmy and his colleagues demonstrated that the sensors could detect a response by these cells, T cells, to many types of antigen. The new report shows that the sensors can now distinguish the specific antigen or antigens activating the immune system and so potentially detect disease.

Doctors could eventually use the sensors to

immediately diagnose patients' illnesses, or to test whether medication had successfully treated a disease, the researchers say.

**CHEMISTRY****Selective separation***J. Am. Chem. Soc.* doi:10.1021/ja804164y (2008)

Carbon nanotubes produced by the commonly used high-pressure carbon monoxide method are normally one-third metallic or semi-metallic and two-thirds semiconductor, and of various diameters. Now James Tour and his colleagues at Rice University in Houston, Texas, have developed what should be an easy way to separate these types in a reaction that may enable their use in a variety of micro-electronic components.

Their reaction uses ultraviolet light with a wavelength of 254 nanometres to add hydroxyl groups first to the semiconducting nanotubes in a mixture and then to metallic tubes of small diameters. This should mean that the larger metallic tubes could be easily separated from the mix.

**NEUROLOGY****Contextual views***Neuron* **60**, 162–173 (2008)

An animal's response to a stimulus depends on context, and it has now been shown that the connections between individual neurons depend on context as well. Marlene Cohen and William Newsome of Stanford University School of Medicine in California followed two direction-selective neurons in the middle temporal area of a monkey's brain as it looked at the same visual stimulus in two contexts.

The two cells were affiliated with the trajectories of two dots on a screen. The two neurons made the same direction judgement

when the monkey was asked to distinguish between northwards and southwards motion, but different judgements when asked to distinguish between eastwards and westwards.

The researchers found that, in general, the responses of the two neurons were more similar when they contributed to the same direction judgement. They presume that connection strength somewhere upstream of the target neurons changes depending on the task.

**PLANT CHEMISTRY****Banana blues***Angew. Chem. Int. Edn* doi:10.1002/anie.200803189 (2008)

Ripe bananas turn ... blue? Apparently so, when viewed under ultraviolet light (pictured in bottom panel, below).

Bernhard Kräutler of the University of Innsbruck in Austria and his co-workers



WILEY-VHC