RESEARCH HIGHLIGHTS

Selections from the scientific literature

IMMUNOLOGY

Culprits in diabetic heart risk

People with type 1 diabetes have an above-average risk of developing heart disease, or atherosclerosis, and two related groups of inflammatory immune cells may be to blame.

Immune cells called monocytes and macrophages — which develop from bone marrow — from mice and humans with diabetes express unusually high levels of the enzyme ACSL1. This modifies fat molecules that then trigger inflammation, according to Karin Bornfeldt at the University of Washington in Seattle and her team. Diabetic mice that received transplanted bone-marrow cells lacking ACSL1 developed fewer and smaller blood-vessel lesions characteristic of atherosclerosis than did diabetic mice transplanted with normal cells.

Blocking this enzyme could prevent the accelerated atherosclerosis common in patients with diabetes, the authors suggest.

Proc. Natl Acad. Sci. USA **http://dx.doi.org/10.1073/pnas.1111600109 (2012)**

S. BOBACK

ANIMAL BEHAVIOUR

Snakes strangle with feeling

As boa constrictors tighten their bodies around their prey, the snakes sense the dying animal's heart rate to determine how much pressure to apply and when to stop squeezing.

Scott Boback and his colleagues at Dickinson College in Carlisle, Pennsylvania, implanted simulated hearts into warm, dead rats and presented them to 16 snakes. In the presence of a heartbeat, the boas constricted for nearly twice as long and with more than double the pressure than in the absence of a heartbeat. When the heart stopped midway through constriction, the snakes released their prey.

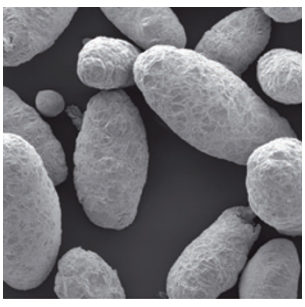
The researchers speculate that the ability to detect a heartbeat co-evolved with constriction (pictured) to help snakes identify when death occurs and minimize energy expenditure.

Biol. Lett. **http://dx.doi.org/10.1098/rsbl.2011.1105 (2012)**

MATERIALS

Circuit, heal thyself

A crack in an electrical circuit no longer needs to be permanent, thanks to the development of circuits that can 'heal' themselves. The incorporation of tiny capsules of liquid metal allows electrical circuits to recover almost all of their function after being broken.



WILEY

Nancy Sottos, Scott White and their colleagues at the University of Illinois at Urbana-Champaign created capsules of gallium and indium (**pictured**) and placed them either directly onto gold circuits or into an insulating layer above the wires. If a crack breaks the circuit and ruptures the capsules, the liquid metal is released, filling in the crack.

After damage, the researchers' circuit recovered 99% of its conductance in less than 1 millisecond. However, the team's method may not be immediately applicable because the demonstration circuit is significantly larger than most current micro-electronics.

Adv. Mater. 24, **398–401 (2012)**

CANCER

Tumour cells lend a hand

Cells that provide tumours with support may also defend against the cancer's spread, so chemotherapies that target these cells could inadvertently fuel metastasis.

Pericytes are cells that provide structural support to blood vessels, including those that feed tumours. Raghu Kalluri at Harvard Medical School in Boston, Massachusetts, and his group found that patients with invasive breast cancer tended to fare poorly if they had few pericytes covering the blood vessels in their tumours. Selectively killing pericytes in tumour-bearing mice slowed tumour growth but increased metastasis and