RESEARCH HIGHLIGHTS

ROTHAMSTED RESEARCH

Active aphids

Proc. R. Soc. Lond. B doi: 10.1098/rspb.2008.0880 (2008)

Airborne arthropods are often divided into active fliers, which travel under their own power, and passive drifters on air currents. Now Andy Reynolds of Rothamsted Research in Harpenden, UK, and a colleague announce that aphids and other small-winged insects should not be labelled passive, because they can control their altitude. In simulations of air currents and aphid behaviour, results were closest to the observed distribution of aphids when the insects flew so as to magnify the effect of air movements. In updrafts, the authors claim, they fly just enough to counterbalance gravity. In downdrafts, they stop flapping and sink.

BIOCHEMISTRY

Protecting the heart

Science **321,** 1493–1495 (2008)

A protein that reduces heart damage in rats could hold the key to protecting humans against a potentially life-threatening condition: reduction of blood flow to the heart, or cardiac ischaemia.

Daria Mochly-Rosen, of Stanford University in California, and her colleagues found that in rats, increased activity of a protein called aldehyde dehydrogenase 2 (ALDH2) is correlated with reduced damage following cardiac ischaemia. The researchers then isolated a compound called Alda-1 that activates ALDH2, also reducing heart damage by ischaemia.

Two-fifths of East Asians carry a mutation in the *ALDH2* gene that leads to reduced ALDH2 activity. Alda-1 activated the mutant protein, and restored it to normal levels of activity.

ASTRONOMY

Fossils on Titan

Science **321,** 1475–1478 (2008)

Before 13 June 2007, astronomers observed Saturn's moon Titan (pictured right) only when it was inside the planet's magnetic field. But on that day the probe Cassini observed Titan outside the controlling influence of Saturn's magnetosphere, in a region permeated by the Sun's magnetic field.

Cesar Bertucci, now at the Institute for Astronomy and Space Physics in Buenos Aires, and his colleagues report that Titan, which lacks a major magnetic field of its own, retains an imprint of Saturn's magnetic fields after leaving the planet's magnetosphere. This occurs in the form of 'fossil' fields frozen into the plasma surrounding the moon. The solar magnetic field then overlaid these fossil fields, which persisted for between 20 minutes and three hours, they report.

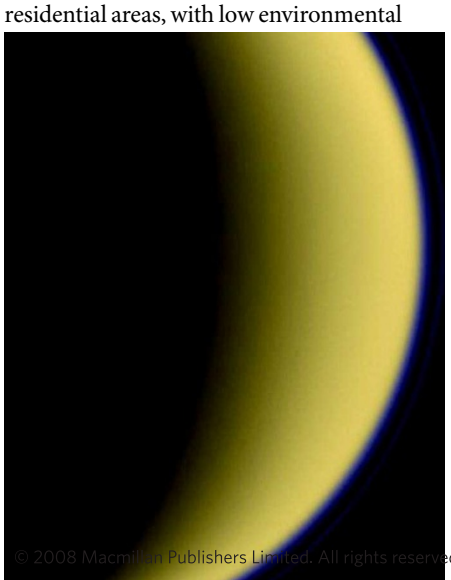
CONSERVATION

Homes on the range

Conserv. Biol. **22,** 912–921 (2008)

When it comes to choosing where to live, the best environmental intentions can lead to the worst results.

M. Nils Peterson, now at North Carolina State University in Raleigh, and his colleagues surveyed more than 400 households in Idaho and Wyoming. They found that the least educated people who cared least about the environment chose to live in established residential areas, with low environmental impacts. But people with high levels of education and environmental concerns chose homes in environmentally sensitive natural areas. Income was not a factor. Strangely, the longer residents lived in a natural area, the less they cared about the environment.



NASA-JPL

EVOLUTION

Sexy and doomed

Proc. Natl Acad. Sci. USA doi: 10.1073/pnas.0803851105 (2008)

Why haven't oncogenes — genes that cause cancer — been eliminated by natural selection? André Fernandez and a colleague from Ohio University in Athens believe they have found a possible answer. In a species of swordtail fish, *Xiphophorus cortezi,* the oncogene *Xmrk* also causes a dark pattern on male fish's tail fin that females in two out of three populations studied found attractive. Indeed, fish that have developed cancer had the largest patterns and were able to mate for many months before the disease killed them.

NEUROLOGY

Dopamine link to fragile X

Neuron doi: 10.1016/j.neuron.2008.06.027 (2008)

The lack of fragile X mental retardation protein (FMRP) causes a disorder with physical, cognitive and behavioural symptoms. FMRP has many roles, and Min Zhuo at the University of Toronto and his colleagues now add another: relaying messages in the dopamine pathway that shapes memory, planning and attention.

Zhuo and his colleagues studied cultured neurons and mice lacking FMRP. The