RESEARCH HIGHLIGHTS

ZOOLOGY
Whiff of danger

The house finch (*Carpodacus mexicanus*) has joined the short list of birds that can smell, apparently using this sense to detect predators.

Timothy Roth and his colleagues at Indiana State University in Terre Haute placed 51 wild finches in enclosures in which food sat in ventilation gaps. For two days, unscented air streamed through these gaps and the finches happily moved into the airflow to eat. Roth and his team then gently blew air over cat faeces, rabbit faeces or water before wafting it into the enclosures.

Both faecal odours reduced the amount of time the finches spent at feeders. The effect was strongest for cat scent, suggesting that finches can tell a predator from its poo.

PHYSICS
Flags and drag

Professional cyclists can reduce their drag by following close behind the rider in front. Counterintuitively, downstream flags feel more drag than those flapping in front of them.

Leif Ristroph of Cornell University in Ithaca, New York, and Jun Zhang of New York University in New York City simulated one-dimensional flags by tethering tiny threads in a flow of soap film (pictured below). The upstream thread's flapping was constrained by the proximity of the fixed 'flagpole' — the leading portion — of its downstream partner. Meanwhile, the downstream flag was caught in the leader's oscillating wake.

CHEMICAL BIOLOGY
Honey trap

A nanoparticle with antibody-like binding activity has been created by a group of researchers led by Kenneth Shea of the

I. SPENCE/FLPA
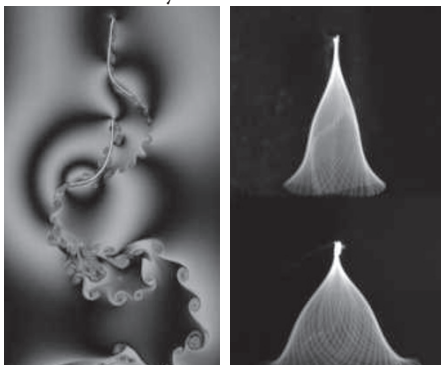
Quick change

By mutating just two genes, researchers in Belgium have turned a slender annual plant (inset) into a bushy, woody perennial (main picture).

Perennials have repeatedly evolved from annuals, but genetic changes that can cause this switch had not been identified. Siegbert Melzer of Ghent University and his colleagues studied *Arabidopsis thaliana* with mutations in *soc1* and *ful*, which both regulate when the species flowers.

Mutants with dysfunctional forms of both genes formed woody stems and structures resembling dormant buds. These buds awakened periodically, producing several waves of growth and a longer lifespan.

University of California, Irvine. Their 'plastic antibody' attaches to a specific biological molecule — the honeybee toxin, melittin, which is composed of 26 amino acids.

The authors took a selection of acrylamide monomers containing chemical groups that bind to different portions of melittin, and linked these into a polymer using the target as a template. Crosslinking the monomers generated particles 30–40 nanometres in diameter, making the fruits of their labour comparable in size as well as binding activity to a real antibody. Molecules such as this might one day be injected into the blood, adding new sensors or antidotes to the immune system's armoury.

MOLECULAR BIOLOGY
Silent guide

A whole-genome scan of the mouse has revealed where to find the protein H2AZ, which influences gene expression. It's attached to the 'on/off switches' of genes that are important in embryonic development and tends to accompany the 'polycomb group' protein Suz12, which does a similar job.

Laurie Boyer of the Massachusetts Institute of Technology in Cambridge and her co-workers report that H2AZ can be found at 8% of these switches, or promoter regions, of protein-coding genes in embryonic stem cells. Their gene-silencing experiments showed that H2AZ is needed for embryonic stem cells to become specialized; specifically, the protein must be redistributed around the genome before the cells can acquire a fate.

ASTRONOMY
Missing no more

Rest assured, astronomers: the missing satellite galaxies of the Milky Way are there — they just haven't been discovered yet, according to calculations by Erik Tollerud of the University of California, Irvine, and his colleagues.

Models that aim to capture how the