RESEARCH HIGHLIGHTS

Nasty, brutish and short

Proc. Natl Acad. Sci. USA **105,** 8980–8984 (2008)
The Madagascan chameleon *Furcifer labordi* has an annual life cycle, and spends most of its short life in the egg.

Kristopher Karsten of Oklahoma State University in Stillwater and his colleagues monitored individuals from the time of hatching until death during several cycles. They found that they hatch in November; grow at astonishing rates; reach maturity by January; battle fiercely over mates, breed and lay their eggs by February; and then promptly drop dead. For the next nine months, the entire species is represented by eggs.

This is the shortest lifespan ever recorded for a four-legged vertebrate animal.

C. J. RAXWORTHY

NEUROSCIENCE

Predicting psychosis

J. Neurosci. **28,** 6295–6303 (2008)
Scientists have found a way of predicting how an individual will respond to the party drug ketamine — and it might help us understand why symptoms of schizophrenia vary so much between individuals.

Ketamine mimics many symptoms of schizophrenia. Paul Fletcher at the University of Cambridge, UK, and his colleagues scanned the brains of 15 healthy volunteers while they performed various cognitive tasks that require skills that are often disrupted in schizophrenia, such as verbal processing and working memory.

They found, among other things, that those with higher activity in frontal, thalamic and caudate regions of the brain during a working memory task tended to become apathetic and withdrawn on ketamine. Meanwhile, those with exaggerated frontal and temporal activation responses during verbal tasks experienced disordered thoughts and abnormal auditory perception.

L. DALTON/NHPA

GENETICS

The genetics of anarchy

Genetics doi: 10.1534/genetics.108.087270 (2008)
A study of honeybee 'anarchy' has uncovered several regions of the genome that influence cheating behaviour.

Honeybee (*Apis mellifera*; pictured right) queens emit a pheromone to 'switch off' the ovaries of female worker bees, but some individuals are more sensitive to the pheromone than others. Those who fail to respond are branded anarchists because they disrupt the social order of the hive.

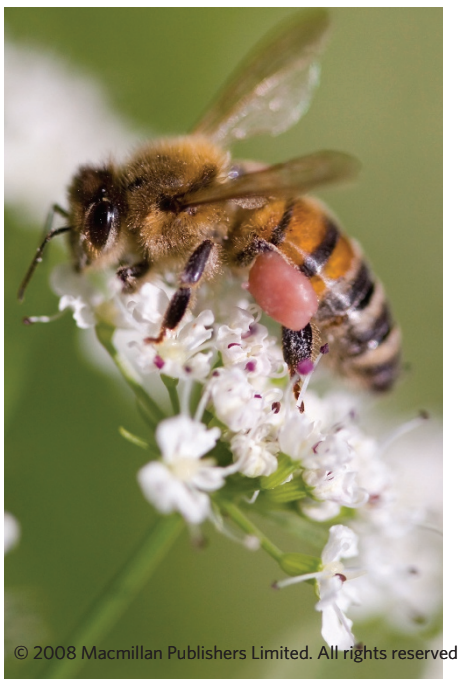
Peter Oxley of the University of Sydney, Australia, and his colleagues tracked down regions of the genome that have a role in ovary activation. They found four such regions that together account for 25% of the variation in this trait observed in the population of honeybees they studied.

CHEMISTRY

Flipping brilliant

Organic Lett. doi: 10.1021/ol801135g (2008)
A super-fast colour-changing chemical has been synthesized by Jiro Abe and his colleagues at Aoyama Gakuin University in Sagamihara, Japan. The molecule is a ring system containing naphthalene groups.

When the colourless version of the molecule is zapped by ultraviolet light it changes to its green-coloured form by breaking a carbon–nitrogen bond to leave a molecule in which two electrons are left delocalized in their naphthalene rings as radicals. This change takes a fraction of a second. When the light is turned off the molecule can quickly flip back to its colourless version. This light-induced colour change can happen whether the molecule is a solid or in a solution. Photochromic materials such as this are used in light-sensitive lenses and data-storage devices.



CHEMICAL BIOLOGY

Anti-Alzheimer's agent

Nature Chem. Biol. doi:10.1038/nchembio.96 (2008)
Scientists have designed an enzyme inhibitor that seems to prevent the tangling of a brain protein that is linked with the onset of disorders such as Alzheimer's disease.

The inhibitor, named thiamet-G, acts by stopping the removal of sugar groups from specific sites on a protein called tau. It thereby blocks the attachment of phosphate groups thought to lead to the characteristic tangling.

The team, led by David Vocadlo at Simon Fraser University in British Columbia, Canada, tested the enzyme inhibitor in healthy rats. They found thiamet-G to be the first such inhibitor that can be delivered to the brain through the bloodstream. Besides providing a means to investigate how tau proteins form clumps, the inhibitor may have potential as a therapeutic agent.

MATERIALS SCIENCE

The heart of glass

Nature Mater. **7,** 556–561 (2008)
A glass is caught somewhere between a liquid and a crystalline solid — its atoms move, but they do so very slowly. Theorists predicted that was because the atoms arranged