

# RESEARCH HIGHLIGHTS

Selections from the  
scientific literature

## BEHAVIOURAL NEUROSCIENCE

### Male mice cut out for fathering

Male mice that live with their mates help to nurture pups, whereas virgin males attack them, owing to differences in neural signalling. Kashiko Tachikawa and her colleagues at the RIKEN Brain Science Institute in Saitama, Japan, compared how sexually naive males and cohabiting fathers reacted to pups displaced from their nests, and found that their behaviour was mediated by the pheromone-detecting vomeronasal organ located at the base of the nasal cavity. Most of the virgin males attacked the pups, and the neural pathways that link the vomeronasal organ to other areas in their brains were highly activated in these animals. Cohabiting fathers, however, carried pups back to their nests and displayed little activation in these neural pathways. Sexually naive males showed parental behaviour if their vomeronasal organ had been removed.

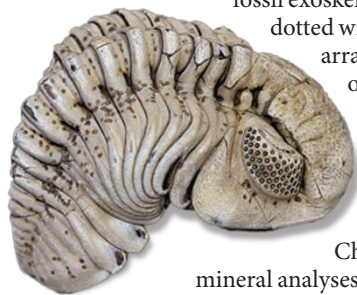
*J. Neurosci.* 33, 5120–5126 (2013)

## PALAEONTOLOGY

### Trilobite fossil spotted

Speckles on 390-million-year-old trilobite fossils (pictured) may have helped to camouflage the marine invertebrates.

A team led by Christopher McRoberts, of the State University of New York at Cortland and Thomas Hegna at Western Illinois University



in Macomb examined more than 25 *Eldredgeops rana* trilobites that were discovered in central and western New York state. The fossil exoskeletons were dotted with regular arrangements of a variable number of spots — more than 500 in some cases. Chemical and mineral analyses indicated that spots are of similar composition to the rest of the fossil, suggesting the markings are not artefacts. No pigment molecules were

preserved, but the authors speculate that the spots may have scattered sunlight and blurred a trilobite's shadow. *Geology* <http://dx.doi.org/10.1130/G34158.1> (2013)

## STRUCTURAL BIOLOGY

### Serotonin signalling secrets

Researchers have deciphered molecular structures of two neurotransmitter receptors bound with drug molecules.

Bryan Roth at the University of North Carolina Chapel Hill Medical School and Raymond Stevens at the Scripps Research Institute in

many fruit-tree seedlings as the hunted sites. The researchers suggest that with many fewer primates eating fruits and dispersing the seeds by spitting and defaecation, fruit trees do not reproduce as well in hunted areas. As these hunted forests age, the lack of seedlings will mean the dying trees are not replaced, and primates will be unlikely to find enough to eat. *Proc. R. Soc. B* 280, 20130246 (2013)

## Primates hunting leaves forest scar

By hunting for primates, humans may create an ecological ripple that makes the hunted regions permanently unsuitable for the animals.

Ola Olsson at Lund University in Sweden and his colleagues looked at six sites in three protected areas in south-eastern Nigeria. Three of the sites were well protected from hunters, and had more than three times as

La Jolla, California, and their colleagues, solved the crystal structure of a serotonin receptor called 5-HT<sub>2B</sub> bound to the migraine medication ergotamine, which is chemically related to the hallucinogen lysergic acid diethylamide (LSD).

In a related paper, a team led by Stevens and Eric Xu at the Van Andel Research Institute in Grand Rapids, Michigan, solved the structure of another serotonin receptor, 5-HT<sub>1B</sub>, bound to ergotamine. Differences between the structures show how similar drugs can have different biological effects.



## ECOLOGY

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