

RESEARCH HIGHLIGHTS

Selections from the
scientific literature

PSYCHOLOGY

Young people resist bad news

Children and teenagers get better at learning from bad news as they grow older, according to a study by Christina Moutsiana and her colleagues at University College London.

Fifty-nine people aged 9 to 26 were asked how likely they thought they were to experience something bad, such as a car accident or burglary. The team then showed the volunteers actual probabilities for such events and asked them again.

The younger the volunteer, the worse he or she was at learning that a misfortune was more likely than previously believed. But if the chance of a bad experience was less likely than initially predicted, the good news got across to all ages. These results could explain why teens are inclined towards risky behaviour in spite of warnings.

Proc. Natl Acad. Sci. USA
<http://doi.org/nv5> (2013)

GENE REGULATION

RNA boosts genes on a loop

Bits of a gene that don't code for protein can regulate that gene's expression as a loop of RNA.

Ling-Ling Chen, Li Yang and their colleagues at the Shanghai Institutes for Biological Sciences in China examined a class of 'introns' — sequences that reside in the protein-coding portion of genes but get snipped out of the RNA template before the protein is made.

Some introns formed circles that were abundant in the nucleus and, unlike other reported circular RNAs, did not associate with small regulatory RNAs. Reducing

levels of the circular intronic RNAs, many of which were unique to human cells, reduced expression of the parent genes. *Mol. Cell* <http://doi.org/nv6> (2013)

NEUROSCIENCE

Lit neurons show sleep patterns

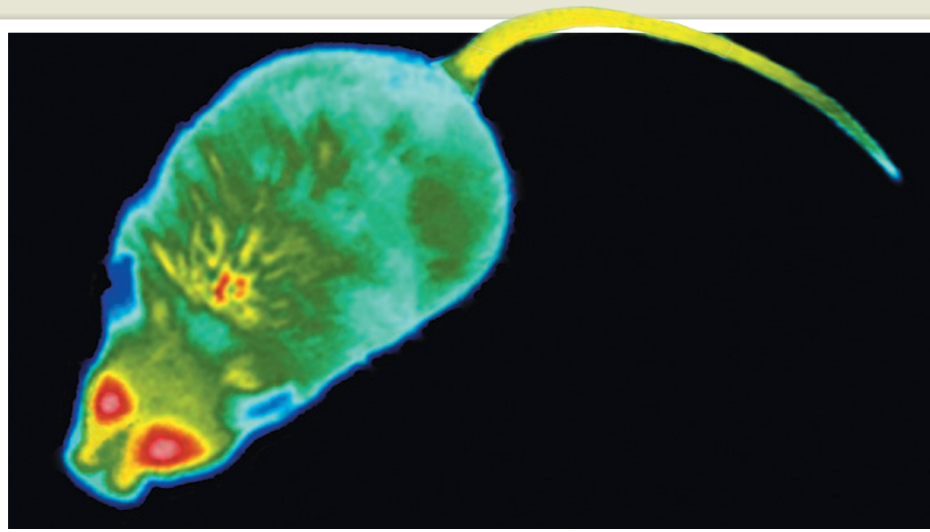
Experiments within living brains have revealed key neurons that control a stage of deep slumber called rapid-eye movement (REM).

In mouse studies, scientists led by Antoine Adamantidis of McGill University in Montreal, Canada, engineered a group of neurons so that they could be

controlled by external pulses of light in the brain region linked to REM sleep. The neurons make a peptide called melanin-concentrating hormone (MCH).

Activating these cells with light increased the likelihood that mice entered REM sleep and extended its duration by 47%. Silencing the neurons reduced the quality of REM sleep (as measured by brain waves called theta oscillations) but did not shorten it.

The neurons may increase the stability of REM sleep by suppressing neighbouring neurons linked to arousal and wakefulness, the authors say. *Nature Neurosci.* <http://doi.org/nw7> (2013)



AMY WARNER

METABOLISM

Thyroid disease tips body's thermostat

Some unexpected effects of thyroid hormone on blood vessels could explain why people with thyroid disorders often feel too hot or too cold.

Jens Mittag of the Karolinska Institute in Stockholm and his colleagues found that mice with a mutation in a thyroid-hormone receptor burn fat at a higher rate than normal, but show no increase in their body temperatures.

Thermal imaging revealed that the mutant

mice lost more heat than usual through their tails because the tail arteries were not constricting properly. This, in turn, boosted the rate at which the mice burned brown fat — an effect that was reversed when the mice were given a drug that stimulates blood-vessel constriction.

Proc. Natl Acad. Sci. USA <http://doi.org/nv7> (2013)

MICROBIOLOGY

Termite turns to its dung for defence

A species of termite protects itself from fungal infection by using the faeces lining its nest to cultivate bacteria.

Colonies of *Coptotermes formosanus*, a subterranean termite, are constantly exposed to pathogens such as the fungus *Metarhizium anisopliae*. For years, researchers have been trying to exploit the fungus to stop *Coptotermes* from chomping through wooden structures, but the insects have evolved several ways of resisting the pathogen.