

# RESEARCH HIGHLIGHTS

Selections from the scientific literature

## ASTRONOMY

### Fresh look at Galactic rim

A survey has provided the most detailed look yet at a mysterious ring of stars at the fringes of the Milky Way.

Using data from the Pan-STARRS1 telescope in Hawaii, Colin Slater and Eric Bell at the University of Michigan in Ann Arbor and their colleagues show that the Monoceros Ring appears as wispy stellar streams emerging from the Milky Way's outer disk.

There is debate over how the ring was created, with theories suggesting that it is either a part of the Galactic disk that was warped by the influence of nearby dwarf galaxies or the remnants of a dwarf galaxy that was unfurled in an encounter with the Milky Way. Neither scenario explains all the details seen in the survey, however, suggesting that the models need improving.

*Astrophys. J.* 791, 9 (2014)

## NEUROSCIENCE

### Brain scans predict TV hits

Brain activity measured in just a few individuals watching television programmes might predict whether large populations of viewers will find the shows interesting.

Jacek Dmochowski at Stanford University in California and his colleagues used functional magnetic resonance imaging (fMRI) or electroencephalography (EEG) activity to follow brain activity in groups of up to 16 young adults watching a previously aired episode of drama programme *The Walking Dead*



(pictured) or advertisements broadcast during American football Super Bowl games.

The extent to which neural responses to the stimuli were shared between the small experimental groups correlated with the amount of social-media activity or positive audience ratings that the broadcasts had originally elicited from large audiences. Such neural reliability may be a useful tool in targeting

education or marketing activities to specific groups, the authors suggest. *Nature Commun.* 5, 4567 (2014)

## OCEAN SCIENCES

### Breaking icebergs blast out noise

Iceberg disintegrations make the oceans noisier for months, and in the low frequencies that might affect marine mammals.

Researchers led by Haru Matsumoto at Oregon State University in Newport studied ocean hydrophone recordings from across the Southern Hemisphere. They found that

noise levels rose throughout the southern Pacific Ocean for 1.5 years after two huge icebergs disintegrated near Antarctica between 2007 and 2009. The signal was detected even north of the equator. *Geochem. Geophys. Geosys.* <http://doi.org/txf> (2014)

## BIOENGINEERING

### Rodents made see-through

The whole body of a rodent can be rendered transparent for imaging, without damaging cells and proteins. Previous techniques for



## CLIMATE SCIENCE

### Rubbish is a burning problem

Open burning of rubbish contributes more than a trillion kilograms of carbon dioxide and other greenhouse gases to the atmosphere, but is often not included in national emissions estimates.

Christine Wiedinmyer, at the National Center for Atmospheric Research in Boulder, Colorado, and her colleagues estimated global waste-burning emissions on the basis of factors such as national population sizes, income and waste production and collection. They calculated that the CO<sub>2</sub> generated by open

waste burning is equivalent to 5% of reported global anthropogenic emissions in 2010. In some countries, such as Mali and Sri Lanka, these emissions exceed those reported by the United Nations.

Emissions from burning rubbish are currently not accounted for in climate and air-quality models, so could explain some discrepancies between observed levels of pollutants and those estimated by models. *Environ. Sci. Technol.* <http://doi.org/txh> (2014)

BEN HORTON/NATIONAL GEOGRAPHIC/CORBIS

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