

for transmission electron microscopy. They imaged influenza viruses and cells in their native state. *Nature Commun.* 6, 7384 (2015); *Nano Lett.* <http://doi.org/5gp> (2015)

## CHEMISTRY

## X-rays make molecular movie

Researchers have made a film of a molecule's structural changes during a chemical reaction.

A team led by Michael Miniti at the SLAC National Accelerator Laboratory in Menlo Park, California, used a powerful free-electron laser to fire ultrafast X-ray pulses at the ring structure of 1,3-cyclohexadiene as it opened up to form the linear molecule 1,3,5-hexatriene. The scattered X-rays provided structural snapshots roughly every 80 femtoseconds during the 200-femtosecond reaction (1 femtosecond is  $10^{-15}$  seconds). Using these results and theoretical calculations, the team worked out the most likely path for the reaction.

The technique could reveal new reaction mechanisms, the authors say.

*Phys. Rev. Lett.* <http://dx.doi.org/10.1103/physrevlett.114.255501> (2015)

## ANIMAL BEHAVIOUR

## Kangaroos are lefties

Kangaroos that use two legs to jump have a strong preference for which hand they use to scratch themselves, suggesting that pronounced handedness is not uniquely human.

Yegor Malashichev of Saint Petersburg State University, Russia, and his team observed seven species of marsupial (including kangaroos) in Australia — three that walk on four legs and four species that are bipedal. They found that two kangaroo species

mostly used their left forelimbs for actions such as grooming (pictured is an Eastern grey kangaroo, *Macropus (Macropus) giganteus*). Red-necked wallabies (*Macropus (Notamacropus) rufogriseus*), which move on two legs, generally used their left forelimb for fine manipulation tasks, such as feeding, and the right forelimb for actions requiring greater physical strength, such as holding up branches when feeding.

Four-legged animals did not exhibit handedness, suggesting that two-legged locomotion is a prerequisite for this characteristic. *Curr. Biol.* <http://doi.org/5jh> (2015)

## PLANETARY SCIENCE

## Polar winds blow on Titan

Electrically charged particles stream away from Saturn's moon Titan, escaping into space in a similar way to Earth's polar atmosphere.

Titan's thick hydrocarbon haze is unique in the Solar System. Andrew Coates of University College London and his colleagues used the Cassini spacecraft to detect charged particles in Titan's uppermost atmosphere and deep space. Particles flowed away from the moon, along magnetic field lines that extended more than 17,000 kilometres from Titan.

The work explains how 7 tonnes of atmospheric molecules manage to escape from Titan every day. *Geophys. Res. Lett.* <http://doi.org/5jg> (2015)

## GEOPHYSICS

## An island's ups and downs

An island off the coast of Chile lurched upward during earthquakes in 1835 and 2010, but subsided in between.

Such events provide a rare look at how Earth's crustal plates respond throughout an entire earthquake cycle.

## SOCIAL SELECTION

Popular topics on social media

## Curiosity over computer fact-checker

A computational fact-checker that can sort truth from fiction caught the attention of the online science community this week. Researchers at Indiana University in Bloomington mined Wikipedia's information boxes, which summarize key facts, to create a 'knowledge graph' of 3 million people, places and things. The resulting algorithm then used that knowledge to gauge the truth of statements that were presented to it, such as "Rome is the capital of Italy", with nearly the same accuracy as humans. The researchers acknowledge that the source material is not 100% reliable, as online commenters also noted. William Gunn, head of academic outreach for the research-management tool Mendeley in California, tweeted that the results might be different if the algorithm had been built using a different body of knowledge: "Wonder what this would look like using sci pubs as a knowledge graph?"

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Informatics researcher and lead author

Giovanni Ciampaglia says that the team plans to use other sources of information to improve the fact-checker.

*PLoS ONE* 10, e0128193 (2015)

Just after the 1835 quake, Robert FitzRoy of the HMS *Beagle* noted that seaweed and mussels had lifted as much as 3 metres above the shoreline of Santa Maria island. Now, a team led by Robert Wesson of the US Geological Survey in Denver, Colorado, has collected data from other old surveys and modern satellite measurements of the same island.

The scientists found that the island's height above sea level dropped by about 1.4 metres between 1835 and 2010, before rising 1.8 metres during the later quake. This suggests that strain builds up erratically where the Nazca and South American tectonic plates collide, indicating that the seismic activity in that region is more complicated than scientists had thought.

*Nature Geosci.* <http://dx.doi.org/10.1038/ngeo2468> (2015)

## CLIMATE-CHANGE ECOLOGY

## Plant diversity declines in the dry

The number of plant species in a California grassland area has dropped since 2000 as the area has become more arid — an

indication of how such ecosystems might respond to climate change.

Susan Harrison and her colleagues at the University of California, Davis, monitored plant diversity at 80 sites across a 27-square-kilometre area from 2000 to 2014. They found that the number of species at the sites and across the study area decreased over time, particularly in the number of native annual flowering plants. The decline in diversity correlated with diminishing precipitation during winter, when the annual plants are seedlings. The team did not find links between the fall in diversity and other possible causes such as fire, invasive species or nitrogen levels.

A reduction in precipitation is predicted for this area as the climate warms, so such biodiversity losses could signify future extinctions. *Proc. Natl Acad. Sci. USA* <http://dx.doi.org/10.1073/pnas.1502074112> (2015)

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