

RESEARCH HIGHLIGHTS

Seismic storms

Geophys. Res. Lett. **34**, L14304 (2007)

Thunder really does make Earth move. The acoustic shockwaves unleashed by a thunderstorm can excite seismic tremors in the ground, say Ting-Li Lin and Charles Langston of the University of Memphis in Tennessee.

It is not the audible crash that does most of the shaking, however, but the associated rumble on the threshold of hearing, in the low-frequency infrasound range. Lin and Langston used a seismic sensor array housed in 0.2-metre-deep boreholes to pick up the tremors created by two thunderclaps in the spring of 2006. They say that thunder could provide a convenient natural source for mapping out the seismic vibration profile of an earthquake monitoring site.



MEDICAL MODELS

Humanized livers

Nature Biotechnol. doi:10.1038/nbt1326 (2007)

Scientists have constructed an improved mouse model for studying human liver cells.

The liver breaks down foreign substances such as drugs. Studying its cells gives insight into drug toxicity as well as liver diseases such as hepatitis. But it's difficult to culture human liver cells, so scientists have created mouse models whose own liver cells die to 'make space' for transplanted human cells.

Previously available models suffered from practical difficulties, so Markus Grompe of the Oregon Health and Science University in Portland and his colleagues set about making a better one. They bred mice deficient in a key liver enzyme, and then treated them with a protein that further damages their livers. In these mice, transplanted human cells taken from live patients or cadavers multiplied extensively. Cells harvested from these 'humanized livers' could then be cultured or serially transplanted into other mice for further expansion.

NITROGEN CYCLE

Attack of the nitrogen fixers

Global Change Biol. doi:10.1111/j.1365-2486.2007.01410.x (2007)

Scruffy green invaders have colonized the islands of Hawaii and are boosting their production of greenhouse gases, new research confirms.

The invader is a tree named *Morella faya* (pictured right). This plant's ability to convert

atmospheric nitrogen into biologically useful compounds has given it a competitive edge over many native species. Previous work has suggested that *M. faya* has been increasing local soil nitrogen cycling and the concentration of nitrogen in the forest canopy.

Sharon Hall of Arizona State University in Tempe and Gregory Asner of the Carnegie Institution in Stanford, California, expanded on this work by coupling measurements of soil nitrogen with remote sensing of upper-canopy nitrogen oxide concentrations in Hawai'i Volcanoes National Park. These concentrations imply that the tree has pushed up regional nitrous and nitric oxide emissions 16-fold since its first occurrence in the park 40 years ago.



CHEMISTRY

Getting the right version

Science **317**, 496–499 (2007)

Mirror-image versions of some molecules — called chiral — are not structurally identical, and ensuring that only one version is produced in a chemical reaction is often a problem. One way is to use a metal catalyst attached to a ligand molecule that is also chiral.

Ligands are normally attached to metal catalysts by strong covalent bonds, but Dean Toste and his colleagues at the University of California at Berkeley have successfully used negatively charged ligands that are only weakly ionically attracted to the positively charged metal. This means that a small group of charged ligands could make a vast number of existing metal-catalysed reactions chiral selective.

Toste reports three different gold-catalysed transformations that gave more than 90% yield of one chiral product.

BIOMEDICINE

Be still my beating heart

Cell **130**, 247–258 (2007)

Heart-pounding action may pack a thrill, but researchers have shown that getting rid of a protein involved in adrenaline's control of heart rate allows mice to live longer and have healthier hearts. This protein, known as type 5 adenylyl cyclase (AC5), could become a new target for anti-ageing therapies.

Together with their colleagues, Stephen Vatner and Junichi Sadoshima at the New