RESEARCH HIGHLIGHTS

Selections from the scientific literature

PARTICLE PHYSICS

Antihydrogen held captive

Hot on the heels of last year's breakthrough, in which physicists briefly captured antihydrogen atoms, comes a 5,800-fold increase in the length of time that atoms of the elusive substance can be trapped.

Researchers working on the ALPHA experiment at CERN, Europe's particle physics laboratory near Geneva in Switzerland, used a magnetic trap to hold a small number of antihydrogen atoms, which consist of a positron orbiting an antiproton, for as long as 1,000 seconds. The achievement may enable studies of the energy levels of antihydrogen, and allow comparison of the properties of matter with antimatter.

Nature Phys. **doi:10.1038/nphys2025 (2011)**

For a longer story on this research, see go.nature.com/fmv4yc

ANTHROPOLOGY

Dinner date in Madagascar

Humans seem to have reached Madagascar many centuries earlier than previously thought.

Dominique Gommery at the French National Centre for Scientific Research in Paris and his colleagues discovered cut marks on bones from pygmy hippopotamuses found in the Anjohibe Cave in the north-west of the island. Although the researchers could not directly date the bones, other samples from the layer in which they were uncovered dated to around 4,000 years ago.

The oldest cut marks known on the island before this were found on bones from the other end of the island that were estimated to be about 1,500 years younger. The Anjohibe bones suggest an earlier human presence and interaction with local fauna.

C.R. Palevol 10, **271–278 (2011)**

J.-P. CLATOT/AFP/GETTY

GLACIOLOGY

Glacier modelling can reduce risks

Last year, a large, water-filled pocket in the Tête Rousse Glacier of the French Alps threatened to burst and flood the valley below. On an urgent request by local authorities, scientists quickly developed a model to assess whether draining the cavity would weaken the cavity roof and cause it to collapse. The model accurately predicted that draining would be safe.

Taking into account glacier geometry and the physical properties of ice, Olivier Gagliardini and his colleagues at the Joseph Fourier University in Grenoble, France, quantified a reasonably low risk of stress build-up that would burst the cavity during drainage. Measurements of glacial surface displacements taken during and after the successful drainage (**pictured**) confirmed the accuracy of the model's predictions.

Ice-flow models have become mature enough to be used in mitigating glaciological hazards, the team concludes.

Geophys. Res. Lett. **doi:10.1029/2011GL047536 (2011)**

CANCER

Probing for pancreatic cancer

Early-stage pancreatic cancer cells can be illuminated in live mice with infrared light.

Pancreatic cancer is one of the deadliest of human cancers, and is often diagnosed only in the later stages of the disease. Dieter Saur at the Technical University of Munich, Germany, and his colleagues found that pancreatic cancer cells in mice express higher levels of certain cathepsin proteins — which break down other proteins — than healthy cells do. The researchers injected a mouse model of the disease with an agent that emits near-infrared light when activated by these proteins. They then inserted a fluorescence-laser-microscopy probe into the animals to detect the light. The pattern of light emission differed between early- and late-stage cancer cells, and the researchers were even able to identify premalignant cells.

If this probe works in humans, it could be used for early screening of at-risk individuals, say the authors.

Proc. Natl Acad. Sci. USA **doi:10.1073/pnas.1100890108 (2011)**

PHOTONICS

Light threaded through tiny gap

When light passes through an opening smaller than half its wavelength, it tends to spread out or 'diffract' — a feature that is problematic to researchers developing