

RESEARCH HIGHLIGHTS

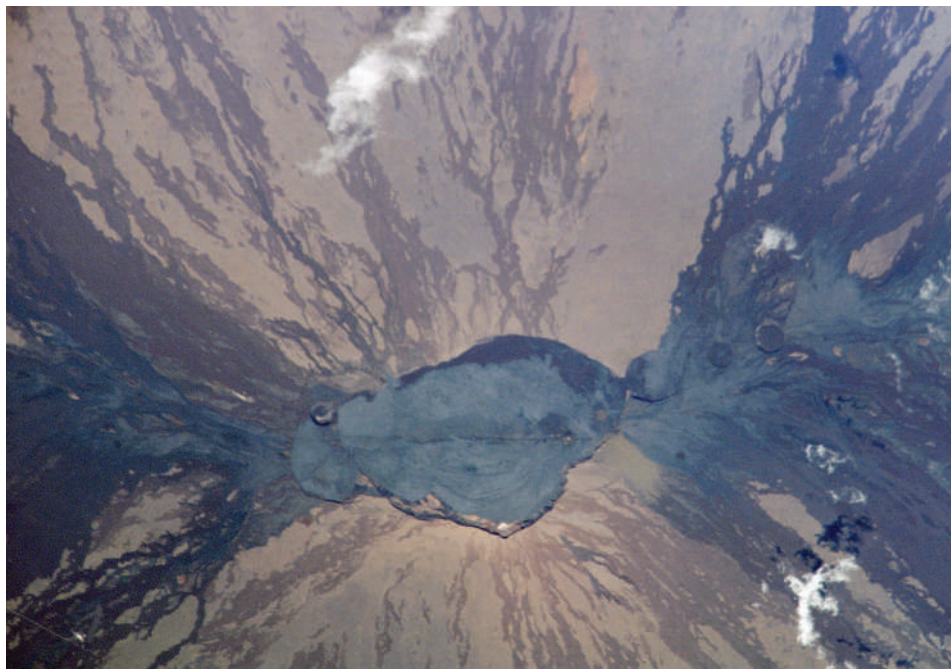
A bigger bang

Geochem. Geophys. Geosyst. doi:10.1029/2005GC001086 (2006)

Mauna Loa (pictured), the world's largest volcano, is even more enormous than thought, a recent study suggests.

Submersible dives and seafloor mapping studies yielded a new underwater map of Mauna Loa's western flank, including ten submarine vents where only one was known before. The data suggest that its 1877 underwater eruption, which made the surface of a nearby bay boil, was much larger than thought.

If so, the volume of Mauna Loa's historical eruptions is 10% greater than previously believed, contradicting the theory that this Hawaiian volcano is dying, say Dorsey Wanless of the University of Hawaii in Honolulu and colleagues. The volcano last erupted in 1984.



NASA/SPL

CIRCADIAN BIOLOGY

Periodic regulation

Mol. Cell 22, 375–382 (2006)

The circadian feedback loop known as the biological clock has recently been indirectly implicated in cancer development.

Researchers have now provided more direct evidence, by showing that a gene called *Per1*, a key component of the circadian clock, regulates growth and DNA damage in human cancer cells.

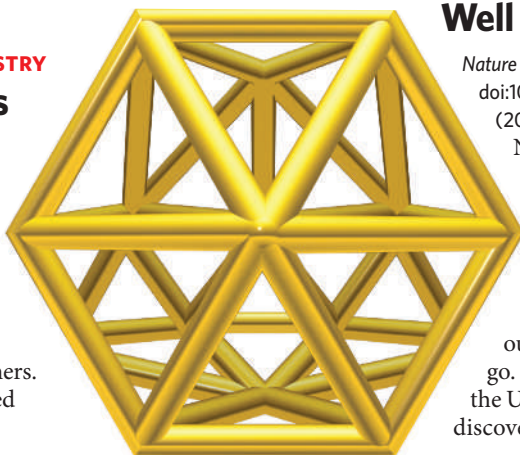
A team led by Sigal Gery at the University of California, Los Angeles, reports that overexpression of *Per1* interferes with the cell's complex molecular defences against the cancer-inducing effects of ionizing radiation. What's more, the group found reduced levels of *Per1* in human cancer patient samples.

PHYSICAL CHEMISTRY

Goldenballs

Proc. Natl Acad. Sci. doi:10.1073/pnas.0600637103 (2006)

Forming football-shaped molecules is no longer the sole preserve of carbon atoms, say researchers. Now gold has joined the game.



CELL BIOLOGY

Well sorted

Nature Struct. Mol. Biol. doi:10.1038/nsmb1098 (2006)

Newly made proteins need to find their way to the right places in the cell. To do this, they carry a molecular address label spelling out where they should go. Now, a team in the United States has discovered a molecular

Theory predicted that a few dozen gold atoms could naturally order themselves into a structure similar to carbon-60 'buckyballs', but early experiments showed that groupings of 32 or more atoms resembled little more than a tangled gold nugget.

Now Lai-Sheng Wang of Washington State University, Richland, Xiao Cheng Zeng of the University of Nebraska, Lincoln, and their team have examined clusters of 20 gold atoms or less and found a wide range of naturally occurring arrangements — from pyramids to gold cages (pictured below).

The authors believe the cages could be used to hold single atoms of various types, potentially useful in nanotechnology applications.

courier that reads labels and helps to deliver proteins to an exclusive location in the cell's nucleus.

Sharon Braunagel of Texas A&M University and her colleagues studied proteins destined for the inner of the two membranes bounding the nucleus. They discovered another protein, called importin- α -16, that identifies these molecules and delivers them, possibly by hitching a lift on one of the cell's motor proteins.

PLANETARY SCIENCE

Magnetic sunscreen

Astron. Astrophys. 451, L43–L46 (2006)

An asteroid's colour may reveal whether it has a magnetic field to shield it from the ageing effects of the solar wind.

Space rocks are darkened and reddened by the stream of ions from the Sun. But the surface of Vesta, the second-largest asteroid known in our Solar System, is surprisingly pristine.

Simulating this process in the lab, Pierre Vernazza of the Paris Observatory, France, and colleagues exposed a meteorite, thought to originate from Vesta, to ions in the lab to show that its parent should indeed be substantially more weathered than it appears. They suggest that the asteroid must have a magnetic field of at least 0.2 microtesla at its surface, a few hundred times smaller than Earth's own field, which diverts the damaging ions.

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