Researchers led by Kathryn Meurs of the Ohio State University in Columbus have sequenced the cat equivalents of genes that can cause the human disease if they are spelt incorrectly.

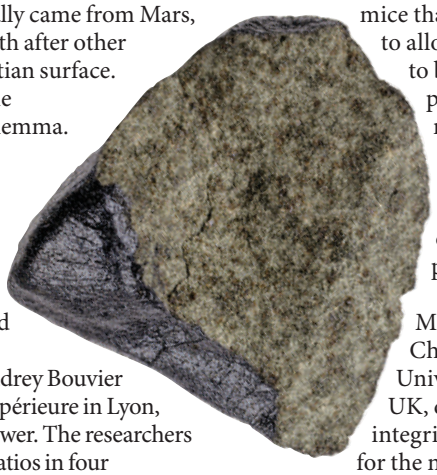
The team now reports that a mutation in the cat equivalent of one of these human genes, known as *MYBPC3*, can also cause the feline form of the disease. The finding suggests that Maine Coons could provide the first useful large animal model for studies of this disease.

METEORITICS

Rocks' clocks reset

Earth Planet.Sci. Lett. doi:10.1016/j.epsl.2005.09.007 (2005)

Planetary geologists have long known that a rare group of meteorites known as SNCs (pictured right) originally came from Mars, and were blasted to Earth after other space rocks hit the martian surface. But one type of SNC, the shergottites, posed a dilemma. Dating of the rocks had suggested they were roughly 180 million years old. However, the red planet shows no widespread signs of having been bombarded that recently.



NATURAL HISTORY MUSEUM

Now a team led by Audrey Bouvier of the Ecole Normale Supérieure in Lyon, France, may have an answer. The researchers measured lead isotope ratios in four shergottite samples found them to be much older than believed — 4 billion years, an age consistent with the lack of recent cratering on the martian surface.

The previous, isotope-based dating may have given younger ages because acidic groundwater percolated through the rocks in the relatively recent past, resetting their isotopic clocks, the team suggests.

ORGANIC CHEMISTRY

Get shorty

Angew. Chem. Int. Edn **44,** 7549–7553 (2005)

Where molecules are concerned, chemists can be merciless. They have put carbon–carbon single bonds on the rack before, seeing how far they can be stretched. Now Deborah Huntley of Saginaw Valley State University in Michigan and her colleagues apply the thumbscrews, compressing C–C bonds to uncomfortable extremes.

Normal C–C single bonds are about 0.154 nanometres long. Using quantum chemical methods, the researchers propose molecules that they predict have C–C bonds as short as 0.132 nanometres. This shortening was achieved by putting simple alkanes into molecular cages or by sandwiching the bonds within highly constrained hydrocarbon frameworks.

CELL BIOLOGY

Protein shake-up

J. Cell Biol. **171,** 717–728 (2005)

Integrins are proteins that help attach cells to their extracellular matrix. They also help to transmit external signals into cells, and ensure that the mobile molecules involved in cell signalling pathways are positioned in the right place at the right time.

β_1 integrin is known to be crucial for the normal development of embryos. Using mice that were engineered to allow the β_1 integrin gene to be switched off at particular times, researchers now show that this integrin is also required for the normal development of mammary glands in pregnant adult females.

The team, headed by Matthew Naylor and Charles Streuli from the University of Manchester, UK, demonstrated that β_1 integrin is, in addition, crucial for the mouse's ability to nurse her young.

OPTOELECTRONICS

A little light on the matter

NanoLetters doi:10.1021/nl051811+ (2005)

Miniature organic light-emitting diodes (OLEDs), some as small as 60 nanometres across, could help scientists to make light work of nanoscale tasks. The tiny lights, their inventors say, may prove useful for quantum communication or in photopatterning nanomaterials.

The OLEDs, made by Zakya Kafafi and her colleagues at the Naval Research Laboratory in Washington DC, rely on a light-emitting polymer called MEH–PPV. The polymer is packed inside cylindrical nanoholes etched about 100 nanometres deep into a film of silicon nitride. Each cylinder acts as an independent OLED.

Tests showed that the nanodiode's electrical and light-emitting properties are much like those of a larger reference OLED.

JOURNAL CLUB

H. Eugene Stanley
Boston University, Massachusetts

A physicist ventures into the no-man's-land of water to find the source of its unusual properties.

Instead of behaving like other liquids, water acts as if there were mathematical singularities in its thermodynamic properties such as compressibility and specific heat. These abnormalities appear at about −45 °C, where such functions would become infinite in value.

Water has such wide importance that scientists from many disciplines (including this author) seek a coherent explanation for this unusual behaviour. Indeed, in July, *Science* included water on its list of the 125 most important open questions in science today.

One theory that promises to unify all of water's strange properties is the liquid–liquid (LL) critical-point hypothesis: it says that liquid water possesses a critical point, below which it can switch from one phase, a high-density liquid, to another phase, a low-density liquid. The LL critical-point hypothesis has received a generous amount of theoretical support, but experimental proof has remained elusive because the LL critical point appears in the 'no-man's-land' of temperatures where bulk water is always frozen.

Recently, Sow-Hsin Chen's team at the Massachusetts Institute of Technology in Cambridge succeeded in probing these low temperatures, using the clever trick of confining water to nanopores so narrow that the liquid could not freeze. The researchers discovered a transition between two dynamic behaviours known as fragile and strong, suggestive of the two phases (L. Liu *et al. Phys. Rev. Lett.* **95,** 117802; 2005).

Since then, Chen and members of my group have collaborated to show that the experimental results are best explained by the existence of a critical point (L. Xu *et al. Proc. Natl Acad. Sci. USA* **102,** 16558–16562; 2005) — so, at last, there is clear evidence of the LL critical point.