is one prong; an organocatalyst developed to move single electrons is the other.

The light-activated ruthenium catalyst creates an alkyl halide radical; the aldehyde is dealt with by the organocatalyst; and the reactants are brought together with precision so as to give most of the product the desired handedness. The reaction is easy to perform and broadly applicable, say the authors, and will make life easier for those developing new drugs.

GENETICS

Sweet longevity

Proc. Natl Acad. Sci. USA **105,** 13987–13992 (2008)

Variations in a gene that mediates responses to insulin are associated with longevity in humans, researchers have found.

Bradley Willcox of the Pacific Health Research Institute in Honolulu, Hawaii, and his colleagues looked for links between longevity and variations in five genes involved in insulin signalling and which had previously been suggested to have a link with ageing. The researchers used samples from more than 600 Japanese-American men: 213 who had lived to at least 95 years of age, and 402 who had died before the age of 81.

Variation within one of the genes, *FOXO3A*, was associated with longevity. Those with two copies of a particular version of the gene reported fewer health problems and were nearly three times more likely than those with just one copy to live to the age of 98.

MOLECULAR IMMUNOLOGY

Friendly antibodies

Science 321, 1343–1346 (2008)

The gene *Rfv3* has long been known to protect mice against the 'Friend' retrovirus, but its mechanism has proved elusive.

Warner Greene at the University of California, San Francisco, Kim Hasenkrug at Rocky Mountain Laboratories in Hamilton, Montana, and their co-workers show that the effect comes from *Rfv3*'s role in editing the RNA transcript of the gene *Apobec3*. By intervening in this pathway, they reduced the number of neutralizing antibodies against Friend virus that mice made, and increased their subsequent mortality.

The researchers suggest that this throws light on the importance of the action of the HIV protein Vif on *APOBEC3* in humans, which they think accounts for the poor neutralizing antibody responses generally seen in HIV infection.

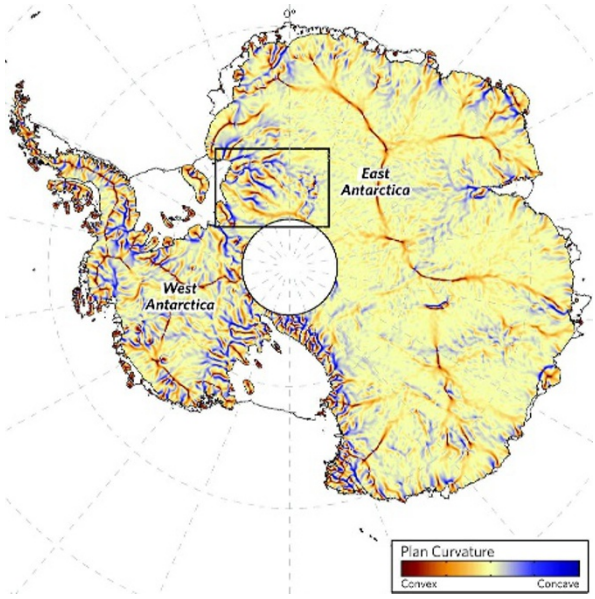
GLACIOLOGY

Judge a basin by its cover

Geophys Res Lett. doi:10.1029/2008GL034728 (2008)

A study of ice-surface shape adds to evidence that a significant part of the East Antarctic Ice Sheet (EAIS) sits on sediments below sea level, which would tend to make it less stable.

Anne Le Brocq of Durham University, UK, and her colleagues studied the 'plan curvature' — a measure of the sinuousness of contours — of the ice sheet. The plan curvature depends on the dynamics of the ice in a way that reveals the depth and deformability of the underlying surface. From this analysis, the researchers suggest that the Recovery Glacier may be sitting on saturated sediments more than 1,000 metres below sea level (area marked on map, below). If this part of the EAIS were lost owing to instability, it would raise sea levels globally by at least 2.6 metres.



A. M. LE BROCQ *ET AL.*/AM. GEOPHYS. UNION

ASTROPHYSICS

Cloudy skies

Astrophys. J. **684,** 364–372 (2008)

Christopher Thom of the University of Chicago in Illinois and his colleagues used a high-resolution spectrometer at the Keck Observatory in Hawaii to look at stars in the direction of a cloud called Complex C to assess its distance from Earth.

The spectra of some stars showed absorption lines that could be ascribed to the cloud, proving that they lay behind it; the spectra of others had no such feature. Because the distances to the stars are known, this provided a bracket for the distance to the cloud. Subsequent estimates of its mass suggest that it could be a significant source of fresh material to the galactic disc.

JOURNAL CLUB

Michael K. Richardson
Leiden University, the Netherlands

A developmental biologist highlights potential pitfalls of using stem cells that can 'remember' their origins.

For me, embryos are beautiful and their development is endlessly fascinating. They are experts at making new tissues, and accomplish this by using stem cells. Stem cells can develop into mature tissues such as bone or muscle; but, cleverly, some of their progeny remain in an undeveloped state, forming reserve supplies that remain in our bodies into adulthood.

Adult stem cells are found in tissues where cell populations are constantly being renewed, such as the testes, hair follicles and bones. We replace our entire skeleton every decade or so, and rely on stem cells in our bones to do this. Stem cells also have an important role in repair, swinging into action to deal with broken bones and other mishaps.

A recent study in mice yielded remarkable evidence that some of these adult stem cells remember where in the embryo they came from. Jill Helms and her colleagues at Stanford University in California grafted stem cells from one bone into another to see whether they would help repair fractures in the 'wrong' location. Stem cells transplanted from leg bones into fractured jaws failed to produce new bone (P. Leucht *et al. Development* **135,** 2845–2854; 2008). Interestingly, the uncooperative stem cells continued to express a gene, *Hoxa11*, that acts as a kind of embryonic 'postcode' for the leg.

These findings have broad implications. They validate the concept of non-equivalence — that seemingly identical cells differ if they come from different places in the embryo — first enunciated by Julian Lewis and Lewis Wolpert in the 1970s, and show that it holds in the adult. More pragmatically, if some stem cells also have positional memory, doctors may need to make sure that they take stem cells from the right location to heal damaged tissues.

Discuss this paper at **http://blogs.nature.com/nature/journalclub**