diving-board. They then measured the extra bend, due to gravity, when a second mass was temporarily brought directly beneath the gold.

NEUROSCIENCE

Location, location, location

Neuron **59,** 125–137 (2008)

Researchers studying anaesthetized adult gerbils fitted with earphones report that the neurotransmitter GABA calibrates the processing system that locates a sound's origin.

Ursula Koch and Anna Magnusson of LMU Munich in Germany and their co-workers considered the lateral superior olive (LSO), a nucleus in the gerbil brainstem where information from both ears converges. They played different sound volumes through the right and left earphones and administered chemicals that stimulate or block GABA receptors. This revealed that GABA released by neurons in the LSO adjusts the balance of excitation and inhibition experienced by the same neurons as a result of signals from each ear.

Excitatory nerve terminals seemed to be more strongly affected by GABA, which suggests that neurons in the LSO tend to 'turn down' excitatory input. This would increase auditory sensitivity on the side of the animal that a sound is coming from.

ASTRONOMY

Bright origins

Astrophys. J. **681,** 1035–1045 (2008)

Astronomers have found that vast stores of hot gas in the areas between clusters of gravitationally bound galaxies do form stars, though not many. The gas falls into one of the cluster's bright central galaxies, where it cools and condenses enough for star formation. This process was thought to be negligible in the present-day Universe.

Christopher O'Dea from the Rochester Institute of Technology in New York and his colleagues considered data from 62 of these central galaxies, from which they estimate that 1–10% of the gas contributes to star birth. X-ray emissions served as a proxy for the amount of hot gas falling in, and infrared emissions as a proxy for new stars being formed. Some mechanism, the authors suggest, keeps the gas from cooling completely — perhaps a supermassive black hole in the galactic core, or the new stars themselves.

INFECTIOUS DISEASE

DARC matters

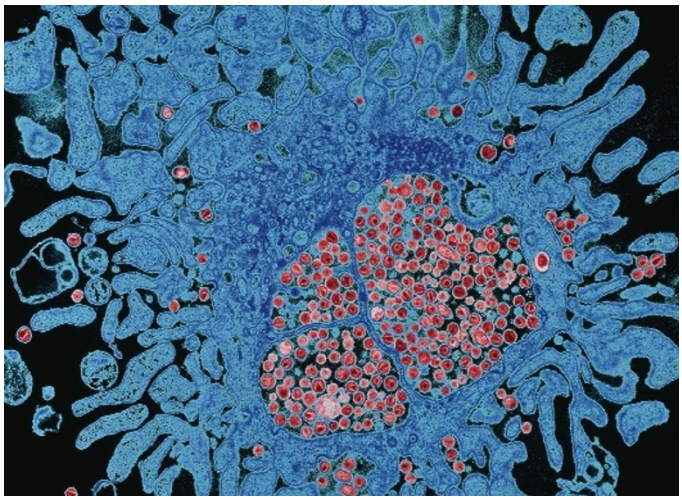
Cell Host Microbe **4,** 52–62 (2008)

A mutation that makes Africans resistant to a form of malaria renders them more vulnerable to HIV infection, researchers have found.

The mutation halts the expression of the protein DARC in red blood cells, where it normally occurs on the surface. Almost all black Africans carry this mutation, which confers resistance to the benign, recurring malaria caused by the parasite *Plasmodium vivax*.

Sunil Ahuja of the University of Texas Health Science Center in San Antonio and his colleagues analysed blood samples from more than 3,400 African Americans and discovered that the DARC mutation is associated with a 40% increase in the risk of acquiring HIV. However, HIV-infected participants with the DARC mutation also survived an average of two years longer than those without it.

The image (below) shows an immune cell known as a T lymphocyte full of newly manufactured HIV particles (red).



H. GELDERBLOM/GETTY IMAGES

CHEMISTRY

Easy bonding

Angew. Chem. Int. Edn doi:10.1002/anie.200802164 (2008)

Many drugs contain compounds with fluorine–carbon bonds, as do tracers used in positron-emission tomography (PET), a medical imaging technique. Producing these compounds is tricky and involves harsh conditions. Now, Tobias Ritter and his colleagues at Harvard University in Cambridge, Massachusetts, have worked out how to perform the fluorination reaction at room temperature.

They developed a palladium catalyst that can replace a boronic acid group on an aromatic ring with fluorine. The catalyst has nitrogen-containing ligands that make it resistant to attack from aggressive fluorination reagents. Other chemical groups on the ring do not interfere with the reaction, and the carbon–fluorine bond forms in the final step. That is important for making PET tracers because the fluorine isotopes used for PET have short half-lives.

MOLECULAR BIOLOGY

WHAMM!

Cell **134,** 148–161 (2008)

A protein called WHAMM helps shuttle other proteins between compartments in mammalian cells by interacting with two components of the cell skeleton, researchers have found.

Matthew Welch, Kenneth Campellone and their colleagues at the University of California, Berkeley, found that WHAMM mediates the transport of proteins between the endoplasmic reticulum and the Golgi apparatus. The researchers mapped distinct regions of the protein that interact with the membranes of the Golgi, and with two constituents of the cell's internal skeleton: actin and microtubules.

Both raising and lowering the amount of WHAMM in human cells disrupted the Golgi's structure and interfered with the transport of a viral protein from the endoplasmic reticulum to the Golgi.

GENETICS

DNA potholes

Proc. Natl Acad. Sci. USA **105,** 9936–9941 (2008)

In living cells, palindromes in a DNA sequence often stall the DNA replication machinery when their two halves bind, making the strand loop outwards.

Such arrangements, in which similar or identical sequences sit close to each other but run in opposite directions, are hotspots for chromosome breaks that can cause disease. Using gel electrophoresis to analyse DNA at various stages of its copying, Sergei Mirkin of Tufts University in Medford, Massachusetts, and his colleagues showed that hairpin structures are made this way in living bacterial, yeast and primate cells.

The researchers think that when a hairpin forms, the lagging strand is left uncopied. This makes it more prone to breakage, and thus at greater risk of elimination from the genome.