

bacterium *Magnetospirillum gryphiswaldense* as it split into two. The dividing cell bends, presumably weakening the strength of the internal magnet to the point that it can be snapped in two. Meanwhile, another mechanism tugs the magnetosome chain towards the centre of the cell so that each daughter cell ends up with its own working magnet.

*Mol. Microbiol.* 82, 1316–1329 (2011)

For a longer version of this story, see [go.nature.com/hyweco](http://go.nature.com/hyweco)

## MATHEMATICS

## What da Vinci saw in trees

In his notebooks (pictured), the fifteenth-century Italian polymath Leonardo da Vinci observed that the total cross-section of a tree remains the same along its height every time it branches. Physicists have searched for years for an explanation for this phenomenon, but have yet to find one that is widely accepted.

Christophe Eloy of Aix-Marseilles University in France shows that the observation follows from two assumptions — first, that trees are fractal, or self-similar in nature, and, second, that their growth is determined by the need to withstand wind stress on their branches. Eloy says that the most relevant property of wind loads is the way it diverges towards the tips of branches. Static loads from fruit, snow or ice would have a similar effect. *Phys. Rev. Lett.* 107, 258101 (2011)



T. LE MAGE/RMN (INST. FRANCE)

## ANIMAL BEHAVIOUR

## Frogs croak about their pad

The Emei music frog accurately tells potential mates about the structure and quality of the nest he has built through his calls.

Although females of some frog and bird species size up mates through male song, only human males were thought to vocally advertise their real-estate assets. However, research from Yezhong Tang at the Chengdu Institute of Biology in Sichuan, China, and his colleagues shows that calls made by male Emei music frogs (*Babina dauchina*) from inside nests differ in frequency and note duration from those made outside.

What is more, call characteristics were positively correlated with the area of the burrow entrance and burrow depth. More than 70% of females studied preferred calls made from inside nests. *Biol. Lett.* <http://dx.doi.org/10.1098/rsbl.2011.1091> (2011)

## CANCER BIOLOGY

## Sisterhood of lymphoma

A rare consequence of bone-marrow transplantation gave scientists the opportunity to observe the evolution of one cancer in two patients. Seven years after donating bone marrow and white blood cells called leukocytes to her sister, who was battling leukaemia, a woman was diagnosed with a cancer of the lymph nodes known as follicular lymphoma. Fewer than six months later, so was her sister.

David Weinstock at the Dana-Farber Cancer Institute in Boston, Massachusetts, and his colleagues found that the cells of both lymphomas looked identical. In addition to a few unique mutations in each lymphoma, the team also identified 14 mutations that

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## NETWORKS

## Control of the super-corporations

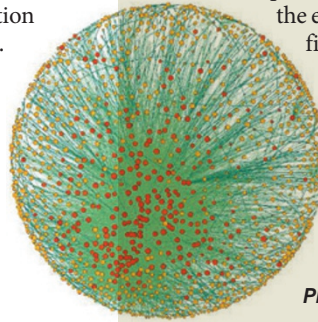
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The global economy is dominated by a small, tight-knit group of companies, according to a network analysis of 43,060 transnational corporations.

Stefano Battiston and his colleagues at the Swiss Federal Institute of Technology, Zurich, studied the linkages of control among these companies, where control is shareholding and ownership. The links form a structure that resembles a bow tie, similar to the structure formed when mapping all links on the World Wide Web. The knot of the bow tie — a group of intricately interlinked companies that essentially hold a majority share of one another (pictured) — is both surprisingly small and exceptionally powerful. The top 737 companies exert 80% of the control over the value of the entire network. Most of these companies are financial institutions. Barclays controls the greatest share of the network, at 4%.

The dense linkages at the bow tie's knot, the authors suggest, both protect the companies from market competition and make them prone to contagion during financial crises. The period's grim global economic news might help to explain the paper's popularity.

*PLoS ONE* 6, e25995 (2011)



were shared between the two cancers and a frozen sample of the leukocytes originally transplanted from the donor sister. Thus, both cancers originated in the donor sister, with some mutations occurring before transplantation and others developing afterwards. *Cancer Discov.* <http://dx.doi.org/10.1158/2159-8290.CD-11-0208> (2011)

## EVOLUTIONARY BIOLOGY

## Modern humans smell good

Did *Homo sapiens* benefit from the evolution of a fine sense of smell? Researchers who analysed the shape of fossil skulls from Neanderthals, modern humans and their ancestors say that the idea is plausible.

Markus Bastir at the Spanish National Museum of Natural Sciences in Madrid and his colleagues used

three-dimensional surface-shape analysis to measure the internal dimensions of 14 skulls. They found shape differences suggestive of larger olfactory bulbs and temporal lobes in the area where the base of the brain would have rested in *H. sapiens* compared with other hominins.

The temporal lobes are involved in emotion, memory and social functions, and receive direct input from the olfactory bulbs. Inflated size of both may reflect increased links between smell and social functions. This might have yielded survival advantages by promoting social learning and odour-related modulation of behaviour, tightening bonds between group members, say the authors.

*Nature Commun.* 2, 588 (2011)

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