

RESEARCH HIGHLIGHTS

Selections from the scientific literature

ECOLOGY

A look at backyard biodiversity

The choices city dwellers make when deciding which plants to cultivate in their gardens or yards could affect the function and health of the wider plant ecosystem.

Sonja Knapp at the Helmholtz Centre for Environmental Research in Halle, Germany, and her group compared the characteristics and diversity of plants in 137 residential yards with those of a nearby nature reserve. They found that yard plant species were more closely related to each other, shorter-lived, faster-growing and more likely to be self-pollinating.

As yard plants spread into natural habitats, the ability of those ecosystems to respond to environmental change could be reduced, the authors say.

Ecology <http://dx.doi.org/10.1890/11-0392.1> (2012)

ANIMAL BEHAVIOUR

Licking ants fight fungal infection

Healthy ants that rub up against infected counterparts or even lick pathogenic fungal spores off them may be immunizing themselves and, ultimately, protecting their whole colony.

Sylvia Cremer at the Institute of Science and Technology Austria in Klosterneuburg and her colleagues infected ants

(*Lasius neglectus*; pictured) with fluorescently labelled fungal spores (*Metarhizium anisopliae*) and released them among healthy members of their colony. The authors found that spores frequently transferred to healthy ants, resulting in low-level infection. Genetic analysis revealed that these minor infections upregulated a set of

immune-system genes that bolstered the ants' anti-fungal defences. Computer modelling suggests that this 'social immunization' actively stimulates the ants' immune systems, allowing the colony as a whole to fight infection. **PLoS Biol.** 10, e1001300 (2012)



M. KONRAD/IST AUSTRIA



MARKA/SUPERSTOCK

GEOLOGY

Hot tuff not so tough

Tuffs are volcanic rocks commonly used as building materials despite their notorious weakness — and at least one popular tuff could pose an even greater hazard in the event of a fire.

Michael Heap at the University of Strasbourg in France and his colleagues examined three types of tuff commonly used in buildings in the Neapolitan region of Italy (pictured). Two exhibited no reduction in strength after thermal stressing, but the most commonly used one,

known as Neapolitan yellow tuff, lost 80% of its compressive strength as temperatures reached 1,000 °C. This is explained by the fact that Neapolitan yellow tuff contains zeolite minerals that are sensitive to heat.

The team suggests that the results be considered in establishing regional fire codes and recommends similar tests for building tuff in other regions.

Geology 40, 311–314 (2012)

MOLECULAR BIOLOGY

MicroRNAs boost gene variation

Small RNA molecules that regulate and stabilize the expression of certain genes in humans may also promote and preserve variations in gene expression between individuals and ethnic groups.

Jian Lu and Andrew Clark at Cornell University in Ithaca, New York, examined the expression profiles of protein-coding genes that are influenced by microRNAs (miRNAs) and were obtained from multiple human populations. The authors compared these profiles with

those of genes not targeted by miRNAs. Expression of some of the miRNA-regulated genes varied little across populations, or between humans, chimpanzees and macaques. However, most differed from one individual to another and between ethnic groups.

Genome Res. <http://dx.doi.org/10.1101/gr.132514.111> (2012)

NANOTECHNOLOGY

Lasers sort particles by size

Gold nanoparticles have a range of biomedical uses, from detecting tumours to delivering drugs. However, their size is important because