

RESEARCH HIGHLIGHTS

Selections from the scientific literature

ASTRONOMY

From the Kuiper Belt to comets

A hunt for the smallest members of the Kuiper Belt — a disk of icy cold objects at the Solar System's edge — has revealed a potential source of local comets.

Hilke Schlichting at the University of California, Los Angeles, and her colleagues made use of the Hubble Space Telescope's Fine Guidance Sensors to search the Kuiper Belt. These sensors stabilize the telescope by watching distant stars, which are occasionally eclipsed by a passing Kuiper Belt Object. By trawling more than nine years' worth of data, the team found a single candidate for a new object just 530 metres across. Combining that result with a previous one, the team estimates that small objects in the Kuiper Belt are abundant enough to be the source of the short-period comets observed in the inner Solar System.

Astrophys. J. 761, 150 (2012)

PALAEOECOLOGY

Teeth speak of dietary change

The ecosystems of the Omo Valley in southern Ethiopia changed about 2.8 million years ago, causing a shift in the diet of herbivores towards C4 grasses. Such grasses exhibit a more efficient photosynthetic pathway than their more common C3 cousins.

Faysal Bibi of the Natural History Museum in Berlin and his colleagues found increased amounts of the isotope carbon-13 in the tooth enamel of two herbivores, the antelope *Tragelaphus nakuae* and the pig-like *Kolpochoerus limnetes*, after the 2.8-million-year mark. This points to a diet high in C4



ANIMAL BEHAVIOUR

Benefits of mixed flocks

Cooperation between species may be an overlooked factor in community organization.

Ecologists tend to assume that all of the species within a community are more different from one another than chance would predict, because competition precludes two species from sharing the same ecological niche. So mixed-species bird flocks are a puzzle: these groups, which contain birds of different species that all eat roughly the same food, seem to show species happily co-existing. According to an analysis of a global data set by Kartik Shanker at the Indian Institute of Science in Bangalore and his co-authors, the more similar two birds are by taxonomy, body size and foraging style, the more likely they are to be found together, especially where tropical mixed flocks are concerned.

The team suggests that this happens because cooperative benefits — such as those provided by alarm calls or the discovery of food resources — are best obtained from the most similar individuals.

Am. Nat. 180, 777–790 (2012)

plants, which accumulate more carbon-13 than do C3 plants.

The findings tally with evidence of a major environmental shift in Africa at the time, the authors say. However, they add that it is not yet clear whether the incoming C4 grasses replaced woodlands or C3 grasses.

Biol. Lett. <http://dx.doi.org/10.1098/rsbl.2012.0890> (2012)

ENVIRONMENTAL SCIENCE

Rivers' antibiotic resistance threat

Synthetic antibiotic-resistant genes have found their way into microorganisms in Chinese rivers.

Min Jin and Jun-Wen Li at the Key Laboratory of Risk Assessment and Control for Environment and Food Safety in Tianjin, China, and their colleagues extracted microbes from the water of six rivers. They then looked for lab-made DNA fragments called plasmid vectors, which are used as genetic tools to introduce and express particular genes in cells. In all six rivers, the authors found microbes containing genes from plasmid vectors widely used in biotechnology, as well as synthetic versions of the β -lactam antibiotic (*bla*) gene, which confers resistance to ampicillin.

The team warns that this plasmid-containing lab waste could be a source of animal and human antibiotic resistance.

Environ. Sci. Technol. <http://dx.doi.org/10.1021/es302760s> (2012)

ECOLOGY

When plants run the food chain

Some plants may offer snacks to attract carnivorous insects that provide a defence against herbivorous attackers.

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