whether it was a planet or a background star.

Now they have made follow-up observations and found a comparable object to the star's south-west, a clear sign that it is an orbiting planet. The planet's mass is roughly nine times that of Jupiter, and it has cut a swath through the disk of debris surrounding the young star.

The authors conclude that such gas giants can form early in a star's development. They also confirm that planets are one likely cause of irregularities in a young star's disk. **G.B.**

CHEMISTRY

Iodine improvement

Science **328,** 1376–1379 (2010)

Iodine has the potential to replace the toxic and rare metals used as catalysts in many reactions.

Certain reactions yield a mixture of two mirror-image, or 'chiral', products. To produce only one or other of these, iodine catalysts have generally been fitted out with a chiral aromatic ring. Now, Kazuaki Ishihara and his colleagues at Nagoya University in Japan demonstrate an extremely selective catalysis using iodine that is instead converted *in situ* to either IO^- or IO_2^-.

The resulting catalyst induced selectivity between chiral forms, successfully converting ketophenols to 2-acyl-2,3-dihydrobenzofurans with extremely high selectivity for one form. This shows the potential for iodine catalysts without aromatic rings to replace traditional transition-metal catalysts. **D.C.**

MICROBIAL ECOLOGY

Sated snakes

ISME J. doi:10.1038/ismej.2010.71 (2010)

For pythons, indulging in a meal not only distorts physique, it also reshapes microbial communities living in the gut.

Most studies of gut microbes focus on animals that eat frequent, small meals, but Rob Knight at the University of Colorado in Boulder and his colleagues wanted to know how the microbes respond to more extreme intakes. The team decided to study the Burmese python (*Python molurus*), which may have only one meal in a month.

After 30 days of imposed fasting, juvenile pythons tucked into rodent meals weighing one-quarter of their own body mass. Within three days of the meal, gut microbe populations shifted drastically: overall species diversity increased, and bacteria of the phylum Firmicutes began to outnumber those of the Bacteroidetes, which had dominated during the fast. **H.L.**

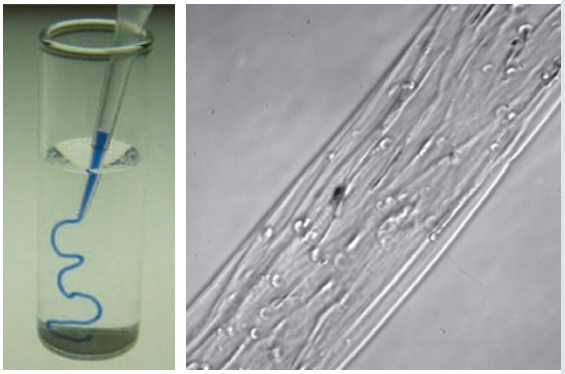
MATERIALS SCIENCE

Noodly appendages

Nature Mater. doi:10.1038/NMAT2778 (2010)

Chemists have cooked up bundles of nanometre-scale fibres that not only stretch and bend, but can be packed alongside cells.

Samuel Stupp and his colleagues at Northwestern University in Evanston, Illinois, created the noodle-like material (pictured left) by heating and then cooling peptide suspensions. Living cells could be embedded in the stringy matrix (right), from which individual strings could then be teased out using a pipette and salty solution. This offers an advantage over 'electrospinning' methods of nanofibre formation, in which the high electrical or mechanical energies involved would kill cells.



The authors showed that stem cells elongated preferentially along the direction of the fibres, and that the noodles also allowed heart cells to propagate electrical signals as if in a wire. The material could be a useful scaffold for medical researchers. **E.H.**

EVOLUTIONARY GENETICS

Vive la digits

Proc. R. Soc. B doi:10.1098/rspb.2010.1007 (2010)

Vertebrate sexual behaviour and other traits have been correlated with the ratio of the length of the second to the fourth digit, but what underlies the connection between sex hormones and digit ratio remains unclear.

In a study of 1,156 zebra finches, Wolfgang Forstmeier and his colleagues at the Max Planck Institute for Ornithology in Seewiesen, Germany, traced the association to a gene encoding an oestrogen receptor. Different versions of the gene explained about 11% of the variance in digit ratio and 2–5% of the variance in mating behaviour, measured in duration of mating song in males and, in females, number of hops towards males. The researchers think that the receptor may influence digit ratio by activating *HOX* genes, which regulate morphology. **A.K.**

JOURNAL CLUB

Ros Rickaby
University of Oxford, UK

A biogeochemist weighs up the climatic influence of CO_2.

Carbon dioxide constitutes a vanishingly small fraction of our atmosphere, but punches well above its weight in terms of greenhouse warming. So just how potent is it?

The geological record provides clues because, over time, Earth has oscillated between greenhouse and icehouse climates. But reconstructing coincident atmospheric CO_2 concentrations is notoriously difficult. Modelling and proxy calculations are starting to converge on a single picture of atmospheric CO_2 during greenhouse episodes, except for one fly in the ointment: estimates derived from the ratio of carbon isotopes in soil-precipitated carbonates are always higher than those derived from any other source.

Daniel Breecker, now at the University of Texas at Austin, and two co-workers confirm that these estimates are too large (D. O. Breecker *et al. Proc. Natl Acad. Sci. USA* **107,** 576–580; 2010). The numbers relied on measurements of CO_2 in soil pores, thought to reflect the growing-season mean. But the creation of soil carbonates is more likely during the driest and warmest parts of the growing season, when the release of CO_2 from plant respiration is at a minimum.

To understand the implications of this, think of a gin and tonic. If you have less gin than you thought, you must lower the amount of tonic to get the same tasty ratio. Likewise, because there is less carbon than we thought from plant respiration, we lower our estimate of atmospheric carbon to accord with the observed ratio. The newly calculated values align beautifully with the emerging consensus. A mere 1,000 parts per million by volume (just two and a half times current atmospheric levels and similar to those predicted for AD 2100) is sufficient to induce the hottest greenhouse conditions — such as those of the Mesozoic period 251 million to 65 million years ago. CO_2 truly is a heavyweight greenhouse gas.

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