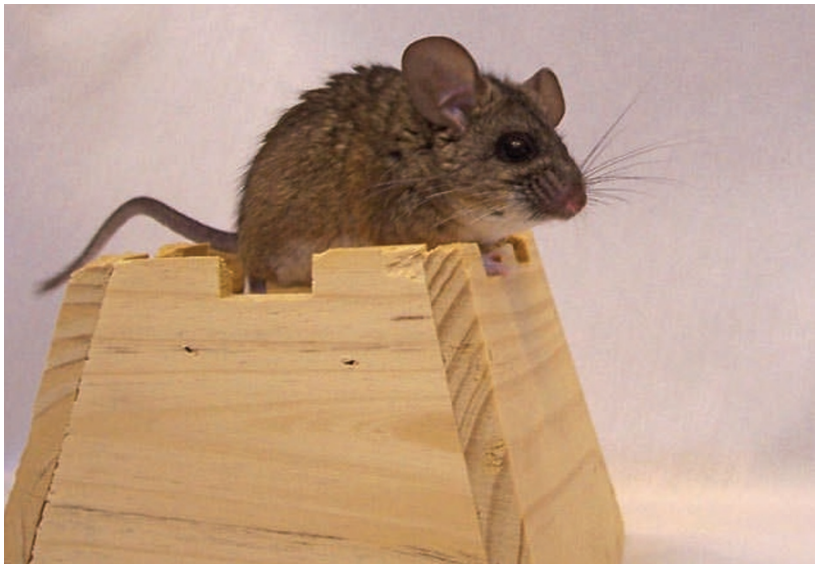
RESEARCH HIGHLIGHTS

BEHAVIOUR

Brain-changing battles

Proc. Natl Acad. Sci.USA doi:10.1073/pnas.1001394107 (2010)
Success in physical conflict can boost fighting ability in animals, possibly because of a post-bout release of testosterone. A study in a territorial species of mouse shows how the brain changes after several victories and that winning on home turf seems to enhance this effect.

Matthew Fuxjager at the University of Wisconsin, Madison, and his colleagues looked at the expression of androgen receptors, which respond to testosterone, in nine brain areas in captive California mice (*Peromyscus californicus*; pictured) that had won several territorial disputes. They found higher expression in three areas associated with social aggression, motivation and reward. But in two of these areas, expression was elevated only when the animals had fought in their own cages. These home-turf winners were more likely to win future encounters. **B.M.**



M. FUXJAGER

PLANT TAXONOMY

Flower and be counted

Proc. R. Soc. B doi:10.1098/rspb.2010.1004 (2010)
How many species of flowering plant are there? Around 400,000, estimate Stuart Pimm at Duke University in Durham, North Carolina, and his colleagues. They first modelled the pace of taxonomic research, knowing that as the pool of undiscovered species shrinks, taxonomists take more time to make the same number of discoveries. So changing rates of discovery per taxonomist hint at the number of unknown species. Then they asked experienced taxonomists how many species they thought were still undiscovered.

Both methods suggested that the number of unnamed species is about 10–20% of the number of described species and that many are likely to be rare, localized and under threat, the authors say. **E.M.**

ATMOSPHERIC SCIENCE

More rain or less?

Geophys. Res. Lett. doi:1029/2010GL042895 (2010)
Atmospheric aerosols such as black carbon that absorb solar radiation can affect precipitation in opposing ways: by heating up the atmosphere and decreasing precipitation, and by heating the ground surface and boosting it. To determine the overall effect, Yi Ming and his co-workers at the National Oceanic and Atmospheric Administration in Princeton, New Jersey, used a coupled general circulation–ocean model to simulate the response to increased black carbon levels.

They found that the net effect on global mean precipitation is slightly negative but is too small to outweigh the predicted 2–3% increase in global precipitation per degree of greenhouse warming. However, absorbent aerosols could have a more pronounced impact on patterns of wind and moisture circulation than carbon dioxide or aerosols that merely scatter solar radiation, the authors suggest. **Q.S.**

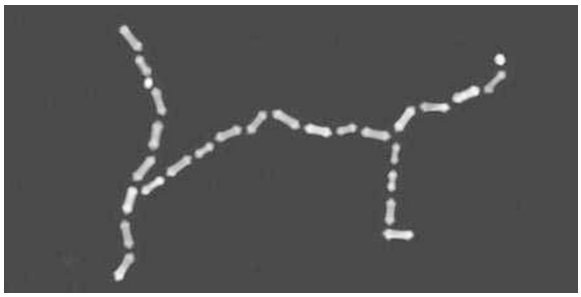
NANOSCIENCE

Polymerization to order

Science **329,** 197–200 (2010)
Making nanoparticles has become relatively straightforward, but assembling them into more complex structures in a predictable way has proved more difficult. Researchers have now modified gold nanorods so that they polymerize to form linear, branched and cyclical structures (pictured).

Eugenia Kumacheva at the University of Toronto in Canada, Michael Rubinstein at the University of North Carolina at Chapel Hill and their colleagues synthesized their nanorods with 'arrowheads' on each end that were then coated with polystyrene molecules. Another compound covered the sides of the rods to prevent side-by-side aggregation.

The rods linked up with each other end-to-end to form chains through the association of polystyrene molecules as the researchers adjusted the composition of the solvent to reduce the solubility of polystyrene. The authors were able to control the aggregation number and architecture of the structures. **C.L.**



SCIENCE/AAAS

IMMUNOLOGY

HIV in the cross hairs

Science doi:10.1126/science.1187659; doi:10.1126/science.1192819 (2010)
Newly discovered antibodies that can neutralize 90% of HIV-1 strains could aid the design of better vaccines.

Antibodies that act against such a wide spectrum of HIV-1 strains are rare. Peter Kwong and John Mascola at the US National Institutes of Health in Bethesda, Maryland, and their colleagues screened the antibodies generated by 25 million B cells from HIV patients for ones that bind to part of a viral envelope protein that is similar across strains and provokes an immune response.

The team found three antibodies that targeted a wide swathe of HIV-1 strains. Structural analysis of one antibody, VRC01, showed that it bound to the virus in a similar way to HIV's host cells — $CD4^+$ T cells. **H.L.**

For a longer story on this research, see go.nature.com/vYFcgY