# RESEARCH HIGHLIGHTS

*Selections from the scientific literature*

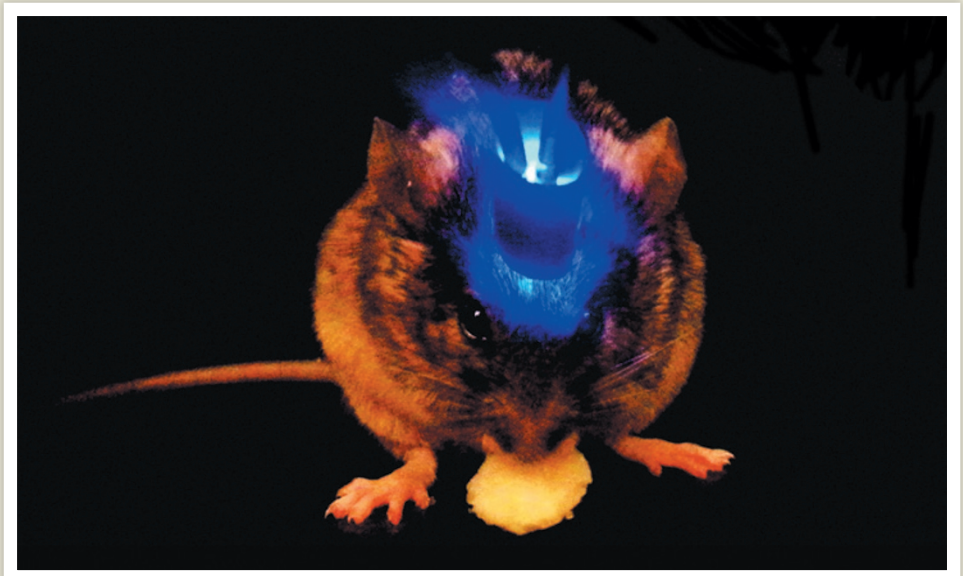
AGRICULTURE

## Easy to thresh and better to sow

When domesticating wheat, Neolithic humans preferred plants that kept the grain on the stalk until ripe. That not only made the crop easier to harvest, but also made it faster to separate grain from chaff.

Shahal Abbo at the Hebrew University of Jerusalem and his colleagues experimentally threshed nearly 200 types of wheat, including wild strains and traditional varieties. For wheat heads that did not shatter, threshing time was reduced by about 30% compared with more-brittle types. And for plants with resilient heads and weak husks, threshing time decreased by a further 85%. This resulted in many fewer broken kernels, making the seed more likely to be saved for future sowing.

Post-harvest processing, sometimes considered a barrier to the domestication of cereal crops, may have played an underappreciated part in promoting it, the authors say.
***Ann. Bot.*** 112, **829–837 (2013)**



JOSH JENNINGS

NEUROSCIENCE

## Hunger neurons hunted out

Scientists have revealed a key brain circuit that causes mice to eat uncontrollably.

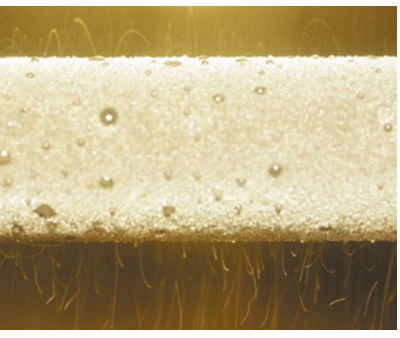
Garret Stuber at the University of North Carolina, Chapel Hill, and his colleagues manipulated a precise set of brain cells using optogenetics — a technology that lets scientists control neurons by shining light into living brains (**pictured**). The neurons that they studied connect two brain areas: the lateral hypothalamus, which is involved in eating behaviour, and the BNST, which collects input on 'motivational states' such as hunger and thirst.

When these neurons were activated, well-fed mice began to gorge and showed a marked preference for high-calorie food. When the cells were inhibited, even mice that were previously deprived of food refrained from eating.
***Science*** 341, **1517–1521 (2013)**

APPLIED PHYSICS

## Jumping droplets repel each other

Water droplets that form on strongly repellent surfaces often coalesce and leap off. When they do, they carry an electric charge that can be used to control them.



Evelyn Wang at the Massachusetts Institute of Technology in Cambridge and her colleagues observed that jumping droplets sometimes repel each other in the air (**pictured**). To learn why, they studied droplets coalescing on a superhydrophobic copper oxide nanostructure, and found that the droplets sometimes gain a small positive charge as they merge and leap into the air.

The authors suggest that this electrostatic effect could be exploited to remove or manipulate the droplets, and so produce surfaces that can be easily cleaned or de-iced.
***Nature Commun.*** 4, **2517 (2013)**

CANCER

## Tumour types have traits in common

Combining genomic data from tumours found in different organs has revealed previously unknown cancer-related genes, and has led to a system for classifying tumours that could predict a patient's response to therapy.

In recent years, studies of cancer genomics have focused on mapping the genetic changes that contribute to the disease. Rameen Beroukhim of the Broad Institute in Cambridge, Massachusetts, and his colleagues analysed how the number of copies of genes varied across almost 5,000 tumours representing 11 kinds of cancer. The team found 140 genome regions in which copy-number variations were associated with cancer. Of those, 102 contained no known cancer-related gene, suggesting a suite of new cancer drivers.

In related work, Chris Sander and his colleagues at

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