

## PHYLOGENY

### Many non-crop grasses bear salt

Although breeding salt-tolerance in crops is tricky, the trait has evolved many times in grasses — the family to which most crops belong.

Tom Bennett at the Australian National University in Canberra and his colleagues examined the family tree of 2,684 grasses and found that salt tolerance had independently evolved 76 times, indicating that its establishment does not require exceptional circumstances.

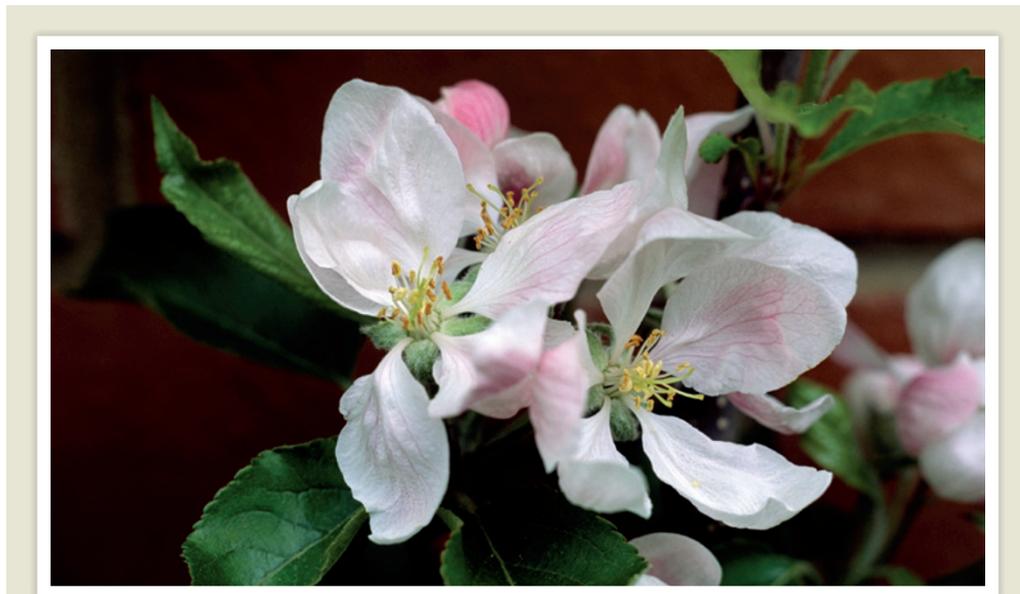
The authors suggest that the limited genetic diversity in modern crops could be a reason why breeding salt-tolerant varieties of cultivated plants has been troublesome. *Biol. Lett.* 9, 20130029 (2013)

## CONDENSED MATTER

### Atomic collapse on carbon sheets

The wonder material graphene has been used to confirm a long-standing prediction of quantum mechanics: that electrons in super-heavy atoms can spiral into the nucleus and away again, an effect known as atomic collapse.

Michael Crommie at the University of California, Berkeley, and his team assembled artificial super-heavy nuclei by depositing calcium ions on a graphene surface. Electrons behave as if they are massless in graphene's flat sheets of carbon atoms, and follow rules of relativistic quantum mechanics. This allowed the authors to detect the electronic signature of collapse for the artificial atoms using a scanning tunnelling microscope. The authors say that atomic collapse could one



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## BOTANY

### Bacteria blossom in apple flowers

Surveys of microbe populations on plants have stuck mainly to leaves, but research now shows that flowers of apple trees (pictured) harbour a diverse and changing population of microbes.

Jo Handelsman at Yale University in New Haven, Connecticut, and her colleagues sequenced the DNA of microbes residing on the flowers of six apple trees at five points in their flowering cycle. In total, the authors identified 1,677 types of bacterium and archaeon.

From buds to petal-fall, six microbial groups colonized and dominated in succession. Although prevalent taxa produced the successional pattern, transient and rare taxa were behind tree-to-tree variation.

The team also found that the antibiotic streptomycin — which is used to control blight on commercial apple farms — lowers diversity, but does not affect the sequence of succession. *mBio* 4, e00602-12 (2013)

day be relevant for electronic devices.

*Science* <http://dx.doi.org/10.1126/science.1234320>

## CELL BIOLOGY

### Membranes protrude to fuse

Whether it is an egg and sperm joining during fertilization or bone cells merging during development, cell fusion may start with a neighbourly poke.

Elizabeth Chen and her team at Johns Hopkins University in Baltimore, Maryland, found a way to induce fusion in a cell line that

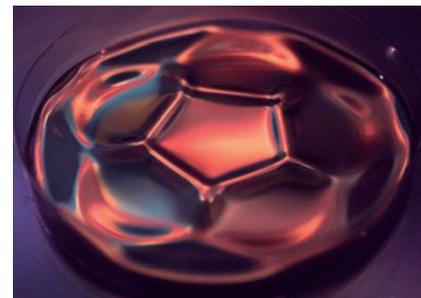
does not normally fuse. When proteins involved in membrane fusion and cytoskeletal remodelling were expressed in these cells, the cells pushed finger-like appendages from their membranes by linking up subunits of actin — a protein required for cell movement and structure. This allows proteins at the tips of the 'fingers' to make direct contact with adjacent cells. The authors suggest that such actin-based appendages may be a general mechanism used by cells to initiate fusion.

*Science* <http://dx.doi.org/10.1126/science.1234781> (2013)

## WAVE DYNAMICS

### Shaking oil into stars

By vibrating a shallow layer of oil, physicists have created standing wave patterns that



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