Paul Rothemund of the California Institute of Technology in Pasadena, Gregory Wallraff of the IBM Almaden Research Center in San Jose, California, and their colleagues now show that DNA, folded origami-style into triangles measuring 127 nanometres on each side, can slot neatly into matching depressions carved onto a silica surface.

In principle, each chunk of DNA origami can be attached to an individual molecule such as a conducting nanowire or a fluorescent protein. As a result, these structures offer a way to control the positioning and orientation of single molecules using straightforward lithographic techniques.

BIOLOGY

Following in the wake

Phys. Rev. Lett. **103,** 078102 (2009)

Fish can sense subtle differences in water pressure and velocity using the lateral line, a collection of sense organs that run the length of their bodies. So far, most research into this capability has been limited to the sensing of simple oscillating objects. Jan-Moritz Franosch of the Technical University of Munich in Germany and his colleagues now show how fish detect more complex disturbances — the orientation of ring-shaped vortices left in the wake of other fishes.

The authors modelled the stimulus expected from a vortex ring passing a fish's lateral line and compared this with recorded neuronal responses from a fish fixed in place and subjected to passing vortices. The recordings fit the model's predictions. Information on the orientation of vortices should allow fish to track the movement of other animals — and perhaps a meal — the authors argue.

PHYSICS

Trip the light magnetic

Science **325,** 973–976 (2009)

Researchers have coaxed the tiny particles known as quantum dots to change their magnetic properties simply by shining light on them. The finding is another development in the quest to produce 'spintronic' devices that rely on particles' spin states, rather than their charge, to convey information.

By adding manganese to a chemical suspension, or colloid, of cadmium selenide quantum dots, Daniel Gamelin at the University of Washington in Seattle and his co-workers were able to manipulate the particles' magnetism in new ways. Earlier work had had to be done at ultracold temperatures; the colloidal suspension permitted the particles to power up strong magnetic fields, retaining magnetic signatures even at room temperature.

The researchers say that future steps might include incorporating colloids into nanoparticle manufacturing technologies to see what other effects occur.

PLANT BIOLOGY

The other garden path

Cell **138,** 738–749 (2009)

There is more than one way to flower. In the thale cress, *Arabidopsis thaliana*, the well characterized *FT* gene encodes a pro-flowering protein that travels from leaf to shoot in response to changes in day length.

Now, Detlef Weigel and his colleagues at the Max Planck Institute for Developmental Biology in Tübingen, Germany, show that another pathway regulated by microRNAs — molecules that prevent translation of messenger RNAs into proteins — can stimulate flowering independently of daylight cues.

They find that levels of microRNA-156 decline as the plant ages, parallelling a rise in expression of the genes it seems to silence. The products of these genes, called SPLs, set off floral development.

GEOSCIENCE

Ground down

Nature Geosci. doi:10.1038/ngeo616 (2009)

Glaciers are often said to be better than rivers at eroding the land, in part because of the dramatic landscapes they leave behind. But Michele Koppes of the University of British Columbia in Vancouver, Canada, and David Montgomery at the University of Washington in Seattle challenge this belief.

E. WELTY/AURORA PHOTOS

By compiling global data on erosion rates from glacial and non-glacial environments, they show that both ice and water flows can erode rock at up to 10 millimetres per year in areas of rapid tectonic uplift.

It seems that tectonics controls erosion rates from both rivers and glaciers, they say, and claims that glaciers erode faster are largely explained by incomplete data.

JOURNAL CLUB

Paul Riley
University College London

A molecular cardiologist looks into getting to the heart of his inner fish.

Newts do it, fish do it, but sadly humans and other mammals cannot repair or regenerate damaged heart tissue as adults.

Despite the modern-day promotion of healthier lifestyles (such as bans on smoking in public places and pro-fitness campaigns in the run-up to London 2012), cardiovascular disease is still on the up worldwide and, not unlike swine flu, is a true pandemic that respects no borders. As a result, and for some time now, I and others have been asking how we might become more newt-like or fish-like and repair our own hearts after a heart attack.

We have favoured looking at small resident progenitor cells which, when stimulated, might make new heart muscle and blood vessels. But a study by Bernhard Kühn and his colleagues at the Children's Hospital Boston in Massachusetts shows us another way (K. Bersell *et al. Cell* **138,** 257–270; 2009).

They simply asked whether or not existing heart muscle can be instructed to divide and make more of the same. Apparently it can, with the help of the epidermal growth factor neuregulin (famed for its role in the nervous system), and its Erb4 receptor. While under the influence of neuregulin, some mature heart cells in mice disassemble their scaffold, re-enter the cell cycle, divide and regenerate injured muscle.

Of course, the devil is in the detail: the trick, it seems, is to have not only plenty of neuregulin, but also more heart muscle cells with one nucleus instead of two, because only the former responded to the growth factor. Unfortunately, this presents something of a conundrum where mammals are concerned. Mammalian heart-muscle cells generally become binuclear shortly after birth. Thus, for a complete fix, we are left heading back in the direction of the drawing board.

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

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