

# RESEARCH HIGHLIGHTS

Selections from the scientific literature

## STEM CELLS

### Telomeres help cells to commit

Stem cells have trouble assuming a specialized identity if their telomeres, the protective caps on the ends of their chromosomes, are short.

Pluripotent stem cells can become any cell type in the body, and are known to require long telomeres to grow normally. A group led by Lea Harrington, formerly at the University of Edinburgh, UK, reports that telomeres are also important for stem cells to differentiate into other cell types. They found that mouse embryonic stem cells with experimentally shortened telomeres did not differentiate stably, and that the pluripotency gene *Nanog*, which is normally silenced during differentiation, was abnormally active in these cells. In addition, the chemical modifications to DNA that normally stabilize differentiation were disrupted throughout the genome.

Telomere length might also have a role in differentiation of cancer stem cells in the body, the authors suggest.

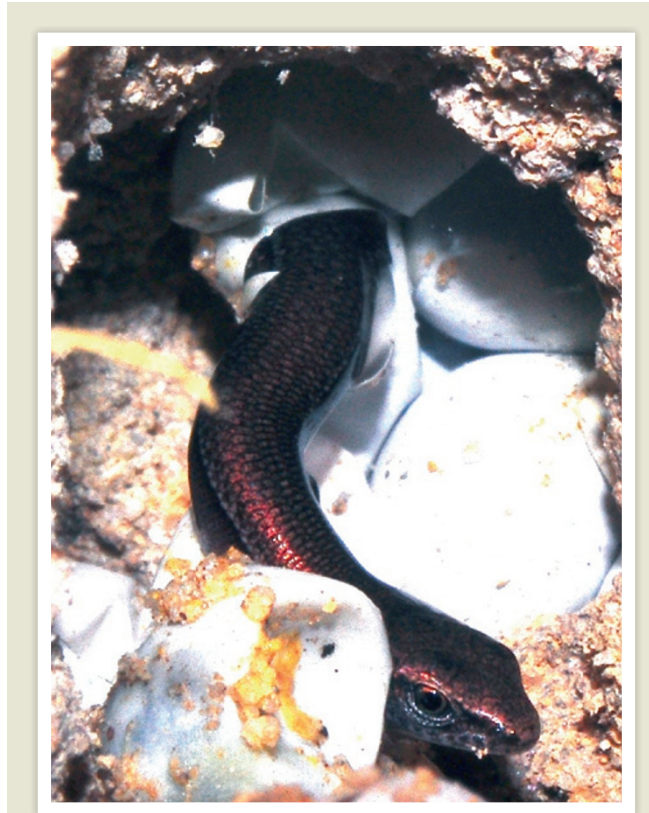
*Cell Stem Cell* 12, 479–486 (2013)

## PSYCHOLOGY

### Here's looking at you

When humans cannot tell where gaze is focused, they assume that people are looking at them.

Isabelle Mareschal, now at Queen Mary University of London, and her team asked volunteers to determine where the gazes of computer-generated faces were directed. When the true direction of the gaze was obscured by pixelating the eyes, all six observers



## ANIMAL BEHAVIOUR

### Lizards hatch early to flee

On sensing predators, developing delicate skinks (*Lampropholis delicata*, pictured) burst from their eggs and, in one fluid motion, sprint about 40 centimetres and dive for cover.

Sean Doody and Phillip Paull at Monash University in Clayton, Australia, poked, pinched and dropped skink eggs to simulate predator attacks. The duo found that threatened embryos escape their eggs several days earlier than unperturbed siblings. However, hatching early comes with a cost. Compared with spontaneously hatching skinks, hatchlings under threat leave more yolk behind and their bodies are about 4% shorter.

Although similar behaviour has been reported in amphibians, fish and invertebrates, this is the first report of reptiles hatching early in response to perceived predation.

*Copeia* 2013, 159–164 (2013)

believed the gaze was directed towards them — even if the eyes or faces were rotated to the left or right.

Although it is not clear whether this gaze bias is learned or innate, it could prove

useful in anticipating social interactions. Conditions such as autism have been linked to abnormal gaze behaviours, the authors note.

*Curr. Biol.* <http://dx.doi.org/10.1016/j.cub.2013.03.030> (2013)

## SOLID-STATE PHYSICS

### Diamonds tick like atomic clocks

Flaws in diamond crystals could make precise timekeeping more convenient.

Today's most accurate timekeeping standards are kept by clocks that contain hard-to-manufacture atomic gases. These clocks are usually placed only in specialist laboratories or on satellites, where their signals are used for applications such as communication and navigation. Dirk Englund, now at Massachusetts Institute of Technology in Cambridge, and his colleagues propose a scheme for keeping time using a diamond containing a nitrogen impurity. This defect has an oscillating electronic spin state that could be detected from the light it emits when excited by a laser, and therefore could provide a timekeeping signal. A device that relies on diamond chips would be more portable than atomic clocks, as well as easier to integrate into solid-state manufacturing.

*Phys. Rev. A* 87, 032118 (2013)

## GEOLOGY

### Quake linked to drilling

Waste water from oil and gas drilling that was pumped underground may have set off a magnitude-5.7 earthquake in the central United States.

In November 2011, a series of quakes near Prague, Oklahoma, could be felt across 17 states. A team led by Katie Keranan at the University of Oklahoma in Norman analysed the aftershocks to see how faults ruptured. Of three segments to break in the fault network, the first was located

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