GLACIOLOGY

Greenland glaciers have hidden depths

Greenland's glaciers may be more susceptible to global warming than was thought.

Eric Rignot of the University of California, Irvine, and his colleagues used sonar to analyse the depths and profiles of three glaciers terminating in fjords in western Greenland. They found that the glaciers reach hundreds of metres farther down into the ocean than current maps suggest, allowing the ice to come into contact with a deep layer of warm Atlantic water. This leads to melting and the formation of deep cavities that probably boost the chances of large glacier chunks breaking off.

The authors note that these processes are not included in current ice-sheet models, and suggest that estimates of Greenland's contribution to sea-level rise will need to be increased.

Geophys. Res. Lett. **http://doi.org/6dn (2015)**

LIVIA CARVALHO

PALAEONTOLOGY

Lizards evolved at snail's pace

Lizards of the Caribbean islands have changed little over millions of years.

Only three fossils of *Anolis* lizards have previously been studied, but now Emma Sherratt at the University of New England in Armidale, Australia, and her colleagues have analysed a further 17 fossils entombed in amber (**pictured**) from the Dominican Republic. The specimens, which are 15 million to 20 million years old, revealed that the animals were uniquely adapted to the different parts of the trees that they inhabit, much as they are today. For instance, lizards that lived on twigs tended to be small with short limbs.

ETTORE MORONE

Other fossils resembled larger lizards that live near the base of tree trunks and those found around the crowns of trees.

The findings suggest that communities can remain remarkably stable over long evolutionary timescales.

Proc. Natl Acad. Sci. USA **http://doi.org/6hk (2015)**

GEOPHYSICS

Ancient roots of Earth's magnetism

Earth may have developed a magnetic field as early as four billion years ago — more than half a billion years earlier than was thought.

John Tarduno at the University of Rochester in New York and his colleagues measured faint magnetic signals of iron-bearing minerals trapped inside zircon crystals up to four billion years old from the Jack Hills region of Western Australia. They found that the magnetic field fluctuated in strength, from a value similar to today's field (around 25 microteslas) to about 12% of that.

An ancient magnetic field when the planet was only about 500 million years old would have been a good, if imperfect, shield against the solar wind. This could have made the young planet more hospitable to life, the authors say.

Science 349, **521–524 (2015)**

MATERIALS

Scaling up pure graphene growth

Researchers have found a way to grow and transfer crystals of graphene more efficiently compared with other methods.

Pure graphene comprises one-atom-thick sheets of carbon that have desirable electronic properties, and is best made by stripping a single layer of atoms off a graphite crystal. However, the process is hard to scale up for industrial use and other, more scaleable methods introduce contaminants. So Christoph Stampfer at RWTH Aachen University in Germany and his colleagues synthesized a layer of graphene on copper, and used a compound called hexagonal boron nitride to peel the graphene off and transfer it to another substrate. This yielded crystals with fewer flaws than those made using other techniques, and the copper could be used again to produce more graphene.

The resulting material has electronic properties that rival the best graphene made by other, less scaleable methods, the authors report.

Sci. Adv. 1, **e1500222 (2015)**

SOCIAL SELECTION

Popular topics on social media

A way to solve irreproducibility?

A growing backlog of psychology findings that have never been reproduced has shaken confidence in the field. One possible remedy is to require PhD students to replicate at least one study from their own specialism as part of their education, write UK psychologists Brian Earp and Jim Everett in an opinion piece in *Frontiers in Psychology*. "Best suggestion I've heard [with respect to] the replication crisis in psychology. Plus seems like just smart pedagogy," tweeted Jonathan LaTourelle, a PhD student in the philosophy of cognitive science at Arizona State University in Tempe. But ethicist Owen Schaefer at the University of Oxford, UK, suggested in a comment on a blog post that the proposal could end up "disproportionately burdening" graduate students.

Front. Psychol. **http://dx.doi.org/10.3389/fpsyg.2015.01152 (2015)**

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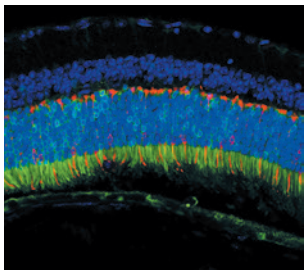
VIROLOGY

Ancestral virus for gene therapy

An ancient virus reconstructed by researchers could make gene therapy more efficient.

Viruses are used in such therapies to deliver functioning genes to diseased cells in the body, but better viruses are needed to transfer genes more efficiently. Luk Vandenberghe of the Massachusetts Eye and Ear Infirmary in Boston and his colleagues analysed the amino-acid sequences of the proteins that coat 75 adeno-associated viruses (AAV), 5 of which are being tested in human gene-therapy trials. They predicted how the structure of these proteins might have evolved, and came up with protein sequences for 9 AAVs that might have been ancestors of the current viruses. They synthesized the ancient AAVs and found that one, Anc80, could efficiently transfer genes to muscles and the retina in mice (**pictured**), and to the liver in both mice and monkeys.



Anc80 did not trigger any negative side effects in these animals that would prevent it from delivering genes to cells.

Cell Rep. **http://doi.org/6j6 (2015)**

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