

1913 to 2012, comparing simulations with and without greenhouse gases, aerosols and other climate drivers. Their results show that aerosols have offset 1.3–2.2°C of Arctic warming from greenhouse gases, limiting the observed warming to 1.2°C. With aerosol emissions projected to drop in the coming decades, the rate of the warming is likely to increase.

The team says that its results underscore the reliability of the climate models, which simulate 8.3°C of warming in the Arctic in a high-emissions scenario by the end of the century. *Nature Clim. Change* <http://dx.doi.org/10.1038/nclimate2524> (2015)

## ANIMAL BEHAVIOUR

## Chimps learn new calls for food

Captive chimpanzees learn new grunts from neighbours to refer to foods — the first evidence of such behaviour in non-humans, according to a study.

To see whether chimps (pictured) show flexibility in the calls they use to refer to everyday objects, Simon Townsend at the University of Zurich, Switzerland, and his team compared the grunts of seven chimps that were moved from a safari park in the Netherlands to join six chimps in a UK zoo. A year after the move, the Dutch chimps referred to apples with a high-pitched call, in contrast to the deep-timbred grunts of the UK chimps. But after three years, the Dutch chimps had adopted their neighbours' calls.

The findings suggest that social learning of referential words in humans could have

a longer evolutionary history than was thought. *Curr. Biol.* <http://doi.org/zzd> (2015)

## NEUROSCIENCE

## Deep-brain zap for addiction

An electric current sent deep into the brain, together with a therapeutic drug, can reverse the symptoms of cocaine addiction in mice.

Christian Lüscher at the University of Geneva in Switzerland and his colleagues implanted an electrode into the brains of cocaine-addicted mice. Stimulating the animals' neurons at a low frequency only temporarily relieved symptoms of addiction after the mice were injected with cocaine. But when the researchers also gave the animals a drug that blocks receptors for the neurotransmitter dopamine — involved in addiction and reward — the symptoms abated for longer. Neural connections that were overactive because of cocaine exposure also functioned normally again.

The researchers say that this approach could be a potential therapy for humans with addiction and other neural disorders.

*Science* 347, 659–664 (2015)

## ANTHROPOLOGY

## Soggy climates affect language

In warm, moist climates, human languages developed with more complex linguistic tones than did those in colder, drier regions.

It is thought that language is not influenced by ecological factors. However, Caleb Everett at the University of Miami in Coral Gables, Florida, and his colleagues concluded the opposite after looking at studies of vocal-cord biology and comparing the geographic origins of more than 3,700 languages with the humidity and annual average temperatures of those regions. The vocal-cord data showed

## SOCIAL SELECTION

Popular articles on social media

## Lab size matters for productivity

To publish the most papers, labs should ideally have 10 to 15 members, according to a much-discussed study in *PeerJ PrePrints*. Adding more graduate students and postdocs beyond that number does not guarantee a continued rise in high-impact papers, the study found, partly because the extra workers tend to be much less productive than the principal investigator (PI). Mark Pallen, who heads a microbiology lab at the University of Warwick, UK, tweeted “Nice that PIs matter!” But Jessica Chong, a geneticist and postdoc at the University of Washington in Seattle, called it an “odd analysis” on Twitter, adding, “we expect PIs to ‘produce’ more papers than any other lab member. They’re authors on all papers!” *PeerJ Prepr.* 3, e812v1 (2015)



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that cords produce sounds of varying pitch more accurately in moist air than in dry air. Languages with complex tone, such as Mandarin Chinese, originated mainly in warm, moist climates, whereas languages such as English, which have little or no tone, came from arid or cold regions.

*Proc. Natl Acad. Sci. USA* 112, 1322–1327 (2015)

## EVOLUTION

## A hint at how hearing evolved

Early four-legged vertebrates may have been able to hear sounds on land, even though they lacked key ear structures.

Christian Christensen at Aarhus University in Denmark and his colleagues studied the hearing of the African lungfish (*Protopterus annectens*; pictured), the closest living relative of early tetrapods that began moving onto land around 350 million years ago.

The middle ear, which senses changes in air pressure caused by sound, is missing in lungfish. The researchers found that low-frequency sounds in air caused the lungfish's head to



vibrate. Its brain responded to these frequencies, suggesting that the animal detects airborne sounds using the vibrations.

Another study by some of the same authors looked at salamanders, which also lack middle ear structures and live in water and on land. The team showed that even juvenile salamanders, which are fully aquatic, can detect sound in air.

The findings suggest that early tetrapods were pre-equipped to hear sounds in air, which probably helped them to adapt to life on land and eventually led to more-modern middle ear structures.

*J. Exp. Biol.* 218, 381–387 (2015); *Proc R. Soc. B* 282, 20141943 (2015)

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