

## References

### Aktuell

VAN BOECKEL 2015

Thomas P. van Boeckel et al., *Global trends in antimicrobial use in food animals*. [PNAS 112 \(2015\), 5649–5654](#).

Thomas P. Van Boeckel, Charles Brower, Marius Gilbert, Bryan T. Grenfell, Simon A. Levin, Timothy P. Robinson, Aude Teillant & Ramanan Laxminarayan

Demand for animal protein for human consumption is rising globally at an unprecedented rate. Modern animal production practices are associated with regular use of antimicrobials, potentially increasing selection pressure on bacteria to become resistant. Despite the significant potential consequences for antimicrobial resistance, there has been no quantitative measurement of global antimicrobial consumption by livestock. We address this gap by using Bayesian statistical models combining maps of livestock densities, economic projections of demand for meat products, and current estimates of antimicrobial consumption in high-income countries to map antimicrobial use in food animals for 2010 and 2030. We estimate that the global average annual consumption of antimicrobials per kilogram of animal produced was 45 mg • kg<sup>-1</sup>, 148 mg • kg<sup>-1</sup>, and 172 mg • kg<sup>-1</sup> for cattle, chicken, and pigs, respectively. Starting from this baseline, we estimate that between 2010 and 2030, the global consumption of antimicrobials will increase by 67 %, from 63,151 ± 1,560 tons to 105,596 ± 3,605 tons. Up to a third of the increase in consumption in livestock between 2010 and 2030 is imputable to shifting production practices in middle-income countries where extensive farming systems will be replaced by large-scale intensive farming operations that routinely use antimicrobials in subtherapeutic doses. For Brazil, Russia, India, China, and South Africa, the increase in antimicrobial consumption will be 99 %, up to seven times the projected population growth in this group of countries. Better understanding of the consequences of the uninhibited growth in veterinary antimicrobial consumption is needed to assess its potential effects on animal and human health.

**Keywords:** antimicrobials | livestock | mapping | drug resistance | linear regression

**Significance:** Antimicrobials are used in livestock production to maintain health and productivity. These practices contribute to the spread of drug-resistant pathogens in both livestock and humans, posing a significant public health threat. We present the first global map (228 countries) of antibiotic consumption in livestock and conservatively estimate the total consumption in 2010 at 63,151 tons. We project that antimicrobial consumption will rise by 67 % by 2030, and nearly double in Brazil, Russia, India, China, and South Africa. This rise is likely to be driven by the growth in consumer demand for livestock products in middle-income countries and a shift to large-scale farms where antimicrobials are used routinely. Our findings call for initiatives to preserve antibiotic effectiveness while simultaneously ensuring food security in low- and lower-middle-income countries.

CALLAWAY 2015

Ewen Callaway, *Oldest stone tools raise questions about their creators*. [nature 520 \(2015\), 421](#).

The 3.3-million-year-old implements predate the first members of the Homo genus.

Careful excavation of the patch revealed 19 buried artefacts, including stone core forms, and dozens more on the surface. One key surface find was a small rock flake, which fitted in a gap in a buried core as snugly as a jigsaw puzzle piece, confirming that the tools were made through a flaking process. The tools come from sediments that Harmand's team dated to around 3.3 million years ago and are much larger than the Oldowan artefacts: some weigh as much as 15 kilograms.

The Lomekwi talk left David Braun, an archaeologist at George Washington University in Washington DC, itching for further details. He says that the tools look authentic, as does the date that Harmand and her team assert. The identity of their makers has aroused his curiosity: "What the hell do these things look like if they can use 15-kilogram tools?"

#### CLARKSON 2015

M. O. Clarkson et al., *Ocean acidification and the Permo-Triassic mass extinction*. [science](#) **348** (2015), 229–232.

[s348-0229-Supplement.pdf](#)

M. O. Clarkson, S. A. Kasemann, R. A. Wood, T. M. Lenton, S. J. Daines, S. Richoz, F. Ohnemüller, A. Meixner, S. W. Poulton & E. T. Tipper

Ocean acidification triggered by Siberian Trap volcanism was a possible kill mechanism for the Permo-Triassic Boundary mass extinction, but direct evidence for an acidification event is lacking. We present a high-resolution seawater pH record across this interval, using boron isotope data combined with a quantitative modeling approach. In the latest Permian, increased ocean alkalinity primed the Earth system with a low level of atmospheric CO<sub>2</sub> and a high ocean buffering capacity. The first phase of extinction was coincident with a slow injection of carbon into the atmosphere, and ocean pH remained stable. During the second extinction pulse, however, a rapid and large injection of carbon caused an abrupt acidification event that drove the preferential loss of heavily calcified marine biota.

#### GONSAMO 2015

Alemu Gonsamo & Jing M. Chen, *Winter teleconnections can predict the ensuing summer European crop productivity*. [PNAS](#) **112** (2015), E2265–E2266.

In recent decades, NAO and SCA have remained in one extreme phase, contributing significantly to the recent wintertime warmth across Europe, which is linked to recent dry conditions over southern Europe and wetter than normal conditions in northern Europe (5). The nature of climatic oscillations, and changes in their behavior, including predictability of rainfall, snowfall, droughts, heat wave, or temperature patterns with a few months lead time, are central to understand agricultural crop productivity. The winter NAO and SCA patterns provide early warning to farmers to plan and take adaptive measures to minimize yield losses during the growing-season summer months of European countries. Our analysis highlights one of several often-overlooked aspects of agricultural crop yield responses to the anticipated changes in the behavior of climatic oscillations linked to future climate changes.

#### LAVÉ 2015

Jérôme Lavé, *Landscape inversion by stream piracy*. [nature](#) **520** (2015), 442–444.

A model suggests that active deformation in mountains causes river networks to constantly reorganize, providing an explanation for the paradoxical formation of almost flat surfaces high in craggy mountain ranges.

[A] two-stage mechanism has always been assumed, in which the formation of low-relief surfaces precedes river dissection. [...] The low-relief surfaces therefore cannot be relict landscapes, and must instead correspond to areas that formerly had normal relief, but where the main stream has lost its power to incise bedrock because its headwater has been captured. If subjected to sustained uplift, such areas would gain elevation, and their local relief would be smoothed down because of erosion of the surrounding hill slope. The process is a kind of topographic inversion, because formerly incised valley bottoms and rugged topographies end up as flatter surfaces at high elevations.

#### MONTES 2015

C. Montes et al., *Middle Miocene closure of the Central American Seaway*. [science](#) **348** (2015), 226–229.

s348-0226-Supplement1.pdf, s348-0226-Supplement2.xls

C. Montes, A. Cardona, C. Jaramillo, A. Pardo, J. C. Silva, V. Valencia, C. Ayala, L. C. Pérez-Angel, L. A. Rodríguez-Parra, V. Ramirez & H. Niño

Uranium-lead geochronology in detrital zircons and provenance analyses in eight boreholes and two surface stratigraphic sections in the northern Andes provide insight into the time of closure of the Central American Seaway. The timing of this closure has been correlated with Plio-Pleistocene global oceanographic, atmospheric, and biotic events. We found that a uniquely Panamanian Eocene detrital zircon fingerprint is pronounced in middle Miocene fluvial and shallow marine strata cropping out in the northern Andes but is absent in underlying lower Miocene and Oligocene strata. We contend that this fingerprint demonstrates a fluvial connection, and therefore the absence of an intervening seaway, between the Panama arc and South America in middle Miocene times; the Central American Seaway had vanished by that time.

#### MOORE 2015

Frances C. Moore & David B. Lobell, *Yield findings independent of cause of climate trends, Reply to Gonsamo and Chen*. [PNAS](#) **112** (2015), E2267.

of the analysis. The long-term warming over Europe, wetting over northern Europe, and drying over southern Europe that we use to identify impacts on crop yields may be consistent either with anthropogenic climate change or multidecadal patterns of natural climate variability. A formal analysis to attribute long-term climate trends to greenhouse gas emissions requires the use of climate model output to characterize both the distinctive signal of anthropogenic climate change and the magnitude of internal variability (3, 4). Such an analysis is beyond the scope of our paper, and therefore we make no claims regarding the cause of the observed long-term climate trends in Europe, which is the focus of the letter by Gonsamo and Chen.

#### PRICE 2015

Lance B. Price, Benjamin J. Koch & Bruce A. Hungate, *Ominous projections for global antibiotic use in food-animal production*. [PNAS](#) **112** (2015), 5554–5555.

Antibiotic resistance has already reached a crisis (13). Antibiotics discovery has plummeted (14), yet resistance to existing antibiotics is increasing rapidly (15). These trends should be a warning, demanding immediate action to curb unnecessary antibiotic use around the world. However, curbing unnecessary antibiotic use requires political and scientific leadership.

Methods exist for raising food animals efficiently and profitably without the use of nontherapeutic antibiotics. Denmark has become the classic example. The Danes banned all nontherapeutic antibiotics more than a decade ago and have maintained their status as one of the world's largest pork exporters, demonstrating that such production can be achieved at a competitive price (17). Today, food-animal production companies in other countries are responding to consumer demands and raising cattle, chickens, pigs, and turkeys without nontherapeutic antibiotics (18). It can be done.

The study's results, and the collective knowledge from more than 80 y of research since the discovery of penicillin, argue that scientists must add their voices to the public discourse surrounding antibiotic stewardship. We must help inform policymakers and demand global leadership to ensure that the trends predicted in this paper do not come to pass.

## YANG 2015

Rong Yang, Sean D. Willett & Liran Goren, *In situ low-relief landscape formation as a result of river network disruption*. [nature 520 \(2015\), 526–529](#).

n520-0526-Supplement.mov

Landscapes on Earth retain a record of the tectonic, environmental and climatic history under which they formed. Landscapes tend towards an equilibrium in which rivers attain a stable grade that balances the tectonic production of elevation and with hillslopes that attain a gradient steep enough to transport material to river channels. Equilibrium low-relief surfaces are typically found at low elevations, graded to sea level. However, there are many examples of high-elevation, low-relief surfaces, often referred to as relict landscapes<sup>1,2</sup>, or as elevated peneplains<sup>3</sup>. These do not grade to sea level and are typically interpreted as uplifted old landscapes, preserving former, more moderate tectonic conditions<sup>4</sup>. Here we test this model of landscape evolution through digital topographic analysis of a set of purportedly relict landscapes on the southeastern margin of the Tibetan Plateau, one of the most geographically complex, climatically varied and biologically diverse regions of the world. We find that, in contrast to theory, the purported surfaces are not consistent with progressive establishment of a new, steeper, river grade, and therefore they cannot necessarily be interpreted as a remnant of an old, low relief surface. We propose an alternativemodel, supported by numerical experiments, in which tectonic deformation has disrupted the regional river network, leaving remnants of it isolated and starved of drainage area and thus unable to balance tectonic uplift. The implication is that the state of low relief with low erosion rate is developing in situ, rather than preserving past erosional conditions.

## Amerika

## CALLAWAY 2015

Ewen Callaway, *South America settled in one go*. [nature 520 \(2015\), 598–599](#).

Tests of human remains from a cave high in the Peruvian Andes point to a single early migration.

To gauge whether the Lauricocha residents were descended from members of more than one migration, the team sequenced the DNA from their mitochondria, cellular organelles that are passed directly from mother to child, and thus trace maternal ancestry. All five people were found to be descended from maternal lines

that are common among modern and ancient indigenous people of North and South America.

## DOUGLAS 2015

Peter M. J. Douglas et al., *Drought, agricultural adaptation, and sociopolitical collapse in the Maya Lowlands*. *PNAS* **112** (2015), 5607–5612.

Peter M. J. Douglas, Mark Pagani, Marcello A. Canuto, Mark Brenner, David A. Hodell, Timothy I. Eglinton & Jason H. Curtis

Paleoclimate records indicate a series of severe droughts was associated with societal collapse of the Classic Maya during the Terminal Classic period ( $\approx 800$ – $950$  C.E.). Evidence for drought largely derives from the drier, less populated northern Maya Lowlands but does not explain more pronounced and earlier societal disruption in the relatively humid southern Maya Lowlands. Here we apply hydrogen and carbon isotope compositions of plant wax lipids in two lake sediment cores to assess changes in water availability and land use in both the northern and southern Maya lowlands. We show that relatively more intense drying occurred in the southern lowlands than in the northern lowlands during the Terminal Classic period, consistent with earlier and more persistent societal decline in the south. Our results also indicate a period of substantial drying in the southern Maya Lowlands from  $\approx 200$  C.E. to 500 C.E., during the Terminal Preclassic and Early Classic periods. Plant wax carbon isotope records indicate a decline in C4 plants in both lake catchments during the Early Classic period, interpreted to reflect a shift from extensive agriculture to intensive, water-conservative maize cultivation that was motivated by a drying climate. Our results imply that agricultural adaptations developed in response to earlier droughts were initially successful, but failed under the more severe droughts of the Terminal Classic period.

**Keywords:** Maya civilization | drought | societal collapse | climate adaptation | compound-specific isotope analysis

**Significance:** The Terminal Classic decline of the Maya civilization represents a key example of ancient societal collapse that may have been caused by climate change, but there are inconsistencies between paleoclimate and archaeological evidence regarding the spatial distribution of droughts and sociopolitical disintegration. We conducted a new analysis of regional drought intensity that shows drought was most severe in the region with the strongest societal collapse. We also found that an earlier drought interval coincided with agricultural intensification, suggesting that the ancient Maya adapted to previous episodes of climate drying, but could not cope with the more extreme droughts of the Terminal Classic.

## KITCHEN 2008

Andrew Kitchen, Michael M. Miyamoto & Connie J. Mulligan, *A Three-Stage Colonization Model for the Peopling of the Americas*. *PLoS ONE* **3** (2008), e1596. DOI:10.1371/journal.pone.0001596.

**Background:** We evaluate the process by which the Americas were originally colonized and propose a three-stage model that integrates current genetic, archaeological, geological, and paleoecological data. Specifically, we analyze mitochondrial and nuclear genetic data by using complementary coalescent models of demographic history and incorporating nongenetic data to enhance the anthropological relevance of the analysis.

**Methodology/Findings:** Bayesian skyline plots, which provide dynamic representations of population size changes over time, indicate that Amerinds went through two stages of growth  $<40,000$  and  $<15,000$  years ago separated by a long period of population stability. Isolation-with-migration coalescent analyses, which utilize

data from sister populations to estimate a divergence date and founder population sizes, suggest an Amerind population expansion starting <15,000 years ago.

**Conclusions/Significance:** These results support a model for the peopling of the New World in which Amerind ancestors diverged from the Asian gene pool prior to 40,000 years ago and experienced a gradual population expansion as they moved into Beringia. After a long period of little change in population size in greater Beringia, Amerinds rapidly expanded into the Americas <15,000 years ago either through an interior ice-free corridor or along the coast. This rapid colonization of the New World was achieved by a founder group with an effective population size of <1,000–5,400 individuals. Our model presents a detailed scenario for the timing and scale of the initial migration to the Americas, substantially refines the estimate of New World founders, and provides a unified theory for testing with future datasets and analytic methods.

## Anthropologie

### BERGER 2008

Lee R. Berger, Steven E. Churchill, Bonita De Klerk & Rhonda L. Quinn, *Small-Bodied Humans from Palau, Micronesia*. [PLoS ONE 3 \(2008\), e1780](#). DOI:10.1371/journal.pone.0001780.

Newly discovered fossil assemblages of small bodied *Homo sapiens* from Palau, Micronesia possess characters thought to be taxonomically primitive for the genus *Homo*.

**Background:** Recent surface collection and test excavation in limestone caves in the rock islands of Palau, Micronesia, has produced a sizeable sample of human skeletal remains dating roughly between 940-2890 cal ybp.

**Principle Findings:** Preliminary analysis indicates that this material is important for two reasons. First, individuals from the older time horizons are small in body size even relative to “pygmoid” populations from Southeast Asia and Indonesia, and thus may represent a marked case of human insular dwarfism. Second, while possessing a number of derived features that align them with *Homo sapiens*, the human remains from Palau also exhibit several skeletal traits that are considered to be primitive for the genus *Homo*.

**Significance:** These features may be previously unrecognized developmental correlates of small body size and, if so, they may have important implications for interpreting the taxonomic affinities of fossil specimens of *Homo*.

### DERRICOURT 2005

Robin Derricourt, *Getting “Out of Africa”, Sea Crossings, Land Crossings and Culture in the Hominin Migrations*. [Journal of World Prehistory 19 \(2005\), 119–132](#).

Palaeoanthropologists and archaeologists have advanced a wide range of explanatory narratives for the various movements of *Homo erectus*/*Homo ergaster*, and the first modern *Homo sapiens*, “Out of Africa”?or even back again. The application of Occam’s razor?a parsimonious approach to causes?gives a more cautious approach. There is nothing in the available evidence that would require the ability for a human water crossing from Africa before the later Pleistocene, whether across the Strait of Gibraltar, the Sicilian Channel or the southern Red Sea (Bab el-Mandab). A parsimonious narrative is consistent with movements across the Sinai peninsula. The continuous arid zone from northern Africa to western Asia allowed both occupation and transit during wet phases of the Pleistocene; there is no requirement for a “sponge” model of absorption followed by expulsion of

human groups. The Nile Valley as a possible transit route from East Africa has a geological chronology that could fit well much current evidence for the timing of human migration. The limited spatial and temporal opportunities for movements “Out of Africa,” or back again, also puts particular difficulties in the way of the gene flow required for the multiregional hypothesis of the development of modern Homo sapiens.

**Keywords:** Out of Africa | Hominin migrations | Homo erectus | Homo sapiens | Sinai | Nile Valley

#### FIELD 2005

Julie S. Field & Marta Mirazon Lahr, *Assessment of the Southern Dispersal, GIS-Based Analyses of Potential Routes at Oxygen Isotopic Stage 4*. *Journal of World Prehistory* **19** (2005), 1–45.

This paper explores the geographic and environmental context of the Southern Dispersal Route, which has been proposed as a migratory route for Homo sapiens from East Africa to Australasia during oxygen isotope stage (OIS) 4 (71-59 kyr). A series of assumptions and constraints garnered from modern hunter-gatherer observations are used to build a model of coastal foragers, which is then integrated with high-resolution physiographic analyses to produce a potential dispersal route along the coastline of the Indian Ocean. Paleoenvironmental conditions that may have supplied critical resources or served as obstacles to human colonization are identified and discussed in regards to human subsistence, the speed of migration, and demographic expansion. These factors suggest that rapid dispersals along coastlines and river valleys would have occurred upon the initial expansion out of Africa, but slowed as populations expanded demographically into South Asia and the Sunda Shelf. This also suggests that archaeological signatures relating to the earliest modern Homo sapiens are more likely to be recovered in South Asia.

**Keywords:** Out-of-Africa; modern humans; dispersals; routes; coastlines

#### FISCHER 2015

Barbara Fischer & Philipp Mitteroecker, *Covariation between human pelvis shape, stature, and head size alleviates the obstetric dilemma*. *PNAS* **112** (2015), 5655–5660.

Compared with other primates, childbirth is remarkably difficult in humans because the head of a human neonate is large relative to the birth-relevant dimensions of the maternal pelvis. It seems puzzling that females have not evolved wider pelvises despite the high maternal mortality and morbidity risk connected to childbirth. Despite this seeming lack of change in average pelvic morphology, we show that humans have evolved a complex link between pelvis shape, stature, and head circumference that was not recognized before. The identified covariance patterns contribute to ameliorate the “obstetric dilemma.” Females with a large head, who are likely to give birth to neonates with a large head, possess birth canals that are shaped to better accommodate large-headed neonates. Short females with an increased risk of cephalopelvic mismatch possess a rounder inlet, which is beneficial for obstetrics. We suggest that these covariances have evolved by the strong correlational selection resulting from childbirth. Although males are not subject to obstetric selection, they also show part of these association patterns, indicating a genetic–developmental origin of integration.

**Keywords:** pelvis | evolution | morphometrics | correlational selection | obstetric dilemma

**Significance:** Because of the tight fit of the large human neonate through the narrow maternal birth canal, childbirth is remarkably difficult. In this study we show that the dimensions of head, stature, and pelvis in a human body are linked in a

complex way that was not recognized before and that contributes to ameliorate this tight fit. We show that females with a large head possess a birth canal that can better accommodate largeheaded neonates. Because mothers with large heads usually give birth to neonates with large heads, the detected pattern of covariation contributes to ease childbirth and has likely evolved in response to strong selection.

KIEN 1991

Jenny Kien, *The need for data reduction may have paved the way for the evolution of language ability in hominids.* [Journal of Human Evolution](#) **20** (1991), 157–165.

The increasing size of the hominid brain during its evolution must have posed increasing demands on the brain’s data management and data reduction systems. Any loss in efficiency in coping with increasing amounts of data would negate any advantages gained by an increase in size. Therefore a reorganization of the data management systems must have become necessary. This could have been achieved by replication of the structures responsible for data reduction as part of the brain’s expansion, and a new coupling between them. Serial coupling, rather than the parallel coupling which would be the simplest result of replicative expansion, would produce a reiterative processing system which could develop new abilities although the individual operations stay the same. One such ability is that of deriving “neural symbols”, the reduction or abstraction of data down to a form which allows easy transfer amongst the different parts of the brain. The use of neural symbols would free large amounts of working space and so would open possibilities for new computations. A brain which has undergone this reorganization can gain, rather than lose, in performance as it becomes larger. The new ability of forming neural symbols and also that of sequencing them are prerequisites for, and must precede the evolution of language.

MCCOY 2015

Rajiv C. McCoy et al., *Common variants spanning PLK4 are associated with mitotic-origin aneuploidy in human embryos.* [science](#) **348** (2015), 235–238.

s348-0235-Supplement1.pdf, s348-0235-Supplement2.csv, s348-0235-Supplement3.csv

Rajiv C. McCoy, Zachary Demko, Allison Ryan, Milena Banjevic, Matthew Hill, Styrmir Sigurjonsson, Matthew Rabinowitz, Hunter B. Fraser & Dmitri A. Petrov

McCoy et al. provocatively speculate that a genetic variant that reduces fecundity may provide a selective advantage by obscuring paternity. This interpretation may make sense in a species with low fecundity and heavy parental investment, such as humans.

Aneuploidy, the inheritance of an atypical chromosome complement, is common in early human development and is the primary cause of pregnancy loss. By screening day-3 embryos during in vitro fertilization cycles, we identified an association between aneuploidy of putative mitotic origin and linked genetic variants on chromosome 4 of maternal genomes. This associated region contains a candidate gene, Polo-like kinase 4 (PLK4), that plays a well-characterized role in centriole duplication and has the ability to alter mitotic fidelity upon minor dysregulation. Mothers with the high-risk genotypes contributed fewer embryos for testing at day 5, suggesting that their embryos are less likely to survive to blastocyst formation. The associated region coincides with a signature of a selective sweep in ancient humans, suggesting that the causal variant was either the target of selection or hitchhiked to substantial frequency.

## UNDERHILL 2001

P. A. Underhill et al., *The phylogeography of Y chromosome binary haplotypes and the origins of modern human populations*. [Annals of Human Genetics](#) **65** (2001), 43–62.

P. A. Underhill, G. Passarino, A. A. Lin, P. Shen, M. Mirazón Lahr, R. A. Foley, P. J. Oefner & L. L. Cavalli-Sforza

Although molecular genetic evidence continues to accumulate that is consistent with a recent common African ancestry of modern humans, its ability to illuminate regional histories remains incomplete. A set of unique event polymorphisms associated with the non-recombining portion of the Y-chromosome (NRY) addresses this issue by providing evidence concerning successful migrations originating from Africa, which can be interpreted as subsequent colonizations, diãerentiations and migrations overlaid upon previous population ranges. A total of 205 markers identified by denaturing high performance liquid chromatography (DHPLC), together with 13 taken from the literature, were used to construct a parsimonious genealogy. Ancestral allelic states were deduced from orthologous great ape sequences. A total of 131 unique haplotypes were defined which trace the microevolutionary trajectory of global modern human genetic diversification. The genealogy provides a detailed phylogeographic portrait of contemporary global population structure that is emblematic of human origins, divergence and population history that is consistent with climatic, paleoanthropological and other genetic knowledge.

## Bibel

### LAATO 1995

Antti Laato, *Assyrian propaganda and the falsification of history in the royal inscriptions of Sennacherib*. [Vetus Testamentum](#) **45** (1995), 198–226.

We have seen that the annals of Sennacherib do not clearly state why the siege of Jerusalem was suspended. Everything indicates that Sennacherib wanted to conquer Jerusalem and remove Hezekiah, who was not willing to open the gates of Jerusalem. In fact, Sennacherib did not achieve his goal, but had to abandon the siege of Jerusalem. These circumstances prompt us to ask whether Sennacherib attempted to veil some setback which the Assyrian army had suffered. In the light of the four criteria established in section III we note that Sennacherib’s account of his third campaign contains stylistic devices similar to those which have been used when an apparent military setback is being concealed.

Nevertheless, Sennacherib’s boasting, fictitious as it is, relates to his claims to political hegemony. So we have no reason to suggest that Sennacherib’s campaign was totally unsuccessful. Nevertheless, we have reason to believe that he tried to veil the setback which had forced his retreat to Nineveh (cf. criterion 3).

## Biologie

### CARPENTER 1887

Alfred Carpenter, *Monkeys opening oysters*. [nature](#) **36** (1887), 53.

The low-water rocks of the islands of the Mergui Archipelago are covered with oysters, large and small. A monkey, probably *Macacus cynomolgus*, which infests these islands, prowls about the shore when the tide is low, opening the rock-oysters with a stone by striking the base of the upper valve until it dislocates and

breaks up. He then extracts the oyster with his finger and thumb, occasionally putting his mouth straight to the broken shell.

#### KYNDT 2015

Tina Kyndt, Dora Quispe, Hong Zhai, Robert Jarret, Marc Ghislain, Qingchang Liu, Godelieve Gheysen & Jan F. Kreuze, *The genome of cultivated sweet potato contains Agrobacterium T-DNAs with expressed genes, An example of a naturally transgenic food crop*. [PNAS \*\*112\*\* \(2015\), 5844–5849](#).

[pnas112-05844-Supplement1.xlsx](#), [pnas112-05844-Supplement2.xlsx](#), [pnas112-05844-Supplement3.xlsx](#), [pnas112-05844-Supplement4.xlsx](#), [pnas112-05844-Supplement5.docx](#)

Agrobacterium rhizogenes and Agrobacterium tumefaciens are plant pathogenic bacteria capable of transferring DNA fragments [transfer DNA (T-DNA)] bearing functional genes into the host plant genome. This naturally occurring mechanism has been adapted by plant biotechnologists to develop genetically modified crops that today are grown on more than 10% of the world’s arable land, although their use can result in considerable controversy. While assembling small interfering RNAs, or siRNAs, of sweet potato plants for metagenomic analysis, sequences homologous to T-DNA sequences from Agrobacterium spp. were discovered. Simple and quantitative PCR, Southern blotting, genome walking, and bacterial artificial chromosome library screening and sequencing unambiguously demonstrated that two different T-DNA regions (IbT-DNA1 and IbT-DNA2) are present in the cultivated sweet potato (*Ipomoea batatas* [L.] Lam.) genome and that these foreign genes are expressed at detectable levels in different tissues of the sweet potato plant. IbT-DNA1 was found to contain four open reading frames (ORFs) homologous to the tryptophan-2-monooxygenase (*iaaM*), indole3-acetamide hydrolase (*iaaH*), C-protein (C-prot), and agrocinopine synthase (*Acs*) genes of Agrobacterium spp. IbT-DNA1 was detected in all 291 cultigens examined, but not in close wild relatives. IbT-DNA2 contained at least five ORFs with significant homology to the ORF14, ORF17n, rooting locus (Rol)B/RolC, ORF13, and ORF18/ORF17n genes of *A. rhizogenes*. IbT-DNA2 was detected in 45 of 217 genotypes that included both cultivated and wild species. Our finding, that sweet potato is naturally transgenic while being a widely and traditionally consumed food crop, could affect the current consumer distrust of the safety of transgenic food crops.

**Keywords:** horizontal gene transfer | Agrobacterium spp. | food safety | sweet potato | transgenic crops

**Significance:** We communicate the rather remarkable observation that among 291 tested accessions of cultivated sweet potato, all contain one or more transfer DNA (T-DNA) sequences. These sequences, which are shown to be expressed in a cultivated sweet potato clone (“Huachano”) that was analyzed in detail, suggest that an Agrobacterium infection occurred in evolutionary times. One of the T-DNAs is apparently present in all cultivated sweet potato clones, but not in the crop’s closely related wild relatives, suggesting the T-DNA provided a trait or traits that were selected for during domestication. This finding draws attention to the importance of plant–microbe interactions, and given that this crop has been eaten for millennia, it may change the paradigm governing the “unnatural” status of transgenic crops.

#### PALKOPOULOU 2015

Eleftheria Palkopoulou et al., *Complete Genomes Reveal Signatures of Demographic and Genetic Declines in the Woolly Mammoth*. [Current Biology \(2015\), preprint, 1–6](#). DOI:10.1016/j.cub.2015.04.007.

Eleftheria Palkopoulou, Swapan Mallick, Pontus Skoglund, Jacob Enk, Nadin Rohland, Heng Li, Ayça Omrak, Sergey Vartanyan, Hendrik Poinar, Anders Göth-erström, David Reich & Love Dalén

The processes leading up to species extinctions are typically characterized by prolonged declines in population size and geographic distribution, followed by a phase in which populations are very small and may be subject to intrinsic threats, including loss of genetic diversity and inbreeding [1]. However, whether such genetic factors have had an impact on species prior to their extinction is unclear [2, 3]; examining this would require a detailed reconstruction of a species' demographic history as well as changes in genome-wide diversity leading up to its extinction. Here, we present high-quality complete genome sequences from two woolly mammoths (*Mammuthus primigenius*). The first mammoth was sequenced at 17.1-fold coverage and dates to  $\approx 4,300$  years before present, representing one of the last surviving individuals on Wrangel Island. The second mammoth, sequenced at 11.2-fold coverage, was obtained from an  $\approx 44,800$ -year-old specimen from the Late Pleistocene population in northeastern Siberia. The demographic trajectories inferred from the two genomes are qualitatively similar and reveal a population bottleneck during the Middle or Early Pleistocene, and a more recent severe decline in the ancestors of the Wrangel mammoth at the end of the last glaciation. A comparison of the two genomes shows that the Wrangel mammoth has a 20% reduction in heterozygosity as well as a 28-fold increase in the fraction of the genome that comprises runs of homozygosity. We conclude that the population on Wrangel Island, which was the last surviving woolly mammoth population, was subject to reduced genetic diversity shortly before it became extinct.

## WALMSLEY 2015

Lauren Walmsley et al., *Colour As a Signal for Entrainning the Mammalian Circadian Clock*. [PLoS Biology 13 \(2015\), e1002127](#). DOI:10.1371/journal.pbio.1002127.

Lauren Walmsley, Lydia Hanna, Josh Mouland, Franck Martial, Alexander West, Andrew R. Smedley, David A. Bechtold, Ann R. Webb, Robert J. Lucas & Timothy M. Brown

Twilight is characterised by changes in both quantity ("irradiance") and quality ("colour") of light. Animals use the variation in irradiance to adjust their internal circadian clocks, aligning their behaviour and physiology with the solar cycle. However, it is currently unknown whether changes in colour also contribute to this entrainment process. Using environmental measurements, we show here that mammalian blue–yellow colour discrimination provides a more reliable method of tracking twilight progression than simply measuring irradiance. We next use electrophysiological recordings to demonstrate that neurons in the mouse suprachiasmatic circadian clock display the cone-dependent spectral opponency required to make use of this information. Thus, our data show that some clock neurons are highly sensitive to changes in spectral composition occurring over twilight and that this input dictates their response to changes in irradiance. Finally, using mice housed under photoperiods with simulated dawn/dusk transitions, we confirm that spectral changes occurring during twilight are required for appropriate circadian alignment under natural conditions. Together, these data reveal a new sensory mechanism for telling time of day that would be available to any mammalian species capable of chromatic vision.

## Jungpaläolithikum

### DIAMOND 2002

Jared Diamond, *Evolution, consequences and future of plant and animal domestication*. *nature* **418** (2002), 700–707.

Domestication interests us as the most momentous change in Holocene human history. Why did it operate on so few wild species, in so few geographic areas? Why did people adopt it at all, why did they adopt it when they did, and how did it spread? The answers to these questions determined the remaking of the modern world, as farmers spread at the expense of hunter-gatherers and of other farmers.

## Klima

### BEAUFORT 2003

L. Beaufort, T. de Garidel-Thoron, B. Linsley, D. Oppo & N. Buchet, *Biomass burning and oceanic primary production estimates in the Sulu Sea area over the last 380 kyr and the East Asian monsoon dynamics*. *Marine Geology* **201** (2003), 53–65.

Coccolithophorid assemblages and micro-charcoal content were analysed in giant piston core MD97-2141 recovered in the Sulu Sea (Philippines). These proxies help to reconstruct respectively the dynamics of the oceanic primary production (PP) and biomass burning in that area. PP in the Sulu Sea intensifies during the East Asian winter monsoon (EAWM) and therefore PP constitutes a proxy for EAWM dynamics. Most of the precipitation in the Sulu Sea region occurs during the East Asian summer monsoon (EASM). Because the intensity of biomass burning is related to dryness of the surrounding area, the sedimentary micro-charcoal content can be used as an inverse proxy for EASM intensity. Our results show that the EAWM intensifies during glacial times in agreement with previous studies. Precessional forcing appears to act directly on EAWM because of the early response of PP in that frequency band. The micro-charcoal record exhibits complex dynamics, which we attribute to the competing influence of the long-term El Niño Southern Oscillation (ENSO)-like forcing and the glacial/interglacial cycle on EASM. These influences create an unusual frequency spectrum with power around 30 kyr and 19 kyr attributed to the non-linear response to the 100-kyr cycle (glacial) and the 23-kyr (ENSO) cycle. A factor of two increase in the amplitude of the micro-charcoal variability between 51 and 10 ka BP could correspond to Homo sapiens biomass burning in the style of the fire-stick farming of the Australian Aborigines. We also find, on precession cycles, an opposite phase between EASM and EAWM records and an advance of  $-d18O$  and  $d18O$  respectively by 2000 yr.

Keywords: Monsoon; Pleistocene; cre; nannoplankton; Sulu Sea

### BRAUER 2007

Achim Brauer, Judy R. M. Allen, Jens Mingram, Peter Dulski, Sabine Wulf & Brian Huntley, *Evidence for last interglacial chronology and environmental change from Southern Europe*. *PNAS* **104** (2007), 450–455.

Establishing phase relationships between earth-system components during periods of rapid global change is vital to understanding the underlying processes. It requires records of each component with independent and accurate chronologies. Until now, no continental record extending from the present to the penultimate glacial had such a chronology to our knowledge. Here, we present such a record

from the annually laminated sediments of Lago Grande di Monticchio, southern Italy. Using this record we determine the duration ( $17.70 \pm 0.20$  ka) and age of onset ( $127.20 \pm 1.60$  ka B.P.) of the last interglacial, as reflected by terrestrial ecosystems. This record also reveals that the transitions at the beginning and end of the interglacial spanned only  $\approx 100$  and 150 years, respectively. Comparison with records of other earthsystem components reveals complex leads and lags. During the penultimate deglaciation phase relationships are similar to those during the most recent deglaciation, peaks in Antarctic warming and atmospheric methane both leading Northern Hemisphere terrestrial warming. It is notable, however, that there is no evidence at Monticchio of a Younger Dryas-like oscillation during the penultimate deglaciation. Warming into the first major interstadial event after the last interglacial is characterized by markedly different phase relationships to those of the deglaciations, warming at Monticchio coinciding with Antarctic warming and leading the atmospheric methane increase. Diachroneity is seen at the end of the interglacial; several global proxies indicate progressive cooling after  $\approx 115$  ka B.P., whereas the main terrestrial response in the Mediterranean region is abrupt and occurs at  $109.50 \pm 1.40$  ka B.P.

Keywords: Eemian | phase relationships | pollen | varves

## BRUGGEMANN 2004

J. Henrich Bruggemann et al., *Stratigraphy, palaeoenvironments and model for the deposition of the Abdur Reef Limestone, Context for an important archaeological site from the last interglacial on the Red Sea coast of Eritrea*. *Palaeo* **203** (2004), 179–206.

J. Henrich Bruggemann, Richard T. Buffler, Mireille M. M. Guillaume, Robert C. Walter, Rudo von Cosel, Berhane N. Ghebretensae & Seife M. Berhe

Stone tools discovered within uplifted marine terraces along the Red Sea coast of Eritrea at the Abdur Archaeological Site, dated to 12517 ka (the last interglacial, marine isotope stage 5e), show that early humans occupied coastal areas by this time [Walter et al. (2000) *Nature* 405, 65–69]. In the present paper the stratigraphy, facies types and faunal composition from 25 measured sections of the tool-bearing Abdur Reef Limestone (ARL) are documented in detail and interpreted to provide a palaeoenvironmental context for the stone artefacts and a model for the deposition of the ARL. The ARL represents a complex marine terrace sequence. Erosional surfaces indicative of interrupted sedimentation are locally observed at two levels within the ARL. They subdivide the complex into three subunits, named 5e1, 5e2, and 5e3, representing different stages of the marine isotope stage 5e sea level highstand, comprising six depositional phases (I–VI) of the ARL. Subunit 5e1 begins with the initial transgression of the 5e sea level highstand leading to the deposition of widespread lag gravels on which rich oyster beds developed in shallow water (phase I). It further records rapid deepening accompanied by the deposition of low-energy carbonates with scarce corals (phase II), and later shoaling characterised by local development of a fringing reef tract in a sedimented environment (phase III). Subunit 5e1 is capped locally by a burrowed hardground that is laterally equivalent to depositional discontinuities, interpreted as caused by a globally recognised mid-5e sea level low stand (phase IV). Extensive reef build-up in response to sea level rise and improved conditions for coral growth characterises subunit 5e2 (phase V). A possible second sea level drop during the 5e highstand is inferred from the oyster-encrusted upper surface of subunit 5e2. Subunit 5e3 encompasses restricted coral patches that developed on the upper surface of the underlying subunit during the last stage of the 5e marine high stand (phase VI). Two different toolkits are found in the ARL. One consists of bifacial hand axes and cores of the Acheulian industry, typically associated with the oyster

beds encrusted on the transgressive lag deposits. The other consists of Middle Stone Age (MSA)-type obsidian flakes and blades, mainly found in the nearshore and beach environments alongside debris from marine invertebrates and large land mammals. The distribution of these tools suggests that foraging activities of early humans varied with environmental setting. The Abdur Archaeological Site represents a late example of the Acheulian/MSA transition, seen as a benchmark for early modern human behaviour, and is, to date, the earliest well-dated example of early human adaptation to marine food resources.

**Keywords:** Pleistocene; coral reefs; sea level change; human evolution; stone tools; palaeoecology

#### CERLING 1997

Thure E. Cerling, John M. Harris, Bruce J. MacFadden, Meave G. Leakey, Jay Quade, Vera Eisenmann & James R. Ehleringer, *Global vegetation change through the Miocene/Pliocene boundary*. [nature 389 \(1997\), 153–158](#).

Between 8 and 6 million years ago, there was a global increase in the biomass of plants using C4 photosynthesis as indicated by changes in the carbon isotope ratios of fossil tooth enamel in Asia, Africa, North America and South America. This abrupt and widespread increase in C4 biomass may be related to a decrease in atmospheric CO2 concentrations below a threshold that favoured C3-photosynthesizing plants. The change occurred earlier at lower latitudes, as the threshold for C3 photosynthesis is higher at warmer temperatures.

#### VAN OMMEN 2015

Tas van Ommen, *Northern push for the bipolar see-saw*. [nature 520 \(2015\), 630–631](#).

Antarctic ice-core data show that abrupt changes of climate in the Northern Hemisphere in the last glacial period preceded associated shifts in Antarctica by about 200 years — indicating an oceanic coupling process.

#### SÉGALÉN 2007

Loïc Ségalen, Julia A. Lee-Thorp & Thure Cerling, *Timing of C4 grass expansion across sub-Saharan Africa*. [Journal of Human Evolution 53 \(2007\), 549–559](#).

The emergence of C4 grass biomes is believed to have first taken place in the upper Miocene, when a series of events modified global climate with long-lasting impacts on continental biotas. Changes included major shifts in floral composition characterized in Africa by shrinking of forests and emergence of C4 grasses and more open landscapes followed by large-scale evolutionary shifts in faunal communities. The timing of the emergence of C4 grasses, and the subsequent global expansion of C4 grass-dominated biomes, however, is disputed, leading to contrasting views of the patterns of environmental changes and their links to faunal shifts, including those of early hominins. Here we evaluate the existing isotopic evidence available for central, eastern, and southern Africa, and review interpretations in light of these data. Pedogenic and biomineral carbonate  $\delta^{13}\text{C}$  data suggest that clear evidence for C4 biomass in low latitudes exists only from 7–8 Ma. This likely postdates the emergence of C4 plants, whose physiology is adapted to low atmospheric carbon dioxide concentrations. Biomes with C4 grasses appeared later in mid-latitude sites. Moreover, C4 grasses apparently remained a relatively minor component of most environments until the late Pliocene and early Pleistocene. Hence establishment of C4 grasses, even as minor components of

African biomes, precedes the very earliest evidence for bipedalism by two million years, and the more abundant and secure evidence by some three to four million years. This may suggest a protracted process of hominin adaptation to these emerging, more open landscapes.

Keywords: Miocene; Pliocene; Paleosols; Tooth enamel; Ratite eggshell

#### VAKS 2007

Anton Vaks, Miryam Bar-Matthews, Avner Ayalon, Alan Matthews, Ludwik Halicz & Amos Frumkin, *Desert speleothems reveal climatic window for African exodus of early modern humans*. *Geology* **35** (2007), 831–834.

One of the first movements of early modern humans out of Africa occurred 130–100 thousand years ago (ka), when they migrated northward to the Levant region. The climatic conditions that accompanied this migration are still under debate. Using high-precision multicollector–inductively coupled plasma–mass spectrometry (MC-ICP-MS) U-Th methods, we dated carbonate cave deposits (speleothems) from the central and southern Negev Desert of Israel, located at the northeastern margin of the Saharan-Arabian Desert. Speleothems grow only when rainwater enters the unsaturated zone, and this study reveals that a major cluster of wet episodes (the last recorded in the area) occurred between 140 and 110 ka. This episodic wet period coincided with increased monsoonal precipitation in the southern parts of the Saharan-Arabian Desert. The disappearance at this time of the desert barrier between central Africa and the Levant, and particularly in the Sinai-Negev land bridge between Africa and Asia, would have created a climatic “window” for early modern human dispersion to the Levant.

Keywords: Negev Desert, speleothems, U-Th dating, paleoclimate, out of Africa.

#### WAIS 2015

WAIS Divide Project Members, *Precise inter-polar phasing of abrupt climate change during the last ice age*. *nature* **520** (2015), 661–665.

n520-0661-Supplement1.xls, n520-0661-Supplement2.zip

The last glacial period exhibited abrupt Dansgaard–Oeschger climatic oscillations, evidence of which is preserved in a variety of Northern Hemisphere palaeoclimate archives<sup>1</sup>. Ice cores show that Antarctica cooled during the warm phases of the Greenland Dansgaard–Oeschger cycle and vice versa<sup>2,3</sup>, suggesting an interhemispheric redistribution of heat through a mechanism called the bipolar seesaw<sup>4–6</sup>. Variations in the Atlantic meridional overturning circulation (AMOC) strength are thought to have been important, but much uncertainty remains regarding the dynamics and trigger of these abrupt events<sup>7–9</sup>. Key information is contained in the relative phasing of hemispheric climate variations, yet the large, poorly constrained difference between gas age and ice age and the relatively low resolution of methane records from Antarctic ice cores have so far precluded methane-based synchronization at the required sub-centennial precision<sup>2,3,10</sup>. Here we use a recently drilled high-accumulation Antarctic ice core to show that, on average, abrupt Greenland warming leads the corresponding Antarctic cooling onset by  $218 \pm 92$  years (2 $\sigma$ ) for Dansgaard–Oeschger events, including the Bølling event; Greenland cooling leads the corresponding onset of Antarctic warming by  $208 \pm 96$  years. Our results demonstrate a north-to-south directionality of the abrupt climatic signal, which is propagated to the Southern Hemisphere high latitudes by oceanic rather than atmospheric processes. The similar inter-polar phasing of warming and cooling transitions suggests that the transfer time of the climatic signal is independent of the AMOC background state. Our findings confirm a central role

for ocean circulation in the bipolar seesaw and provide clear criteria for assessing hypotheses and model simulations of Dansgaard–Oeschger dynamics.

## Methoden

WEISSGERBER 2015

Tracey L. Weissgerber, Natasa M. Milic, Stacey J. Winham & Vesna D. Garovic, *Beyond Bar and Line Graphs: Time for a New Data Presentation Paradigm*. *PLoS Biology* **13** (2015), e1002128. DOI:10.1371/journal.pbio.1002128.

Figures in scientific publications are critically important because they often show the data supporting key findings. Our systematic review of research articles published in top physiology journals ( $n = 703$ ) suggests that, as scientists, we urgently need to change our practices for presenting continuous data in small sample size studies. Papers rarely included scatterplots, box plots, and histograms that allow readers to critically evaluate continuous data. Most papers presented continuous data in bar and line graphs. This is problematic, as many different data distributions can lead to the same bar or line graph. The full data may suggest different conclusions from the summary statistics. We recommend training investigators in data presentation, encouraging a more complete presentation of data, and changing journal editorial policies. Investigators can quickly make univariate scatterplots for small sample size studies using our Excel templates.

## Mittelpaläolithikum

SCHMITT 2003

Daniel Schmitt, Steven E. Churchill & William L. Hylander, *Experimental Evidence Concerning Spear Use in Neandertals and Early Modern Humans*. *Journal of Archaeological Science* **30** (2003), 103–114.

Can a bimanual activity such as thrusting a spear during hunting produce bilateral asymmetries in the strength of the upper limbs? This question is important to arguments about the predatory capabilities of Neandertals and early modern humans. To address this question, we determined the magnitude and direction of reaction forces on the upper limbs during thrusting spear use. We collected lateral video records of eight adults thrusting an instrumented aluminum rod into a padded target. This “spear” was instrumented with two sets of four strain gauges placed at two positions along the shaft to register the force along the shaft and the distribution of those forces relative to the two limbs. From the gauge output and video we were able to calculate loads experienced by the trailing limb (holding the proximal spear) and the leading limb (holding the distal spear) as well as approximate bending moments along the trailing limb. The trailing limb provides a significantly greater portion of the force during spear impact and when the spear is held forcefully on the target. The loads on this limb at spear impact are twice body weight and the bending moments on the trailing humerus are large and appear to occur primarily in the parasagittal plane. These data, in combination with fossil humeral cross-sectional data and the lack of evidence for throwing spears among Eurasian Neandertals, suggest that previously documented humeral strength asymmetries in Eurasian Neandertals and early Upper Paleolithic Modern human males can be plausibly linked to spear thrusting.

**Keywords:** Experimental Archaeology, Spears Forces, Bone Modelling, Anatomically Modern Humans, Mousterian, Upper Paleolithic.

## Neolithikum

KUZMIN 2002

Yaroslav V. Kuzmin, *The earliest centres of pottery origin in the Russian Far East and Siberia, Review of chronology for the oldest Neolithic cultures*. *Documenta Praehistorica* **29** (2002), 37–46.

The earliest pottery from the Russian Far East, Osipovka and Gromatukha cultural complexes, was radiocarbon-dated to c. 13 300–12 300 BP. In Siberia, the earliest pottery is known from the Ust-Karenga complex, dated to c. 11 200–10 800 BP. The Osipovka and Gromatukha complexes belong to the Initial Neolithic, and they are contemporaneous with the earliest Neolithic cultures in southern China and Japan. In spite of the very early emergence of pottery in the Russian Far East, there is no evidence of agriculture at the beginning of the Neolithic, and subsistence remains based on hunting and fishing, including anadromous salmonids in the Amur River and its tributaries.

**Keywords:** pottery; initial Neolithic; radiocarbon dating; Russian Far East; Siberia

## Ostasien

D'ALPOIM GUEDES 2015

Jade A. d'Alpoim Guedes, Hongliang Lu, Anke M. Hein & Amanda H. Schmidt, *Early evidence for the use of wheat and barley as staple crops on the margins of the Tibetan Plateau*. *PNAS* **112** (2015), 5625–5630.

[pnas112-05625-Supplement1.xlsx](#), [pnas112-05625-Supplement2.xlsx](#)

We report directly dated evidence from circa 1400 calibrated years (cal) B.C. for the early use of wheat, barley, and flax as staple crops on the borders of the Tibetan Plateau. During recent years, an increasing amount of data from the Tibetan Plateau and its margins shows that a transition from millets to wheat and barley agriculture took place during the second millennium B.C. Using thermal niche modeling, we refute previous assertions that the ecological characteristics of wheat and barley delayed their spread into East Asia. Rather, we demonstrate that the ability of these crops to tolerate frost and their low growing degree-day requirements facilitated their spread into the high-altitude margins of western China. Following their introduction to this region, these crops rapidly replaced Chinese millets and became the staple crops that still characterize agriculture in this area today.

**Keywords:** modeling | wheat | barley | staple crops | Tibet

**Significance:** Adapting agricultural systems to the high-altitude environment of the Tibetan Plateau has long been considered a major challenge for farmers. It has been asserted previously that the ecological characteristics of wheat and barley delayed their spread into East Asia. We argue instead that the ability of these crops to tolerate frost and their low heat requirements facilitated their spread into the high-altitude margins of western China. Following their introduction to this region, these crops rapidly replaced Chinese millets that could not adapt to the cooler temperatures of post-Holocene climatic optimum East Asia. We present data from the eastern Tibetan Plateau demonstrating that wheat and barley rapidly became staple crops shortly after their introduction.

## Politik

HAMADÉ 2015

Kassem Hamadé, *Bashar al-Assad warns of terror threat*. [Expressen 2015, Apr. 17](#).

Because when you have such a war, such a vicious war, terrorists supported by tens of countries around the world, and terrorists coming as recruits from over 100 countries to Syria, and you have anyway a small country, limited resources, you have to put a list of priorities based on military criteria.

Rebuilding the country is not a problem, any country could be rebuilt later, but the main challenge is how to purify the next generation that saw these atrocities from the debris of what they saw psychologically and morally. That is the challenge, I think. I'm not pessimistic. I mean, if we get rid of the terrorists, I'm not pessimistic about the future of Syria.

Now, if you look at the society now in the safe areas, where you have many displaced people coming from place to place, living with each other. You look at the whole spectrum of the Syrian society living together. If you have real division, they wouldn't live with each other. It's not civil war, it's a war between society and the terrorists. This is the real war, actually, in Syria. So, otherwise, they wouldn't live with each other, and you can go and see that with your eyes, see all the spectrum, with no exception. When I say all, I don't like to use the absolute word, but this is absolute that all the spectrum lives with each other, so it's still the same. Actually, I would say that this homogeneity today is much stronger than before the war, because of the war, because as I said earlier, the Syrian people learned many lessons from that war. They are closer to each other than before the war.

## Story or Book

NYHART 2015

Lynn K. Nyhart, *Speaking of science, How English became the language of science*. [science 348 \(2015\), 192](#).

Scientific Babel. How Science Was Done Before and After Global English. Michael D. Gordin. University of Chicago Press, 2015. 421 pp.

Scientific Babel offers a close-to-the-ground perspective that reveals how short-lived language movements, translation efforts, and publication schemes have interacted with global geopolitics to produce larger historical trends. This emphasis on historical contingencies invites us to reconsider the dominance of English in science today and may ruffle the complacency of those who imagine that it is permanent.

TRENT 2015

Brian Trent, *The archive personality protocol*. [nature 520 \(2015\), 716](#).