

References

Aktuell

ELSE 2018

Holly Else, *Mega-publisher cuts off German scientists*. [nature](#) **559** (2018), 454–455.

Negotiations with Elsevier have stalled over open access.

Around 200 are thought to be affected by the latest switch-off, according to Projekt Deal. The affected universities and research institutes can still source missing Elsevier articles through inter-library loans from the 150 or so institutes whose contracts have not yet expired. Elsevier will be closely monitoring journal article submissions from researchers based in Germany, Esposito predicts. “If it drops sharply, Elsevier will likely reconsider its position.”

GOODMAN 2018

Linda Goodman & Elinor K. Karlsson, *America’s lost dogs*. [science](#) **361** (2018), 27–28.

The dogs that arrived in the Americas with human settlers $\approx 10,000$ years ago left almost no genetic traces.

Canine transmissible venereal tumor (CTVT) may actually be far older. Ní Leathlobhair et al. estimate that the founder lived up to 8200 years ago and find that CTVT is more closely related to American precontact dogs than to modern dogs, wolves, or coyotes. However, CTVT probably did not evolve in the Americas. Instead, CTVT may have evolved in an Asian dog related to the precontact dogs sometime after the land bridge to the Americas flooded (see the figure) (12). This timing raises an intriguing new possibility: CTVT arrived in the Americas with European dogs in the 15th century, where it infected, for the first time in thousands of years, dogs that were genetically similar to its founder. The severity of CTVT in such closely related dogs is unknown, because no dogs of this lineage are known to survive in the modern world.

LEATHLOBHAIR 2018

Máire Ní Leathlobhair et al., *The evolutionary history of dogs in the Americas*. [science](#) **361** (2018), 81–85.

s361-0081-Supplement.pdf

Máire Ní Leathlobhair, Angela R. Perri, Evan K. Irving-Pease, Kelsey E. Witt, Anna Linderholm, James Haile, Ophélie Lebrasseur, Carly Ameen, Jeffrey Blick, Adam R. Boyko, Selina Brace, Yahaira Nunes Cortes, Susan J. Crockford, Alison Devault, Evangelos A. Dimopoulos, Morley Eldridge, Jacob Enk, Shyam Gopalakrishnan, Kevin Gori, Vaughan Grimes, Eric Guiry, Anders J. Hansen, Ardern Hulme-Beaman, John Johnson, Andrew Kitchen, Aleksei K. Kasparov, Young-Mi Kwon, Pavel A. Nikolskiy, Carlos Peraza Lope, Aurélie Manin, Terrance Martin, Michael Meyer, Kelsey Noack Myers, Mark Omura, Jean-Marie Rouillard, Elena Y. Pavlova, Paul Sciulli, Mikkel-Holger S. Sinding, Andrea Strakova, Varvara V. Ivanova, Christopher Widga, Eske Willerslev, Vladimir V. Pitulko, Ian Barnes, M. Thomas P. Gilbert, Keith M. Dobney, Ripan S. Malhi, Elizabeth P. Murchison¹, Greger Larson & Laurent A. F. Frantz

Dogs were present in the Americas before the arrival of European colonists, but the origin and fate of these precontact dogs are largely unknown. We sequenced 71 mitochondrial and 7 nuclear genomes from ancient North American and Siberian dogs from time frames spanning ≈ 9000 years. Our analysis indicates that American dogs were not derived from North American wolves. Instead, American dogs form a monophyletic lineage that likely originated in Siberia and dispersed into the Americas alongside people. After the arrival of Europeans, native American dogs almost completely disappeared, leaving a minimal genetic legacy in modern dog populations. The closest detectable extant lineage to precontact American dogs is the canine transmissible venereal tumor, a contagious cancer clone derived from an individual dog that lived up to 8000 years ago.

PERRIGO 2018

Allison Perrigo, *The road less traveled*. [science](#) **361** (2018), 102.

I peered sidelong into my laptop's keyboard. If I was careless with the mangoes and papaya in my little tropical island bungalow, the ants were sure to invade—and end up squashed among the keys as I pushed out the morning's emails. I would often end up singing “the ants go marching one by one” while trying to reroute them out the door with sticky trails of decoy papaya juice. (“Hurrah! Hurrah!”) This was not a problem I expected to encounter as part of running my scientific editing business. But it was the price—a small one—of my life as a digital nomad.

Anthropologie

KAPPELMAN 2018

John Kappelman, *An early hominin arrival in Asia*. [nature](#) **559** (2018), 480–481.

An excavation has uncovered stone tools in China that are about 2.1 million years old. This evidence pushes back the date of the earliest established signs of a hominin species outside Africa.

Zhu and colleagues' report of signs of a hominin presence at Shangchen in China's Loess Plateau (Fig. 1) is based on evidence from only stone tools, and the researchers found that these tools were distributed in layers of sediment that date back to about 2.1 million years ago.

The pattern of polarity reversals in these ancient sediment layers provides a fingerprint that can be matched to a dated reference called the geomagnetic polarity timescale (GPTS). The authors' data provide a convincing correlation to the GPTS, and the team was able to identify two notable events from the GPTS (the brief Réunion Subchron9 and the later, but slightly longer, Olduvai Subchron), which bookend the layer that contains the oldest artefacts.

ZHU 2018

Zhaoyu Zhu et al., *Hominin occupation of the Chinese Loess Plateau since about 2.1 million years ago*. [nature](#) **559** (2018), 608–612.

[n559-0608-Supplement1.pdf](#), [n559-0608-Supplement2.mp4](#), [n559-0608-Supplement3.mp4](#), [n559-0608-Supplement4.mp4](#)

Zhaoyu Zhu, Robin Dennell, Weiwen Huang, Yi Wu, Shifan Qiu, Shixia Yang, Zhiguo Rao, Yamei Hou, Jiubing Xie, Jiangwei Han & Tingping Ouyang

Considerable attention has been paid to dating the earliest appearance of hominins outside Africa. The earliest skeletal and artefactual evidence for the genus

Homo in Asia currently comes from Dmanisi, Georgia, and is dated to approximately 1.77–1.85 million years ago (Ma)¹. Two incisors that may belong to Homo erectus come from Yuanmou, south China, and are dated to 1.7 Ma²; the next-oldest evidence is an H. erectus cranium from Lantian (Gongwangling)—which has recently been dated to 1.63 Ma³—and the earliest hominin fossils from the Sangiran dome in Java, which are dated to about 1.5–1.6 Ma⁴. Artefacts from Majuangou III⁵ and Shangshazui⁶ in the Nihewan basin, north China, have also been dated to 1.6–1.7 Ma. Here we report an Early Pleistocene and largely continuous artefact sequence from Shangchen, which is a newly discovered Palaeolithic locality of the southern Chinese Loess Plateau, near Gongwangling in Lantian county. The site contains 17 artefact layers that extend from palaeosol S15—dated to approximately 1.26 Ma—to loess L28, which we date to about 2.12 Ma. This discovery implies that hominins left Africa earlier than indicated by the evidence from Dmanisi.

Datierung

ORTON 2018

David Orton, Jana Anvari, Catriona Gibson, Jonathan Last, Amy Bogaard, Eva Rosenstock & Peter F. Biehl, *A tale of two tells, Dating the Catalhoyuk West Mound*. *Antiquity* **92** (2018), 620–639.

Antiquity092-0620-Supplement1.pdf, Antiquity092-0620-Supplement2.xlsx, Antiquity092-0620-Supplement3.xlsx

Catalhoyuk is one of the most well-known and important Neolithic/Chalcolithic sites in the Middle East. Settlement at the site encompasses two separate tell mounds known as Catalhoyuk East and West, with the focus of attention having traditionally been upon what is often regarded as the main site, the earlier East Mound. Limitations of dating evidence have, however, rendered the nature of the relationship between the settlements on these mounds unclear. Traditional models favoured a hiatus between their occupation, or, alternatively, a rapid shift from one site to the other, often invoking changes in natural conditions by way of an explanation. New dates challenge these theories, and indicate a potentially significant overlap between the occupation of the mounds, starting in the late seventh millennium BC.

Keywords: Turkey | Catalhoyuk | Neolithic | Chalcolithic | radiocarbon dating | tell settlement

Klima

TIMMERMANN 2018

Axel Timmermann et al., *El Niño–Southern Oscillation complexity*. *nature* **559** (2018), 535–545.

Axel Timmermann, Soon-Il An, Jong-Seong Kug, Fei-Fei Jin, Wenju Cai, Antonietta Capotondi, Kim Cobb, Matthieu Lengaigne, Michael J. McPhaden, Malte F. Stuecker, Karl Stein, Andrew T. Wittenberg, Kyung-Sook Yun, Tobias Bayr, Han-Ching Chen, Yoshimitsu Chikamoto, Boris Dewitte, Dietmar Dommenges, Pamela Grothe, Eric Guilyardi, Yoo-Geun Ham, Michiya Hayashi, Sarah Ineson, Daehyun Kang, Sunyong Kim, Wonmoo Kim, June-Yi Lee, Tim Li, Jing-Jia Luo, Shayne McGregor, Yann Planton, Scott Power, Harun Rashid, Hong-Li Ren, Agus Santoso, Ken Takahashi, Alexander Todd, Guomin Wang, Guojian

Wang, Ruihuang Xie, Woo-Hyun Yang, Sang-Wook Yeh, Jinho Yoon, Elke Zeller & Xuebin Zhang

El Niño events are characterized by surface warming of the tropical Pacific Ocean and weakening of equatorial trade winds that occur every few years. Such conditions are accompanied by changes in atmospheric and oceanic circulation, affecting global climate, marine and terrestrial ecosystems, fisheries and human activities. The alternation of warm El Niño and cold La Niña conditions, referred to as the El Niño–Southern Oscillation (ENSO), represents the strongest year-to-year fluctuation of the global climate system. Here we provide a synopsis of our current understanding of the spatio-temporal complexity of this important climate mode and its influence on the Earth system.

WHITEHOUSE 2018

Pippa Whitehouse, *Ancient ice sheet had a growth spurt.* [nature 559 \(2018\), 487–488.](#)

An analysis of ancient coral from the Great Barrier Reef reveals that global sea level fell rapidly at the end of the last glacial period. The findings suggest that ice sheets are more dynamic than was previously thought.

Unlike ice-sheet retreat, the mechanisms responsible for rapid ice-sheet growth have received relatively little attention. It is tempting to equate cold periods in Earth’s history to an increase in snowfall, but the opposite is actually true, because cold air holds less moisture than warmer air.

Could these feedbacks between ice dynamics, the underlying Earth and the adjacent ocean explain the short-lived nature of the final LGM sea-level lowstand, or did external climate factors bring it to an abrupt end? Whatever the explanation, it seems the LGM was more dynamic than previously thought.

YOKOYAMA 2018

Yusuke Yokoyama et al., *Rapid glaciation and a two-step sea level plunge into the Last Glacial Maximum.* [nature 559 \(2018\), 603–607.](#)
n559-0603-Supplement.xlsx

Yusuke Yokoyama, Tezer M. Esat, William G. Thompson, Alexander L. Thomas, Jody M. Webster, Yosuke Miyairi, Chikako Sawada, Takahiro Aze, Hiroyuki Matsuzaki, Jun’ichi Okuno, Stewart Fallon, Juan-Carlos Braga, Marc Humblet, Yasufumi Iryu, Donald C. Potts, Kazuhiko Fujita, Atsushi Suzuki & Hironobu Kan

The approximately 10,000-year-long Last Glacial Maximum, before the termination of the last ice age, was the coldest period in Earth’s recent climate history¹. Relative to the Holocene epoch, atmospheric carbon dioxide was about 100 parts per million lower and tropical sea surface temperatures were about 3 to 5 degrees Celsius lower^{2,3}. The Last Glacial Maximum began when global mean sea level (GMSL) abruptly dropped by about 40 metres around 31,000 years ago⁴ and was followed by about 10,000 years of rapid deglaciation into the Holocene¹. The masses of the melting polar ice sheets and the change in ocean volume, and hence in GMSL, are primary constraints for climate models constructed to describe the transition between the Last Glacial Maximum and the Holocene, and future changes; but the rate, timing and magnitude of this transition remain uncertain. Here we show that sea level at the shelf edge of the Great Barrier Reef dropped by around 20 metres between 21,900 and 20,500 years ago, to -118 metres relative to the modern level. Our findings are based on recovered and radiometrically dated fossil corals and coralline algae assemblages, and represent relative sea level at the Great Barrier Reef, rather than GMSL. Subsequently, relative sea level rose at a rate of about 3.5 millimetres per year for around 4,000 years. The rise is consistent with the warming previously observed at 19,000 years ago^{1,5}, but we now show

that it occurred just after the 20-metre drop in relative sea level and the related increase in global ice volumes. The detailed structure of our record is robust because the Great Barrier Reef is remote from former ice sheets and tectonic activity. Relative sea level can be influenced by Earth's response to regional changes in ice and water loadings and may differ greatly from GMSL. Consequently, we used glacio-isostatic models to derive GMSL, and find that the Last Glacial Maximum culminated 20,500 years ago in a GMSL low of about -125 to -130 metres.

Mittelpaläolithikum

SORENSEN 2018

A. C. Sorensen, E. Claud & M. Soressi, *Neandertal fire-making technology inferred from microwear analysis*. [Scientific Reports 8 \(2018\), 10065](#). DOI:10.1038/s41598-018-28342-9.

Fire use appears to have been relatively common among Neandertals in the Middle Palaeolithic. However, the means by which Neandertals procured their fire—either through the collection of natural fire, or by producing it themselves using tools—is still a matter of debate. We present here the first direct artefactual evidence for regular, systematic fire production by Neandertals. From archaeological layers attributed to late Mousterian industries at multiple sites throughout France, primarily to the Mousterian of Acheulean Tradition (MTA) technoculture (ca. 50,000 years BP), we identify using microwear analysis dozens of late Middle Palaeolithic bifacial tools that exhibit macroscopic and microscopic traces suggesting repeated percussion and/or forceful abrasion with a hard mineral material. Both the locations and nature of the polish and associated striations are comparable to those obtained experimentally by obliquely percussing fragments of pyrite (FeS₂) against the flat/convex sides of a biface to make fire. The striations within these discrete use zones are always oriented roughly parallel to the longitudinal axis of the tool, allowing us to rule out taphonomic origins for these traces. We therefore suggest that the occasional use of bifaces as ‘strike-a-lights’ was a technocultural feature shared among the late Neandertals in France.

Neolithikum

DALY 2018

Kevin G. Daly et al., *Ancient goat genomes reveal mosaic domestication in the Fertile Crescent*. [science 361 \(2018\), 85–88](#).

s361-0085-Supplement.pdf

Kevin G. Daly, Pierpaolo Maisano Delser, Victoria E. Mullin, Amelie Scheu, Valeria Mattiangeli, Matthew D. Teasdale, Andrew J. Hare, Joachim Burger, Marta Pereira Verdugo, Matthew J. Collins, Ron Kehati, Cevdet Merih Erek, Guy Bar-Oz, François Pompanon, Tristan Cumer, Canan Çakýrlar, Azadeh Fateh-meh Mohaseb, Delphine Decruyenaere, Hossein Davoudi, Özlem Çevik, Gary Rollefson, Jean-Denis Vigne, Roya Khazaeli, Homa Fathi, Sanaz Beizae Doost, Roghayeh Rahimi Sorkhani, Ali Akbar Vahdati, Eberhard W. Sauer, Hossein Azizi Kharanaghi, Sepideh Maziar, Boris Gasparian, Ron Pinhasi, Louise Martin, David Orton, Benjamin S. Arbuckle, Norbert Benecke, Andrea Manica, Liora Kolska Horwitz, Marjan Mashkour & Daniel G. Bradley

Current genetic data are equivocal as to whether goat domestication occurred multiple times or was a singular process. We generated genomic data from 83 ancient goats (51 with genomewide coverage) from Paleolithic to Medieval contexts

throughout the Near East. Our findings demonstrate that multiple divergent ancient wild goat sources were domesticated in a dispersed process that resulted in genetically and geographically distinct Neolithic goat populations, echoing contemporaneous human divergence across the region. These early goat populations contributed differently to modern goats in Asia, Africa, and Europe. We also detect early selection for pigmentation, stature, reproduction, milking, and response to dietary change, providing 8000-year-old evidence for human agency in molding genome variation within a partner species.

Ostasien

BELLWOOD 2018

Peter Bellwood, *The search for ancient DNA heads east*. [science 361 \(2018\), 31–32](#).

Multiple migrations explain the peopling of Southeast Asia in the past 10,000 years.

LIPSON 2018

Mark Lipson et al., *Ancient genomes document multiple waves of migration in Southeast Asian prehistory*. [science 361 \(2018\), 92–95](#).

s361-0092-Supplement.pdf

Mark Lipson, Olivia Cheronet, Swapan Mallick, Nadin Rohland, Marc Oxenham, Michael Pietrusewsky, Thomas Oliver Pryce, Anna Willis, Hirofumi Matsumura, Hallie Buckley, Kate Domett, Giang Hai Nguyen, Hoang Hiep Trinh, Aung Aung Kyaw, Tin Tin Win, Baptiste Pradier, Nasreen Broomandkhoshbacht, Francesca Candilio, Piya Changmai, Daniel Fernandes, Matthew Ferry, Beatriz Gamarra, Eadaoin Harney, Jatupol Kampaunsai, Wibhu Kutanan, Megan Michel, Mario Novak, Jonas Oppenheimer, Kendra Sirak, Kristin Stewardson, Zhao Zhang, Pavel Flegontov, Ron Pinhasi & David Reich

Southeast Asia is home to rich human genetic and linguistic diversity, but the details of past population movements in the region are not well known. Here, we report genome-wide ancient DNA data from 18 Southeast Asian individuals spanning from the Neolithic period through the Iron Age (4100 to 1700 years ago). Early farmers from Man Bac in Vietnam exhibit a mixture of East Asian (southern Chinese agriculturalist) and deeply diverged eastern Eurasian (hunter-gatherer) ancestry characteristic of Austroasiatic speakers, with similar ancestry as far south as Indonesia providing evidence for an expansive initial spread of Austroasiatic languages. By the Bronze Age, in a parallel pattern to Europe, sites in Vietnam and Myanmar show close connections to present-day majority groups, reflecting substantial additional influxes of migrants.

MCCOLL 2018

Hugh McColl et al., *The prehistoric peopling of Southeast Asia*. [science 361 \(2018\), 88–92](#).

s361-0088-Supplement.pdf

Hugh McColl, Fernando Racimo, Lasse Vinner, Fabrice Demeter, Takashi Gakuhari, J. Victor Moreno-Mayar, George van Driem, Uffe Gram Wilken, Andaine Seguin-Orlando, Constanza de la Fuente Castro, Sally Wasef, Rasmi Shoocongdej, Viengkeo Souksavatdy, Thongsa Sayavongkhamdy, Mohd Mokhtar Saidin, Morten E. Allentoft, Takehiro Sato, Anna-Sapfo Malaspinas, Farhang A. Aghakhani, Thorfinn Korneliussen, Ana Prohaska, Ashot Margaryan, Peter de Barros Damgaard, Supanee Kaewsutthi, Patcharee Lertrit, Thi Mai Huong Nguyen,

Hsiao-chun Hung, Thi Minh Tran, Huu Nghia Truong, Giang Hai Nguyen, Shaiful Shahidan, Ketut Wiradnyana, Hiromi Matsumae, Nobuo Shigehara, Minoru Yoneda, Hajime Ishida, Tadayuki Masuyama, Yasuhiro Yamada, Atsushi Tajima, Hiroki Shibata, Atsushi Toyoda, Tsunehiko Hanihara, Shigeki Nakagome, Thibaut Deviese, Anne-Marie Bacon, Philippe Durringer, Jean-Luc Ponche, Laura Shackelford, Elise Patole-Edoumba, Anh Tuan Nguyen, Berenice Bellina-Pryce, Jean-Christophe Galipaud, Rebecca Kinaston, Hallie Buckley, Christophe Pottier, Simon Rasmussen, Tom Higham, Robert A. Foley, Marta Mirazon Lahr, Ludovic Orlando, Martin Sikora, Maude E. Phipps, Hiroki Oota, Charles Higham, David M. Lambert & Eske Willerslev

The human occupation history of Southeast Asia (SEA) remains heavily debated. Current evidence suggests that SEA was occupied by Hoabinhian hunter-gatherers until ≈ 4000 years ago, when farming economies developed and expanded, restricting foraging groups to remote habitats. Some argue that agricultural development was indigenous; others favor the “twolayer” hypothesis that posits a southward expansion of farmers giving rise to present-day Southeast Asian genetic diversity. By sequencing 26 ancient human genomes (25 from SEA, 1 Japanese Jmon), we show that neither interpretation fits the complexity of Southeast Asian history: Both Hoabinhian hunter-gatherers and East Asian farmers contributed to current Southeast Asian diversity, with further migrations affecting island SEA and Vietnam. Our results help resolve one of the long-standing controversies in Southeast Asian prehistory.

Story or Book

MIDDLETON 2018

Guy D. Middleton, *Megadrought and Collapse*. *Antiquity* **92** (2018), 828–830.

Harvey Weiss (ed.). *Megadrought and collapse: from early agriculture to Angkor*. 2017. Oxford: Oxford University Press; 978-0-19-932919-9 £47.99.

Weiss’s Introduction pushes the megadrought collapse agenda and dismisses McAnany and Yoffee’s important *Questioning collapse* volume (2009) by calling them ‘politically correct’—because they want to problematise the characterisation of collapse and to place humans at the centre of the story—and simply omits additional work, but other chapters are not so deterministic. While Weiss suggests that his determinists are turning the tide against those who consider social factors key, it is rather the case that both views have long co-existed and have fed off each other; as there are difficulties in weighting factors in collapse, this to and fro seems likely to continue. The deterministic approach adopted here seems to go against the grain of twenty-first-century collapse research, which is now much more open to non-deterministic, non-linear reconstructions emphasising historical particularity.