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## NOTICES

### PUBLICATION ALERTS

If you have had a paper or book published, or you see something which would be of interest to the group, do please send me a publication alert so that I can include it in the newsletter. Many thanks to those who have already sent in alerts.

If there is a journal you feel I should be tracking on a regular basis, do let me know.

And if you have any other ideas for extending the “EAORC experience”, please contact me.

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## NEWS

### BREAKING SCIENCE – Neanderthals Had Capacity to Produce Human-Like Speech

Neanderthals evolved the auditory capacities to support a vocal communication system as efficient as modern human speech, according to new research led by Universidad de Alcalá scientists. The linguistic capacities in Neanderthals have long been an area of active research and debate among scientists, albeit with little resolution.

[http://feedproxy.google.com/~r/BreakingScienceNews/~3/ns19iw5XUrs/neanderthal-speech-09405.html?utm\\_source=feedburner&utm\\_medium=email](http://feedproxy.google.com/~r/BreakingScienceNews/~3/ns19iw5XUrs/neanderthal-speech-09405.html?utm_source=feedburner&utm_medium=email)

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### BREAKING SCIENCE – Cuttlefish Pass Fishy Version of ‘Marshmallow Test’

New research led by the University of Cambridge and the Marine Biological Laboratory demonstrates that common cuttlefish (*Sepia officinalis*) can tolerate delays to obtain food of higher quality. The common cuttlefish is a cephalopod native to the Mediterranean Sea, North Sea, and Baltic Sea.

[http://feedproxy.google.com/~r/BreakingScienceNews/~3/MSZv6P2VnKA/cuttlefish-marshmallow-test-09415.html?utm\\_source=feedburner&utm\\_medium=email](http://feedproxy.google.com/~r/BreakingScienceNews/~3/MSZv6P2VnKA/cuttlefish-marshmallow-test-09415.html?utm_source=feedburner&utm_medium=email)

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### SAPIENS – A magnetic field reversal and the Neanderthals

A Neanderthal expert weighs in on a new theory that proposes a swap in the planet’s poles triggered a climate catastrophe that killed off our evolutionary cousins. / Read More

<https://sapiens.us11.list-manage.com/track/click?u=80f6cf678900daf984bf763b7&id=39dcb4c22f&e=dc0eff6180>

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### SCIENCE DAILY – Maternal instincts lead to social life of bees

The maternal care of offspring is one of the behavioral drivers that has led some bee species to have an ever-expanding social life over the history of evolution, new research has found. By virtue of being in a social group the genome itself may respond by selecting more social, rather than non-social genes. The behavior and social environment come first setting the stage for future molecular evolution.

<https://www.sciencedaily.com/releases/2021/02/210226121242.htm>

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## SCIENCE DAILY – Neanderthals had the capacity to perceive and produce human speech

Neanderthals -- the closest ancestor to modern humans -- possessed the ability to perceive and produce human speech, according to a new study.

<https://www.sciencedaily.com/releases/2021/03/210301112358.htm>

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## SCIENCE DAILY – New technology allows scientists first glimpse of intricate details of Little Foot's life

In June 2019, an international team brought the complete skull of the 3.67-million-year-old Little Foot Australopithecus skeleton, from South Africa to the UK and achieved unprecedented imaging resolution of its bony structures and dentition in an X-ray synchrotron-based investigation at the UK's national synchrotron, Diamond Light Source. The X-ray work is highlighted in a new article, focusing on the inner craniodental features of Little Foot.

<https://www.sciencedaily.com/releases/2021/03/210302075348.htm>

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## SCIENCE DAILY – Quick-learning cuttlefish pass 'the marshmallow test'

Cuttlefish can delay gratification - wait for a better meal rather than be tempted by the one at hand - and those that can wait longest also do better in a learning test, scientists have discovered. This intriguing report marks the first time a link between self-control and intelligence has been found in an animal other than humans and chimpanzees.

<https://www.sciencedaily.com/releases/2021/03/210302212001.htm>

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## SCIENCE DAILY – Chimpanzees without borders

Chimpanzees are divided into four subspecies separated by geographic barriers like rivers. Previous studies attempting to understand chimpanzee population histories have been limited either by a poor geographic distribution of samples, samples of uncertain origin or different types of genetic markers. Due to these obstacles, some studies have shown clear separations between chimpanzee subspecies while others suggest a genetic gradient across the species as in humans.

<https://www.sciencedaily.com/releases/2021/03/210305080118.htm>

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## SOCIETY FOR SCIENCE – An ancient dog fossil helps trace humans' path into the Americas

Found in Alaska, the roughly 10,000-year-old bone bolsters the idea that early human settlers took a coastal rather than inland route.

<http://click.societyforscience->

[email.com/?qs=3bb3a826bcda6d235f42ccfa24eb7bfa2a54868bd99a2317202e7fe65c99dd63be71277a77c5d1ad970b3e9331557b8c37e5548166aacbfd012626fe2efbad13](mailto:email.com/?qs=3bb3a826bcda6d235f42ccfa24eb7bfa2a54868bd99a2317202e7fe65c99dd63be71277a77c5d1ad970b3e9331557b8c37e5548166aacbfd012626fe2efbad13)

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## PUBLICATIONS

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### Current Anthropology

#### PAPERS

#### **MANVIR SINGH – Magic, Explanations, and Evil: The Origins and Design of Witches and Sorcerers**

In nearly every documented society, people believe that some misfortunes are caused by malicious group mates using magic or supernatural powers. Here I report cross-cultural patterns in these beliefs and propose a theory to explain them. Using the newly created Mystical Harm Survey, I show that several conceptions of malicious mystical practitioners, including sorcerers (who use learned spells), possessors of the evil eye (who transmit injury through their stares and words), and witches (who possess superpowers, pose existential threats, and engage in morally abhorrent acts), recur around the world. I argue that these beliefs develop from three cultural selective processes: a selection for intuitive magic, a selection for plausible explanations of impactful misfortune, and a selection for demonizing myths that justify mistreatment. Separately, these selective schemes produce traditions as diverse as shamanism, conspiracy theories, and campaigns against heretics—but around the world, they jointly give rise to the odious and feared witch. I use the tripartite theory to explain the forms of beliefs in mystical harm and outline 10 predictions for how shifting conditions should affect those conceptions. Societally corrosive beliefs can persist when they are intuitively appealing or they serve some believers' agendas.

<https://www.journals.uchicago.edu/doi/abs/10.1086/713111>

#### **AGUSTÍN FUENTES – Searching for the “Roots” of Masculinity in Primates and the Human Evolutionary Past**

The reconstruction and prioritization of masculinity in human evolution (and thus human nature) is often rooted in reference to other primates and the hominin fossil and archaeological record. And it almost always involves violence. Whether it be the “demonic males” hypothesis, the trope of aggressive alpha maleness and sexual coercion, or gender-biased representations of toolmaking, hunting, and fierce encounters between different populations of the genus *Homo* in the Pleistocene, a particular pattern of masculinity (maleness)—and violence—permeates most popular discourse and much of the academic discourse. While there are some significant sexual differences and divergent strategies among our closest cousins, and the fossil record does offer important insights into the development and deployment of gender, much of the data do not fit seamlessly with typical assumptions. In fact, much in our contemporary understandings of other primate behavior and the

hominins either contradicts or complexifies assumptions and assertions about the origins and “ancestral” patterns of contemporary human masculinity and its associated violence. This paper articulates what we do and do not know about maleness in primates and past humans and offers some possibilities for how such information might assist in elaborating more integrative understandings of the complexities of human masculinities.

<https://www.journals.uchicago.edu/doi/full/10.1086/711582>

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## Evolutionary Human Sciences

### PAPERS

#### **FELIX RIEDE et al with APRIL NOWELL – Children and innovation: play, play objects and object play in cultural evolution**

Cultural evolutionary theory conceptualises culture as an information-transmission system whose dynamics take on evolutionary properties. Within this framework, however, innovation has been likened to random mutations, reducing its occurrence to chance or fortuitous transmission error. In introducing the special collection on children and innovation, we here place object play and play objects – especially functional miniatures – from carefully chosen archaeological contexts in a niche construction perspective. Given that play, including object play, is ubiquitous in human societies, we suggest that plaything construction, provisioning and use have, over evolutionary timescales, paid substantial selective dividends via ontogenetic niche modification. Combining findings from cognitive science, ethology and ethnography with insights into hominin early developmental life-history, we show how play objects and object play probably had decisive roles in the emergence of innovative capabilities. Importantly, we argue that closer attention to play objects can go some way towards addressing changes in innovation rates that occurred throughout human biocultural evolution and why innovations are observable within certain technological domains but not others.

<https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/children-and-innovation-play-play-objects-and-object-play-in-cultural-evolution/9DBF086C84C3DB984DA028FB85EDD020>

#### **KIM STERELNY – Veiled agency? Children, innovation and the archaeological record**

Children and subadults were obviously part of ancient human communities, and almost certainly, in important ways their activities were distinctive; they did not routinely act like scaled down adults. Yet their presence was quite cryptic, but not entirely hidden. Their lives and acts did leave traces, although these tend to be fragile, ambiguous and fast-fading. In addition to pursuing the methodological issues posed by the detection of subadult lives, this special issue raises important questions about the role of children, and their willingness to experiment and play, on innovation. It is true that ethnographically known forager children are almost certainly more autonomous, experimental and adventurous than WEIRD children, and this was probably true of the young foragers of the early Holocene and late Pleistocene too. Their greater willingness to experiment probably fuelled a supply of variation, and perhaps occasionally adaptation as well, especially finding new uses for existing materials. Much more certainly, innovations tend to be noted, taken up and spread by adolescents. They were vectors of change, even if perhaps only rarely initiators of change.

<https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/veiled-agency-children-innovation-and-the-archaeological-record/57ADE075335D0B05984D270E8997BE6C>

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## Language and Cognition

### PAPERS

#### **WOJCIECH LEWANDOWSKI – Variable motion event encoding within languages and language types: a usage-based perspective**

Speakers of the world’s languages differ in the ways they talk about directed motion. Speakers of satellite-framed languages (S-languages; e.g., English) typically conflate Path and Manner in a single clause (e.g., run out), whereas speakers of verb-framed languages (V-languages; e.g., Spanish) tend to convey Path and Manner in two different clauses (e.g., salir corriendo ‘exit running’). Herein, we ask whether speakers also show systematic variability within particular languages and language types in their directed motion descriptions. We examine this question by comparing oral narratives of adult native speakers of one V-language (Spanish) and two S-languages (German, Polish) (N = 15), where each subject provided a simultaneous description of an ongoing animated video depicting self- (e.g., jump into the river) and caused-motion (e.g., throw a stone into the river) events. Our results showed strong evidence for both intra-typological and language-internal variability, especially in the extent to which the Manner component is encoded. Overall, the locus of Path encoding (e.g., verb, prefix, particle) and the conceptual structure of motion events (i.e., self-motion, caused-motion) were two key factors that influenced the speakers’ choice of lexicalization pattern. We discuss the implications of our findings, which (i) suggest a more nuanced typology of motion events that expands the binary distinction between V- vs. S-languages – in line with earlier work on intra-typological variability, and (ii) highlight the relevance of such a nuanced typology for motion cognition.

<https://www.cambridge.org/core/journals/language-and-cognition/article/variable-motion-event-encoding-within-languages-and-language-types-a-usagebased-perspective/FFB89CC1451944E563C5BC1006A6FBCF>

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## Nature

### NEWS

#### **Arms control: cuttlefish can pass the ‘marshmallow test’**

The ten-limbed molluscs can defer gratification — and those that hold out the longest score best on learning performance.

<https://www.nature.com/articles/d41586-021-00556-4>

#### **Neanderthals could hear like we can**

Modelling of Neanderthal ear canals reveals they were tuned to certain sounds that are common in modern speech.

<https://www.nature.com/articles/d41586-021-00554-6>

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## Nature Communications

### PAPERS

#### **KIMMO ERIKSSON et al – Perceptions of the appropriate response to norm violation in 57 societies**

Norm enforcement may be important for resolving conflicts and promoting cooperation. However, little is known about how preferred responses to norm violations vary across cultures and across domains. In a preregistered study of 57 countries (using convenience samples of 22,863 students and non-students), we measured perceptions of the appropriateness of various responses to a violation of a cooperative norm and to atypical social behaviors. Our findings highlight both cultural universals and cultural variation. We find a universal negative relation between appropriateness ratings of norm violations and appropriateness ratings of responses in the form of confrontation, social ostracism and gossip. Moreover, we find the country variation in the appropriateness of sanctions to be consistent across different norm violations but not across different sanctions. Specifically, in those countries where use of physical confrontation and social ostracism is rated as less appropriate, gossip is rated as more appropriate.

<https://www.nature.com/articles/s41467-021-21602-9>

#### **JACK D. LESTER et al with CRICKETTE SANZ, KLAUS ZUBERBUEHLER & CHRISTOPHE BOESCH – Recent genetic connectivity and clinal variation in chimpanzees**

Much like humans, chimpanzees occupy diverse habitats and exhibit extensive behavioural variability. However, chimpanzees are recognized as a discontinuous species, with four subspecies separated by historical geographic barriers. Nevertheless, their range-wide degree of genetic connectivity remains poorly resolved, mainly due to sampling limitations. By analyzing a geographically comprehensive sample set amplified at microsatellite markers that inform recent population history, we found that isolation by distance explains most of the range-wide genetic structure of chimpanzees. Furthermore, we did not identify spatial discontinuities corresponding with the recognized subspecies, suggesting that some of the subspecies-delineating geographic barriers were recently permeable to gene flow. Substantial range-wide genetic connectivity is consistent with the hypothesis that behavioural flexibility is a salient driver of chimpanzee responses to changing environmental conditions. Finally, our observation of strong local differentiation associated with recent anthropogenic pressures portends future loss of critical genetic diversity if habitat fragmentation and population isolation continue unabated.

<https://www.nature.com/articles/s42003-021-01806-x>

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## Nature Ecology & Evolution

### PAPERS

#### **MERCEDES CONDE-VALVERDE et al with JOSÉ MARÍA BERMÚDEZ DE CASTRO – Neanderthals and Homo sapiens had similar auditory and speech capacities**

The study of audition in fossil hominins is of great interest given its relationship with intraspecific vocal communication. While the auditory capacities have been studied in early hominins and in the Middle Pleistocene Sima de los Huesos hominins, less is known about the hearing abilities of the Neanderthals. Here, we provide a detailed approach to their auditory capacities. Relying on computerized tomography scans and a comprehensive model from the field of auditory bioengineering, we have established sound power transmission through the outer and middle ear and calculated the occupied bandwidth in Neanderthals. The occupied bandwidth is directly related to the efficiency of the vocal communication system of a species. Our results show that the occupied bandwidth of Neanderthals was greater than the Sima de los Huesos hominins and similar to extant humans, implying that Neanderthals evolved the auditory capacities to support a vocal communication system as efficient as modern human speech.

<https://www.nature.com/articles/s41559-021-01391-6>

#### **S. ANNA FLORIN et al – Pandanus nutshell generates a palaeoprecipitation record for human occupation at Madjedbebe, northern Australia**

Little is known about the Pleistocene climatic context of northern Australia at the time of early human settlement. Here we generate a palaeoprecipitation proxy using stable carbon isotope analysis of modern and archaeological pandanus nutshell from Madjedbebe, Australia’s oldest known archaeological site. We document fluctuations in precipitation over the last 65,000 years and identify periods of lower precipitation during the penultimate and last glacial stages, Marine Isotope Stages

4 and 2. However, the lowest effective annual precipitation is recorded at the present time. Periods of lower precipitation, including the earliest phase of occupation, correspond with peaks in exotic stone raw materials and artefact discard at the site. This pattern is interpreted as suggesting increased group mobility and intensified use of the region during drier periods. <https://www.nature.com/articles/s41559-020-01379-8>

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## Nature Human Behaviour

### PAPERS

#### **PAUL L. HOOPER, HILLARD S. KAPLAN & ADRIAN V. JAEGLI – Gains to cooperation drive the evolution of egalitarianism**

What conditions favour egalitarianism, that is, muted hierarchies with relatively equal distributions of resources? Here, we combine the hawk–dove and prisoner’s dilemma games to model the effects of economic defensibility, costs of competition and gains from cooperation on egalitarianism, operationalized as the absence of hawks. We show that a ‘leveller’ strategy, which punishes hawkishness in the hawk–dove game with defection in the prisoner’s dilemma, can be evolutionarily stable provided that the gains from cooperation are high relative to the benefits of hawkishness. Under these conditions, rare mutant levellers select for hawks that acquiesce to punishment by playing dove. If these ‘acquiescent hawks’ become common, levellers outperform hawks and establish a new egalitarian equilibrium. An analysis of human foraging groups corroborates these results, as groups with a greater reliance on cooperation are more egalitarian. Cooperation fosters greater equality when individuals can withhold its benefits from would-be dominant individuals.

<https://www.nature.com/articles/s41562-021-01059-y>

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## Nature Humanities & Social Sciences Communications

### PAPERS

#### **Á. GÓMEZ et al – Admiration for Islamist groups encourages self-sacrifice through identity fusion**

The psychological mechanisms that lead terrorists to make costly sacrifices for their ideological convictions are of great theoretical and practical importance. We investigate two key components of this process: (1) the feeling of admiration toward ingroup members making costly self-sacrifices for their ideological group, and (2) identity fusion with religion. Data collected in 27 Spanish prisons reveal that jihadists’ admiration toward members of radical Islamist groups amplifies their willingness to engage in costly sacrifices for religion in prison. This effect is produced because admiration toward radical Islamist groups has a binding effect, increasing identity fusion with religion. Five additional experiments provide causal and behavioural evidence for this model. By showing that admiration for ingroup members increases identity fusion, which in turn makes individuals prone to engage in costly pro-group behaviours, we provide insights into the emotional machineries of radicalization and open new avenues for prevention strategies to strengthen public safety.

<https://www.nature.com/articles/s41599-021-00734-9>

#### **LU GRAM et al – Modelling collective action to change social norms around domestic violence: social dilemmas and the role of altruism**

Interventions promoting collective action have been used to prevent domestic violence in a range of settings, but their mechanisms of operation remain unclear. We formalise and combine feminist theoretical approaches to domestic violence into a game-theoretic model of women’s collective action to change gendered social norms and outcomes. We show that social norms create a social dilemma in which it is individually rational for women to abstain from action to prevent domestic violence among neighbours, but all women suffer negative consequences if none take action. Promoting altruism among women can overcome the social dilemma. Discouraging women from tolerating domestic violence, imposing additional external punishment on men for perpetrating violence, or lowering costs to women of taking action against violence may not work or even backfire. We invite researchers on community mobilisation to use our framework to frame their understandings of collective action to prevent domestic violence.

<https://www.nature.com/articles/s41599-021-00730-z>

#### **ALASTAIR J. M. KEY, IVAN JARIĆ & DAVID L. ROBERTS – Modelling the end of the Acheulean at global and continental levels suggests widespread persistence into the Middle Palaeolithic**

The Acheulean is the longest cultural tradition ever practised by humans, lasting for over 1.5 million years. Yet, its end has never been accurately dated; only broad 300–150 thousand years ago (Kya) estimates exist. Here we use optimal linear estimation modelling to infer the extinction dates of the Acheulean at global and continental levels. In Africa and the Near East the Acheulean is demonstrated to end between 175 and 166 Kya. In Europe it is inferred to end between 141 and 130 Kya. The Acheulean’s extinction in Asia occurs later (57–53 Kya), while global models vary depending on how archaeological sites are selected (107–29 Kya). These models demonstrate the Acheulean to have remained a distinct cultural tradition long after the inception of Middle Palaeolithic technologies in multiple continental regions. The complexity of this scenario mirrors the increasingly dynamic nature of the Middle Pleistocene hominin fossil record, suggesting contemporaneous hominin populations to have practised distinct stone-tool traditions.

<https://www.nature.com/articles/s41599-021-00735-8>

**CHRIS BAUMANN et al with NICHOLAS J. CONARD – A refined proposal for the origin of dogs: the case study of Gniirshöhle, a Magdalenian cave site**

Dogs are known to be the oldest animals domesticated by humans. Although many studies have examined wolf domestication, the geographic and temporal origin of this process is still being debated. To address this issue, our study sheds new light on the early stages of wolf domestication during the Magdalenian period (16–14 ka cal BP) in the Hegau Jura region (Southwestern Germany and Switzerland). By combining morphology, genetics, and isotopes, our multidisciplinary approach helps to evaluate alternate processes driving the early phases of domestication. The isotope analysis uncovered a restricted, low  $\delta^{15}\text{N}$  protein diet for all analyzed Gniirshöhle specimens, while morphological examinations and phylogenetic relationships did not unequivocally assign them to one or the other canid lineage. Intriguingly, the newly generated mitochondrial canid genomes span the entire genetic diversity of modern dogs and wolves. Such high mitochondrial diversity could imply that Magdalenian people tamed and reared animals originating from different wolf lineages. We discuss our results in light of three ecological hypotheses and conclude that both domestication and the existence of a specialized wolf ecomorph are highly probable. However, due to their proximity to humans and a restricted diet, we propose domestication as the most likely scenario explaining the patterns observed herein.

<https://www.nature.com/articles/s41598-021-83719-7>

**KRIST VAESEN, GERRIT L. DUSSELDORP & MARK J. BRANDT – An emerging consensus in palaeoanthropology: demography was the main factor responsible for the disappearance of Neanderthals**

The causes of Neanderthal disappearance about 40,000 years ago remain highly contested. Over a dozen serious hypotheses are currently endorsed to explain this enigmatic event. Given the relatively large number of contending explanations and the relatively large number of participants in the debate, it is unclear how strongly each contender is supported by the research community. What does the community actually believe about the demise of Neanderthals? To address this question, we conducted a survey among practicing palaeo-anthropologists (total number of respondents = 216). It appears that received wisdom is that demography was the principal cause of the demise of Neanderthals. In contrast, there is no received wisdom about the role that environmental factors and competition with modern humans played in the extinction process; the research community is deeply divided about these issues. Finally, we tested the hypothesis that palaeo-anthropologists' stand in the debate co-varies with their socio-political views and attitudes. We found no evidence for such a correlation.

<https://www.nature.com/articles/s41598-021-84410-7>

**WILLIAM E. BANKS et al with FRANCESCO D'ERRICO – An ecological niche shift for Neanderthal populations in Western Europe 70,000 years ago**

Middle Paleolithic Neanderthal populations occupied Eurasia for at least 250,000 years prior to the arrival of anatomically modern humans. While a considerable body of archaeological research has focused on Neanderthal material culture and subsistence strategies, little attention has been paid to the relationship between regionally specific cultural trajectories and their associated existing fundamental ecological niches, nor to how the latter varied across periods of climatic variability. We examine the Middle Paleolithic archaeological record of a naturally constrained region of Western Europe between 82,000 and 60,000 years ago using ecological niche modeling methods. Evaluations of ecological niche estimations, in both geographic and environmental dimensions, indicate that 70,000 years ago the range of suitable habitats exploited by these Neanderthal populations contracted and shifted. These ecological niche dynamics are the result of groups continuing to occupy habitual territories that were characterized by new environmental conditions during Marine Isotope Stage 4. The development of original cultural adaptations permitted this territorial stability.

<https://www.nature.com/articles/s41598-021-84805-6>

**ALBA CASTELLANO-NAVARRO et al – Japanese Macaques' (*Macaca fuscata*) sensitivity to human gaze and visual perspective in contexts of threat, cooperation, and competition**

Gaze sensitivity allows us to interpret the visual perspective of others, inferring their intentions and attentional states. In order to clarify the evolutionary history of this ability, we assessed the response of free-ranging Japanese macaques (*Macaca fuscata*) to human gaze in three contexts: threat (Experiment 1), cooperation (Experiment 2), and competition (Experiment 3). Subjects interpreted the direct gaze of an approaching human as a sign of threat, showing a greater flight initiation distance and more threats towards the human in this condition than when the human gazed in another direction. Subjects also adapted their behavior to the attentional cues of a human who gave them food, by for example moving into his visual field. However, the macaques did not seem to take the visual perspective of a human competing with them over food, as they failed to first retrieve the food that was not visible to the human (i.e., located behind an opaque barrier). Our results support the idea that Japanese macaques can respond to a human's gaze flexibly depending on the context. Moreover, they highlight the importance of studying animal behavior across different species and contexts to better understand the selective pressures that might have led to its evolution.

<https://www.nature.com/articles/s41598-021-84250-5>

## **HIROTAKA IWAKI et al – Your verbal questions beginning with 'what' will rapidly deactivate the left prefrontal cortex of listeners**

The left prefrontal cortex is essential for verbal communication. It remains uncertain at what timing, to what extent, and what type of phrase initiates left-hemispheric dominant prefrontal activation during comprehension of spoken sentences. We clarified this issue by measuring event-related high-gamma activity during a task to respond to three-phrase questions configured in different orders. Questions beginning with a wh-interrogative deactivated the left posterior prefrontal cortex right after the 1st phrase offset and the anterior prefrontal cortex after the 2nd phrase offset. Left prefrontal high-gamma activity augmented subsequently and maximized around the 3rd phrase offset. Conversely, questions starting with a concrete phrase deactivated the right orbitofrontal region and then activated the left posterior prefrontal cortex after the 1st phrase offset. Regardless of sentence types, high-gamma activity emerged earlier, by one phrase, in the left posterior prefrontal than anterior prefrontal region. Sentences beginning with a wh-interrogative may initially deactivate the left prefrontal cortex to prioritize the bottom-up processing of upcoming auditory information. A concrete phrase may obliterate the inhibitory function of the right orbitofrontal region and facilitate top-down lexical prediction by the left prefrontal cortex. The left anterior prefrontal regions may be recruited for semantic integration of multiple concrete phrases.

<https://www.nature.com/articles/s41598-021-84610-1>

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## **New Scientist**

### **NEWS**

#### **Neanderthal ears were tuned to hear speech just like modern humans**

Virtual reconstructions of Neanderthal ears show that our extinct cousins had the same physical capacity for hearing as modern humans, and by inference could also make the same sounds we can – although whether they actually spoke a language is still unknown.

<https://www.newscientist.com/article/2269577-neanderthal-ears-were-tuned-to-hear-speech-just-like-modern-humans/#ixzz6oBJ2IH3N>

#### **Earliest human ancestors may have swung on branches like chimps**

Our distant ancestors may have swung from branches and knuckle-walked like a chimpanzee – challenging recent thinking that the earliest hominins did neither. That is the conclusion of an analysis of 4.4-million-year-old *Ardipithecus ramidus*, thought to be one of the earliest known hominins.

<https://www.newscientist.com/article/2269038-earliest-human-ancestors-may-have-swung-on-branches-like-chimps/#ixzz6oBJLErVh>

#### **Earliest American dog hints pets accompanied first people in Americas**

Dogs were domesticated at least 27,000 years ago, and they have been tagging along with humans ever since. Now, we may have the strongest evidence yet that early dogs even accompanied the first Americans as they moved along the Pacific coast.

<https://www.newscientist.com/article/2268851-earliest-american-dog-hints-pets-accompanied-first-people-in-americas/#ixzz6oBJXTAMn>

### **ARTICLES**

#### **ROBIN DUNBAR – The hidden rules that determine which friendships matter to us**

Evolutionary psychologist Robin Dunbar has found that our friendships are governed by secret rules, based on everything from your sex to your sleep schedule. Our unique social fingerprints help determine who we are drawn to, which friendships last and why some friends are ultimately replaceable.

<https://www.newscientist.com/article/mg24933240-700-the-hidden-rules-that-determine-which-friendships-matter-to-us/#ixzz6oBJoYubt>

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## **PLoS Genetics**

### **PAPERS**

#### **CONOR R. WALKER et al – Short-range template switching in great ape genomes explored using pair hidden Markov models**

*This is an uncorrected proof*

Many complex genomic rearrangements arise through template switch errors, which occur in DNA replication when there is a transient polymerase switch to an alternate template nearby in three-dimensional space. While typically investigated at kilobase-to-megabase scales, the genomic and evolutionary consequences of this mutational process are not well characterised at smaller scales, where they are often interpreted as clusters of independent substitutions, insertions and deletions. Here we present an improved statistical approach using pair hidden Markov models, and use it to detect and describe short-range template switches underlying clusters of mutations in the multi-way alignment of hominid genomes. Using robust statistics derived from evolutionary genomic simulations, we show that template switch events have been widespread in the evolution of the great apes' genomes and provide a parsimonious explanation for the presence of many complex mutation clusters in their phylogenetic context. Larger-scale mechanisms of genome rearrangement are typically

associated with structural features around breakpoints, and accordingly we show that atypical patterns of secondary structure formation and DNA bending are present at the initial template switch loci. Our methods improve on previous non-probabilistic approaches for computational detection of template switch mutations, allowing the statistical significance of events to be assessed. By specifying realistic evolutionary parameters based on the genomes and taxa involved, our methods can be readily adapted to other intra- or inter-species comparisons.

<https://journals.plos.org/plosgenetics/article?id=10.1371/journal.pgen.1009221>

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## PNAS

### PAPERS

#### **ANIL KUMAR BANDELA et al – Primitive selection of the fittest emerging through functional synergy in nucleopeptide networks**

Many fundamental cellular and viral functions, including replication and translation, involve complex ensembles hosting synergistic activity between nucleic acids and proteins/peptides. There is ample evidence indicating that the chemical precursors of both nucleic acids and peptides could be efficiently formed in the prebiotic environment. Yet, studies on nonenzymatic replication, a central mechanism driving early chemical evolution, have focused largely on the activity of each class of these molecules separately. We show here that short nucleopeptide chimeras can replicate through autocatalytic and cross-catalytic processes, governed synergistically by the hybridization of the nucleobase motifs and the assembly propensity of the peptide segments. Unequal assembly-dependent replication induces clear selectivity toward the formation of a certain species within small networks of complementary nucleopeptides. The selectivity pattern may be influenced and indeed maximized to the point of almost extinction of the weakest replicator when the system is studied far from equilibrium and manipulated through changes in the physical (flow) and chemical (template and inhibition) conditions. We postulate that similar processes may have led to the emergence of the first functional nucleic-acid-peptide assemblies prior to the origin of life. Furthermore, spontaneous formation of related replicating complexes could potentially mark the initiation point for information transfer and rapid progression in complexity within primitive environments, which would have facilitated the development of a variety of functions found in extant biological assemblies.

<https://www.pnas.org/content/118/9/e2015285118.abstract?etoc>

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