

# EAORC BULLETIN 1,215 – 27 September 2026

## CONTENTS

|                                                                                                                                                                         |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>NOTICES.....</b>                                                                                                                                                     | <b>3</b> |
| FORMATTED VERSION OF THIS BULLETIN .....                                                                                                                                | 3        |
| PUBLICATION ALERTS .....                                                                                                                                                | 3        |
| EDITORIAL INTERJECTIONS .....                                                                                                                                           | 3        |
| <b>NEWS.....</b>                                                                                                                                                        | <b>3</b> |
| NATURE BRIEFING – “The lesson I draw from Ngogo is that we are not doomed to turn on each other.” .....                                                                 | 3        |
| NEWS FROM SCIENCE – Why AI agents invent their own language if you let them chat .....                                                                                  | 3        |
| NEWS FROM SCIENCE – Bones link 10,000-year-old temple complex to a village, not a ‘skull cult’ .....                                                                    | 3        |
| SCIENCEADVISER – The brain is not one organ, but two .....                                                                                                              | 3        |
| SCIENCEADVISER – Dogs, like humans, listen for consonants .....                                                                                                         | 3        |
| SCIENCEADVISER – For orangutans, the more learning, the merrier .....                                                                                                   | 4        |
| SCIENCENEWS – When we were prey.....                                                                                                                                    | 4        |
| THE CONVERSATION – The wondrous history of fairy tale art – from wolves & witches to fallen princesses .....                                                            | 4        |
| THE CONVERSATION – How a love of gossip could make you a better reader .....                                                                                            | 4        |
| <b>PUBLICATIONS.....</b>                                                                                                                                                | <b>4</b> |
| Academia Neuroscience and Brain Research .....                                                                                                                          | 4        |
| <b>PAPERS.....</b>                                                                                                                                                      | <b>4</b> |
| JUDITH ZANGERLE – Linguistic frame switching in German–English bilinguals: implications for neuroscience .....                                                          | 4        |
| American Journal of Biological Anthropology .....                                                                                                                       | 5        |
| <b>PAPERS.....</b>                                                                                                                                                      | <b>5</b> |
| CAYLA KARLS et al – Conflict, Constraint, Cooperation, and Allocation: A Plural Evolutionary Architecture for Human Reproductive Paradoxes .....                        | 5        |
| JULIETTE SAUVAGE et al – Ancient DNA Reveals Limited Hunter-Gatherer Ancestry in the Cerny Culture (Middle Neolithic, France) Despite Hunting-Associated Practices..... | 5        |
| TOM COMBEMOREL, JESSE W. YOUNG & FRANÇOIS DRUELLE – Ontogenetic Changes in Intrinsic Hand and Foot Proportions in Chimpanzees, Pan troglodytes .....                    | 5        |
| Cell Genomics .....                                                                                                                                                     | 6        |
| <b>PAPERS.....</b>                                                                                                                                                      | <b>6</b> |
| YANTING LUO et al – Intraspecific sequence variation and complete genomes refine the identification of rapidly evolved regions in humans .....                          | 6        |
| Current Biology .....                                                                                                                                                   | 6        |
| <b>ARTICLES.....</b>                                                                                                                                                    | <b>6</b> |
| MICHAEL GROSS – What it means to be Homo .....                                                                                                                          | 6        |
| <b>PAPERS.....</b>                                                                                                                                                      | <b>6</b> |
| ANDREJ BICANSKI – A vector navigation and inference architecture can construct universal cognitive maps for abstract reasoning.....                                     | 6        |
| eLife.....                                                                                                                                                              | 7        |
| <b>PAPERS.....</b>                                                                                                                                                      | <b>7</b> |
| LOUIS CHITIZ et al – The stability of thought: using experience sampling and brain imaging to determine the contextually bound nature of human cognition.....           | 7        |
| ZHUOQIAO HONG et al – Larger language models better align with neural representations of natural language .....                                                         | 7        |
| Evolutionary Anthropology .....                                                                                                                                         | 7        |
| <b>ARTICLES.....</b>                                                                                                                                                    | <b>7</b> |
| CLÉMENT ZANOLLI et al with ISABELLE CREVECOEUR & BRIAN VILLMOARE – The Early Homo Conundrum: Challenges and Potential Solutions .....                                   | 7        |
| <b>PAPERS.....</b>                                                                                                                                                      | <b>7</b> |
| ADRIANO R. LAMEIRA – Silence as an Overlooked Catalyzer for Primate Vocal Evolution .....                                                                               | 7        |
| MIKI BEN-DOR & RAN BARKAI – Through Time and Across Traits: Evaluating Explanations of Human Evolution .....                                                            | 8        |
| RACHEL M. HURWITZ et al with SUSANA CARVALHO & THOMAS A. PÜSCHEL – Impacted Bones: Can Extant Primates Help Identify Tool Use in Early Hominins?.....                   | 8        |
| IULIA BĂDESCU – Primate Play and the Classificatory Making of Human Nature .....                                                                                        | 8        |
| iScience.....                                                                                                                                                           | 8        |
| <b>PAPERS.....</b>                                                                                                                                                      | <b>8</b> |
| KAYLA KOLFF & SIMONE PIKA – When grooming stalls: Assessing communicative repair, negotiation, and progressivity in chimpanzees .....                                   | 8        |
| Language and Cognition .....                                                                                                                                            | 9        |
| <b>PAPERS.....</b>                                                                                                                                                      | <b>9</b> |

|                                                                                                                                                                                            |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| GABRIEL BRAUN & EINAT SHETREET – Implicit dominance: Truthfulness of implicit information shapes commitment across meanings, but explicit truthfulness is limited to explicit meaning..... | 9  |
| Nature .....                                                                                                                                                                               | 9  |
| ARTICLES.....                                                                                                                                                                              | 9  |
| AUDREY M. ARNER & AMANDA J. LEA – The human skeleton’s unique adaptations relied on gene regulatory changes .....                                                                          | 9  |
| PAPERS.....                                                                                                                                                                                | 9  |
| YIZHI YAN et al – The gene-regulatory evolution of the human skeleton .....                                                                                                                | 9  |
| Nature Communications .....                                                                                                                                                                | 9  |
| PAPERS.....                                                                                                                                                                                | 9  |
| VALERII CHIRKOV et al – Payoff selectivity drives collective intelligence during dynamic resource tracking in humans .....                                                                 | 9  |
| Nature Communications Biology.....                                                                                                                                                         | 10 |
| PAPERS.....                                                                                                                                                                                | 10 |
| ALICE VIVIEN BARCHET et al – Linguistic information may compensate for age-related decline in attentional filtering .....                                                                  | 10 |
| Nature Heredity .....                                                                                                                                                                      | 10 |
| PAPERS.....                                                                                                                                                                                | 10 |
| CRISTIAN PIZZIGALLI et al – Agriculture affects genetic diversity and functional connectivity in an ecologically flexible West African primate .....                                       | 10 |
| Nature Human Behaviour.....                                                                                                                                                                | 10 |
| ARTICLES.....                                                                                                                                                                              | 10 |
| JOHN C. MITANI – What chimpanzees at war have taught me about being human .....                                                                                                            | 10 |
| New Scientist .....                                                                                                                                                                        | 10 |
| NEWS .....                                                                                                                                                                                 | 10 |
| Our brain evolved from two primitive nervous systems that merged.....                                                                                                                      | 10 |
| ARTICLES.....                                                                                                                                                                              | 11 |
| JACKLIN KWAN – Do we live in a simulation? If so, it could be a giant consciousness experiment .....                                                                                       | 11 |
| CHRIS SIMMS – Wild chimpanzees teach youngsters by handing them tools.....                                                                                                                 | 11 |
| Philosophical Transactions of the Royal Society B .....                                                                                                                                    | 11 |
| PAPERS.....                                                                                                                                                                                | 11 |
| SEOHYEON LEE, SOLHA HWANG & M. JUSTIN KIM – From seeing to showing: towards a neuroscience of emotion production .....                                                                     | 11 |
| ELIALA ALICE SALVADORI et al – Smiling in time: the interactive development of infant smiling with mothers, fathers and strangers .....                                                    | 11 |
| MILICA NIKOLIĆ & ROBERT HEPACH – The expression of self-conscious emotions and their motivational and communicative function in early development .....                                    | 11 |
| IVAN NORSCIA, EDOARDO COLLARINI & GIADA CORDONI – The play fever: individual and group factors influence the contagion of play behaviour within social hominid groups .....                | 12 |
| AVELYNE S. VILLAIN et al – Vocal encoding of heritable sociability prevails over emotions in sheep bleats.....                                                                             | 12 |
| PLoS One.....                                                                                                                                                                              | 12 |
| PAPERS.....                                                                                                                                                                                | 12 |
| EDUARDO MÉNDEZ-QUINTAS et al – Random walks in handaxe knapping before 1.2 million years ago in East Africa at Melka Kunture (Upper Awash, Ethiopia).....                                  | 12 |
| JULIA GRESKY & LEE CLARE – First burials give insights into mortuary rites at Göbeklitepe, Early Neolithic Türkiye .....                                                                   | 12 |
| PNAS.....                                                                                                                                                                                  | 13 |
| PAPERS.....                                                                                                                                                                                | 13 |
| CHRISTIAN BENTZ & EWA DUTKIEWICZ – Humans 40,000 y ago developed a system of conventional signs .....                                                                                      | 13 |
| COMMENTARIES.....                                                                                                                                                                          | 13 |
| ALEXANDER KOPLINIG – Coding choices and short-sequence artifacts undermine claims of a conventional Paleolithic sign system .....                                                          | 13 |
| Science.....                                                                                                                                                                               | 13 |
| NEWS .....                                                                                                                                                                                 | 13 |
| Why AI agents invent their own language if you let them chat .....                                                                                                                         | 13 |
| ARTICLES.....                                                                                                                                                                              | 13 |
| NOA TRUSKANOV – Observation and exploration widen the menu.....                                                                                                                            | 13 |
| PAPERS.....                                                                                                                                                                                | 13 |
| T. REVATHE et al with CAREL P. VAN SCHAIK & ANDREW WHITEN – How 8 years of social and individual learning interact to shape ecological competence in orangutans .....                      | 13 |
| BOGLÁRKA MORVAI et al – Neural evidence that dogs segment the speech they hear with a humanlike consonant bias .....                                                                       | 13 |
| SUBSCRIBE to the EAORC Bulletin .....                                                                                                                                                      | 14 |
| UNSUBSCRIBE from the EAORC Bulletin .....                                                                                                                                                  | 14 |
| PRODUCED BY AND FOR THE EAORC EMAIL GROUP.....                                                                                                                                             | 14 |

## NOTICES

### FORMATTED VERSION OF THIS BULLETIN

A pdf formatted version of this Bulletin is available for download at [martinedwardes.me.uk/eaorc/eaorc\\_bulletins.htm](https://martinedwardes.me.uk/eaorc/eaorc_bulletins.htm).

### PUBLICATION ALERTS

If you have had a paper or book published, or you see something which would be of interest to the group, 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, let me know.

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

### EDITORIAL INTERJECTIONS

Comments in curly brackets are editorial interjections. The Editor reserves the right to be wrong, and doesn’t object to being called out on it.

---

## NEWS

### NATURE BRIEFING – “The lesson I draw from Ngogo is that we are not doomed to turn on each other.”

A deadly ‘civil war’ among chimpanzees (Pan troglodytes) doesn’t suggest that aggression is intrinsic to our evolution, argues anthropologist John Mitani, who has studied the Ngogo community in Kibale National Park, Uganda for more than 30 years. Instead, it demonstrates that an unparalleled capacity for cooperation, tolerance and care is what makes us human.

<https://www.nature.com/articles/s41562-026-02601-6.epdf>

### NEWS FROM SCIENCE – Why AI agents invent their own language if you let them chat

“Weird terms” are a natural—but disturbing—byproduct of agent swarms, researchers find.

<https://www.science.org/content/article/why-ai-agents-invent-their-own-language-if-you-let-them-chat>

### NEWS FROM SCIENCE – Bones link 10,000-year-old temple complex to a village, not a ‘skull cult’

Landslides, not rituals, may have scattered skulls and bones at Turkey’s famed Göbekli Tepe site.

<https://www.science.org/content/article/bones-link-10-000-year-old-temple-complex-village-not-skull-cult>

### SCIENCEADVISER – The brain is not one organ, but two

It was long presumed that the mammalian brain develops from a single progenitor cell—the very first brain stem cell, if you will. But when researchers looked closely at the early stages of mouse brain development, they realized that the forebrain and midbrain—the big, wrinkly parts that do most of what we consider “thinking”—grow from a different cell line than the hindbrain, which regulates automatic actions like breathing and hunger. The forebrain and midbrain come from a cell that expresses a gene called Otx2, while the hindbrain’s initial cell expresses Gbx2.

“We’ve shown for the first time that the front of the brain arises from a totally different progenitor cell than the back of the brain,” says study leader Kyle Loh in a statement.

This could help explain why researchers have struggled to grow hindbrain neurons from neural stem cells. “Previous attempts to make hindbrain neurons likely tried to coax forebrain and midbrain progenitors into hindbrain cells, which our study shows is not possible,” says co-first author Rayyan Jokhai.

“In stem cell biology, people are always fixated with creating the end cell type, like the neuron,” Jokhai adds. “But it’s important to begin at the earliest stages of embryonic development. Our careful attention to that early time point allowed us to find this fundamental split in brain development.”

The researchers compared their mouse results to brain development in a variety of species, from acorn worms to chickens, and found the same pattern. “Our research suggests that evolution took two existing neural systems and pushed them together spatially,” Loh explains. “Having the brain as one organ would probably be more efficient, but we rely on this primordial way to make the brain as two separate pieces.”

In fact, the results line up well with the fact that jellies, among the oldest lineages of animals with nerves, have two nervous systems. “Even 500 million years ago, there were these separate neural systems, which now almost operate as one, which is very cool,” says Jokhai.

<https://www.nature.com/articles/s41593-026-02433-7>

### SCIENCEADVISER – Dogs, like humans, listen for consonants

When babies hear other people talking, they tend to listen more closely to vowel sounds, which are stronger and more attention-grabbing, acoustically speaking, than consonants. By around one year of age, however, human ears increasingly

rely on consonants when identifying boundaries between words in continuous speech. This bias reflects the fact that, across many human languages, consonants are more useful than vowels for recognizing words.

Humans, it turns out, aren't the only ones with this preference. In a new study, scientists compared brain activity in 20 adult humans and 20 dogs as they listened to unbroken streams of three-syllable nonsense words. Some of the streams followed patterns based on either consonants or vowels, while a third set had no consistent word patterns, and no sounds clearly marked where one word ended and the next began. The experiments revealed that dogs, like humans, favor consonants over vowels when breaking continuous speech down into words. Researchers found this preference in dogs which had been exposed to human speech both early and late in life.

It's unclear, the study authors note, whether dogs' consonant bias reflects some ancient ability or, more likely, stems from their history of domestication. In any case, they explained, the results suggest that "exposure to speech, if necessary, may be sufficient for consonant bias to emerge, even in an evolutionarily distant, nonspeaking mammal."

<https://www.science.org/doi/10.1126/science.adw7709>

---

### SCIENCEADVISER – For orangutans, the more learning, the merrier

Babies of many species are constantly observing and interacting with the world around them—but which is more important? At least for orangutans, new research shows that learning from others' behavior is extra useful.

Orangutans are one of the longest-cared-for species, with youngsters remaining under their mother's care for around 8 years. By the time they become independent, orangutans must have a solid grasp of their vast diet, which includes around 250 different foods, some requiring tools to procure.

Researchers analyzed 4700 hours of observational data on 21 orangutans from the Suaq Balimbing research station in Indonesia. As the apes aged, they displayed a mix of individual learning, such as exploring and eating items in their habitats, as well as social learning, where they closely observed their mothers and other individuals in an action called "peering." The team found that social learning was up to five times more frequent than individual learning, and that a peering event often triggered hours of individual learning afterward. Strong social learning could even partially compensate when an orangutan didn't do much individual learning; the juveniles could glean five to six times more knowledge from others than when they explored alone.

"In simpler terms, they show clearly what we see in human children and other apes," evolutionary anthropologist Elizabeth Lonsdorf, who was not involved in the research, told New Scientist. "They watch others perform a behavior and then go try it out on their own."

<https://www.science.org/doi/10.1126/science.ael7040>

---

### SCIENCENEWS – When we were prey

Humans are pretty accustomed to our place atop the food chain. We generally don't have to worry about being eaten. But it wasn't always that way. Leopards hunted the early human relative *Homo habilis*, Roberta McLain reports for Science News Explores, our publication for curious younger readers.

That predation likely shaped the path of human evolution. The perils of life on the open savanna may have favored people who lived in groups and cooperated to stay safe from hungry cats and other predators.

"Before we became one of the world's most successful predators, we first had to survive life as prey," Roberta writes.

<https://www.snexplores.org/article/human-evolution-hunted-prey-predator>

---

### THE CONVERSATION – The wondrous history of fairy tale art – from wolves & witches to fallen princesses

Fairy tales continue to nourish artistic invention because their characters embrace continual metamorphosis, discovering yet another possibility within an old story.

<https://theconversation.com/the-wondrous-history-of-fairy-tale-art-from-wolves-and-witches-to-fallen-princesses-292490>

---

### THE CONVERSATION – How a love of gossip could make you a better reader

Gossiping involves being able to read social codes and pick up a host of other signals.

<https://theconversation.com/how-a-love-of-gossip-could-make-you-a-better-reader-291810>

---

## PUBLICATIONS

---

### Academia Neuroscience and Brain Research

#### PAPERS

#### JUDITH ZANGERLE – Linguistic frame switching in German–English bilinguals: Implications for neuroscience

Multilingual speakers frequently report that operating in a different language involves more than a change in grammatical system. The phenomenon at issue is linguistic frame switching (LFS): the involuntary reorganisation of cognitive, emotional, and identity-relevant schemas when a multilingual speaker moves between languages. This study investigated whether German–English bilinguals exhibit systematic language-dependent differences in self-perception and narrative content.

---

This report presents findings from an original mixed-methods study of 27 German–English bi- and multilinguals, combining self-report questionnaire data with computational text analysis (linguistic inquiry and word count, LIWC) of matched narrative pairs elicited by identical picture prompts in both languages at a six-week interval.

Approximately 78% of the participants reported feeling distinctly different when using their respective languages (21 of 27;  $\chi^2(1) = 8.33$ ,  $p = 0.004$ ). LIWC analysis revealed systematic cross-linguistic divergences: German narratives were consistently richer in cognitive processing, occupation-related content, and achievement themes; English narratives were higher in social process language. At the individual level, the contrasts were sometimes dramatic—the same person, the same picture, but two narratives that read as if written by different authors.

It is argued that these patterns cannot be explained by code-switching or translation equivalence effects alone. LFS, the present report suggests, has largely untapped implications for how neuroscience conceptualises the brain–mind–environment relationship. These findings are exploratory and subject to important limitations: the sample was small ( $N = 27$ ) and self-selected, language proficiency was self-rated rather than objectively measured, and no monolingual control group was included.

<https://www.academia.edu/3071-4087/2/3/10.20935/AcadNeurosci8481>

## American Journal of Biological Anthropology

### PAPERS

#### **CAYLA KARLS et al – Conflict, Constraint, Cooperation, and Allocation: A Plural Evolutionary Architecture for Human Reproductive Paradoxes**

Human reproduction presents features that appear inefficient in isolation: gamete overproduction, mechanically demanding birth, neonatal altriciality, lactational suppression of fertility, reproductive cessation, prolonged post-reproductive survival, and extensive care by individuals other than parents. Evolutionary accounts increasingly explain such features through conflict among parties with divergent fitness interests. We argue that conflict loses discriminating power when the term is extended to physical limits, to cooperative interactions, and to trade-offs within a single organism, and that this loss occurs as a formally derived concept becomes a framing metaphor in synthetic and applied literatures. We set out an explanatory architecture in which four processes—genetic conflict, constraint, cooperative dependence, and life-history allocation—occupy distinct positions within a single optimization structure: constraint specifies the feasible set and the shape of the benefit and cost functions, allocation identifies the optimum for one party within it, and conflict and cooperative dependence describe how many parties hold optima on the same joint phenotype and whether their marginal interests oppose or align. A cross-cutting temporal dimension covers traits whose consequences fall on one individual at more than one time. We restate conflict as a claim about marginal rather than total fitness returns, so that shared benefit neither establishes nor refutes it. Explicit coding rules assign nine phenomena a primary architecture and contributing processes, with evidence status, standing in the literature, and discriminating predictions. Two worked cases—the obstetrical dilemma and lactational amenorrhea—convert contested labels into separable empirical programs. The framework does not settle these questions; it specifies which measurements would.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.70359>

#### **JULIETTE SAUVAGE et al – Ancient DNA Reveals Limited Hunter-Gatherer Ancestry in the Cerny Culture (Middle Neolithic, France) Despite Hunting-Associated Practices**

The arrival of the Neolithic way of life in Europe is associated with the migration of Anatolian farmers and their admixture with local hunter-gatherers. In the Paris Basin (Northern France), the Middle Neolithic Cerny culture (4700–4300 bce) combines agricultural practices with funerary items linked to hunting, suggesting a particular connection with the local descendants of Mesolithic hunter-gatherers. The monumental burials gathering only a handful of deceased indicate the development of an elite. To better understand Cerny social structures, we generated genome-wide data for 28 individuals from the Paris basin, including 5 individuals from the Early Neolithic and 23 from various Cerny-associated necropolises. Our analysis revealed no significantly higher Mesolithic hunter-gatherer ancestry compared to other European Neolithic contemporaneous populations, indicating that distinctive cultural traits of the Cerny burials were not linked to biological admixture. We observed genetic continuity among the Paris Basin populations between the Early and Middle Neolithic, with minimal gene flow from other areas and a high degree of genetic homogeneity at the regional level. Finally, genetic relatedness and haplotype-sharing analyses identified only two close biological relationships, suggesting that Cerny necropolises in the Paris Basin were not organized only around biologically related individuals.

<https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.70351>

#### **TOM COMBEMOREL, JESSE W. YOUNG & FRANÇOIS DRUELLE – Ontogenetic Changes in Intrinsic Hand and Foot Proportions in Chimpanzees, *Pan troglodytes***

Ontogenetic trajectories in intrinsic hand and foot proportions are likely to vary in primates according to their locomotor adaptations. We analyzed the developmental trajectories of chimpanzees (*Pan troglodytes*), which exhibit particular locomotor adaptations related to suspensory and climbing abilities, testing whether autopodial growth reflects biomechanical and ecological constraints associated with ontogenetic changes in locomotor behavior.

We analyzed 157 radiographs of 7 female and 198 of 8 male *P. troglodytes* individuals, from 1.5 to 13 years old. Lengths of metapodials and proximal/intermediate phalanges were measured to compute phalangeal indices (PIs: ratio of summed non-distal phalangeal length to corresponding metapodial length). Ontogenetic allometry was assessed by regressing bone length against body mass, with sex included as a factor. Non-linear Gompertz growth models were fitted to estimate bone-specific growth rates and durations.

The results show a positively allometric relationship between all bone lengths and body mass. However, sex-related differences are observed in the allometry of phalanges and metapodials. PIs decline during growth for all digits, with this ontogenetic decline remaining highly similar between sexes. Gompertz models further indicate distinct growth rates between manual and pedal elements.

Ontogenetic changes in chimpanzees indicate canalized autopodial growth, with reduced intrinsic proportional changes at ~5 years, aligning with their major positional shift. Comparative analyses show species-specific phalangeal trajectories, possibly more pronounced in the foot than in the hand and likely reflecting adaptations to ecological and locomotor demands, such as terrestrial knuckle-walking in large-bodied chimpanzees.

<https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.70346>

## Cell Genomics

### PAPERS

#### **YANTING LUO et al – Intraspecific sequence variation and complete genomes refine the identification of rapidly evolved regions in humans**

Humans exhibit significant phenotypic differences from other great apes, yet pinpointing the underlying genetic changes has been limited by incomplete reference genomes and a reliance on single assemblies to represent a species. We aligned 20 telomere-to-telomere (T2T) assemblies spanning great ape divergence and variation to define 1,596 Consensus HAQERs (consensus human ancestor quickly evolved regions), regions that diverged rapidly between the human-chimpanzee ancestor and an ancestral node of modern humans. Unlike prior HAQER sets, Consensus HAQERs incorporate population variation, thereby reducing the likelihood of intraspecies variation appearing as interspecies divergence. Consensus HAQERs exhibit signatures of elevated mutation rates, ancient positive selection, and bivalent regulatory function; are enriched in disease-linked loci; and often emerged in previously inaccessible repetitive DNA. Through multiplex, single-cell enhancer assays, we identify HAQERs as active enhancers in the developing brain and cardiomyocytes, and we highlight their potential contributions to human-specific gene regulation across multiple tissues.

[https://www.cell.com/cell-genomics/fulltext/S2666-979X\(26\)00225-9](https://www.cell.com/cell-genomics/fulltext/S2666-979X(26)00225-9)

## Current Biology

### ARTICLES

#### **MICHAEL GROSS – What it means to be Homo**

A wealth of new evidence on our evolutionary ancestry makes a revision of the family tree necessary. The current delineation of the genus *Homo* may no longer be adequate. Michael Gross reports.

[https://www.cell.com/current-biology/abstract/S0960-9822\(26\)01181-4](https://www.cell.com/current-biology/abstract/S0960-9822(26)01181-4)

### PAPERS

#### **ANDREJ BICANSKI – A vector navigation and inference architecture can construct universal cognitive maps for abstract reasoning**

The idea of cognitive maps in the hippocampal formation has its origins in decades of spatial cognition research. However, increasing evidence points to cognitive maps also supporting non-spatial tasks. It appears that the hippocampal-entorhinal system can map any combination of systematically varying stimulus dimensions onto the same neural manifolds that support spatial representations—grid cells. Here, I propose a model that shows how extant spatial navigation architectures can iteratively construct universal cognitive maps via non-local inference. The model exhibits noise tolerance congruent with behavior, and the mapping process accommodates discontinuous stimulus spaces. It is also shown that the model can support several types of abstract reasoning, including analogy-making, subspace construction, and perspective taking. Importantly, these capabilities are supported by the same computational modules that are used to build a map. Neural-level implementations for several model components are proposed, and it is shown how the (abstract) 1D attributes that are to be combined on a map can be isolated upstream of entorhinal cortex. The combination of mechanisms at play thus suggests how spatial navigation architectures can function as domain-general substrates of cognition.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(26\)01115-2](https://www.cell.com/current-biology/fulltext/S0960-9822(26)01115-2)

## eLife

## PAPERS

**LOUIS CHITIZ et al – The stability of thought: using experience sampling and brain imaging to determine the contextually bound nature of human cognition**

Human behavior is highly flexible, allowing efficient performance across a wide range of task contexts. A distributed set of frontal and parietal regions, commonly termed the multiple-demand network (MDN), is consistently engaged during diverse cognitively demanding tasks and is thought to support this flexibility. However, it remains unclear how patterns of MDN engagement relate to the qualitative features of ongoing cognition experienced during task performance. To address this issue, we examined the reliability of self-reported experiential features sampled during performance of a broad range of tasks. Across tasks, we found little evidence that particular patterns of thought were intrinsically more reliable than others, nor that individual tasks were associated with stable, characteristic thought profiles. Instead, the reliability of specific experiential features varied systematically across task contexts, with the same patterns showing high stability in some tasks and low stability in others. We next asked whether stable patterns of thought were associated with distinct neural signatures. We found that patterns of brain activity resembling the MDN tended to be present for tasks in which deliberate task focus was high, and when distraction was lower, adding to an emerging body of research suggesting that coordinated activity within frontal and parietal regions helps to establish a stable goal-focused mode of thoughts and actions.

<https://elifesciences.org/reviewed-preprints/112111>

**ZHUOQIAO HONG et al – Larger language models better align with neural representations of natural language**

Recent research has used large language models (LLMs) to study the neural basis of naturalistic language processing in the human brain. LLMs have rapidly grown in complexity, leading to improved language processing capabilities. Here, we utilized several families of transformer-based LLMs to investigate the relationship between model size and their ability to capture linguistic information in the human brain. Crucially, a subset of LLMs were trained on a fixed training set, enabling us to dissociate model size from architecture and training set size. We used electrocorticography (ECoG) to measure neural activity in epilepsy patients while they listened to a 30 min naturalistic audio story. We fit electrode-wise encoding models using contextual embeddings extracted from each hidden layer of the LLMs to predict word-level neural signals. In line with prior work, we found that larger LLMs better capture the structure of natural language and better predict neural activity. We also found a logarithmic relationship where the encoding performance peaks in relatively earlier layers as model size increases. We also observed variations in the best-performing layer across different brain regions, corresponding to an organized language processing hierarchy.

<https://elifesciences.org/articles/101204>

---

Evolutionary Anthropology

## ARTICLES

**CLÉMENT ZANOLLI et al with ISABELLE CREVECOEUR & BRIAN VILMOARE – The Early Homo Conundrum: Challenges and Potential Solutions**

In September 2025, 23 scholars met at a workshop in Bordeaux (France) organized by the University of Bordeaux and the Senckenberg Research Institute and Natural History Museum Frankfurt, to present and discuss their views on the origins and earliest phases of the evolution of the genus *Homo*. The workshop, entitled “The early *Homo* conundrum—Challenges and potential solutions” (hereafter “eH25”) took place a few months after the 25th anniversary of the publication of Wood and Collard's seminal papers published in 1999 and close to the 10th anniversary of the publication of the Ledi-Geraru mandible.

<https://onlinelibrary.wiley.com/doi/full/10.1002/evan.70043>

## PAPERS

**ADRIANO R. LAMEIRA – Silence as an Overlooked Catalyst for Primate Vocal Evolution**

Language is inherently relational, prompting comparative studies to prioritize social, gregarious, and voluble primates as evolutionary models. By prevailing theory, solitary and dispersed primates ought to be silent or communicatively impoverished, but this is often presumed, not empirically verified, with these species' capacities seldom being brought to bear on evolutionary theories based on social drivers. This skewed sampling could mask other valuable but hitherto disregarded sources of information and inference obfuscated by the spotlights of the social stage. Orangutans—the only hominids living without permanent social groups—are also the only nonhuman primate known to share with humans two hallmark features of language: displaced vocal reference (where mothers delay alarm calls to teach offspring about past predator encounters) and vocal hierarchies (with vocal motifs nested in self-similar motifs). The description of such traits in the most private and reserved great ape highlights a hidden precondition for vocal evolution: extended and elaborated vocal patterns and functions, which epitomize vocal sophistication, are time-sensitive and require attentive listening without interruption for correct processing. The functional benefits of elaborate and complex sound combinations partly depend on receivers being capable of vocal suppression and impulse control in response to others. Conversely, species with frequent, rapid and reactive social chatter incur “town square taxes” that interrupt and constrain, rather than promote, vocal elaboration and complex patterning. Silence remains a critical but undertheorized resource for fostering communicative and

cognitive sophistication, helping reframe the (a)social prerequisites for primate vocal evolution and the emergence of language amongst ancestral hominids.

<https://onlinelibrary.wiley.com/doi/full/10.1002/evan.70040>

#### **MIKI BEN-DOR & RAN BARKAI – Through Time and Across Traits: Evaluating Explanations of Human Evolution**

We argue that current explanatory practice misses two situations that can arise in any lineage, not only ours. The first is dynamic: traits continue changing in one direction when a lineage's own niche construction keeps enlarging the problem it faces. The second is unifying: many traits change together and may require one explanation rather than several. Both cases bear on Tinbergen's four questions, the test of explanatory completeness, and both require extending his function question: what is a trait for? An answer that names a problem of fixed size cannot explain continued change. We call a problem of rising magnitude a gradient, and one that serves many traits a unifying gradient. We set out five questions that any complete gradient explanation must answer, map the major hypotheses of human evolution onto this scheme, and use our Prey-Size Decline hypothesis as a worked example. The proposed framework does not depend on that example.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.70046>

#### **RACHEL M. HURWITZ et al with SUSANA CARVALHO & THOMAS A. PÜSCHEL – Impacted Bones: Can Extant Primates Help Identify Tool Use in Early Hominins?**

Despite recent advances pushing back the earliest record of tool use, how and when it first emerged in hominins, and the extent to which it featured amongst the numerous co-existing species, remain critical questions in paleoanthropology. In addition to analyzing fossils and lithic toolkits, novel strides in understanding this might be made by studying the skeletons of the great apes, as well as more distantly related tool-using primates and applying resultant findings to the fossil record via predictive modelling. We review current methods of extrapolating tool-use capabilities in extinct and extant taxa and provide an innovative methodological framework to analyze osteological remains for evidence of percussive tool use, using chimpanzees as a case study. We propose a shift in current methodological practice, wherein both sides of the body, rather than just one, should be routinely scanned to understand of the effect percussive tool use on primate bone. Key species, including long-tailed macaques (*Macaca fascicularis* ssp.), capuchins (*Sapajus* and *Cebus* sp.) and chimpanzees (*Pan troglodytes* ssp.), all of whom engage in lithic percussion, should be the work's focus. Due to bone's dynamic ability to respond to mechanical strain, percussive forms of tool use, like nut-cracking, could cause morphological changes in the dominant hands of tool users as compared to their non-dominant hand, or the hands of primates who do not engage in percussive behaviors. However, this potential "damage signature" has not been quantified. Thus, we propose a methodology for examining the effect of percussive tool use on primate bone by scanning skeletal remains bilaterally, analyzing directional asymmetry, and using machine learning to discern patterns of variation. Long-term, our proposed methodology may be extrapolated to examine the lasting impact of tool use on the bones of extinct hominins.

<https://onlinelibrary.wiley.com/doi/full/10.1002/evan.70042>

#### **IULIA BĂDESCU – Primate Play and the Classificatory Making of Human Nature**

Primate play is often interpreted as a developmental activity through which immature individuals acquire capacities used later in life. This essay uses play to examine a wider process in behavioral research: how classification helps produce behavioral data and shapes the explanations those data can support. It asks how juvenile actions are classified as play and become evidence for claims about development, evolution, and "human nature." I argue that the same analogies to adult behavior that help recognize and organize juvenile actions as play later reappear in explanations of the roles or capacities that play is proposed to develop. Examples show how such developmental hypotheses become entangled with culturally familiar narratives of gender and human evolution, particularly as scientific claims circulate publicly. A comparative anthropology of play should keep these evidentiary steps visible, distinguish adult analogies from demonstrated developmental outcomes, and situate play within immature primates' immediate social and material worlds.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.70047>

### **iScience**

#### **PAPERS**

#### **KAYLA KOLFF & SIMONE PIKA – When grooming stalls: Assessing communicative repair, negotiation, and progressivity in chimpanzees**

Human social interaction is built on progressivity (the forward flow of interaction), which communicative breakdowns may disrupt. Communicative repair (resolving communicative troubles) and negotiation (a collaborative sequence to resolve communicative breakdowns) may both serve as processes to restore progressivity following breakdowns. Here, we investigated gestural redoings (reproduction of a previous signal in any form), negotiation, and progressivity in grooming interactions (N = 311) among male East African chimpanzees (*Pan troglodytes schweinfurthii*) in the wild. These chimpanzees produced gestural redoings as repetitions, substitutions, and modifications (N = 158) occurring at delayed temporal gaps relative to grooming turn-taking latencies. Both substitutions and negotiations (N = 219) were associated with restored progressivity. Strongly bonded pairs showed a higher likelihood of compromise outcomes during negotiation. These findings indicate that these chimpanzees employed repair-like processes associated with restored progressivity, bearing certain

resemblances to those observed in human conversation—raising the possibility that such capacities may have evolutionary roots predating the emergence of language.

[https://www.cell.com/science/fulltext/S2589-0042\(26\)02874-9](https://www.cell.com/science/fulltext/S2589-0042(26)02874-9)

## Language and Cognition

### PAPERS

#### **GABRIEL BRAUN & EINAT SHETREET – Implicit dominance: Truthfulness of implicit information shapes commitment across meanings, but explicit truthfulness is limited to explicit meaning**

Communication involves commitment to one's words. These words often carry multiple layers of meaning. The explicit meaning may commit the speaker to one proposition, and the implicit to another. This raises the question: to which meaning are speakers seen as committed? This study examined whether listeners process commitment to utterances' explicit and implicit meaning independently or integratively. Across three experiments, participants were presented with communicative scenarios and corresponding outcomes (each meaning's truth-value). Participants' perceived commitment to each meaning (explicit or implicit) was measured through a direct commitment probe and overall trust. All three experiments demonstrated that the truth-value of the implicit content influenced perceived commitment not only to the implicit meaning, but also to the explicit, despite the latter being independently true/false. The effect was asymmetrical: the explicit truth-value influenced commitment almost exclusively to the explicit meaning. Thus, we observed an 'implicit dominance' that was present despite variation in presentation and stimuli. Compared to direct commitment, trust was shaped by all truth-values, indicating that trust reflects a global evaluation of the speaker, while commitment is aligned with specific communicative intentions. These findings suggest that listeners integrate different meanings when evaluating a speaker's commitment to their words.

<https://www.cambridge.org/core/journals/language-and-cognition/article/implicit-dominance-truthfulness-of-implicit-information-shapes-commitment-across-meanings-but-explicit-truthfulness-is-limited-to-explicit-meaning/B7322A52B77BE8D84F684A18CA5C6AFO>

## Nature

### ARTICLES

#### **AUDREY M. ARNER & AMANDA J. LEA – The human skeleton's unique adaptations relied on gene regulatory changes**

Variants in genes involved in the production of extracellular matrix molecules could have enabled the skeletal adaptations that distinguish humans from other great apes.

<https://www.nature.com/articles/d41586-026-02775-z>

### PAPERS

#### **YIZHI YAN et al – The gene-regulatory evolution of the human skeleton**

Skeletal modifications were central to human evolution, enabling adaptations for bipedalism, large cranial vaults and childbirth. Despite their importance, the genetic changes that gave rise to the unique human form remain mostly unknown. Here we systematically map the gene-regulatory changes that shaped human skeletal evolution. Using massively parallel reporter assays (MPRAs) in chondrocytes, we assayed 561,410 human-derived substitutions in promoters and enhancers, identifying 15,077 loci with human-specific regulatory activity. We then generated human–ape hybrid cells and differentiated them into osteochondral progenitors. Integrating the hybrid cells with MPRA measurements produced genome-wide atlases of human-specific changes in cis-regulatory expression, and the sequence variants that drive them. These atlases reveal an extensive rewiring of the extracellular matrix (ECM), including a marked suppression of glycosaminoglycan (GAG) biosynthesis, leading to an approximately three-to-fourfold reduction in joint GAG content in humans compared with non-human apes. We find that this human-specific shift bears signatures of selection, and is likely to be a key contributor to the exceptional susceptibility of humans to degenerative skeletal diseases. Together, our results reveal a coordinated evolutionary remodelling of the human skeletal ECM, and establish a comprehensive framework for dissecting the genetic basis of human skeletal biology.

<https://www.nature.com/articles/s41586-026-11053-x>

## Nature Communications

### PAPERS

#### **VALERII CHIRKOV et al – Payoff selectivity drives collective intelligence during dynamic resource tracking in humans**

Humans' abilities for complex social learning and collective adaptation stand out across species. Yet it is largely unknown how people integrate dynamically changing personal and social cues in realistic environments, resulting in collective intelligence or maladaptive behavior. Here, we report an online 3D immersive-reality experiment in which participants (n = 621) search for and track a mobile resource under realistic visual–spatial constraints. Participants complete the task either alone or in groups of five with different types of social information and resource speeds. Contrasting earlier work, participants in groups outperform solitary individuals, but only when payoff information was available. High-resolution visual field data and movement trajectories reveal that payoff visibility prompts adaptive recalibration of visual information flow, thereby

enabling flexible adaptation. Computational models of fine-grained movement decisions and agent-based simulations show that payoff information lets participants dynamically identify and selectively respond to reliable social cues, thus unlocking the group's collective potential.

<https://www.nature.com/articles/s41467-026-77762-z>

## Nature Communications Biology

### PAPERS

#### **ALICE VIVIEN BARCHET et al – Linguistic information may compensate for age-related decline in attentional filtering**

As we age, understanding speech in social situations imposes an increasingly difficult challenge to the auditory system. However, the attentional mechanisms underlying age-related speech comprehension difficulties in multitalker situations remain unclear. We collected EEG signals while 63 normal hearing participants (35 women) from 19 to 71 years performed a speech comprehension task involving a multitalker paradigm at individually adjusted target-to-distractor ratios. Combining trial-resolved multivariate temporal response function modeling with detailed behavioral comprehension responses, we provide a window into lower-level impairments and possible higher-level compensatory mechanisms across the adult life span. We show that reduced behavioral performance in late adulthood is associated with increased distractor representation. This points towards increased distractibility as a potential mechanism underlying age-related speech comprehension deficits. Additionally, at the behavioral and neural levels, we show that older adults rely more on higher-level linguistic information. Finally, we show that an increased reliance on word-level linguistic information may compensate for increased distractor tracking and adaptively support comprehension performance across the adult life span. Thus, an increased reliance on higher-level processing could attenuate age-related impairments in attentional filtering.

<https://www.nature.com/articles/s42003-026-10999-y>

## Nature Heredity

### PAPERS

#### **CRISTIAN PIZZIGALLI et al – Agriculture affects genetic diversity and functional connectivity in an ecologically flexible West African primate**

Land-use changes in West Africa are threatening wildlife viability, yet their impacts on species' genetic diversity and connectivity remain poorly understood. We investigated the environmental drivers of genetic diversity and functional connectivity in the Near Threatened Guinea baboon (*Papio papio*) by genotyping 243 non-invasively collected faecal samples across its range and applying a landscape genetics framework. We identified distinct genetic clusters, with Gambian populations exhibiting the lowest genetic diversity and highest inbreeding. Genetic diversity was positively associated with shrublands and forest-savannah mosaics, highlighting the importance of these habitats for maintaining viable populations. Rivers, grasslands, and shrublands facilitate functional connectivity and act as dispersal corridors, whereas large waterbodies and intensive croplands serve as strong barriers. Notably, habitats constituted by mosaics of forest and croplands provide more permeable barriers to movement than strict monocultures. Our results suggest that intensive agricultural land use can reduce functional connectivity, whereas heterogeneous natural habitats and riverine networks sustain it. To ensure the long-term survival of Guinea baboons, conservation strategies must prioritize preserving riverine corridors and habitat heterogeneity. Furthermore, replacing monoculture farming with agroecological practices like agroforestry is crucial to support landscape connectivity and mitigate the adverse effects of agricultural expansion.

<https://www.nature.com/articles/s41437-026-00880-3>

## Nature Human Behaviour

### ARTICLES

#### **JOHN C. MITANI – What chimpanzees at war have taught me about being human**

Seeing a deadly 'civil war' unfold among chimpanzees has been a painful experience for John Mitani. His decades of watching wild great apes now evoke his family's experience with xenophobia. But to him, the war highlights what makes humans unique: not our conflicts, but our unparalleled capacity for tolerance and cooperation.

<https://www.nature.com/articles/s41562-026-02601-6.epdf>

## New Scientist

### NEWS

#### **Our brain evolved from two primitive nervous systems that merged**

The front and back parts of our brain come from different progenitor cells in embryos, which suggests they evolved as separate entities.

<https://www.newscientist.com/article/2589739-our-brain-evolved-from-two-primitive-nervous-systems-that-merged/>

**ARTICLES****JACKLIN KWAN – Do we live in a simulation? If so, it could be a giant consciousness experiment**

Philosophers have pondered whether we live in a simulation for centuries. Now, Astronomer Royal for Scotland Catherine Heymans suggests a compelling rationale for why our reality might actually be synthetic.

<https://www.newscientist.com/article/2588325-do-we-live-in-a-simulation-if-so-it-could-be-a-giant-consciousness-experiment/>

**CHRIS SIMMS – Wild chimpanzees teach youngsters by handing them tools**

Adult chimpanzees have been observed passing tools to their younger relatives, helping them learn the skills needed for fishing for ants or algae.

<https://www.newscientist.com/article/2589364-wild-chimpanzees-teach-youngsters-by-handing-them-tools/>

**Philosophical Transactions of the Royal Society B****PAPERS****SEOHYEON LEE, SOLHA HWANG & M. JUSTIN KIM – From seeing to showing: towards a neuroscience of emotion production**

Facial expressions are considered a critical feature in affective neuroscience. Consequently, extensive research has focused on how emotional facial expressions are perceived, including investigations into which brain regions are activated during their observation and how the brain processes their social significance. To advance a more comprehensive understanding of emotion, it is essential to examine all three aspects—perception, experience and production—in a balanced manner. From an evolutionary perspective, the production of facial expressions during emotional experiences is particularly significant, as it reflects both adaptive communication and survival functions. Nevertheless, a review of existing databases reveals that research on the production of facial expressions remains scarce compared with studies on perception. This gap may stem from several methodological constraints, including the difficulty of reliably inducing emotional experiences in laboratory settings, the challenge of recording participants' full facial expressions in a magnetic resonance imaging scanner and limitations in current analytical approaches for facial expressions. In this review, we argue for the importance of studying the production of facial expressions and outline potential strategies to address these challenges.

<https://royalsocietypublishing.org/rstb/article/381/1959/20250136/483387/From-seeing-to-showing-towards-a-neuroscience-of>

**ELIALA ALICE SALVADORI et al – Smiling in time: the interactive development of infant smiling with mothers, fathers and strangers**

A developmental examination of the temporal dynamics of infant smiling during early social interaction is lacking. We ask how infants and adults influence each other's expressions of positive affect by examining the timing of transitions among dyadic states defined by the presence and absence of each partner's smiles. Fifty-eight infants interacted with their mothers, fathers and a stranger at 4 and 8 months. A survival analysis of the time course of infant (and adult partner) smiles and non-smiles indicated that infants initiated smiles and reciprocated smiles at lower rates than their adult partners, yet ended smiles at higher rates. Nevertheless, adult smiles were associated with higher infant smile rates, while infant smiles prolonged adult smiles, suggesting a dyadic path to mutual positivity. Eight-month-olds initiated smiles at higher rates than 4-month-olds when neither partner was smiling, suggesting increasing infant smiling initiative. Partner-specific patterns revealed selective infant responsiveness. Although strangers initiated and sustained smiles at higher rates than mothers, infants were more probably to reciprocate mother than stranger smiles. In the first year of life, infants showed a tendency to down-regulate positive affect expressions across age and context, as well as partner-specific smile reciprocation proclivities and a developmental increase in smile initiation.

<https://royalsocietypublishing.org/rstb/article/381/1959/20250142/483373/Smiling-in-time-the-interactive-development-of>

**MILICA NIKOLIĆ & ROBERT HEPACH – The expression of self-conscious emotions and their motivational and communicative function in early development**

Self-conscious emotions, such as embarrassment, guilt, shame and pride, play a central role in managing reputation and interpersonal relationships. They are thought to emerge in the first years of life, with children's developing cognitive capacities and their growing appreciation of social norms and rules. Recent years have seen a rapid increase in research on self-conscious emotions in early life, supported by advanced methods including manual and automated micro-coding of non-verbal behaviour, depth sensor imaging and physiological measures. In this narrative review, we summarize this emerging evidence from developmental science, which suggests that self-conscious emotions may be observed earlier than previously thought—within the first months and years of life—and that they seem to serve both motivational and communicative functions from early on. Specifically, they motivate socially appropriate behaviours, such as helping others, while communicating adherence to social norms and rules. Further, we highlight current limitations in the field and recommend more experimental and longitudinal studies especially in infancy and toddlerhood, the integration of multi-modal data and the use of naturalistic tasks to advance our understanding of self-conscious emotions in early development.

<https://royalsocietypublishing.org/rstb/article/381/1959/20250134/483378/The-expression-of-self-conscious-emotions-and>

**IVAN NORSCIA, EDOARDO COLLARINI & GIADA CORDONI – The play fever: individual and group factors influence the contagion of play behaviour within social hominid groups**

Via the perception–action model and mirror neuron system, individuals replicate others' behaviour (behavioural/social contagion) and reduce prediction errors on other behaviours. Among contagious behaviours, play offers a safe context for cooperation, competition and tolerance. Thus, play contagion is interesting to better understand the evolution of social dynamics in many non-primates and primates, including humans. To our knowledge, no study has examined play contagion across social hominids nor analysed individual/group features to identify common modulators. In 2022–2025, we gathered all-occurrences data on play, affiliative and agonistic patterns in social hominids (two groups of captive chimpanzees, bonobos and gorillas; and two toddler classes of  $\leq 3$  years and their educators). In the 3 min period, we checked if individuals not involved in play would start playing either after the onset of a trigger play session (post-play (PP)) or in absence of any previous play session (matched-control). Play occurrence was highest during PP, informing play contagion. Contagion increased with higher male-to-female, immature-to-adult and affiliative-to-agonistic interaction ratios. Males, youngsters and individuals that were in trigger proximity ( $\leq 10$  m) showed the highest contagion. Shared across social hominids, play contagion and its common modulators might trace back to their last common ancestor, underlying the transmission of behaviour, and possible underlying emotions, within groups.

<https://royalsocietypublishing.org/rstb/article/381/1959/20250144/483388/The-play-fever-individual-and-group-factors>

**AVELYNE S. VILLAIN et al – Vocal encoding of heritable sociability prevails over emotions in sheep bleats**

Vocalizations of animals are good indicators of their emotions. Temperament is known to influence the regulation and expression of emotions. However, how animal temperament affects their vocalizations and particularly their vocal expressions of emotions remains largely unexplored. Sociability is often measured as the behavioural reactivity to social separation and is a temperament trait intrinsically linked to emotional reactivity. Most social species respond to such challenging situations using contact calls. Here, we investigated whether the acoustic structure of these calls reflects sociability, emotions or both. Among 152 recorded female lambs, 42 belonged to two diverging sheep lines selected for high or low sociability. High bleats were recorded both in isolation (social challenge, all lambs) and before receiving a food treat (non-social challenge, selected lambs) to investigate the link between vocalizations, emotions and heritable sociability. The acoustic features of isolation bleats differed between lines, which was not the case for pre-food treat bleats. However, surprisingly, the genetic selection index and social behaviour explained the structure of isolation bleats better than emotional arousal per se. Last, encoding of individuality in isolation bleats was impaired by the genetic selection. Our findings show that selecting for sociable animals affects vocal signatures in calls produced during a social challenge, leading us to hypothesize a socio-acoustic co-selection.

<https://royalsocietypublishing.org/rstb/article/381/1959/20250143/483401/Vocal-encoding-of-heritable-sociability-prevails>

---

**PLoS One****PAPERS****EDUARDO MÉNDEZ-QUINTAS et al – Random walks in handaxe knapping before 1.2 million years ago in East Africa at Melka Kunture (Upper Awash, Ethiopia)**

A long-standing objective in Acheulean research is defining evolutionary trends in handaxe production over time. This study investigates technological and morphological variability in the Early Acheulean by analysing three geographically and chronologically proximate assemblages ( $>1.2$  million years ago) from Melka Kunture (Upper Awash, Ethiopia). Combined techno-typological and geometric morphometric analyses reveal significant variability in handaxe morphology, shaping strategies and raw material selection. The observed dissimilarity suggests that Acheulean handaxe manufacture did not follow a linear path of standardisation. Rather, it demonstrates considerable flexibility, reflecting hominins' responses to varying constraints and immediate needs within short timeframes.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0357880>

**JULIA GRESKY & LEE CLARE – First burials give insights into mortuary rites at Göbeklitepe, Early Neolithic Türkiye**

Since the beginning of excavations at Göbeklitepe, a Pre-Pottery Neolithic (PPN) site in southeastern Türkiye, fragmented human bones have been recovered from the fill of the special (monumental) buildings. These fragments derive from males and females of all age categories and exhibit various taphonomic alterations. Compared with contemporaneous Anatolian burial customs, certain parallels exist; however, the seemingly random distribution of human bone fragments at Göbeklitepe remains enigmatic. Recently, the first two intact burials were discovered in Pre-Pottery Neolithic B (8,700–8,000 BCE) contexts. The taphonomic evidence from these burials could explain the presence of the dispersed human bone fragments. It appears that lower-lying parts of the site became inundated by slope deposits from higher areas of the mound, which contained human remains from originally intact burials. Nonetheless, this explanation does not rule out the possibility of additional mortuary practices, thereby underscoring the considerable diversity of burial rituals in Neolithic Anatolia.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0358979>

**PNAS****PAPERS****CHRISTIAN BENTZ & EWA DUTKIEWICZ – Humans 40,000 y ago developed a system of conventional signs**

As humans, we store and share information. This allows us to distribute knowledge necessary for survival and to coordinate large groups. Our hominin ancestors harnessed the surfaces of mobile artifacts and cave walls as information carriers since the Paleolithic time period. Theories abound as to the meaning and function of these Paleolithic signs. However, very little is known about their basic, measurable properties. We here analyze a corpus of more than 200 mobile objects of a 43,000 to 34,000 y old Aurignacian culture—associated with the first modern humans to settle in Central Europe. These objects are adorned with several thousand geometric signs. We apply classification algorithms and statistical models to capture their quantitative properties. First, our analyses illustrate that these sign sequences are clearly distinguishable from modern day writing. Second, however, their statistical properties are comparable to sign sequences on the earliest protocuneiform tablets. Third, Paleolithic signs were systematically applied to yield higher information density on certain types of objects, e.g. ivory figurines compared to tools. These results cannot be taken to strictly prove that Aurignacian sign sequences encoded numero-ideographic information as in the case of protocuneiform. However, they prove that the first hunter-gatherers arriving in Europe already applied sign sequences of comparable complexity in a deliberate, systematic, and conventional manner—several ten thousand years before the advent of genuine writing.

<https://www.pnas.org/doi/10.1073/pnas.2520385123>

**COMMENTARIES****ALEXANDER KOPLINIG – Coding choices and short-sequence artifacts undermine claims of a conventional Paleolithic sign system**

Bentz and Dutkiewicz (1, B&D) conclude that 40,000-y-old Aurignacian signs were used in a deliberate, systematic, and conventional manner. I identify four problems in their analyses.

<https://www.pnas.org/doi/full/10.1073/pnas.2627836123>

---

**Science****NEWS****Why AI agents invent their own language if you let them chat**

“Weird terms” are a natural—but disturbing—byproduct of agent swarms.

<https://www.science.org/content/article/why-ai-agents-invent-their-own-language-if-you-let-them-chat>

**ARTICLES****NOA TRUSKANOV – Observation and exploration widen the menu**

Orangutans expand their foraging skills by combining observation with trial-and-error learning.

[https://www.sciencemagazinedigital.org/sciencemagazine/library/item/24\\_september\\_2026/4363529/](https://www.sciencemagazinedigital.org/sciencemagazine/library/item/24_september_2026/4363529/)

**PAPERS****T. REVATHE et al with CAREL P. VAN SCHAIK & ANDREW WHITEN – How 8 years of social and individual learning interact to shape ecological competence in orangutans**

Cultural learning permeates human skill and knowledge acquisition. To understand its importance for nonhuman apes, we analyzed just under 7000 records of behavioral bouts of social and individual learning across wild orangutans’ 8-year dependency period to assess their combined effects on ecological competence, which is crucial for independent survival. Social learning was five times more frequent than individual learning and influenced subsequent learning for hours. Immature orangutans varied substantially in their learning propensities, and those with heightened social and individual learning propensities developed the most expansive diet profiles at independence. Furthermore, social learning had a compensatory effect on diet profile development when individual learning was low. Our findings advance the science of cultural evolution by showing how multiyear social and individual learning interact to shape great apes’ broad ecological competence.

<https://www.science.org/doi/10.1126/science.adz6415>

**BOGLÁRKA MORVAI et al – Neural evidence that dogs segment the speech they hear with a humanlike consonant bias**

Across many human languages, consonants carry more lexical information than vowels. During speech segmentation, humans, unlike nonhuman primates, rely more on consonant than vowel patterns, despite vowels’ greater acoustic saliency. To investigate whether this consonant bias is specific to humans or could also emerge in other species exposed to human speech, we performed noninvasive electroencephalography in humans and dogs. Intertrial coherence measures of neural entrainment and event-related potentials revealed enhanced word-level tracking for consonant- compared with vowel-structured streams in both species. This suggests that dogs, similar to humans, exhibit consonant bias when segmenting the speech they hear. Linguistic regularity-based processing biases can thus also emerge in a nonspeaking species exposed to speech.

<https://www.science.org/doi/10.1126/science.adw7709>

---

## SUBSCRIBE to the EAORC Bulletin

If you would like to subscribe to this free weekly newsletter, please contact [martin.edwardes@btopenworld.com](mailto:martin.edwardes@btopenworld.com).

---

## UNSUBSCRIBE from the EAORC Bulletin

Send an email to [martin.edwardes@btopenworld.com](mailto:martin.edwardes@btopenworld.com) with the subject "EAORC unsubscribe".

---

## PRODUCED BY AND FOR THE EAORC EMAIL GROUP

EAORC is a fee-free academic internet news service and has no commercial sponsorship or other commercial interests.

EAORC website information is at <http://martinedwardes.me.uk/eaorc/>

If you have received this bulletin, and are unhappy about receiving it, please contact [martin.edwardes@btopenworld.com](mailto:martin.edwardes@btopenworld.com).