

## References

### Aktuell

CHEN 2022

Da-Yuan Chen & Mohsan Saeed et al., *Role of spike in the pathogenic and antigenic behavior of SARS-CoV-2 BA.1 Omicron*. [bioRxiv 2022, Oct. 14. DOI:10.1101/2022.10.13.512134](https://doi.org/10.1101/2022.10.13.512134).

The recently identified, globally predominant SARS-CoV-2 Omicron variant (BA.1) is highly transmissible, even in fully vaccinated individuals, and causes attenuated disease compared with other major viral variants recognized to date<sup>1-7</sup>. The Omicron spike (S) protein, with an unusually large number of mutations, is considered the major driver of these phenotypes<sup>3,8</sup>. We generated chimeric recombinant SARS-CoV-2 encoding the S gene of Omicron in the backbone of an ancestral SARS-CoV-2 isolate and compared this virus with the naturally circulating Omicron variant. The Omicron S-bearing virus robustly escapes vaccine-induced humoral immunity, mainly due to mutations in the receptor-binding motif (RBM), yet unlike naturally occurring Omicron, efficiently replicates in cell lines and primary-like distal lung cells. In K18-hACE2 mice, while Omicron causes mild, non-fatal infection, the Omicron S-carrying virus inflicts severe disease with a mortality rate of 80 %. This indicates that while the vaccine escape of Omicron is defined by mutations in S, major determinants of viral pathogenicity reside outside of S.

Da-Yuan Chen, Devin Kenney, Chue Vin Chin, Alexander H. Tavares, Nazimuddin Khan, Hasahn L. Conway, Guanqun Liu, Manish C. Choudhary, Hans P. Gertje, Aoife K. O’Connell, Darrell N. Kotton, Alexandra Herrmann, Armin Ensser, John H. Connor, Markus Bosmann, Jonathan Z. Li, Michaela U. Gack, Susan C. Baker, Robert N. Kirchdoerfer, Yachana Kataria, Nicholas A. Crossland, Florian Douam & Mohsan Saeed

COHEN 2022

Jon Cohen, *Evidence backs natural origin for pandemic, report asserts*. [science 378 \(2022\), 126. DOI:10.1126/science.adf2884](https://doi.org/10.1126/science.adf2884).

Authors were dropped from broader Lancet review.

David Relman, a microbiome specialist at Stanford University who thinks the different origin scenarios are equally plausible, believes the PNAS and Lancet reports are “not at all contradictory or inconsistent with each other.” And Relman, who was interviewed by the task force, compliments it for highlighting the need to better prepare for a new pandemic.

COUZIN-FRANKEL 2022

Jennifer Couzin-Frankel, *Heart risks fuel debate over COVID-19 boosters*. [science 378 \(2022\), 234–235. DOI:10.1126/science.adf3945](https://doi.org/10.1126/science.adf3945).

With benefits unclear, some scientists question new round of shots for young people.

CDC reports that as of August, at least 86 % of children in the United States have been infected by SARS-CoV-2, which may reduce their risk of future infections. At the same time, “We’re seeing so much less vaccine myocarditis now” than

last year, Newburger says. She doesn't know why, but the trend might alleviate concerns about the side effect.

## Anthropologie

BEN-DOR 2020

Miki Ben-Dor, Raphael Sirtoli & Ran Barkai, *The evolution of the human trophic level during the Pleistocene*. [Yearbook of Physical Anthropology 175 \(2020\), 27–56](#).

The human trophic level (HTL) during the Pleistocene and its degree of variability serve, explicitly or tacitly, as the basis of many explanations for human evolution, behavior, and culture. Previous attempts to reconstruct the HTL have relied heavily on an analogy with recent hunter-gatherer groups' diets. In addition to technological differences, recent findings of substantial ecological differences between the Pleistocene and the Anthropocene cast doubt regarding that analogy's validity. Surprisingly little systematic evolution-guided evidence served to reconstruct HTL. Here, we reconstruct the HTL during the Pleistocene by reviewing evidence for the impact of the HTL on the biological, ecological, and behavioral systems derived from various existing studies. We adapt a paleobiological and paleoecological approach, including evidence from human physiology and genetics, archaeology, paleontology, and zoology, and identified 25 sources of evidence in total. The evidence shows that the trophic level of the Homo lineage that most probably led to modern humans evolved from a low base to a high, carnivorous position during the Pleistocene, beginning with *Homo habilis* and peaking in *Homo erectus*. A reversal of that trend appears in the Upper Paleolithic, strengthening in the Mesolithic/Epipaleolithic and Neolithic, and culminating with the advent of agriculture. We conclude that it is possible to reach a credible reconstruction of the HTL without relying on a simple analogy with recent hunter-gatherers' diets. The memory of an adaptation to a trophic level that is embedded in modern humans' biology in the form of genetics, metabolism, and morphology is a fruitful line of investigation of past HTLs, whose potential we have only started to explore.

Keywords: carnivore | diet | ethnography | paleobiology | paleolithic

DJAKOVIC 2022

Igor Djakovic, Alastair Key & Marie Soressi, *Optimal linear estimation models predict 1400–2900 years of overlap between *Homo sapiens* and Neandertals prior to their disappearance from France and northern Spain*. [Scientific Reports 12 \(2022\), 15000](#). DOI:10.1038/s41598-022-19162-z.

[SciRep12-15000-Supplement1.xlsx](#), [SciRep12-15000-Supplement2.xlsx](#), [SciRep12-15000-Supplement3.pdf](#)

Recent fossil discoveries suggest that Neandertals and *Homo sapiens* may have co-existed in Europe for as long as 5 to 6000 years. Yet, evidence for their contemporaneity at any regional scale remains highly elusive. In France and northern Spain, a region which features some of the latest directly-dated Neandertals in Europe, Protoaurignacian assemblages attributed to *Homo sapiens* appear to 'replace' Neandertal-associated Châtelperronian assemblages. Using the earliest and latest known occurrences as starting points, Bayesian modelling has provided indication that these occupations may in fact have been partly contemporaneous. The reality, however, is that we are unlikely to ever identify the 'first' or 'last' appearance of a species or cultural tradition in the archaeological and fossil record.

Here, we use optimal linear estimation modelling to estimate the first appearance date of *Homo sapiens* and the extinction date of Neandertals in France and northern Spain by statistically inferring these ‘missing’ portions of the Protoaurignacian and Châtelperronian archaeological records. Additionally, we estimate the extinction date of Neandertals in this region using a dataset of directly-dated Neandertal fossil remains. Our total dataset consists of sixty-six modernly produced radiocarbon determinations which we recalibrated using the newest calibration curve (IntCal20) to produce updated age ranges. The results suggest that the onset of the *Homo sapiens* occupation of this region likely preceded the extinction of Neandertals and the Châtelperronian by up to 1400–2900 years. This reaffirms the Bayesian-derived duration of co-existence between these groups during the initial Upper Palaeolithic of this region using a novel independent method, and indicates that our understanding of the timing of these occupations may not be suffering from substantial gaps in the record. Whether or not this co-existence featured some form of direct interaction, however, remains to be resolved.

## GUZMÁN 2022

Ricardo Andrés Guzmán, María Teresa Barbato, Daniel Sznycer & Leda Cosmides, *A moral trade-off system produces intuitive judgments that are rational and coherent and strike a balance between conflicting moral values*. [PNAS 119 \(2022\), e2214005119](#).

[pnas119-e2214005119-Supplement.pdf](#)

How does the mind make moral judgments when the only way to satisfy one moral value is to neglect another? Moral dilemmas posed a recurrent adaptive problem for ancestral hominins, whose cooperative social life created multiple responsibilities to others. For many dilemmas, striking a balance between two conflicting values (a compromise judgment) would have promoted fitness better than neglecting one value to fully satisfy the other (an extreme judgment). We propose that natural selection favored the evolution of a cognitive system designed for making trade-offs between conflicting moral values. Its nonconscious computations respond to dilemmas by constructing “rightness functions”: temporary representations specific to the situation at hand. A rightness function represents, in compact form, an ordering of all the solutions that the mind can conceive of (whether feasible or not) in terms of moral rightness. An optimizing algorithm selects, among the feasible solutions, one with the highest level of rightness. The moral trade-off system hypothesis makes various novel predictions: People make compromise judgments, judgments respond to incentives, judgments respect the axioms of rational choice, and judgments respond coherently to morally relevant variables (such as willingness, fairness, and reciprocity). We successfully tested these predictions using a new trolley-like dilemma. This dilemma has two original features: It admits both extreme and compromise judgments, and it allows incentives—in this case, the human cost of saving lives—to be varied systematically. No other existing model predicts the experimental results, which contradict an influential dual-process model.

**Keywords:** moral psychology | evolutionary psychology | moral dilemmas | judgment and decision-making | moral value pluralism

**Significance:** Intuitions about right and wrong clash in moral dilemmas. We report evidence that dilemmas activate a moral trade-off system: a cognitive system that is well designed for making trade-offs between conflicting moral values. When asked which option for resolving a dilemma is morally right, many people made compromise judgments, which strike a balance between conflicting moral values by partially satisfying both. Furthermore, their moral judgments satisfied a demanding standard of rational choice: the Generalized Axiom of Revealed Pref-

erences. Deliberative reasoning cannot explain these Results, nor can a tug-of-war between emotion and reason. The results are the signature of a cognitive system that weighs competing moral considerations and chooses the solution that maximizes rightness.

#### MCMURRAY 2022

Bob McMurray, John B. Muegge & Keith Apfelbaum, *Multimodal bilinguals reveal complex pathways for flexible language processing*. *PNAS* **119** (2022), e2213634119.

#### MATHIAS 2012

Rasika A. Mathias et al., *Adaptive Evolution of the FADS Gene Cluster within Africa*. *PLoS ONE* **7** (2012), e44926. DOI:10.1371/journal.pone.0044926.

Long chain polyunsaturated fatty acids (LC-PUFAs) are essential for brain structure, development, and function, and adequate dietary quantities of LC-PUFAs are thought to have been necessary for both brain expansion and the increase in brain complexity observed during modern human evolution. Previous studies conducted in largely European populations suggest that humans have limited capacity to synthesize brain LC-PUFAs such as docosahexaenoic acid (DHA) from plantbased medium chain (MC) PUFAs due to limited desaturase activity. Population-based differences in LC-PUFA levels and their product-to-substrate ratios can, in part, be explained by polymorphisms in the fatty acid desaturase (FADS) gene cluster, which have been associated with increased conversion of MC-PUFAs to LC-PUFAs. Here, we show evidence that these high efficiency converter alleles in the FADS gene cluster were likely driven to near fixation in African populations by positive selection ,85 kya. We hypothesize that selection at FADS variants, which increase LC-PUFA synthesis from plantbased MC-PUFAs, played an important role in allowing African populations obligatorily tethered to marine sources for LCPUFAs in isolated geographic regions, to rapidly expand throughout the African continent 60–80 kya.

Rasika A. Mathias, Wenqing Fu, Joshua M. Akey, Hannah C. Ainsworth, Dara G. Torgerson, Ingo Ruczinski, Susan Sergeant, Kathleen C. Barnes & Floyd H. Chilton

#### MONSON 2022

Tesla A. Monson, Andrew P. Weitz, Marianne F. Brasil, Leslea J. HluskoTesla A. Monson, Andrew P. Weitz, Marianne F. Bra, *Teeth, prenatal growth rates, and the evolution of human-like pregnancy in later Homo*. *PNAS* **119** (2022), e2200689119.

pnas119-e2200689119-Supplement.pdf

Evidence of how gestational parameters evolved is essential to understanding this fundamental stage of human life. Until now, these data seemed elusive given the skeletal bias of the fossil record. We demonstrate that dentition provides a window into the life of neonates. Teeth begin to form in utero and are intimately associated with gestational development. We measured the molar dentition for 608 catarrhine primates and collected data on prenatal growth rate (PGR) and endocranial volume (ECV) for 19 primate genera from the literature. We found that PGR and ECV are highly correlated ( $R^2 = 0.93$ ,  $P < 0.001$ ). Additionally, we demonstrated that molar proportions are significantly correlated with PGR ( $P = 0.004$ ) and log-transformed ECV ( $P = 0.001$ ). From these correlations, we developed two methods for reconstructing PGR in the fossil record, one using ECV

and one using molar proportions. Dental proportions reconstruct hominid ECV ( $R^2 = 0.81$ ,  $P < 0.001$ ), a result that can be extrapolated to PGR. As teeth dominate fossil assemblages, our findings greatly expand our ability to investigate life history in the fossil record. Fossil ECVs and dental measurements from 13 hominid species both support significantly increasing PGR throughout the terminal Miocene and Plio-Pleistocene, reflecting known evolutionary changes. Together with pelvic and endocranial morphology, reconstructed PGRs indicate the need for increasing maternal energetics during pregnancy over the last 6 million years, reaching a human-like PGR (i.e., more similar to humans than to other extant apes) and ECV in later Homo less than 1 million years ago.

**Keywords:** maternal energetics | dentition | hominid fossil record | prenatal growth | endocranial volume

**Significance:** Humans are characterized by having very large brains relative to body size. Because gestation is critically linked to brain size, pregnancy is an important but elusive aspect of hominid evolution. We developed two Methods for reconstructing prenatal growth during this earliest phase of life history using brain size and dental morphology. Our results indicate a significant increase in prenatal growth rates (PGRs) throughout the terminal Miocene and Plio-Pleistocene with the evolution of human-like PGRs in later Homo, less than 1 million years ago. These results align with fossilized pelvic and cranial anatomy to support the evolution of human-like pregnancy in the Pleistocene and open up possibilities for novel ways to explore the evolution of hominid gestation via dental variation.

## VILLAMERIEL 2022

Saúl Villameriel, Brendan Costello, Marcel Giezen & Manuel Carreiras, *Cross-modal and cross-language activation in bilinguals reveals lexical competition even when words or signs are unheard or unseen*. *PNAS* **119** (2022), e2203906119.

[pnas119-e2203906119-Supplement.pdf](#)

We exploit the phenomenon of cross-modal, cross-language activation to examine the dynamics of language processing. Previous within-language work showed that seeing a sign coactivates phonologically related signs, just as hearing a spoken word coactivates phonologically related words. In this study, we conducted a series of eye-tracking experiments using the visual world paradigm to investigate the time course of crosslanguage coactivation in hearing bimodal bilinguals (Spanish–Spanish Sign Language) and unimodal bilinguals (Spanish/Basque). The aim was to gauge whether (and how) seeing a sign could coactivate words and, conversely, how hearing a word could coactivate signs and how such cross-language coactivation patterns differ from withinlanguage coactivation. The results revealed cross-language, cross-modal activation in both directions. Furthermore, comparison with previous findings of within-language lexical coactivation for spoken and signed language showed how the impact of temporal structure changes in different modalities. Spoken word activation follows the temporal structure of that word only when the word itself is heard; for signs, the temporal structure of the sign does not govern the time course of lexical access (location coactivation precedes handshape coactivation)—even when the sign is seen. We provide evidence that, instead, this pattern of activation is motivated by how common in the lexicon the sublexical units of the signs are. These results reveal the interaction between the perceptual properties of the explicit signal and structural linguistic properties. Examining languages across modalities illustrates how this interaction impacts language processing.

**Keywords:** language coactivation | bimodal bilingualism | lexical access | sublexical competition | visual world paradigm

**Significance:** When a word is activated, is it like hearing that word in your head? This study broadens our understanding of the cognition of language by exploiting the phenomenon of cross-modal, cross-language activation. Using eye-tracking and analyses of looking patterns over time, we characterized the temporal properties of language coactivation between spoken and signed languages in a sample of native bimodal bilinguals. The findings provide insights not only into the time course of lexical activation in spoken and signed language but also into the nature of language processing: The mental representation of a word/ sign is not tied to the temporal structure of that word/sign. Activating a word is not the same as replaying that word in your head.

YE 2017

Kaixiong Ye, Feng Gao, David Wang, Ofer Bar-Yosef & Alon Keinan, *Dietary adaptation of FADS genes in Europe varied across time and geography*. [bioRxiv 2017, Mar. 9. DOI:10.1101/111229](https://doi.org/10.1101/111229).

[bioRxiv2017-03.09-Supplement1.pdf](#), [bioRxiv2017-03.09-Supplement2.pdf](#)

Fatty acid desaturase (FADS) genes encode rate-limiting enzymes for the biosynthesis of omega-6 and omega-3 long chain polyunsaturated fatty acids (LCPUFAs). This biosynthesis is essential for individuals subsisting on LCPUFAs-poor, plant-based diets. Positive selection on FADS genes has been reported in multiple populations, but its presence and pattern in Europeans remain elusive. Here, with analyses of ancient and modern DNA, we demonstrated that positive selection acted on the same FADS variants both before and after the advent of farming in Europe, but on opposite alleles. Selection in recent farmers also varied geographically, with the strongest signal in Southern Europe. These varying selection patterns concur with anthropological evidence of differences in diets, and with the association of recently-adaptive alleles with higher FADS1 expression and enhanced LCPUFAs biosynthesis. Genome-wide association studies revealed associations of recently-adaptive alleles with not only LCPUFAs, but also other lipids and decreased risk of several inflammation-related diseases.

## Bibel

JOOSTEN 2022

Jan Joosten, *The Theology of Sacrifice in Leviticus 17*. [unknown \(2022\), preprint, 1–10](#). .

The privilege granted to humanity after the Flood is put into full effect in the framework of the covenant with Israel: the human being, created in the image of God, eats of the same food as God — more than that: they eat together at the same table. When Israelites meet with their God around the altar, the likeness of humans to God is transformed from an ideal into a reality.

## Biologie

GIBBONS 2022

Ann Gibbons, *How the Black Death left its mark on immune system genes*. [science 378 \(2022\), 237–238](#).

Study of DNA from medieval victims and survivors finds gene that helped protect people from deadly pathogen.

Today, the protective variant is still found in about 45% of British people in the 1000 Genomes database, a catalog of genetic variation. That is surprisingly high,

because the protective variant has a downside. Earlier work has shown it comes with a higher risk of developing autoimmune disorders, such as Crohn disease and rheumatoid arthritis. “Once the pandemic is gone, this cost becomes apparent,” Enard says. The variant’s high proportion suggests natural selection continued to favor it until recently, presumably because the plague remained endemic in Europe and Asia into the 19th century.

## KELLER 2022

Judith K. Keller, Clemens Wülfing, Jannes Wahl & Esther K. Diekhof, *Disease-related disgust promotes antibody release in human saliva.*

*Brain, Behavior, & Immunity – Health* **24** (2022), 100489, 1–10.

[BraBehImmu24-a100489-Supplement.pdf](#)

The behavioral immune system (BIS) comprises manifold mechanisms, that may assist the physiological immune system (PIS) in counteracting infection and can even reduce the risk of contagion. Previous studies have found initial evidence for possible interactions between the two systems. However, most of these findings were correlative and have not been replicated. Further, none of these studies examined whether disease stimuli that indicate an enhanced airborne transmission risk may trigger a different immune response in comparison to stimuli that predominantly evoke core disgust. In the present study, we employed a video-priming approach to get further insight in the influence of the perception of disgust- and disease-related stimuli on the rapid physiological immune response, as indicated by changes of secretory immunoglobulin A (S-IgA) in saliva. We created three video primers that represented different categories of disgust- and/or disease-associated content. Two of the videos showed disease-related situations that were associated with contagious respiratory virus infections, varying in concealment of aerosols. The third video incurred no heightened airborne contagion risk, but comprised situations that are known to elicit core disgust, such as rotten foods, decaying animal carcasses, or cockroaches. A fourth video acted as control showing landscape impressions. The different video primers varied in their contagion risk and disgust-evoking potential. Given the role of S-IgA in the mucosal immune defense, we expected differences in the S-IgA response between the two videos indicating a heightened airborne contagion risk and the core disgust video, with the highest S-IgA to occur after the aerosol video. For this, we used the data of 107 healthy participants in a between-subjects design with the four video primers. We found a significant increase of S-IgA in response to both the disease- and the disgust-related videos, which correlated positively with the perceived contagion risk of the displayed situations. Nevertheless, there was no significant difference in the increase between the three disease- and disgust-related videos. We also found that people with a high contamination disgust produced less S-IgA in such situations, which is a hint for a compensating relationship between the BIS and PIS. Our observations suggest that the mere visual perception of videos showing realistic situations of an increased contagion risk can elicit a heightened release of salivary antibodies.

**Keywords:** Behavioral immune system | Secretory IgA | Disgust | Prime | Disease | Avoidance

## Grabung

## CLINE 2013

Eric H. Cline, *The Trojan War, A very short introduction.* (Oxford 2013).

## Islam

RESCH 1906

Alfred Resch, *Agrapha, Außercanonische Schriftfragmente. Texte und Untersuchungen zur altchristlichen Literatur* 14.3 (Leipzig <sup>2</sup>1906). Nachdruck Forgotten Books, London.

## Judentum

ADLER 2022

Yonatan Adler, *When Did Jews Start Observing Torah?* [unknown \(2022\)](#), [preprint](#), 1–11. .

By the 1st century C.E., observance of Torah laws is abundantly evidenced in Judean society. But how far back does this widespread observance go?

Recently, some scholars have suggested that it was the Hasmonean family that sponsored the Torah as an instrument for the unification of their newly autonomous state. I would add that the early Hasmonean leaders may have decided to solidify their position vis-à-vis both their subjects and their enemies by officially adopting a document that might serve to codify the core narratives of the nation's origins together with the officially sanctioned Judean laws. This single, composite work would have served the Hasmoneans in a way roughly akin to an amalgamated American Declaration of Independence and the Constitution of the United States.

The Pentateuch—with both its stories about Israel's origins and its laws—would have served such a role magnificently. In adopting the Pentateuch as the formal conceptual and legal foundation of the newly emergent Judean state, the Hasmonean rulers would have provided a rallying point around which the people of Judea might unite.

The notion that the Torah only began to be widely observed starting as late as the third or second century B.C.E. may strike some as surprising—perhaps even radical. In truth, however, my conclusions here are hardly revolutionary.

The biblical authors themselves never asserted that the Torah was widely known and kept from an early date but rather that the laws of the Torah should be observed assiduously. For the biblical writers, it was not the antiquity of the Torah's widespread observance that mattered, but rather its divine source of authority.

## Kultur

HENRICH 2010

Joseph Henrich, Steven J. Heine & Ara Norenzayan, *Most people are not WEIRD.* [nature](#) **466** (2010), 29.

To understand human psychology, behavioural scientists must stop doing most of their experiments on Westerners, argue Joseph Henrich, Steven J. Heine and Ara Norenzayan.

HENRICH 2020

Joseph Henrich, *The Weirdest People in the World, How the West became psychologically peculiar and particularly prosperous.* (Dublin 2021).



## WIESSNER 2022

Polly Wiessner & Cindy Hsin-yee Huang, *A 44-y perspective on the influence of cash on Ju/'hoansi Bushman networks of sharing and gifting*. *PNAS* **119** (2022), e2213214119.

[pnas119-e2213214119-Supplement.pdf](#)

Money has been portrayed by major theorists as an agent of individualism, an instrument of freedom, a currency that removes personal values attached to things, and a generator of avarice. Regardless, the impact of money varies greatly with the cultural turf of the recipient societies. For traditional subsistence economies based on gifting and sharing, surplus perishable resources foraged from the environment carry low costs to the giver compared with the benefits to the receiver. With cash, costs to the giver are usually the same as benefits to the receiver, making sharing expensive and introducing new choices. Using quantitative data on possessions and expenditures collected over a 44-y period from 1974 to 2018 among the Ju/'hoansi (!Kung) in southern Africa, former hunter-gatherers, we look at how individuals spend monetary income, how a partial monetary economy alters traditional norms and institutions (egalitarianism, gifting, and sharing), and how institutions from the past steer change. Results show that gifting declines as cash is spent to increase the well-being of individual families and that gifting and sharing decrease and networks narrow. The sharing of meals and casual gifting hold fast. Substantial material inequalities develop, even between neighbors, but social, gender, and political equalities persist. A strong tradition for individual autonomy combined with monetary income allows individuals to spend their money as they choose, adapt to modern conditions, and pursue new options. However, new challenges are emerging to develop greater community cooperation and build substantial and sustainable economies in the face of such centrifugal forces.

**Keywords:** Kalahari hunter-gatherers | sharing | egalitarianism | impact of money | institutional change

**Significance:** Money has been seen as both the root of all evil as well as an agent of freedom. How it is put to use, however, depends very much on the recipient culture. Today, many small-scale societies that have led a subsistence-based lifestyle are experiencing the influx of money. Understanding the impact of cash is fundamental to confronting current issues, planning for the future, and realizing them—any ways humans have found alternative paths to reshape societies and explore new options. A 44-year perspective on changes brought about by entrance into a partial cash economy indicates both very different strategies taken by households and growing material inequalities, along with the persistence of robust traditional social, political, and gender equalities.

## Metallzeiten

## REITSEMA 2022

Laurie J. Reitsema, Alissa Mittnik, Britney Kyle, Giulio Catalano, Luca Sineo & David Reich et al., *The diverse genetic origins of a Classical period Greek army*. *PNAS* **119** (2022), e2205272119.

[pnas119-e2205272119-Supplement.pdf](#)

Trade and colonization caused an unprecedented increase in Mediterranean human mobility in the first millennium BCE. Often seen as a dividing force, warfare is in fact another catalyst of culture contact. We provide insight into the demographic dynamics of ancient warfare by reporting genome-wide data from fifth-century soldiers who fought for the army of the Greek Sicilian colony of Himera, along with representatives of the civilian population, nearby indigenous

settlements, and 96 present-day individuals from Italy and Greece. Unlike the rest of the sample, many soldiers had ancestral origins in northern Europe, the Steppe, and the Caucasus. Integrating genetic, archaeological, isotopic, and historical data, these results illustrate the significant role mercenaries played in ancient Greek armies and highlight how participation in war contributed to continental-scale human mobility in the Classical world.

**Keywords:** ancient DNA | archaeology | history | Classical world | ancient warfare

**Significance:** By studying genome-wide data from 54 individuals from eighth to fifth-century Sicily, we gain insights into the composition of Classical Greek armies (ca. fifth c. BCE) and the populace of a Greek colony. The presence of mercenaries in Greek armies fighting in the Mediterranean, as early as 480 BCE and with origins as far away as northern Europe and the Caucasus, is absent from historical texts and thus so far underappreciated in ancient classical scholarship. Our interdisciplinary study both underlines the value of integrating genetic studies to complement archaeological and historical research and highlights the importance of warfare in facilitating continental-scale human mobility, cultural contact, and cooperation in the Mediterranean of the Classical period.

Laurie J. Reitsema, Alissa Mittnik, Britney Kyle, Giulio Catalano, Pier Francesco Fabbri, Adam C. S. Kazmi, Katherine L. Reinberger, Luca Sineo, Stefano Vassallo, Rebecca Bernardos, Nasreen Broomandkoshbacht, Kim Callan, Francesca Candilio, Olivia Cheronet, Elizabeth Curtis, Daniel Fernandes, Martina Lari, Ann Marie Lawson, Matthew Mah, Swapan Mallick, Kirsten Mandl, Adam Micco, Alessandra Modi, Jonas Oppenheimer, Kadir Toykan EOzdogan, Nadin Rohland, Kristin Stewardson, Stefania Vai, Chiara Vergata, J. Noah Workman, Fatma Zalzala, Valentina Zaro, Alessandro Achilli, Achilles Anagnostopoulos, Cristian Capelli, Varnavas Constantinou, Hovirag Lancioni, Anna Olivieri, Anastasia Papadopoulou, Nikoleta Psatha, Ornella Semino, John Stamatoyannopoulos, Ioanna Valliannou, Evangelia Yannaki, Iosif Lazaridis, Nick Patterson, Harald Ringbauer, David Caramelli, Ron Pinhasi & David Reich

## Methoden

KAISER 2022

Caspar Kaiser & Andrew J. Oswald, *The scientific value of numerical measures of human feelings*. *PNAS* **119** (2022), e2210412119.

[pnas119-e2210412119-Supplement.pdf](#)

Human feelings measured in integers (my happiness is an 8 out of 10, my pain 2 out of 6 ) have no objective scientific basis. They are “made-up” numbers on a scale that does not exist. Yet such data are extensively collected—despite criticism from, especially, economists—by governments and international organizations. We examine this paradox. We draw upon longitudinal information on the feelings and decisions of tens of thousands of randomly sampled citizens followed through time over four decades in three countries ( $n = 700,000$  approximately). First, we show that a single feelings integer has greater predictive power than does a combined set of economic and social variables. Second, there is a clear inverse relationship between feelings integers and subsequent get-me-out-of-here actions (in the domain of neighborhoods, partners, jobs, and hospital visits). Third, this feelings-to-actions relationship takes a generic form, is consistently replicable, and is fairly close to linear in structure. Therefore, it seems that human beings can successfully operationalize an integer scale for feelings even though there is no true scale. How individuals are able to achieve this is not currently known. The implied scientific puzzle—an inherently cross-disciplinary one—demands attention.

Keywords: happiness | pain | satisfaction | survey design | validity

Significance: Human feelings cannot be expressed on a numerical scale. There are no units of measurement for feelings. However, such data are extensively collected in the modern world—by governments, corporations, and international organizations. Why? Our study finds that a feelings integer (like my happiness is X out of 10) has more predictive power than a collection of socioeconomic influences. Moreover, there is a clear link between those feelings numbers and later get-me-out-of-here actions. Finally, the feelings-to-actions relationship appears replicable and not too far from linear. Remarkably, therefore, humans somehow manage to choose their numerical answers in a systematic way as though they sense within themselves—and can communicate—a reliable numerical scale for their feelings. How remains an unsolved puzzle.

## Mittelpaläolithikum

CASSIDY 2022

Lara M. Cassidy, *The first genomic portrait of a Neanderthal family*. *nature* **610** (2022), 454–455.

Ancient genomic data have been retrieved for 13 Neanderthals from 2 caves in Siberia. The genomes provide unprecedented insights into the social organization of Neanderthal communities.

Several scenarios could account for the greater diversity of maternal lineages, including the possibility that a subset of men fathered most children. But, through modelling, the authors found that their data are best explained by female-biased migration between communities of about 20 individuals, with more than 60% of women being born elsewhere. There are, of course, many caveats to consider. The authors' sample size is small; the sequenced remains might be a skewed representation of the community or derive from multiple communities; and models are always wrong to some extent. But, in line with the group's hypothesis, a study of mtDNA has previously hinted that some Neanderthals practised patrilocality.

Dispersed relatives often maintain lifelong ties — which is not the case for apes. A father whose daughter moves to another community is able to recognize his grandchildren as kin, and to bond with (or at least tolerate) his son-in-law. This can allow vast social networks to form, if population densities are high enough. Whether this level of flexibility and cooperation is unique to *Homo sapiens* (and perhaps part of our success story) or a trait shared with our closest relatives remains to be seen.

SKOV 2022

Laurits Skov et al., *Genetic insights into the social organization of Neanderthals*. *nature* **610** (2022), 519–525.

n610-0519-Supplement.pdf

Genomic analyses of Neanderthals have previously provided insights into their population history and relationship to modern humans<sup>1–8</sup>, but the social organization of Neanderthal communities remains poorly understood. Here we present genetic data for 13 Neanderthals from two Middle Palaeolithic sites in the Altai Mountains of southern Siberia: 11 from Chagyrskaya Cave<sup>9,10</sup> and 2 from Okladnikov Cave<sup>11</sup>—making this one of the largest genetic studies of a Neanderthal population to date. We used hybridization capture to obtain genome-wide nuclear data, as well as mitochondrial and Y-chromosome sequences. Some Chagyrskaya individuals were closely related, including a father–daughter pair and a pair of second-degree relatives, indicating that at least some of the individuals lived at

the same time. Up to one-third of these individuals' genomes had long segments of homozygosity, suggesting that the Chagyrskaya Neanderthals were part of a small community. In addition, the Y-chromosome diversity is an order of magnitude lower than the mitochondrial diversity, a pattern that we found is best explained by female migration between communities. Thus, the genetic data presented here provide a detailed documentation of the social organization of an isolated Neanderthal community at the easternmost extent of their known range.

Laurits Skov, Stéphane Peyrégne, Divyaratan Popli, Leonardo N. M. Iasi, Thibaut Devièse, Viviane Slon, Elena I. Zavala, Mateja Hajdinjak, Arev P. Sümer, Steffi Grote, Alba Bossoms Mesa, David López Herráez, Birgit Nickel, Sarah Nagel, Julia Richter, Elena Essel, Marie Gansauge, Anna Schmidt, Petra Korlevic, Daniel Comeskey, Anatoly P. Derevianko, Aliona Kharevich, Sergey V. Markin, Sahra Talamo, Katerina Douka, Maciej T. Krajcarz, Richard G. Roberts, Thomas Higham, Bence Viola, Andrey I. Krivoshapkin, Kseniya A. Kolobova, Janet Kelso, Matthias Meyer, Svante Pääbo & Benjamin M. Peter

## Politik

LU 2022

Jackson G. Lu, Lesley Luyang Song, Yuhuang Zheng & Laura Changlan Wang, *Masks as a moral symbol, Masks reduce wearers' deviant behavior in China during COVID-19*. [PNAS 119 \(2022\), e2211144119](#).

[pnas119-e2211144119-Supplement.pdf](#)

Since the outbreak of COVID-19, mask wearing has become a global phenomenon. How do masks influence wearers' behavior in everyday life? We examine the effect of masks on wearers' deviant behavior in China, where mask wearing is mostly a publichealth issue rather than a political issue. Drawing on behavioral ethics research, we test two competing hypotheses: (a) masks disinhibit wearers' deviant behavior by increasing their sense of anonymity and (b) masks are a moral symbol that reduces wearers' deviant behavior by heightening their moral awareness. The latter hypothesis was consistently supported by 10 studies (including direct replications) using mixed methods (e.g., traffic camera recording analysis, observational field studies, experiments, and natural field experiment) and different measures of deviant behavior (e.g., running a red light, bike parking in no-parking zones, cheating for money, and deviant behavior in the library). Our research (n = 68,243) is among the first to uncover the psychological and behavioral consequences of mask wearing beyond its health benefits.

**Keywords:** social psychology | behavioral ethics | deviance | unethical behavior | COVID-19

**Significance:** Due to COVID-19, mask wearing has become a global phenomenon and a widespread topic of discussion. How do masks influence wearers' behavior in everyday life? We examine the effect of masks on wearers' deviant behavior in China, where mask wearing is mostly a publichealth issue rather than a political issue. Across 10 studies using mixed methods and different measures of deviant behavior, we provide evidence that masks are a moral symbol in China that reduces wearers' deviant behavior by heightening their moral awareness. Our research is among the first to uncover the psychological and behavioral consequences of mask wearing beyond its health benefits.

YANG 2022

Luojun Yang, Sara M. Constantino, Bryan T. Grenfell, Elke U. Weber, Simon A. Levin & Vítor V. Vasconcelos, *Sociocultural determinants of global mask-wearing behavior*. *PNAS* **119** (2022), e2213525119.

[pnas119-e2213525119-Supplement.pdf](#)

Behavioral responses influence the trajectories of epidemics. During the COVID-19 pandemic, nonpharmaceutical interventions (NPIs) reduced pathogen transmission and mortality worldwide. However, despite the global pandemic threat, there was substantial cross-country variation in the adoption of protective behaviors that is not explained by disease prevalence alone. In particular, many countries show a pattern of slow initial mask adoption followed by sharp transitions to high acceptance rates. These patterns are characteristic of behaviors that depend on social norms or peer influence. We develop a game-theoretic model of mask wearing where the utility of wearing a mask depends on the perceived risk of infection, social norms, and mandates from formal institutions. In this model, increasing pathogen transmission or policy stringency can trigger social tipping points in collective mask wearing. We show that complex social dynamics can emerge from simple individual interactions and that sociocultural variables and local policies are important for recovering cross-country variation in the speed and breadth of mask adoption. These results have implications for public health policy and data collection.

**Keywords:** epidemics | public health | social norms | institutions | risk perceptions