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References

Afrika

Perry 2014

George H. Perry et al., *Adaptive, convergent origins of the pygmy phenotype in African rainforest hunter-gatherers*. PNAS **111** (2014), E3596–E3603.

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George H. Perry, Matthieu Foll, Jean-Christophe Grenier, Etienne Patin, Yohann Nédélec, Alain Pacis, Maxime Barakatt, Simon Gravel, Xiang Zhou, Sam L. Nsobya, Laurent Excoffier, Lluis Quintana-Murci, Nathaniel J. Dominy & Luis B. Barreiro

The evolutionary history of the human pygmy phenotype (small body size), a characteristic of African and Southeast Asian rainforest hunter-gatherers, is largely unknown. Here we use a genome-wide admixture mapping analysis to identify 16 genomic regions that are significantly associated with the pygmy phenotype in the Batwa, a rainforest hunter-gatherer population from Uganda (east central Africa). The identified genomic regions have multiple attributes that provide supporting evidence of genuine association with the pygmy phenotype, including enrichments for SNPs previously associated with stature variation in Europeans and for genes with growth hormone receptor and regulation functions. To test adaptive evolutionary hypotheses, we computed the haplotypebased integrated haplotype score (iHS) statistic and the level of population differentiation (FST) between the Batwa and their agricultural neighbors, the Bakiga, for each genomic SNP. Both |iHS| and FST values were significantly higher for SNPs within the Batwa pygmy phenotype-associated regions than the remainder of the genome, a signature of polygenic adaptation. In contrast, when we expanded our analysis to include Baka rainforest hunter-gatherers from Cameroon and Gabon (west central Africa) and Nzebi and Nzime neighboring agriculturalists, we did not observe elevated |iHS| or FST values in these genomic regions. Together, these results suggest adaptive and at least partially convergent origins of the pygmy phenotype even within Africa, supporting the hypothesis that small body size confers a selective advantage for tropical rainforest hunter-gatherers but raising questions about the antiquity of this behavior.

human evolutionary ecology | human hunter-gatherers | population genomics | convergent evolution

Aktuell

Frederick 2014

Robert Frederick, *Science and Culture: Representing Feynman*. PNAS **111** (2014), 12571.

Mervis 2014

Jeffrey Mervis & David Malakoff, *Firing of Los Alamos researcher draws criticism*. science **345** (2014), 719–720.

Officials claim paper contained classified information.

Outside experts—including several who have handled similar classified material—say they see nothing problematic in Doyle's paper. But they speculate that two sections might have caught the attention of classification officers. One lists Israel as possessing nuclear weapons, which the United States has never officially confirmed. The other discusses documents related to a Cold War misunderstanding that some historians believe could have led to nuclear war.

Former Los Alamos Director Siegfried Hecker thinks that lab officials overreacted. "Is it typical to fire someone who has made a classification mistake?" he says. "The answer is no."

Hecker and others worry that the lab may be turning its back on contributions from political scientists like Doyle, who can bring a different perspective to the lab's work. "I think his writing about these issues is beneficial to both the laboratory and the country," says Hecker, a professor of engineering and management sciences at Stanford University in Palo Alto, California. "But the question is whether Los Alamos, in today's world, still values their input.

Pikaar 2014

Ilje Pikaar, Keshab R. Sharma, Shihu Hu, Wolfgang Gernjak, Jürg Keller & Zhiguo Yuan, *Reducing sewer corrosion through integrated urban water management*. science **345** (2014), 812–814.

s345-0812-Supplement.pdf

Sewer systems are among the most critical infrastructure assets for modern urban societies and provide essential human health protection. Sulfide-induced concrete sewer corrosion costs billions of dollars annually and has been identified as a main cause of global sewer deterioration. We performed a 2-year sampling campaign in South East Queensland (Australia), an extensive industry survey across Australia, and a comprehensive model-based scenario analysis of the various sources of sulfide. Aluminum sulfate addition during drinking water production contributes substantially to the sulfate load in sewage and indirectly serves as the primary source of sulfide. This unintended consequence of urban water management structures could be avoided by switching to sulfate-free coagulants, with no or only marginal additional expenses compared with the large potential savings in sewer corrosion costs.

Rauch 2014

Wolfgang Rauch & Manfred Kleidorfer, *Replace contamination, not the pipes*. science **345** (2014), 734–735.

Rethinking water treatment additives can have synergistic benefits for urban water management systems.

There is a long history of making wrong decisions in complex technical systems if the components are viewed in a segregated way. Understanding processes, interlinkages, and consequences in the complete urban water cycle allows identification of optimal solutions.

Sarewitz 2014

Daniel Sarewitz, *Allow use of electronic cigarettes to assess risk*. nature **512** (2014), 349.

Monitoring the outcomes of incentivized e-cigarette use, not endless research, will be the key to sensible regulation, says Daniel Sarewitz.

If all US smokers 'vaped' (the verb coined to distinguish inhaling e-cigarette vapours from inhaling tobacco smoke) instead of smoked, about 480,000 deaths might eventually be avoided per year.

Altpaläolithikum

Santonja 2014

Manuel Santonja et al., *The Middle Paleolithic site of Cuesta de la Bajada (Teruel, Spain), A perspective on the Acheulean and Middle Paleolithic technocomplexes in Europe.* Journal of Archaeological Science **49** (2014), 556–571.

Manuel Santonja, Alfredo Pérez-González, Manuel Domínguez-Rodrigo, Joaquín Panera, Susana Rubio-Jara, Carmen Sesé, Enrique Soto, Lee James Arnold, Mathieu Duval, Martina Demuro, José E. Ortiz, Trinidad de Torres, Norbert Mercier, Rebeca Barba & José Yravedra

Here we present a pluridisciplinary study of Cuesta de la Bajada site (Teruel, Spain). Our findings show that the site contains an early Middle Paleolithic assemblage similar to other European early Middle Paleolithic industries, allowing us to evaluate the coexistence of this industrial tradition with the Acheulean technocomplex in southwest Europe. The process of lithic production at Cuesta de la Bajada represents a technology focused on debitage, the application of technical concepts such as ramified production sequences, and the recycling of flakes via the resharpening of tools and exhausted cores. This site was formed around a pond not far from a river and contains remains of large macrofauna other than equids and cervids. Taphonomic analysis highlights the abundance of cut marks on bones, and supports the hypothesis of selective hunting by hominids. The numerical ages derived from the combination of ESR, OSL and AAR dating methods indicate that the archaeological site was very likely formed around the MIS 8-MIS 9. The appearance of Middle Paleolithic industries in Europe could represents the autochthonous development of a technocomplex distinctly different from the Acheulean, characterised by chaînes opératoires of debitage and a progressive increase of Levallois technology and retouched tools. These results suggest that there is a clear coexistence of assemblages with Acheulean and Middle Paleolithic industries during the last third of the Middle Pleistocene at least in the Iberian Peninsula.

Keywords: Ancient Middle Paleolithic | Acheulean | Lithic technology | Middle Pleistocene | Numerical dating | Biostratigraphy | Taphonomy | Iberian Peninsula

Anthropologie

Jordan 2014

Jillian J. Jordan, Katherine McAuliffe & Felix Warneken, *Development of in-group favoritism in children's third-party punishment of selfishness.* PNAS **111** (2014), 12710–12715.

When enforcing norms for cooperative behavior, human adults sometimes exhibit in-group bias. For example, third-party observers punish selfish behaviors committed by out-group members more harshly than similar behaviors committed by in-group members. Although evidence suggests that children begin to systematically punish selfish behavior around the age of 6 y, the development of in-group bias in their punishment remains unknown. Do children start off enforcing fairness norms impartially, or is norm enforcement biased from its emergence? How does bias change over development? Here, we created novel social groups in the laboratory and gave 6- and 8-year-olds the opportunity to engage in costly third-party punishment of selfish sharing behavior. We found that by age 6, punishment was already biased: Selfish resource allocations received more punishment when they were proposed by out-group members and when they disadvantaged in-group members. We also found that although costly punishment increased between ages 6 and

8, bias in punishment partially decreased. Although 8-y-olds also punished selfish outgroup members more harshly, they were equally likely to punish on behalf of disadvantaged in-group and out-group members, perhaps reflecting efforts to enforce norms impartially. Taken together, our results suggest that norm enforcement is biased from its emergence, but that this bias can be partially overcome through developmental change.

cooperation | ontogeny | equality

Biologie

Eliassen 2014

Sigrunn Eliassen & Christian Jørgensen, *Extra-Pair Mating and Evolution of Cooperative Neighbourhoods*. PLoS ONE **9** (2014), e99878. DOI:10.1371/journal.pone.0099878.

pone09-e99878-Supplement1.pdf, pone09-e99878-Supplement2.pdf

A striking but unexplained pattern in biology is the promiscuous mating behaviour in socially monogamous species. Although females commonly solicit extra-pair copulations, the adaptive reason has remained elusive. We use evolutionary modelling of breeding ecology to show that females benefit because extra-pair paternity incentivizes males to shift focus from a single brood towards the entire neighbourhood, as they are likely to have offspring there. Male-male cooperation towards public goods and dear enemy effects of reduced territorial aggression evolve from selfish interests, and lead to safer and more productive neighbourhoods. The mechanism provides adaptive explanations for the common empirical observations that females engage in extra-pair copulations, that neighbours dominate as extra-pair sires, and that extra-pair mating correlates with predation mortality and breeding density. The models predict cooperative behaviours at breeding sites where males cooperate more towards public goods than females. Where maternity certainty makes females care for offspring at home, paternity uncertainty and a potential for offspring in several broods make males invest in communal benefits and public goods. The models further predict that benefits of extra-pair mating affect whole nests or neighbourhoods, and that cuckolding males are often cuckolded themselves. Derived from ecological mechanisms, these new perspectives point towards the evolution of sociality in birds, with relevance also for mammals and primates including humans.

Sheldon 2014

Ben C. Sheldon & Marc Mangel, *Love thy neighbour*. nature **512** (2014), 381–382.

A theoretical model suggests that the cause of female-driven extra-pair mating lies in the spreading of male interests among neighbouring families, creating powerful incentives for male cooperation and concomitant benefits for females.

Eliassen and Jørgensen's work represents a radical shift in focus of tests of the costs and benefits of extra-pair mating in birds, and has broad consequences for our understanding of the evolution of cooperation among interacting, but non-related, individuals.

Isotope

Halley 2014

D. J. Halley & Jørgen Rosvold, *Stable isotope analysis and variation in medieval domestic pig husbandry practices in northwest Europe*,

Absence of evidence for a purely herbivorous diet. Journal of Archaeological Science **49** (2014), 1–5.

Stable isotope ratios have been widely used to infer past diets, domestication and husbandry practices of pigs, but few studies have addressed the proper baselines for such inferences. We analysed the diet of pig Sus scrofa from stable isotope analysis of carbon (d13C) and nitrogen (d15N) values of collagen from, urban Bergen, Norway (1300–1400 AD). These were compared with values from Skipshelleren (5500 BC – 200 AD); and from other medieval sites in NW Europe. Results indicated that the pigs from Bergen ate a very high proportion of marine protein compared to pigs and wild boar from Skipshelleren who ate a diet primarily of plant material. Results from other medieval sites in NW Europe show considerable variation in d13C and d15N values, indicating large variations in diet. However, none of the values are consistent with a diet wholly dominated by plant material; and therefore pig husbandry through outspan herding (pannage) without supplementary feeding. We question interpretations to the contrary, which neglect the role of known differences in dietary fractionation between species in producing d13C and d15N values of tissue. Data from domestic pigs of ancient breeds undoubtedly raised by outspan herding/pannage are so far unavailable and would be instructive.

Keywords: Sus scrofa | Pig husbandry | Stable isotope | Diet | Iron Age | Medieval

Isotope Klima

Gil 2014

Adolfo F. Gil et al., *Isotopic evidence on human bone for declining maize consumption.* Journal of Archaeological Science **49** (2014), 213–227.

Adolfo F. Gil, Ricardo Villalba, Andrew Ugan, Valeria Cortegoso, Gustavo Neme, Catalina Teresa Michieli, Paula Novellino & Víctor Durán

This paper explores variation in maize consumption among human societies in arid environments of central-western Argentina over the last 2500 years. Increasingly positive human d13C signatures suggest a high intake of C4 resources (maize) until ca. A.D. 1400. After this time, the importance of maize in the diet drops and never reaches pre-Hispanic consumption rates, despite the known importance of maize to Inka and other late-prehistoric societies in the region. This decline appears to be related to colder temperatures during the Little Ice Age from the beginning of the 15th to the mid19th centuries.

Keywords: Maize | Subtropical Andes | Central western Argentina | Diet | Climate | Farming | Foraging | Stable isotopes | Carbon isotopes | Late Holocene | Little ice age

Jungpaläolithikum

von Petzinger 2014

Genevieve von Petzinger & April Nowell, *A place in time: Situating Chauvet within the long chronology of symbolic behavioral development.* Journal of Human Evolution **74** (2014), 37–54.

Since the discovery of the Grotte Chauvet (Ardèche, France) in the mid-1990s, there has been a debate regarding the accuracy of assigning this site to the Aurignacian period. The main argument stems from a perceived lack of agreement

between the radiocarbon age of the imagery (>32,000 years BP [before present]) and its stylistic complexity and technical sophistication, which some believe are more typical of the later Upper Paleolithic. In this paper we first review the evidence for symbolic behavior among modern humans during the Aurignacian in order to explore the question of whether Chauvet's images are anachronistic. Then, using a database of non-figurative signs found in Paleolithic parietal art, we undertake a detailed comparison between Chauvet's corpus of signs and those found in other French Upper Paleolithic caves. While we conclude that there is substantial evidence to support an Aurignacian date for Grotte Chauvet, we also suggest that it may be time to revisit some of the cultural boundaries that are currently in use in Paleolithic archaeology.

Keywords: Upper Paleolithic | Western Europe | Parietal art | Aurignacian | Non-figurative signs | Symbolic behavior

Neolithikum

Huisman 2014

D. J. Huisman & D. C. M. Raemaekers, *Systematic cultivation of the Swifterbant wetlands (The Netherlands), Evidence from Neolithic tillage marks (c. 4300–4000 cal. BC)*. Journal of Archaeological Science **49** (2014), 572–584.

The Middle Neolithic (4300–4000 cal. yr BC) archaeological sites in the Swifterbant area were typically regarded to represent a transitional phase between a hunter-gatherer and agricultural subsistence. The discovery of a tilled layer on one of the sites (S4) site in 2007 during a renewed excavation campaign (2004–2007) was made possible by a close cooperation between archaeologists, diatom specialists and micromorphologists. Intensive sampling and micromorphological investigation revealed that the Swifterbant cultural layers typically consists of micro-laminated deposits of phytoliths and charred plant remains with waste. This led to the reinterpretation of the sites as middens rather than settlements. At least five levels could be identified that had been tilled with some kind of hand-tool. These levels were separated by natural clay deposits and midden layers. These results, and reinterpretation of observations from two other sites in the Swifterbant area (S2 and S3) indicate that tillage and crop production formed a regular part of the subsistence of the inhabitants during the Middle Neolithic. Rather than a transitional phase, the sites investigated probably should be regarded as traces of a fully agricultural society.

Keywords: Micromorphology | Neolithization | Subsistence | Midden | Agriculture

Politik

Doyle 2013

James E. Doyle, *Why Eliminate Nuclear Weapons?* Survival: Global Politics and Strategy **55** (2013), i, 7–34.

Recent scholarship has challenged both the logic and historical accuracy of arguments supporting the efficacy of nuclear weapons in the war against Japan and the view that nuclear deterrence is the leading cause of the absence of great-power war since 1945.11 For example, there is an emerging view among historians that the entry of the Soviet Union into the Pacific War on 9 August 1945 was more decisive in Japan's decision to surrender than the threat of further atomic

bombings. Japan was already largely defeated and lacked the armed strength or industrial capacity to fight a two-front war. The conventional bombing of Japanese cities had inflicted similar or greater devastation than the atomic bombs but had failed to prompt surrender. Moreover, careful analysis of the correspondence and behaviour of the Japanese leadership reveals a stronger reaction to the Soviet declaration than to the atomic bombings.12

Nor did nuclear weapons end interstate conflict, even between nuclear powers. The specific causes of the absence of major war on the European continent or between the United States and the Soviet Union from 1949 to 1991 cannot be known. But a disciplined thought experiment into the most likely causes of this relative calm would seek evidence that there was indeed an intent to use military force on the part of a state facing a nuclear power and that leaders failed to employ force because of their fear of nuclear war. Such evidence is scarce, especially outside the context of crises generated by accidents and misperceptions between great powers, which continued despite the presence of nuclear weapons. Moreover, during those crises the existence of nuclear weapons escalated the level of tension and put decisionmakers in situations where the probability of miscalculation and human error was increased. This raises the possibility that the traditional view of nuclear deterrence as a crisis stabiliser may be incorrect.