

Literatur

Afrika

PICKRELL 2014

Joseph K. Pickrell, Nick Patterson, Po-Ru Loh, Mark Lipson, Bonnie Berger, Mark Stoneking, Brigitte Pakendorf & David Reich, *Ancient west Eurasian ancestry in southern and eastern Africa*. [PNAS 111 \(2014\), 2632–2637](#).

The history of southern Africa involved interactions between indigenous hunter-gatherers and a range of populations that moved into the region. Here we use genome-wide genetic data to show that there are at least two admixture events in the history of Khoisan populations (southern African hunter-gatherers and pastoralists who speak non-Bantu languages with click consonants). One involved populations related to Niger-Congo-speaking African populations, and the other introduced ancestry most closely related to west Eurasian (European or Middle Eastern) populations. We date this latter admixture event to ≈ 900 – $1,800$ y ago and show that it had the largest demographic impact in Khoisan populations that speak Khoe-Kwadi languages. A similar signal of west Eurasian ancestry is present throughout eastern Africa. In particular, we also find evidence for two admixture events in the history of Kenyan, Tanzanian, and Ethiopian populations, the earlier of which involved populations related to west Eurasians and which we date to $\approx 2,700$ – $3,300$ y ago. We reconstruct the allele frequencies of the putative west Eurasian population in eastern Africa and show that this population is a good proxy for the west Eurasian ancestry in southern Africa. The most parsimonious explanation for these findings is that west Eurasian ancestry entered southern Africa indirectly through eastern Africa.

prehistory | population genetics | migration

Aktuell

ALCOCK 2014

Ian Alcock, Mathew P. White, Benedict W. Wheeler, Lora E. Fleming & Michael H. Depledge, *Longitudinal Effects on Mental Health of Moving to Greener and Less Green Urban Areas*. [Environmental Science & Technology 48 \(2014\), 1247–1255](#).

[EnvSciTec48-01247-Supplement.pdf](#)

Despite growing evidence of public health benefits from urban green space there has been little longitudinal analysis. This study used panel data to explore three different hypotheses about how moving to greener or less green areas may affect mental health over time. The samples were participants in the British Household Panel Survey with mental health data (General Health Questionnaire scores) for five consecutive years, and who relocated to a different residential area between the second and third years ($n = 1064$; observations = 5320). Fixed-effects analyses controlled for time-invariant individual level heterogeneity and other area and individual level effects. Compared to premove mental health scores, individuals who moved to greener areas ($n = 594$) had significantly better mental health in all three postmove years ($P = .015$; $P = .016$; $P = .008$), supporting a “shifting

baseline” hypothesis. Individuals who moved to less green areas ($n = 470$) showed significantly worse mental health in the year preceding the move ($P = .031$) but returned to baseline in the postmove years. Moving to greener urban areas was associated with sustained mental health improvements, suggesting that environmental policies to increase urban green space may have sustainable public health benefits.

CURRIE 2014

Janet Currie, Mark Stabile & Lauren E. Jones, *Do stimulant medications improve educational and behavioral outcomes for children with ADHD?* NBER Working Paper Series 19105 (Cambridge 2014). <http://www.nber.org/papers/w19105>.

We examine the effects of a policy change in the province of Quebec, Canada which greatly expanded insurance coverage for prescription medications. We show that the change was associated with a sharp increase in the use of stimulant medications commonly prescribed for ADHD in Quebec relative to the rest of Canada. We ask whether this increase in medication use was associated with improvements in emotional functioning or academic outcomes among children with ADHD. We find little evidence of improvement in either the medium or the long run. Our results are silent on the effects on optimal use of medication for ADHD, but suggest that expanding medication in a community setting had little positive benefit and may have had harmful effects given the average way these drugs are used in the community.

EDITORIAL 2014

Number crunch. *nature* **506** (2014), 131–132.

The correct use of statistics is not just good for science — it is essential. The criticism in question appears in a News Feature on the thorny issue of statistics. When it comes to statistical analysis of experimental data, the piece says, most scientists would look at a P value of 0.01 and “say that there was just a 1 % chance” of the result being a false alarm. “But they would be wrong.” In other words, most researchers do not understand the basis for a term many use every day. Worse, scientists misuse it. In doing so, they help to bury scientific truth beneath an avalanche of false findings that fail to survive replication.

GENOVES 1961

Santiago Genoves, *Racism and “The Mankind Quarterly”.* *science* **134** (1961), 1928–1932.

GIBBONS 2014

Ann Gibbons, *Neandertals and Moderns Made Imperfect Mates.* *science* **343** (2014), 471–472.

But what struck the researchers most was what they didn’t see. In about 20 regions of the modern human genome, both teams detected “deserts” of Neandertal genes. The starkest were on the X chromosome, which held one fifth as much Neandertal DNA as the rest of the genome, and in genes expressed in testes. Such deserts can’t be accidental, Reich says. They suggest that men carrying Neandertal genes for the testes, for example, were less likely to reproduce. “A massive process has removed at least one-third of the Neandertal ancestry that initially came into the modern human genome,” he says.

Finding traces of incipient speciation in human DNA is a stunning switch for biologists used to focusing on animals. “Seeing the signature of these rules of

speciation in our own history is really amazing,” says speciation expert Daven Presgraves of the University of Rochester in New York.

KREITER 2014

Andreas Kreiter, *Science at the sharp end of oppressive politics*. [nature 506 \(2014\), 133](#).

Andreas Kreiter describes his frightening and surreal ordeal at the hands of animal-rights extremists and their political allies.

Before I started, I heard some troubling news. Opponents of animal research had paid for an advertisement in the centre of Bremen, which claimed that the university had hired me as a monkey torturer. It showed my work and home addresses and telephone numbers, and invited people to call or visit me. The advert was the start of a highly aggressive and defamatory campaign. Strangers threatened to kill me, my wife and our three-year-old son. A university laboratory was destroyed. I was chased by an angry mob and was given police protection.

Our neurobiological experiments invest years of work in a single animal and depend entirely on the creature’s physical and behavioural health. Files on how the reports were prepared (made available to the court) revealed that statements from independent experts had been ignored. Instead, the reports were written by our opponents: long-standing enemies of animal experimentation, who seemed capable of diagnosing animals’ levels of suffering without ever having seen them. The authorities also chose unusual and creative ways to interpret the law — including that it could be trumped by public opinion.

Despite the growing dependence of modern societies on highly specialized fields of science, it is clear from my experience and other cases that such fields, and the relatively small group of corresponding scientists, can be quickly sacrificed for the short-lived opportunistic gains of politicians and operatives in the media. Aside from the progressive ruthlessness of such actions, they clearly threaten crucial mid- and long-term goals of society.

LEHMANN 2014

Caroline E. R. Lehmann et al., *Savanna Vegetation-Fire-Climate Relationships Differ Among Continents*. [science 343 \(2014\), 548–552](#).

[s343-0548-Supplement.pdf](#), [s343-0548-Supplement1.xls](#), [s343-0548-Supplement2.xls](#)

Caroline E. R. Lehmann, T. Michael Anderson, Mahesh Sankaran, Steven I. Higgins, Sally Archibald, William A. Hoffmann, Niall P. Hanan, Richard J. Williams, Roderick J. Fensham, Jeanine Felfili, Lindsay B. Hutley, Jayashree Ratnam, Jose San Jose, Ruben Montes, Don Franklin, Jeremy Russell-Smith, Casey M. Ryan, Giselda Durigan, Pierre Hiernaux, Ricardo Haidar, David M. J. S. Bowman & William J. Bond

Ecologists have long sought to understand the factors controlling the structure of savanna vegetation. Using data from 2154 sites in savannas across Africa, Australia, and South America, we found that increasing moisture availability drives increases in fire and tree basal area, whereas fire reduces tree basal area. However, among continents, the magnitude of these effects varied substantially, so that a single model cannot adequately represent savanna woody biomass across these regions. Historical and environmental differences drive the regional variation in the functional relationships between woody vegetation, fire, and climate. These same differences will determine the regional responses of vegetation to future climates, with implications for global carbon stocks.

PENNISI 2014

Elizabeth Pennisi, *Ecosystems Say ‘Pass the Salt!’*. [science 343 \(2014\), 472–473](#).

[B]ecause sodium exists as a charged element, organisms can't warehouse it as they do other elements including nitrogen, carbon, and phosphorous. So they need a constant source. Carnivores tend to have enough salt in their diets, as they consume other animals that worked hard to keep an adequate supply of salt. But herbivores, and, as Kaspari has recently shown, termites and other detritivores that depend on dead and decaying material for sustenance, require much more sodium than they can get from their primary food choices. Farmers put out salt licks for their livestock for this reason.

SHARPE 2014

Katherine Sharpe, *The Smart-Pill Oversell*. [nature 506 \(2014\), 146–148](#).

There is even some evidence that ADHD medication could worsen outcomes. In 2013, a team of economists published a study¹ examining the effects of a policy change in Quebec that resulted in thousands of children being given prescriptions for methyl phenidate. The authors found that children who began taking it actually did worse at school and were more likely to drop out than those with similar levels of symptoms who did not receive drugs. Girls taking the drug had more emotional problems, and both sexes reported worse relationships with their parents.

Amerika

RAFF 2014

Jennifer A. Raff & Deborah A. Bolnick, *Genetic roots of the first Americans*. [nature 506 \(2014\), 162–163](#).

The whole-genome sequence of a human associated with the earliest widespread culture in North America confirms the Asian ancestry of the Clovis people and their relatedness to present-day Native Americans.

[T]his genome contributes to a large body of genetic and archaeological research to lay the Solutrean hypothesis to rest once and for all.

Perhaps the most important lesson from palaeogenomic studies, then, is that we must be cautious about assuming that present-day genetic patterns are representative of the past. Analyses of ancient human genomes are making it clear that thousands of years of evolutionary processes have drastically reshaped the genetic landscape within any given geographic region.

RASMUSSEN 2014

Morten Rasmussen et al., *The genome of a Late Pleistocene human from a Clovis burial site in western Montana*. [nature 506 \(2014\), 225–229](#).

[n506-0225-Supplement.pdf](#)

Morten Rasmussen, Sarah L. Anzick, Michael R. Waters, Pontus Skoglund, Michael DeGiorgio, Thomas W. Stafford Jr, Simon Rasmussen, Ida Moltke, Anders Albrechtsen, Shane M. Doyle, G. David Poznik, Valborg Gudmundsdottir, Rachita Yadav, Anna-Sapfo Malaspinas, Samuel Stockton White V, Morten E. Allentoft, Omar E. Cornejo, Kristiina Tambets, Anders Eriksson, Peter D. Heintzman, Monika Karmin, Thorfinn Sand Korneliussen, David J. Meltzer, Tracey L. Pierre, Jesper Stenderup, Lauri Saag, Vera M. Warmuth, Margarida C. Lopes, Ripan S. Malhi, Søren Brunak, Thomas Sicheritz-Ponten, Ian Barnes, Matthew Collins, Ludovic Orlando, Francois Balloux, Andrea Manica, Ramneek Gupta, Mait Metspalu, Carlos D. Bustamante, Mattias Jakobsson, Rasmus Nielsen & Eske Willerslev

Clovis, with its distinctive biface, blade and osseous technologies, is the oldest widespread archaeological complex defined in North America, dating from 11,100 to 10,700 14C years before present (BP) (13,000 to 12,600 calendar years BP)^{1,2}. Nearly 50 years of archaeological research point to the Clovis complex as having developed south of the North American ice sheets from an ancestral technology³. However, both the origins and the genetic legacy of the people who manufactured Clovis tools remain under debate. It is generally believed that these people ultimately derived from Asia and were directly related to contemporary Native Americans². An alternative, Solutrean, hypothesis posits that the Clovis predecessors emigrated from southwestern Europe during the Last Glacial Maximum⁴. Here we report the genome sequence of a male infant (Anzick-1) recovered from the Anzick burial site in western Montana. The human bones date to 10,705±35 14C years BP (approximately 12,707–12,556 calendar years BP) and were directly associated with Clovis tools. We sequenced the genome to an average depth of 14.4 × and show that the gene flow from the Siberian Upper Palaeolithic Mal'ta population⁵ into Native American ancestors is also shared by the Anzick-1 individual and thus happened before 12,600 years BP. We also show that the Anzick-1 individual is more closely related to all indigenous American populations than to any other group. Our data are compatible with the hypothesis that Anzick-1 belonged to a population directly ancestral to many contemporary Native Americans. Finally, we find evidence of a deep divergence in Native American populations that predates the Anzick-1 individual.

Biologie

KRATZ 2013

Mario Kratz, Ton Baars & Stephan Guyenet, *The relationship between high-fat dairy consumption and obesity, cardiovascular, and metabolic disease*. [European Journal of Nutrition](#) **52** (2013), 1–24.

Purpose To comprehensively review the data on the relationship between the consumption of dairy fat and high-fat dairy foods, obesity, and cardiometabolic disease.

Methods We have conducted a systematic literature review of observational studies on the relationship between dairy fat and high-fat dairy foods, obesity, and cardiometabolic disease. We have integrated these findings with data from controlled studies showing effects of several minor dairy fatty acids on adiposity and cardiometabolic risk factors, and data on how bovine feeding practices influence the composition of dairy fat.

Results In 11 of 16 studies, high-fat dairy intake was inversely associated with measures of adiposity. Studies examining the relationship between high-fat dairy consumption and metabolic health reported either an inverse or no association. Studies investigating the connection between high-fat dairy intake and diabetes or cardiovascular disease incidence were inconsistent. We discuss factors that may have contributed to the variability between studies, including differences in (1) the potential for residual confounding; (2) the types of high-fat dairy foods consumed; and (3) bovine feeding practices (pasture- vs. grain-based) known to influence the composition of dairy fat.

Conclusions The observational evidence does not support the hypothesis that dairy fat or high-fat dairy foods contribute to obesity or cardiometabolic risk, and suggests that high-fat dairy consumption within typical dietary patterns is inversely associated with obesity risk. Although not conclusive, these findings may provide a rationale for future research into the bioactive properties of dairy fat and the impact of bovine feeding practices on the health effects of dairy fat.

Keywords Milk fat | Dairy fat | Obesity | Adiposity | Diabetes | Cardiovascular disease

PIFFER 2013

Davide Piffer, *Factor Analysis of Population Allele Frequencies as a Simple, Novel Method of Detecting Signals of Recent Polygenic Selection: The Example of Educational Attainment and IQ*. *Mankind Quarterly* **54** (2013), 168–184.

Weak widespread (polygenic) selection is a mechanism that acts on multiple SNPs simultaneously. The aim of this paper is to suggest a methodology to detect signals of polygenic selection using educational attainment as an example. Educational attainment is a polygenic phenotype, influenced by many genetic variants with small effects. Frequencies of 10 SNPs found to be associated with educational attainment in a recent genome-wide association study were obtained from HapMap, 1000 Genomes and ALFRED. Factor analysis showed that they are strongly statistically associated at the population level, and the resulting factor score was highly related to average population IQ ($r=0.90$). Moreover, allele frequencies were positively correlated with aggregate measures of educational attainment in the population, average IQ, and with two intelligence increasing alleles that had been identified in different studies. This paper provides a simple method for detecting signals of polygenic selection on genes with overlapping phenotypes but located on different chromosomes. The method is therefore different from traditional estimations of linkage disequilibrium.

Keywords: Polygenic; Selection; Educational attainment; Intelligence; SNP; HapMap; 1000 genomes; Race differences.

Klima

HANE BUTH 2013

Till J. J. Hanebuth, Hermann R. Kudrass, Jörg Linstädter, Badrul Islam & Anja M. Zander, *Rapid coastal subsidence in the central Ganges-Brahmaputra Delta (Bangladesh) since the 17th century deduced from submerged salt-producing kilns*. *Geology* **41** (2013), 987–990. The densely populated, low-lying Ganges-Brahmaputra Delta is highly vulnerable to global sea-level rise. In order to estimate the rate of subsidence of the delta, we examined submerged salt-producing kiln sites in the coastal Sundarbans (a huge UNESCO-protected mangrove forest). These kilns were built just above the wintery spring high-tide level of the time, but their bases are currently located ≈ 155 cm below the corresponding modern level. According to optically stimulated luminescence (OSL) dating, the kilns were last fired ≈ 300 yr ago, and salt production was terminated by a catastrophic event that affected the kiln sites at different levels and locations. ^{14}C ages of charcoal at the kilns' bases and associated mangrove stump horizons support the OSL dates. Based on the elevations and ages, the 300 yr average rate of sinking of the outer delta is 5.2 ± 1.2 mm/yr, which includes 0.8 mm/yr of eustatic sea-level rise. With the expectation of further acceleration of sea-level rise, the already-present problematic situation will be aggravated, and only prudent control of sediment accretion will keep southern Bangladesh above sea level.

Kultur

HOFFMAN 2014

Jascha Hoffman, *Rupert Till – Acoustic archaeologist*. [nature 506 \(2014\), 158](#).

Rupert Till at the University of Huddersfield, UK, studies the sonic properties of caves containing prehistoric paintings. As he addresses a conference in Malta on the archaeology of sound, he talks about the hum of Stonehenge, acoustic fingerprinting and simulating primeval concerts in the dark.

ORTMAN 2014

Scott G. Ortman, Andrew H. F. Cabaniss, Jennie O. Sturm & Luís M. A. Bettencourt, *The Pre-History of Urban Scaling*. [PLoS ONE 9 \(2014\), e87902](#). [DOI:10.1371/journal.pone.0087902](#).

Cities are increasingly the fundamental socio-economic units of human societies worldwide, but we still lack a unified characterization of urbanization that captures the social processes realized by cities across time and space. This is especially important for understanding the role of cities in the history of human civilization and for determining whether studies of ancient cities are relevant for contemporary science and policy. As a step in this direction, we develop a theory of settlement scaling in archaeology, deriving the relationship between population and settled area from a consideration of the interplay between social and infrastructural networks. We then test these models on settlement data from the Pre-Hispanic Basin of Mexico to show that this ancient settlement system displays spatial scaling properties analogous to those observed in modern cities. Our data derive from over 1,500 settlements occupied over two millennia and spanning four major cultural periods characterized by different levels of agricultural productivity, political centralization and market development. We show that, in agreement with theory, total settlement area increases with population size, on average, according to a scale invariant relation with an exponent in the range $2/3 < a < 5/6$. As a consequence, we are able to infer aggregate socioeconomic properties of ancient societies from archaeological measures of settlement organization. Our findings, from an urban settlement system that evolved independently from its old-world counterparts, suggest that principles of settlement organization are very general and may apply to the entire range of human history.

Methoden

BECK-BORNHOLDT 1997

Hans-Peter Beck-Bornholdt & Hans-Hermann Dubben, *Der Hund, der Eier legt, Erkennen von Fehlinformation durch Querdenken*. (Reinbek 1997).

BECK-BORNHOLDT 2003

Hans-Peter Beck-Bornholdt & Hans-Hermann Dubben, *Der Schein der Weisen, Irrtümer und Fehltrübeile im täglichen Denken*. (Reinbek ⁸2013).

DUBBEN 2005

Hans-Hermann Dubben & Hans-Peter Beck-Bornholdt, *Mit an Wahrscheinlichkeit grenzender Sicherheit, Logisches Denken und Zufall*. (Reinbek ³2006).

NUZZO 2014

Regina Nuzzo, *Statistical Errors*. [nature 506 \(2014\), 150–152](#).

P values, the ‘gold standard’ of statistical validity, are not as reliable as many scientists assume.

Critics also bemoan the way that P values can encourage muddled thinking. A prime example is their tendency to deflect attention from the actual size of an effect. Last year, for example, a study of more than 19,000 people showed⁸ that those who meet their spouses online are less likely to divorce ($p < 0.002$) and more likely to have high marital satisfaction ($p < 0.001$) than those who meet offline (see Nature <http://doi.org/rcg>; 2013). That might have sounded impressive, but the effects were actually tiny: meeting online nudged the divorce rate from 7.67% down to 5.96%, and barely budged happiness from 5.48 to 5.64 on a 7-point scale. Perhaps the worst fallacy is the kind of self-deception for which psychologist Uri Simonsohn of the University of Pennsylvania and his colleagues have popularized the term P-hacking; it is also known as data-dredging, snooping, fishing, significance-chasing and double-dipping.

VON RANDOW 1992

Gero von Randow, *Das Ziegenproblem, Denken in Wahrscheinlichkeiten*. (Reinbek 1992).

VON RANDOW 1993

GERO VON RANDOW (Hrsg.), *Mein paranormales Fahrrad und andere Anlässe zur Skepsis, entdeckt im „Skeptical Inquirer“*. (Reinbek 1993).

Politik

KUPFERSCHMIDT 2014

Kai Kupferschmidt, *The Dangerous Professor*. [science 343 \(2014\), 478–481](#).

David Nutt wants to make drug policies science-based and give the world a safe alternative to alcohol. If only politicians would listen, he says.

In early 2009, ignoring advice from Nutt’s advisory council, Smith upgraded cannabis from class C to class B, increasing the maximum penalty for possession from 2 to 5 years in prison. A few months later, Nutt criticized the decision in a public lecture, arguing that “overall, cannabis use does not lead to major health problems” and that tobacco and alcohol were more harmful. When media reported the remarks, Alan Johnson, who succeeded Smith as home secretary in mid-2009, asked him to resign. “He was asked to go because he cannot be both a government adviser and a campaigner against government policy,” Johnson wrote in a letter in *The Guardian*.

Story or Book

KISER 2014

Barbara Kiser, *The Evolutionary Origins of the Depression Epidemic*. [nature 506 \(2014\), 157](#).

The Depths: The Evolutionary Origins of the Depression Epidemic. Jonathan Rottenberg. Basic Books (2014)

Depression, avers psychologist Jonathan Rottenberg, is an evolved trait: a way of stopping us in our tracks so that we can perceive the hurdles facing us. But in today's relatively safe environment, he argues, this useful adjunct of self-analysis can ramp up in severity — and strictly biological approaches and talking cures are not universally effective. Rottenberg brings clinical findings, experimental research, anecdotal evidence and personal experience of depression to his study of triggers, exacerbating factors, psychobiology and evidence for routes to recovery.

KISER 2014

Barbara Kiser, *Warriors and Worriers*. [nature 506 \(2014\), 157](#).

Warriors and Worriers: The Survival of the Sexes. Joyce F. Benenson with Henry Markovits. Oxford University Press (2014)

In this provocative treatise, psychologist Joyce Benenson overturns the prevalent social-science theory that women are the more sociable sex and men more competitive. Benenson posits that the sexes exhibit the strongest differences in behaviours that support their long-term survival. The tendency among girls to discuss others is linked to the evolutionary need to sift out people who will help with childcare, she argues, but women often compete over men. Men, by contrast, cooperate in competing against other groups.

KISER 2014

Barbara Kiser, *Surnames and the History of Social Mobility*. [nature 506 \(2014\), 157](#).

The Son Also Rises: Surnames and the History of Social Mobility. Gregory Clark. Princeton University Press (2014)

Bloody revolutions, policy upheavals and a deluge of social-science theories have been sparked by social inequality. So how porous is the class divide? Not very, reveals economic historian Gregory Clark in this audacious study based on tracking family names through history. Examining names in areas as far-flung in time and space as today's Sweden, Qing Dynasty China and medieval England, Clark shows how little social mobility has altered in 800 years. The solution to the status lottery, he argues, is for society to rectify the imbalance in rewards given to rich and poor.

KOCH 2014

Christof Koch, *In the Playing Ground of Consciousness*. [science 343 \(2014\), 487](#).

Consciousness and the Brain. Deciphering How the Brain Codes Our Thoughts. by Stanislas Dehaene. Viking, New York, 2014. 350 pp. \$27.95, C\$32.95. ISBN 9780670025435.

Dehaene has little patience with philosophy. No eristic and endless debates about whether consciousness can or cannot be explained within a reductionist framework. The book introduces the methods that acted as midwife at the birth of a science of consciousness: treating people's reports about their subjective experiences as genuine scientific data (with appropriate caveats); manipulating the visibility of briefly flashed images of faces, objects, words, or numbers so that the subject sometimes consciously sees them but sometimes not (depending on experimental conditions or uncontrolled processes in the subject's brain); and recording the associated neural activity using functional brain imaging, electroencephalography (EEG), magnetoencephalography, or electrodes implanted into the brain of epileptic patients to monitor seizures for clinical purposes.

Consciousness is just brainwide sharing of information that is in the memory buffer. Unfortunately, this workspace has a very limited capacity. At any one

time, we can only be conscious of a smithereen—in the limit only a single item or event, although we can quickly shifts things into and out of consciousness. New information will compete with the old and overwrite it.