Liste erstellt am 2012-02-16

Literatur

Aktuell

Balafoutas 2012

Loukas Balafoutas & Matthias Sutter, *Affirmative Action Policies Promote Women and Do Not Harm Efficiency in the Laboratory*. science **335** (2012), 579–582.

s335-0579-Supplement.pdf

Gender differences in choosing to enter competitions are one source of unequal labor market outcomes concerning wages and promotions. Given that studying the effects of policy interventions to support women is difficult with field data because of measurement problems and potential lack of control, we evaluated, in a set of controlled laboratory experiments, four interventions: quotas, where one of two winners of a competition must be female; two variants of preferential treatment, where a fixed increment is added to women's performance; and repetition of the competition, where a second competition takes place if no woman is among the winners. Compared with no intervention, all interventions encourage women to enter competitions more often, and performance is at least equally good, both during and after the competition.

Beaman 2012

Lori Beaman, Esther Duflo, Rohini Pande & Petia Topalova, *Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India*. science **335** (2012), 582–582.

s335-0582-Supplement.pdf

Exploiting a randomized natural experiment in India, we show that female leadership influences adolescent girls' career aspirations and educational attainment. A 1993 law reserved leadership positions for women in randomly selected village councils. Using 8453 surveys of adolescents aged 11 to 15 and their parents in 495 villages, we found that, relative to villages in which such positions were never reserved, the gender gap in aspirations closed by 20 % in parents and 32 % in adolescents in villages assigned a female leader for two election cycles. The gender gap in adolescent educational attainment was erased, and girls spent less time on household chores. We found no evidence of changes in young women's labor market opportunities, which suggests that the impact of women leaders primarily reflects a role model effect.

Jackson 2012

David P. Jackson, Priscilla W. Laws & Scott V. Franklin, *An Inquiry-Based Curriculum for Nonmajors*. science **335** (2012), 418–419.

s335-0418-Supplement1.pdf, s335-0418-Supplement2.xlsx

Light, Sight, and Rainbows, the IBI prizewinning module, provides questions for exploring simple atmospheric phenomena.

"Our own research and that of others, most prominently the Physics Education Group at the University of Washington, has revealed that students have tremendous difficulty with the concept of sight and the necessity of light impinging on the eye in order to see. Our unit begins with the simple question, "Can you see in the dark?" This never fails to produce a rich discussion of what it means to see and the difference between self-luminescent and reflecting objects. Some students assert that sight will return once their eyes become dark-adapted. Others accept that they cannot see in the dark, but

attribute to light a passive catalyst role to illuminate the object and allow our "sight" to become active."

Mackintosh 2002

N. J. Mackintosh, *Do not ask whether they have a cognitive map, but how they find their way about*. Psicológica **23** (2002), 165–185.

The publication of "The hippocampus as a cognitive map" (O'Keefe & Nadel, 1978) has had a remarkable impact, stimulating a huge amount of both behavioural and neurobiological research on spatial learning and memory, involving both laboratory and field studies, and employing a variety of novel techniques. The reviews of this general area of research provided by the previous contributors to this special issue attest to the progress that has been made since 1978. No one would now doubt that the hippocampus is implicated in the use of configurations of landmarks to locate a goal – in both mammals and birds, although the precise nature of that implication remains a matter of much speculation and debate. On balance, however, the behavioural evidence does not seem to have supported O'Keefe and Nadel's original hypothesis that true spatial or locale learning is quite distinct from simple associative learning and depends on the establishment of a cognitive map of the environment.

Mitchell 2012

Ross N. Mitchell, Taylor M. Kilian & David A. D. Evans, *Supercontinent cycles and the calculation of absolute palaeolongitude in deep time*. nature **482** (2012), 208–211.

n482-0208-Supplement1.pdf, n482-0208-Supplement2.mov, n482-0208-Supplement3.mov

Traditional models of the supercontinent cycle predict that the next supercontinent-'Amasia'-will form either where Pangaea rifted (the 'introversion' model) or on the opposite side of the world (the 'extroversion' models). Here, by contrast, we develop an 'orthoversion' model whereby a succeeding supercontinent forms 90° away, within the great circle of subduction encircling its relict predecessor. A supercontinent aggregates over a mantle downwelling but then influences global-scale mantle convection to create an upwelling under the landmass6.Wecalculate theminimum moment of inertia about which oscillatory true polar wander occurs owing to the prolate shape of the non-hydrostatic Earth. By fitting great circles to each supercontinent's true polar wander legacy, we determine that the arc distances between successive supercontinent centres (the axes of the respective minimum moments of inertia) are 88° for Nuna to Rodinia and 87° for Rodinia to Pangaea—as predicted by the orthoversionmodel. Supercontinent centres can be located back into Precambrian time, providing fixed points for the calculation of absolute palaeolongitude over billion-year timescales. Palaeogeographic reconstructions additionally constrained in palaeolongitude will provide increasingly accurate estimates of ancient plate motions and palaeobiogeographic affinities.

Villeval 2012

Marie Claire Villeval, *Ready, Steady, Compete*. science **335** (2012), 544–545.

Women's willingness to compete can be increased through appropriate affirmative action. As in (16) but for a wider range of policies, Balafoutas and Sutter find that, with very few exceptions, the most able men are not overtaken by less able women. Thus, the policies reduce the competitiveness gap without causing reverse discrimination or reducing efficiency.

Anthropologie

Brown 2012

Peter Brown, *LB1 and LB6 Homo floresiensis are not modern human (Homo sapiens) cretins*. Journal of Human Evolution **62** (2012), 201–224.

Excavations in the late Pleistocene deposits at Liang Bua cave, Flores, have uncovered the skeletal remains of several small-bodied and small-brained hominins in association with stone artefacts and the bones of Stegodon. Due to their combination of plesiomorphic, unique and derived traits, they were ascribed to a new species, Homo floresiensis, which, along with Stegodon, appears to have become extinct w17 ka (thousand years ago). However, recently it has been argued that several characteristics of H. floresiensis were consistent with dwarfism and evidence of delayed development in modern human (Homo sapiens) myxoedematous endemic (ME) cretins. This research compares the skeletal and dental morphology in H. floresiensis with the clinical and osteological indicators of cretinism, and the traits that have been argued to be associated with ME cretinism in LB1 and LB6. Contrary to published claims, morphological and statistical comparisons did not identify the distinctive skeletal and dental indicators of cretinism in LB1 or LB6 H. floresiensis. Brain mass, skeletal proportions, epiphyseal union, orofacial morphology, dental development, size of the pituitary fossa and development of the paranasal sinuses, vault bone thickness and dimensions of the hands and feet all distinguish H. floresiensis from modern humans with ME cretinism. The research team responsible for the diagnosis of ME cretinism had not examined the original H. floresiensis skeletal materials, and perhaps, as a result, their research confused taphonomic damage with evidence of disease, and thus contained critical errors of fact and interpretation. Behavioural scenarios attempting to explain the presence of cretinous H. sapiens in the Liang Bua Pleistocene deposits, but not unaffected H. sapiens, are both unnecessary and not supported by the available archaeological and geochronological evidence from Flores.

Keywords: Liang Bua | Iodine deficiency | Skeleton | Taphonomy | Modern human behaviour

Biologie

Achilli 2012

Alessandro Achilli et al., *Mitochondrial genomes from modern horses reveal the major haplogroups that underwent domestication*. PNAS **109** (2012), 2449–2454.

Alessandro Achilli, Anna Olivieri, Pedro Soares, Hovirag Lancioni, Baharak Hooshiar Kashani, Ugo A. Perego, Solomon G. Nergadze, Valeria Carossa, Marco Santagostino, Stefano Capomaccio, Michela Felicetti, Walid Al-Achkar, M. Cecilia T. Penedo, Andrea Verini-Supplizi, Massoud Houshmand, Scott R. Woodward, Ornella Semino, Maurizio Silvestrelli, Elena Giulotto, Luísa Pereira, Hans-Jürgen Bandelt and Antonio Torroni
Archaeological and genetic evidence concerning the time and mode of wild horse (Equus ferus) domestication is still debated. High levels of genetic diversity in horse mtDNA have been detected when analyzing the control region; recurrent mutations, however, tend to blur the structure of the phylogenetic tree. Here, we brought the horse mtDNA phylogeny to the highest level of molecular resolution by analyzing 83 mitochondrial genomes from modern horses across Asia, Europe, the Middle East, and the Americas. Our data reveal 18 major haplogroups (A-R) with radiation times that are mostly confined to the Neolithic and later periods and place the root of the phylogeny corresponding to the Ancestral Mare Mitogenome at ≈130-160 thousand years ago. All haplogroups were detected in modern horses from Asia, but F was only found in E. przewalskii—the only remaining wild horse. Therefore, a wide range of matrilineal lineages from the extinct E. ferus underwent

domestication in the Eurasian steppes during the Eneolithic period and were transmitted to modern E. caballus breeds. Importantly, now that the major horse haplogroups have been defined, each with diagnostic mutational motifs (in both the coding and control regions), these haplotypes could be easily used to (i) classify well-preserved ancient remains, (ii) (re)assess the haplogroup variation of modern breeds, including Thoroughbreds, and (iii) evaluate the possible role of mtDNA backgrounds in racehorse performance.
horse mitochondrial genome | mtDNA haplogroups | origin of Equus caballus | Przewalski's horse | animal domestication

Cease 2012

Arianne J. Cease, James J. Elser, Colleen F. Ford, Shuguang Hao, Le Kang & Jon F. Harrison, *Heavy Livestock Grazing Promotes Locust Outbreaks by Lowering Plant Nitrogen Content*. science **335** (2012), 467–469.
s335-0467-Supplement.pdf
Current paradigms generally assume that increased plant nitrogen (N) should enhance herbivore performance by relieving protein limitation, increasing herbivorous insect populations. We show, in contrast to this scenario, that host plant N enrichment and high-protein artificial diets decreased the size and viability of Oedaleus asiaticus, a dominant locust of north Asian grasslands. This locust preferred plants with low N content and artificial diets with low protein and high carbohydrate content. Plant N content was lowest and locust abundance highest in heavily livestock-grazed fields where soils were N-depleted, likely due to enhanced erosion. These results suggest that heavy livestock grazing and consequent steppe degradation in the Eurasian grassland promote outbreaks of this locust by reducing plant protein content.

Möllinger 2004

H. Möllinger, R. Schneider, M. Löffel & H. Walach, *A Double-Blind, Randomized, Homeopathic Pathogenetic Trial with Healthy Persons: Comparing Two High Potencies*. Forschende Komplementärmedizin **11** (2004), 274–280.
Background and Objective: According to homeopathic theory, symptoms provoked by the homeopathic remedy in a pathogenetic trial (PT) make up the remedy picture serving as the basis for the homeopathic treatment. Little is known whether the symptoms produced by the remedy differ from symptoms produced by placebo. This is because both homeopathic remedy and placebo also produce so-called unspecific effects due to psychological reasons. We therefore explore the distinctiveness of homeopathic symptoms and placebo symptoms.
Design: A three-armed, randomized PT pilot study.
Setting: A blinded materia medica expert identifies symptoms with regard to their number and specificity.
Participants: 21 healthy homeopathic practitioners note symptoms produced after remedy intake.
Interventions: Patients are randomly assigned to receive either (1) Calendula officinalis, (2) Ferrum muriaticum, or (3) placebo. After a seven-day baseline symptoms recording period, proving substances are taken until symptoms occur. In daily supervision phone calls, symptoms are verified by the supervisor.
Main Outcome Measure: Total number of symptoms produced and number of specific symptoms produced.
Outlook: The results showed that both remedies 'produced' significantly more symptoms than placebo. With regard to the specificity, the Calendula officinalis group displayed more remedy-specific symptoms than placebo. However, in the Ferrum muriaticum group more Calendula symptoms than placebo were also recorded.
Key Words: Pathogenetic trial | Calendula officinalis | Ferrum muriaticum | Nonlocality | Placebo

Energie

Buesseler 2011

Ken Buesseler, Michio Aoyama & Masao Fukasawa, *Impacts of the Fukushima Nuclear Power Plants on Marine Radioactivity*. Environmental Science & Technology **45** (2011), 9931–9935.

EnvSciTec45-09931-Supplement.pdf

The impacts on the ocean of releases of radionuclides from the Fukushima Dai-ichi nuclear power plants remain unclear. However, information has been made public regarding the concentrations of radioactive isotopes of iodine and cesium in ocean water near the discharge point. These data allow us to draw some basic conclusions about the relative levels of radionuclides released which can be compared to prior ocean studies and be used to address dose consequences as discussed by Garnier-Laplace et al. in this journal.1 The data show peak ocean discharges in early April, one month after the earthquake and a factor of 1000 decrease in the month following. Interestingly, the concentrations through the end of July remain higher than expected implying continued releases from the reactors or other contaminated sources, such as groundwater or coastal sediments. By July, levels of 137Cs are still more than 10 000 times higher than levels measured in 2010 in the coastal waters o. Japan. Although some radionuclides are significantly elevated, dose calculations suggest minimal impact on marine biota or humans due to direct exposure in surrounding ocean waters, though considerations for biological uptake and consumption of seafood are discussed and further study is warranted.

Klima

Burke 2012

Andrea Burke & Laura F. Robinson, *The Southern Ocean's Role in Carbon Exchange During the Last Deglaciation*. science **335** (2012), 557–561.

s335-0557-Supplement.pdf

Changes in the upwelling and degassing of carbon from the Southern Ocean form one of the leading hypotheses for the cause of glacial-interglacial changes in atmospheric carbon dioxide. We present a 25,000-year-long Southern Ocean radiocarbon record reconstructed from deep-sea corals, which shows radiocarbon-depleted waters during the glacial period and through the early deglaciation. This depletion and associated deep stratification disappeared by ≈14.6 ka (thousand years ago), consistent with the transfer of carbon from the deep ocean to the surface ocean and atmosphere via a Southern Ocean ventilation event. Given this evidence for carbon exchange in the Southern Ocean, we show that existing deep-ocean radiocarbon records fromthe glacial period are sufficiently depleted to explain the ≈190 per mil drop in atmospheric radiocarbon between ≈17 and 14.5 ka.

Kanner 2012

Lisa C. Kanner, Stephen J. Burns, Hai Cheng & R. Lawrence Edwards, *High-Latitude Forcing of the South American Summer Monsoon During the Last Glacial*. science **335** (2012), 570–573.

s335-0570-Supplement.pdf

The climate of the Last Glacial period (10,000 to 110,000 years ago) was characterized by rapid millennial-scale climate fluctuations termed Dansgaard/Oeschger (D/O) and Heinrich events. We present results from a speleothem-derived proxy of the South American summer monsoon (SASM) from 16,000 to 50,000 years ago that demonstrate the occurrence of D/O cycles and Heinrich events. This tropical Southern Hemisphere monsoon reconstruction illustrates an antiphase relationship to Northern Hemisphere

monsoon intensity at the millennial scale. Our results also show an influence of Antarctic millennial-scale climate fluctuations on the SASM. This high-resolution, precisely dated, tropical precipitation record can be used to establish the timing of climate events in the high latitudes of the Northern and Southern Hemispheres.

Miller 2012

Gifford H. Miller et al., *Abrupt onset of the Little Ice Age triggered by volcanism and sustained by sea-ice/ocean feedbacks*. Geophysical Research Letters **39** (2012), L02708. DOI:10.1029/2011GL050168.

GeoResLet39-L02708-Supplement.zip

Gifford H. Miller, IJslaug Geirsdóttir, Yafang Zhong, Darren J. Larsen, Bette L. Otto-Bliesner, Marika M. Holland, David A. Bailey, Kurt A. Refsnider, Scott J. Lehman, John R. Southon, Chance Anderson, Helgi Björnsson and Thorvaldur Thordarson

Northern Hemisphere summer temperatures over the past 8000 years have been paced by the slow decrease in summer insolation resulting from the precession of the equinoxes. However, the causes of superposed century-scale cold summer anomalies, of which the Little Ice Age (LIA) is the most extreme, remain debated, largely because the natural forcings are either weak or, in the case of volcanism, short lived. Here we present precisely dated records of ice-cap growth from Arctic Canada and Iceland showing that LIA summer cold and ice growth began abruptly between 1275 and 1300 AD, followed by a substantial intensification 1430–1455 AD. Intervals of sudden ice growth coincide with two of the most volcanically perturbed half centuries of the past millennium. A transient climate model simulation shows that explosive volcanism produces abrupt summer cooling at these times, and that cold summers can be maintained by sea-ice/ ocean feedbacks long after volcanic aerosols are removed. Our results suggest that the onset of the LIA can be linked to an unusual 50-year-long episode with four large sulfur-rich explosive eruptions, each with global sulfate loading >60 Tg. The persistence of cold summers is best explained by consequent sea-ice/ocean feedbacks during a hemispheric summer insolation minimum; large changes in solar irradiance are not required.

Rodbell 2012

Donald T. Rodbell, *Marching in Near Lock-Step*. science **335** (2012), 548–549.

A cave record from Peru closely matches climate patterns seen in cores from Greenland and the North Atlantic Ocean.

The calcium carbonate in caves is ideally suited to the uranium-thorium dating method, often yielding a higher age precision than any other dating method applicable to the time window in question; typical age uncertainties are less than $\pm 1\,\%$. Indeed, this precision exceeds that of the proxy climate records from the North Atlantic/Greenland region that contain D/O cycles and Heinrich layers. Kanner et al. therefore suggest that their Peruvian archive can be used to improve the dating of the very records to which they are comparing.

One of the curiosities of the precipitation seesaw is the degree to which it is controlled by temperature cycles in the North Atlantic/ Greenland region, and the relatively minor role played by Antarctic temperature cycles. The latter precede those in Greenland by 1500 to 3000 years. Kanner et al.'s precisely dated Pacupahuain Cave record may delineate the competing influence of the two poles.

Story or Book

Torrence 2012

Robin Torrence, *Ecocide or Utopia on Easter Island?* science **335** (2012), 403–404.

The Statues That Walked, Unraveling the Mystery of Easter Island, by Terry Hunt and Carl Lipo, Free Press (Simon and Schuster), New York, 2011. 251 pp. $26, C$29.99. ISBN 9781439150313.

Combining new dating from excavations at key sites and a reassessment of previous work, they conclude that humans arrived only about 1200 CE. Their revision fits much better with dates for the expansion of Polynesian settlement to other far-flung locations such as Hawaii and New Zealand. Rats that also traveled on the boats fed on the nuts of the island's giant Jubaea palm and over 600 years helped drive them to extinction. Rather than degenerating into warfare, the islanders responded to deforestation by developing an effective gardening system aided by small walled gardens enhanced by composting and stone mulching.

No Rapa Nui story would be complete without a catastrophe. In this telling, that was generated by the arrival of Europeans. Drawing on early Dutch accounts, Hunt and Lipo argue that Rapanui culture had not succumbed to environmental disaster by the early part of the 18th century but was flourishing because it was well adapted to the limited resources on the island.