Liste erstellt am 2022-03-28

References

Aktuell

Abu-Raddad 2022

L. J. Abu-Raddad et al., *Effect of mRNA Vaccine Boosters against SARS-CoV-2 Omicron Infection in Qatar*. New England Journal of Medicine (2022), preprint, 1–13. DOI:10.1056/NEJMoa2200797.

The messenger RNA (mRNA) boosters were highly effective against symptomatic delta infection, but they were less effective against symptomatic omicron infection. However, with both variants, mRNA boosters led to strong protection against Covid-19–related hospitalization and death.

L.J. Abu-Raddad, H. Chemaitelly, H.H. Ayoub, S. AlMukdad, H.M. Yassine, H.A. Al-Khatib, M.K. Smatti, P. Tang, M.R. Hasan, P. Coyle, Z. Al-Kanaani, E. Al-Kuwari, A. Jeremijenko, A.H. Kaleeckal, A.N. Latif, R.M. Shaik, H.F. Abdul-Rahim, G.K. Nasrallah, M.G. Al-Kuwari, A.A. Butt, H.E. Al-Romaihi, M.H. Al-Thani, A. Al-Khal, and R. Bertollini

Amundson 2022

Ronald Amundson, *Negative emissions in agriculture are improbable in the near future*. PNAS **119** (2022), e2118142119.

The most serious impediment is the underdiscussed Achilles' heel of agriculture: In the 10,000 y since it was invented, it has never been generally sustainable or at steady state (4). Agriculture has always relied on borrowing resources from the future. In the past, degraded land was abandoned, and new biomes were exploited. That "extra" land is now all gone. Today, agriculture, instead, uses limited reservoirs of fossil fuel and minerals to maintain elemental steady state. Early farming altered the global C cycle and Earth's climate system (5), and these impacts have only become magnified over time. In the 21st century, the environmental challenges of agriculture are even more complex (6).

Northrup 2022

Daniel L. Northrup, Bruno Basso, Michael Q. Wang, Cristine L. S. Morgan & Philip N. Benfey, *Time to go to work*, *Reply to Amundson*. PNAS **119** (2022), e2122842119.

Amundson (1) notes that each innovation is a mini–Manhattan Project; the Manhattan Project succeeded in its goal in roughly 3 y. Mitigation of climate change is also likened to a moonshot, an effort that took 8 y. Given the consequences of failure, we hope that the climate challenge can be addressed on a decadal time scale. As Amundson concludes, we must do much work first. By laying out a plausible set of goals and identifying the areas for innovation, we aim to inspire that work.

Wu 2022

Yuchang Wu, Shiro Furuya, Zihang Wang, Jenna E. Nobles, Jason M. Fletcher & Qiongshi Lu, *GWAS on birth year infant mortality rates provides evidence of recent natural selection*. PNAS **119** (2022), e2117312119.

pnas119-e2117312119-Supplement.pdf

Following more than a century of phenotypic measurement of natural selection processes, much recent work explores relationships between molecular genetic measurements and realized fitness in the next generation. We take an innovative approach to the study of contemporary selective pressure by examining which genetic variants are "sustained" in populations as mortality exposure increases. Specifically, we deploy a so-called "regional GWAS" (genome-wide association study) that links the infant mortality rate (IMR) by place and year in the United Kingdom with common genetic variants among birth cohorts in the UK Biobank. These cohorts (born between 1936 and 1970) saw a decline in IMR from above 65 to under 20 deaths per 1,000 live births, with substantial subnational variations and spikes alongside wartime exposures. Our Results show several genome-wide significant loci, including LCT and TLR10/1/6, related to area-level cohort IMR exposure during gestation and infancy. Genetic correlations are found across multiple domains, including fertility, cognition, health behaviors, and health outcomes, suggesting an important role for cohort selection in modern populations.

Keywords: infant mortality | recent natural selection | regional GWAS

Significance: Quantifying natural selection in human populations is a central topic in evolutionary biology and human genetics. Current studies to identify which single-nucleotide polymorphism has undergone selection suffer from limited sample sizes and large uncertainties in the timing of selection. In this study, we advance the field by showing that a genome-wide association study (GWAS) on infant mortality rate can identify recent selection signals. Our study produces wellpowered genome-wide maps for selection. It replicates two selection signals that were detected in a previous study using ancient DNA, substantially improves the resolution on the timing of selection, and provides evidence for very recent selection during WorldWar II. It also provides fundamental insights into how to interpret GWAS results.

Amerika

Gibbons 2022

Ann Gibbons, *Southern roots for the Maya—and the maize that fed them*. science **375** (2022), 1325.

Migrants from the south may have helped spread early farming in Central America, ancient DNA suggests.

The study also suggests that, as in Europe, farming in the Americas spread at least in part with people on the move, rather than being passed among cultures. The work tracing the origin of the Maya also illuminates the roots of one of the world's great crops, says archaeobotanist Dolores Piperno of the Smithsonian Institution. "It really transforms our knowledge of how maize dispersed."

Bibel

Knohl 2021

Israel Knohl, *The Original Version of the Priestly Creation Account and the Religious Significance of the Number Eight in the Bible and in Early Jewish Mysticism*. Jewish Studies **56** (2021), 1–31.

In his influential study on Jewish mysticism, Gershom Scholem noted the significance of speculation on the number eight, which he saw to have its origins outside of Jewish and Christian circles.1 In what follows, however, I would like to

argue that the sacredness of the number eight is in fact deeply rooted in the HB itself, especially in the "Priestly Torah" (P).

In my view, the original version of the Priestly account of creation (Gen 1:1–2:4a), was based on the number eight. However, later editors from the "Holiness School" changed the text to reflect the more popular sanctity of the number seven, with the Sabbath day as the culmination of the story. However, the esoteric sanctity of eight did not disappear, but continued to be transmitted within some biblical circles. In the postbiblical period we find the imprint of this concept in the Gabriel Revelation, in Memar Marqah, in the Hekhalot, and in the Book of Bahir.

Klima

Northrup 2021

Daniel L. Northrup, Bruno Basso, Michael Q. Wang, Cristine L. S. Morgan & Philip N. Benfey, *Novel technologies for emission reduction complement conservation agriculture to achieve negative emissions from row-crop production.* PNAS **118** (2021), e2022666118.

pnas119-e2022666118-Supplement.pdf, pnas118-e2022666118-Comment1.pdf, pnas118-e2022666118-Reply1.pdf

Plants remove carbon dioxide from the atmosphere through photosynthesis. Because agriculture's productivity is based on this process, a combination of technologies to reduce emissions and enhance soil carbon storage can allow this sector to achieve net negative emissions while maintaining high productivity. Unfortunately, current row-crop agricultural practice generates about 5 % of greenhouse gas emissions in the United States and European Union. To reduce these emissions, significant effort has been focused on changing farm management practices to maximize soil carbon. In contrast, the potential to reduce emissions has largely been neglected. Through a combination of innovations in digital agriculture, crop and microbial genetics, and electrification, we estimate that a 71 % (1,744 kg CO2e/ha) reduction in greenhouse gas emissions from row crop agriculture is possible within the next 15 y. Importantly, emission reduction can lower the barrier to broad adoption by proceeding through multiple stages with meaningful improvements that gradually facilitate the transition to net negative practices. Emerging voluntary and regulatory ecosystems services markets will incentivize progress along this transition pathway and guide public and private investments toward technology development. In the difficult quest for net negative emissions, all tools, including emission reduction and soil carbon storage, must be developed to allow agriculture to maintain its critical societal function of provisioning society while, at the same time, generating environmental benefits.

Keywords: agriculture | emission reduction | innovation | crop genetics | soil health | electrification

Ostasien

Eda 2022

Masaki Eda, Yu Itahashi & Hiroki Kikuchi et al., *Multiple lines of evidence of early goose domestication in a 7,000-y-old rice cultivation village in the lower Yangtze River, China.* PNAS **119** (2022), e2117064119.

pnas119-e2117064119-Supplement.pdf

Poultry are farmed globally, with chicken (Gallus gallus domesticus) being the leading domesticated species. Although domestic chicken bones have been reported from some Early Holocene sites, their origin is controversial and there is no reliable domestic chicken bone older than the Middle Holocene. Here, we studied goose bones from Tianluoshan—a 7,000-y-old rice cultivation village in the lower Yangtze River valley, China—using histological, geochemical, biochemical, and morphological approaches. Histological analysis revealed that one of the bones was derived from a locally bred chick, although no wild goose species breed in southern China. The analysis of oxygen-stable isotope composition supported this observation and further revealed that some of the mature bones were also derived from locally bred individuals. The nitrogen-stable isotope composition showed that locally bred mature birds fed on foods different from those eaten by migrant individuals. Morphological analysis revealed that the locally bred mature birds were homogenous in size, whereas radiocarbon dating clearly demonstrated that the samples from locally bred individuals were ≈7,000 y old. The histological, geochemical, biochemical, morphological, and contextual evidence suggest that geese at Tianluoshan village were at an early stage of domestication. The goose population appears to have been maintained for several generations without the introduction of individuals from other populations and may have been fed cultivated paddy rice. These findings indicate that goose domestication dates back 7,000 y, making geese the oldest domesticated poultry species in history.

Keywords: poultry farming | domestication | Middle Neolithic | stable isotope composition

Masaki Eda, Yu Itahashi, Hiroki Kikuchi, Guoping Sun, Kai-hsuan Hsu, Takashi Gakuhari, Minoru Yoneda, Leping Jiang, Guomei Yang & Shinichi Nakamura

Significance: We studied goose bones from Tianluoshan—a 7,000-y-old rice cultivation village in the lower Yangtze River valley, China—using histological, geochemical, biochemical, and morphological approaches. Our analyses reveal an early stage of goose domestication at Tianluoshan. The goose population seemed to have been maintained for several generations without the introduction of individuals from other populations and might have been fed cultivated paddy rice. These findings indicate that goose domestication dates back 7,000 y, making geese the oldest domesticated poultry species in history.

Politik

Kupferschmidt 2022

Kai Kupferschmidt, *On the trail of bullshit*. science **375** (2022), 1334–1337.

Studying misinformation should become a top scientific priority, says biologist Carl Bergstrom.

"The social media companies are able to run the largest scale psychological experiments in history by many orders of magnitude, and they're running them in real time on all of us," Bergstrom says.

Online networks also undermine traditional rules of thumb about communication. Before the advent of the internet, for example, hearing the same information from multiple people made it more trustworthy.

"There is a correlation of course between all this misinformation and the decision by so many people not to get vaccinated, but correlation does not mean causation," he says. He believes people choose information to conform to their world view, not the other way around. In his view, misinformation is a symptom, but the real disease is polarization and a political system and societal climate that rewards it.

Sprachlehre

Joosten 2022

Jan Joosten, עופלה — *"They will be doubled upon them" (Pesher Habakkuk VII 14-16)*. unknown (2022), preprint, 1–8. .

If the approach proposed in the present note is accepted, the interpretation of the obscure word עופלה in Hab 2:4 as "their iniquities (?) will be doubled upon them" turns out to be derived fairly straightforwardly from the Hebrew text. The word was divided into two elements, a verbal form and a prepositional phrase. The verbal form was derived from the root עוף "to double" known from Aramaic. The notion of doubling in a context that spoke of judgment made the pesharist think of Isa 40:2, which led him to supply an explicit object (or subject) "sins." And the motif was fitted out with apocalyptic overtones as usual in pesher Habakkuk. But the initial insight on which the interpretation in 1QpHab VII 14-16 is based in language. The pesharist's approach is creative, and charismatic, but in the final analysis it rests on philological competence (though perhaps not of the kind that would pass muster in our universities).

The interpretation proposed in the pesher is without parallel. It is hard to say whether this indicates that it reflects the individual genius of the author, or whether the interpretation was accepted in a limited circle before the author adopted it in the pesher.

Story or Book

Robinson 2022

Andrew Robinson, *Unlocking the mysteries of the written word*. science **375** (2022), 1361.

A philologist presents a lively tour of the world's foundational and undeciphered scripts.

The Greatest Invention: A History of the World in Nine Mysterious Scripts. Silvia Ferrara. Translated by Todd Portnowitz. Picador, 2022. 304 pp.

According to Plato, Socrates spoke of the Egyptian god Thoth, the supposed inventor of writing, who came to the king seeking a royal blessing for his hieroglyphic invention. However, the king admonished Thoth, replying, "You have invented an elixir not of memory, but of reminding; and you offer your pupils the appearance of wisdom, not true wisdom, for they will read many things without instruction and will therefore seem to know many things, when they are for the most part ignorant." These words, spoken in antiquity, have a distinctly contemporary ring.