

References

Aktuell

BRUSCHETTA 2019

Giuseppe Bruschetta & Sabrina Diano, *The smoke clears over diabetes. nature* **574** (2019), 336–337.

The discovery of a signalling axis that connects nicotine responses in the brain with glucose metabolism by the pancreas sheds light on why cigarette smoking increases the risk of diabetes.

DUNCAN 2019

Alexander Duncan, Mary P. Heyer, Masago Ishikawa & Stephanie P. B. Caligiuri et al., *Habenular TCF7L2 links nicotine addiction to diabetes. nature* **574** (2019), 372–377.

Diabetes is far more prevalent in smokers than non-smokers, but the underlying mechanisms of vulnerability are unknown. Here we show that the diabetes-associated gene *Tcf7l2* is densely expressed in the medial habenula (mHb) region of the rodent brain, where it regulates the function of nicotinic acetylcholine receptors. Inhibition of TCF7L2 signalling in the mHb increases nicotine intake in mice and rats. Nicotine increases levels of blood glucose by TCF7L2-dependent stimulation of the mHb. Virus-tracing experiments identify a polysynaptic connection from the mHb to the pancreas, and wild-type rats with a history of nicotine consumption show increased circulating levels of glucagon and insulin, and diabetes-like dysregulation of blood glucose homeostasis. By contrast, mutant *Tcf7l2* rats are resistant to these actions of nicotine. Our findings suggest that TCF7L2 regulates the stimulatory actions of nicotine on a habenula–pancreas axis that links the addictive properties of nicotine to its diabetes-promoting actions.

Alexander Duncan, Mary P. Heyer, Masago Ishikawa, Stephanie P. B. Caligiuri, Xin-An Liu, Zuxin Chen, Maria Vittoria Micioni Di Bonaventura, Karim S. Elayouby, Jessica L. Ables, William M. Howe, Purva Bali, Clementine Fillinger, Maya Williams, Richard M. O'Connor, Zichen Wang, Qun Lu, Theodore M. Kame-necka, Avi Ma'Ayan, Heidi C. O'Neill, Ines Ibanez-Tallon, Aron M. Geurts & Paul J. Kenny

GARNETT 2019

Emma E. Garnett, Andrew Balmford, Chris Sandbrook, Mark A. Pilling & Theresa M. Marteau, *Impact of increasing vegetarian availability on meal selection and sales in cafeterias. PNAS* **116** (2019), 20923–20929.

[pnas116-20923-Supplement.pdf](#)

Shifting people in higher income countries toward more plantbased diets would protect the natural environment and improve population health. Research in other domains suggests altering the physical environments in which people make decisions ("nudging") holds promise for achieving socially desirable behavior change. Here, we examine the impact of attempting to nudge meal selection by increasing the proportion of vegetarian meals offered in a year-long large-scale series of observational and experimental field studies. Anonymized individual-level data

from 94,644 meals purchased in 2017 were collected from 3 cafeterias at an English university. Doubling the proportion of vegetarian meals available from 25 to 50 % (e.g., from 1 in 4 to 2 in 4 options) increased vegetarian meal sales (and decreased meat meal sales) by 14.9 and 14.5 percentage points in the observational study (2 cafeterias) and by 7.8 percentage points in the experimental study (1 cafeteria), equivalent to proportional increases in vegetarian meal sales of 61.8 %, 78.8 %, and 40.8 %, respectively. Linking sales data to participants' previous meal purchases revealed that the largest effects were found in the quartile of diners with the lowest prior levels of vegetarian meal selection. Moreover, serving more vegetarian options had little impact on overall sales and did not lead to detectable rebound effects: Vegetarian sales were not lower at other mealtimes. These results provide robust evidence to support the potential for simple changes to catering practices to make an important contribution to achieving more sustainable diets at the population level.

Keywords: diet | behavior change | meat | choice architecture | climate change

Significance: Reducing meat consumption in higher income countries is vital to protect the environment and improve public health. Few studies have tested the real-world performance of different strategies to increase plant-rich diets, and none has examined the impact of altering the availability of vegetarian meal options. In robust observational and experimental studies, we show that doubling the proportion of vegetarian meals offered increases vegetarian sales by between 41 % and 79 %. Our study assesses the impact of increasing the proportion of plantbased meal options on selection and is based on over 90,000 meal choices. We suggest that our findings have the potential to make a significant contribution to the global ambition for more sustainable diets.

KUPFERSCHMIDT 2019

Kai Kupferschmidt, *Scientists clash over paper on Syrian sarin attack, Weapons expert suggests Assad's regime was not to blame.* [science 365 \(2019\), 1362.](#)

An online copy of the manuscript drew little attention until Democratic presidential candidate Tulsi Gabbard, a U.S. representative from Hawaii who met Assad in 2017 and believes he has been unjustly accused of some chemical attacks, discussed it on her campaign website.

Koblentz wrote several emails to Pavel Podvig, one of the journal's three editors, urging him not to publish the paper. Koblentz didn't question the computer model, which he says he is not qualified to judge, but said Postol's past statements disqualified him.

An "independent, internal review" had "identified a number of issues with the peer-review and revision process," a new note reads, leading the editors to put the paper on hold and "examine whether the editors can rectify the problems." Podvig declined to elaborate but says: "In hindsight we probably should have sent it to a different set of reviewers."

RAMACHANDRAN 2019

Roshini Ramachandran, *The education of an educator.* [science 365 \(2019\), 1490.](#)

My students were taking midterms when my phone erupted with urgent messages. "Student is having a panic attack," texted a teaching assistant. I ran out of my office, down a flight of stairs and found the student—a pupil in my 350-person organic chemistry class—lying motionless on the ground outside the exam hall. "I can't move my fingers, head, or legs," she cried. "I don't know what's happening to me." My mind raced as she slipped in and out of consciousness. I asked a

bystander to call 911 and held the student's hand, reassuring her that help was on the way. "Did my exam really trigger a panic attack?" I asked myself. "Why am I not prepared to deal with a situation like this?"

Biologie

KATSNELSON 2019

Mikhail I. Katsnelson, Yuri I. Wolf & Eugene V. Koonin, *On the feasibility of saltational evolution*. [PNAS 116 \(2019\), 21068–21075](#).

Is evolution always gradual or can it make leaps? We examine a mathematical model of an evolutionary process on a fitness landscape and obtain analytic solutions for the probability of multimutation leaps, that is, several mutations occurring simultaneously, within a single generation in 1 genome, and being fixed all together in the evolving population. The results indicate that, for typical, empirically observed combinations of the parameters of the evolutionary process, namely, effective population size, mutation rate, and distribution of selection coefficients of mutations, the probability of a multimutation leap is low, and accordingly the contribution of such leaps is minor at best. However, we show that, taking sign epistasis into account, leaps could become an important factor of evolution in cases of substantially elevated mutation rates, such as stress-induced mutagenesis in microbes. We hypothesize that stress-induced mutagenesis is an evolvable adaptive strategy.

Keywords: fitness landscape | stress-induced mutagenesis | epistasis | purifying selection | positive selection

Significance: In evolutionary biology, it is generally assumed that evolution occurs in the weak mutation limit, that is, the frequency of multiple mutations simultaneously occurring in the same genome and the same generation is negligible. We employ mathematical modeling to show that, although under the typical parameter values of the evolutionary process the probability of multimutational leaps is indeed low, they might become substantially more likely under stress, when the mutation rate is dramatically elevated. We hypothesize that stress-induced mutagenesis in microbes is an evolvable adaptive strategy. Multimutational leaps might matter also in other cases of substantially increased mutation rate, such as growing tumors or evolution of primordial replicators.

Islam

ARJOMAND 2009

Saïd Amir Arjomand, *The Constitution of Medina, A Sociolegal Interpretation of Muhammad's Acts of Foundation of the Umma*. [International Journal of Middle East Studies 41 \(2009\), 555–575](#).

One of the oldest extant documents in Islamic history records a set of deeds executed by Muhammad after his migration (hijra) in 622 from Mecca to Yathrib, subsequently known as "the City [madina] of the Prophet." Marking the beginning of the Islamic era, the document comprising the deeds has been the subject of well over a century of modern scholarship and is commonly called the "Constitution of Medina—with some justification, although the first modern scholar who studied it at the end of the 19th century, Julius Wellhausen, more accurately described it as the "municipal charter" (Gemeindeordnung) of Medina. In 1889, Wellhausen highlighted the text's antiquity, which has been acknowledged by even the most skeptical of contemporary "source-critical" scholars, Patricia Crone, who thinks

that, in Ibn Ishaq's Sim, "it sticks out like a piece of solid rock in an accumulation of rubble."

The significance of the text cannot be reduced to its antiquity, however. Furthermore, this significance varies from generation to generation. History is an open book, and the past can always be reread in the light of present concerns and from the horizon of expectations of the future. Medieval Muslim scholarship primarily followed Ibn Ishaq in seeing the document as "Muhammad's pact with the Jews of Medina" but also recognized it as an important text in public law. In fact, the text used as the basis of my interpretation and translation is taken from a 9th-century treatise on public law, Abu Ubayd's *Kitab al-Amwal*.

The constitutionalist reading of the document that accounts for its designation in modern scholarship as the Constitution of Medina (CM) acquires new immediacy with the current widespread preoccupation of Muslims throughout the world with Islamic constitutionalism. The agenda for research in the human sciences, including historiography, is set by the values of each epoch. As "the light of the great cultural problems moves on," this research, as Max Weber puts it, "follows those stars which alone are able to give meaning and direction to its labors." This study of the CM as proto-Islamic public law is accordingly guided by the prominence of a constitutional rereading of Islam among the values of our generation.

GÖRKE 2011

Andreas Görke, *Prospects and limits in the study of the historical Muhammad*. In: NICOLET BOEKHOFF-VAN DER VOORT, KEES VERSTEEGH & JOAS WAGEMAKERS (Hrsg.), *The Transmission and Dynamics of the Textual Sources of Islam, Essays in Honour of Harald Motzki*. Islamic History and Civilization 89 (Leiden 2011), 137–151.

It is indeed problematic to use the Muslim literary sources as historical sources for the life of Muhammad. They are by no means straightforward accounts of the life of Muhammad, and numerous studies have demonstrated the extent to which different incentives and tendencies have influenced and formed the traditions about his life. There are five main arguments against the reliability of these sources:

1. The Muslim accounts of the life of Muhammad are only recorded in written sources that date from more than 150 years after Muhammad's purported death; they are neither supported by non-Muslim sources, nor substantiated by archaeological findings.
2. Some accounts are apparently inspired by verses from the Qur'an. They thus do not constitute independent sources, but are only attempts to interpret Qur'anic verses and to place them into a context.
3. Some accounts display obvious secondary tendencies that reflect later political, theological or legal debates.
4. Often, the existing accounts are contradictory. They contain conflicting information regarding chronology, persons involved, and the course of events that cannot be reconciled.
5. The motivation of the accounts' creators and transmitters should not be considered to be purely historiographical. Instead, it has to be assumed that they aimed at presenting the life of Muhammad as salvation history, to provide a context for the Qur'anic text, support certain legal positions by tracing them back to the Prophet, provide certain persons with a particular status by emphasising their role in the Prophet's surroundings, or simply to entertain. The accounts are thus not only reshaped and distorted by secondary tendencies, but were never meant to present the life of Muhammad in any objective way.

RAVEN 2006

Wim Raven, *Sīra and the Qur’ān*. In: JANE DAMMEN MCAULIFFE (Hrsg.), *Encyclopaedia of the Quran*. (Leiden 2006), 1–30.

Sira is a branch of Arabic literature that is devoted to the earliest salvation history of Islam and focuses on God’s actions towards his prophet Muhammad and through him, i.e. the revelation of the Qur’an and the foundation of an Islamic community. The term sira can also connote a work belonging to that literature.

In present day Muslim usage, the sira par excellence is that of the Prophet: sirat rasul Allah or al-sira al-nabawiyya, which is often rendered as “the biography of the Prophet.” But this designation is imprecise. The life and times of Muhammad (q.v.) are pivotal in the sira, but it also contains reports and narrations about the ancient history of Arabia (see pre-islamic arabia and the qur’an), the earlier prophets (see prophets and prophethood; messenger), the Companions (see companions of the prophet) and the first caliphs, whose sunna (q.v.) was relevant for the Islamic community. Furthermore it deals with qur’anic exegesis (see exegesis of the qur’an: classical and medieval) and the occasions and ways of qur’anic revelation (see revelation and inspiration; occasions of revelation); and it preserves letters, speeches, documents, genealogies, lists of names, and poetry (see poetry and poets; rhetoric and the qur’an).

Judentum

SCHATTNER-RIESER 2019

Ursula Schattner-Rieser, *The Lord’s Prayer in the Context of Jewish-Aramaic Prayer Traditions in the Time of Jesus*. In: DANIEL A. SMITH & CHRISTOPH HEIL (Hrsg.), *Prayer in the Sayings Gospel Q*. Wissenschaftliche Untersuchungen zum Neuen Testament 425 (Tübingen 2019), 23–55.

This paper discusses the Jewish formulae in the Lord’s Prayer (Matt 6:9–13; Luke 11:2–4; cf. Did 8:2) and analyzes its terminology, language and structure from a philological point of view. This analysis is carried out from the perspective of a scholar in Jewish studies, and not that of a scholar of early Christianity. Our main sources for the reconstruction of the Lord’s Prayer, roughly contemporary to the Q Source, are the Dead Sea Scrolls, chiefly their Aramaic witnesses. Following some more general observations about prayer in the Second Temple Jewish context and the linguistic milieu of Jesus, the essay examines the Lord’s Prayer petition by petition in proposed Aramaic versions which parallel the Greek texts of Matthew and Luke, surveying the parallel materials found in the Aramaic texts from Qumran and in the Targumim, and discussing their implications for our understanding of Jesus’ Prayer.

Kultur

CALLAWAY 2019

Ewen Callaway, *Bronze Age DNA hints at roots of social inequality*. *nature* 574 (2019), 304–305.

Family trees gleaned from ancient human genomes are set to transform archaeology.

Mesolithikum

NADEL 2004

Dani Nadel, Ehud Weiss, Orit Simchoni, Alexander Tsatskin, Avinoam Danin & Mordechai Kislev, *Stone Age hut in Israel yields world's oldest evidence of bedding*. *PNAS* **101** (2004), 6821–6826.

pnas101-06821-Supplement.zip

The earliest archaeological remains of dwelling huts built by Homo sapiens were found in various European Upper Paleolithic open-air camps. Although floors of huts were found in a small number of cases, modern organization of the home space that includes defined resting areas and bedding remains was not discovered. We report here the earliest in situ bedding exposed on a brush hut floor. It has recently been found at the previously submerged, excellently preserved 23,000-year-old fisher–hunter–gatherers' camp of Ohalo II, situated in Israel on the shore of the Sea of Galilee. The grass bedding consists of bunches of partially charred *Puccinellia confer convoluta* stems and leaves, covered by a thin compact layer of clay. It is arranged in a repeated pattern, on the floor, around a central hearth. This study describes the bedding in its original context on a well preserved intentionally constructed floor. It also reconstructs on the basis of direct evidence (combined with ethnographic analogies) the Upper Paleolithic hut as a house with three major components: a hearth, specific working locales, and a comfortable sleeping area near the walls.

Methoden

CLAUSS 1974

G. Clauß, F.-R. Finze & L. Partzsch, *Grundlagen der Statistik, Für Soziologen, Pädagogen, Psychologen und Mediziner*. (Frankfurt ⁶2011).

Physik

AGOSTINI 2019

M. Agostini et al., *Probing Majorana neutrinos with double- β decay*. *science* **365** (2019), 1445–1448.

s365-1445-Supplement.pdf

A discovery that neutrinos are Majorana fermions would have profound implications for particle physics and cosmology. The Majorana character of neutrinos would make possible the neutrinoless double- β (0nbb) decay, a matter-creating process without the balancing emission of antimatter. The GERDA Collaboration searches for the 0nbb decay of ^{76}Ge by operating bare germanium detectors in an active liquid argon shield. With a total exposure of 82.4 kg • year, we observe no signal and derive a lower half-life limit of $T_{1/2} > 0.9 \times 10^{26}$ years (90% C.L.). Our $T_{1/2}$ sensitivity, assuming no signal, is 1.1×10^{26} years. Combining the latter with those from other 0nbb decay searches yields a sensitivity to the effective Majorana neutrino mass of 0.07 to 0.16 electron volts.

M. Agostini, A. M. Bakalyarov, M. Balata, I. Barabanov, L. Baudis, C. Bauer, E. Bellotti, S. Belogurov, A. Bettini, L. Bezrukov, D. Borowicz, V. Brudanin, R. Brugnera, A. Caldwell, C. Cattadori, A. Chernogorov, T. Comellato, V. D'Andrea, E. V. Demidova, N. Di Marco, A. Domula, E. Doroshkevich, V. Egorov, R. Falkenstein, M. Fomina, A. Gangapshev, A. Garfagnini, M. Giordano, P. Grabmayr, V. Gurentsov, K. Gusev, J. Hakenmüller, A. Hegai, M. Heisel, S. Hemmer, R. Hiller,

W. Hofmann, M. Hult, L. V. Inzhechik, J. Janicskó Csáthy, J. Jochum, M. Junker, V. Kazalov, Y. Kermaïdic, T. Kihm, I. V. Kirpichnikov, A. Kirsch, A. Kish, A. Klimenko, R. Kneißl, K. T. Knöpfle, O. Kochetov, V. N. Kornoukhov, P. Krause, V. V. Kuzminov, M. Laubenstein, A. Lazzaro, M. Lindner, I. Lippi, A. Lubashevskiy, B. Lubsandorzhev, G. Lutter, C. Macolino, B. Majorovits, W. Maneschg, M. Miloradovic, R. Mingazheva, M. Misiaszek, P. Moseev, I. Nemchenok, K. Panas, L. Pandola, K. Pelczar, L. Pertoldi, P. Piseri, A. Pullia, C. Ransom, S. Riboldi, N. Rumyantseva, C. Sada, E. Sala, F. Salamida, C. Schmitt, B. Schneider, S. Schönerert, A.-K. Schütz, O. Schulz, M. Schwarz, B. Schwingenheuer, O. Selivanenko, E. Shevchik, M. Shirchenko, H. Simgen, A. Smolnikov, L. Stanco, D. Stukov, L. Vanhoefer, A. A. Vasenko, A. Veresnikova, K. von Sturm, V. Wagner, A. Wegmann, T. Wester, C. Wiesinger, M. Wojcik, E. Yanovich, I. Zhitnikov, S. V. Zhukov, D. Zinatulina, A. Zschocke, A. J. Zsigmond, K. Zuber, G. Zuzel & GERDA Collaboration

DAVIS 2019

Tamara Davis, *An expanding controversy*. [science 365 \(2019\), 1076–1077](#).

An independently calibrated measurement fortifies the debate around Hubble’s constant.

JEE 2019

Inh Jee, Sherry H. Suyu, Eiichiro Komatsu, Christopher D. Fassnacht, Stefan Hilbert & Léon V. E. Koopmans, *A measurement of the Hubble constant from angular diameter distances to two gravitational lenses*. [science 365 \(2019\), 1134–1138](#).

[s365-1134-Supplement.pdf](#)

The local expansion rate of the Universe is parametrized by the Hubble constant, H_0 , the ratio between recession velocity and distance. Different techniques lead to inconsistent estimates of H_0 . Observations of Type Ia supernovae (SNe) can be used to measure H_0 , but this requires an external calibrator to convert relative distances to absolute ones. We use the angular diameter distance to strong gravitational lenses as a suitable calibrator, which is only weakly sensitive to cosmological assumptions. We determine the angular diameter distances to two gravitational lenses, 810+160–130 and 1230+180–150 megaparsec, at redshifts $z = 0.295$ and 0.6304 . Using these absolute distances to calibrate 740 previously measured relative distances to SNe, we measure the Hubble constant to be $H_0 = 82.4 + 8.4 - 8.3$ kilometers per second per megaparsec.

Politik

GALTON 2019

Riley Galton, *The parent trap*. [science 365 \(2019\), 1214](#).

“Have babies in grad school,” several female professors advised me at a department reception during the first year of my Ph.D. “If you fall behind, it doesn’t matter like it does when you’re a postdoc or new professor.” I think I laughed at this suggestion; the idea of having a baby seemed absurd at the time. But as I thought about it, their advice began to make sense. I want to pursue an academic career. Grad students have a lot more flexibility in their academic timeline, and they’re generally young and less likely to face fertility challenges. Fast-forward 2 years and I was pregnant. “It will be fine,” I told myself. “After all, this is the best time to do it.”

Sprachlehre

BAUER 1929

Hans Bauer & Pontus Leander, *Kurzgefaßte Biblisch-Aramäische Grammatik, Mit Texten und Glossar.* (Hildesheim 2008).

NICOLAE 2010

Daniel Nicolae & Josef Topper, *Biblisch-Aramäisch kompakt, Lehrbuch mit Übungstexten, Glossar und Paradigmensammlung.* HESED (Hebraica et Semitica Didactica) 2 (Kamen 2010).

ROSENTHAL 1961

Franz Rosenthal, *A Grammar of Biblical Aramaic.* Porta Linguarum Orientalium NS 5 (Wiesbaden 1961).

Story or Book

SPINNEY 2019

Laura Spinney, *How pandemics shape social evolution.* [nature](#) **574** (2019), 324–326.

Laura Spinney weighs up Frank Snowden’s sweeping history of the impact of infectious diseases on society.

Epidemics and Society: From the Black Death to the Present. Frank M. Snowden. Yale University Press (2019)

For Snowden, the lesson from more than 50 years of such experiments — successes and failures — is that eradication is most likely to work when doctors, politicians, drugmakers, the media and citizens work together. *Salus populi suprema lex*, he reminds us: public health must be the highest law. He has preached that message to generations of Yale undergraduates, and repeats it in this book. The risk is only that he is preaching to the converted.