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References

Aktuell

Cole 2021

Steven W. Cole et al., *The Type I interferon antiviral gene program is impaired by lockdown and preserved by caregiving*. PNAS **118** (2021), e2105803118. DOI:10.1073/pnas.2105803118.

pnas118-e2105803118-Supplement.pdf

Previous research has linked perceived social isolation (loneliness) to reduced antiviral immunity, but the immunologic effects of the objective social isolation imposed by pandemic "shelter in place" (SIP) policies is unknown. We assessed the immunologic impact of SIP by relocating 21 adult male rhesus macaques from 2,000-m2 field cage communities of 70 to 132 other macaques to 2 wk of individual housing in indoor shelters. SIP was associated with 30 % to 50 % reductions in all circulating immune cell populations (lymphocytes, monocytes, and granulocytes), down-regulation of Type I interferon (IFN) antiviral gene expression, and a relative up-regulation of CD16- classical monocytes. These effects emerged within the first 48 h of SIP, persisted for at least 2 wk, and abated within 4 wk of return to social housing. A subsequent round of SIP in the presence of a novel juvenile macaque showed comparable reductions in circulating immune cell populations but reversal of Type I IFN reductions and classical monocyte increases observed during individual SIP. Analyses of lymph node tissues showed parallel up-regulation of Type I IFN genes and enhanced control of viral gene expression during juvenile-partnered SIP compared to isolated SIP. These results identify a significant adverse effect of SIP social isolation on antiviral immune regulation in both circulating immune cells and lymphoid tissues, and they suggest a potential behavioral strategy for ameliorating gene regulatory impacts (but not immune cell declines) by promoting prosocial engagement during SIP.

Keywords: social genomics | infectious disease | public health | social behavior | social epidemiology

Steven W. Cole, John T. Cacioppo, Stephanie Cacioppo, Kyle Bone, Laura A. Del Rosso, Abigail Spinner, Jesusa M. G. Arevalo, Thomas P. Dizon & John P. Capitanio

Significance: "Shelter in place" (SIP) orders have been deployed to slow the spread of SARS-CoV-2, but they induce social isolation that may paradoxically weaken antiviral immunity. We examined the impact of 2-wk SIP on immune cell population dynamics and gene regulation in 21 adult rhesus macaques, finding 30 to 50 % declines in circulating immune cells, decreases in antiviral gene expression, and increased inflammatory cells in blood and inflammatory gene expression in lymph nodes. Declines in antiviral gene expression (but not circulating immune cells) were blocked by the presence of a novel juvenile partner during SIP, suggesting a potential strategy for maintaining antiviral immunity during SIP by enhancing prosocial engagement.

Lewis 2021

Dyani Lewis, *The case is growing for mix-and-match Covid vaccines*. nature **595** (2021), 344–345.

Many studies suggest mixing vaccines provokes potent immune responses, but questions remain.

Mallapaty 2021

Smriti Mallapaty, *Will Covid Become a Disease of the Young?* nature **595** (2021), 343–344.

Rising infections among unvaccinated teenagers and children are highlighting their role in the pandemic.

Nogrady 2021

Bianca Nogrady, *Mounting evidence suggests Sputnik Covid vaccine is safe and effective.* nature **595** (2021), 339–340.

Sputnik is in use in nearly 70 nations, but its adoption has been slowed by questions over rare side effects, and it has yet to garner World Health Organization approval.

Radbruch 2021

Andreas Radbruch & Hyun-Dong Chang, *A long-term perspective on immunity to COVID.* nature **595** (2021), 359–360.

Determining the duration of protective immunity to infection by SARS-CoV-2 is crucial for understanding and predicting the course of the COVID-19 pandemic. Clinical studies now indicate that immunity will be long-lasting.

Shimabukuro 2021

Tom T. Shimabukuro et al., *Preliminary Findings of mRNA Covid-19 Vaccine Safety in Pregnant Persons.* New England Journal of Medicine **384** (2021), 2273–2282. DOI:10.1056/NEJMoa2104983.

NEJMed384-2273-Supplement.pdf

Background: Many pregnant persons in the United States are receiving messenger RNA (mRNA) coronavirus disease 2019 (Covid-19) vaccines, but data are limited on their safety in pregnancy.

Methods: From December 14, 2020, to February 28, 2021, we used data from the "v-safe after vaccination health checker" surveillance system, the v-safe pregnancy registry, and the Vaccine Adverse Event Reporting System (VAERS) to characterize the initial safety of mRNA Covid-19 vaccines in pregnant persons.

Results: A total of 35,691 v-safe participants 16 to 54 years of age identified as pregnant. Injection-site pain was reported more frequently among pregnant persons than among nonpregnant women, whereas headache, myalgia, chills, and fever were reported less frequently. Among 3958 participants enrolled in the v-safe pregnancy registry, 827 had a completed pregnancy, of which 115 (13.9 %) resulted in a pregnancy loss and 712 (86.1 %) resulted in a live birth (mostly among participants with vaccination in the third trimester). Adverse neonatal outcomes included preterm birth (in 9.4 %) and small size for gestational age (in 3.2 %); no neonatal deaths were reported. Although not directly comparable, calculated proportions of adverse pregnancy and neonatal outcomes in persons vaccinated against Covid-19 who had a completed pregnancy were similar to incidences reported in studies involving pregnant women that were conducted before the Covid-19 pandemic. Among 221 pregnancy-related adverse events reported to the VAERS, the most frequently reported event was spontaneous abortion (46 cases).

Conclusions: Preliminary findings did not show obvious safety signals among pregnant persons who received mRNA Covid-19 vaccines. However, more longitudinal follow-up, including follow-up of large numbers of women vaccinated earlier in pregnancy, is necessary to inform maternal, pregnancy, and infant outcomes.

Tom T. Shimabukuro, Shin Y. Kim, Tanya R. Myers, Pedro L. Moro, Titilope Oduyebo„ Lakshmi Panagiotakopoulos, Paige L. Marquez, M.S.P.H., Christine K. Olson, Ruiling Liu„ Karen T. Chang, Sascha R. Ellington, Veronica K. Burkel, Ashley N. Smoots„ Caitlin J. Green, Charles Licata, Bicheng C. Zhang, Meghna Alimchandani„ Adamma Mba-Jonas, Stacey W. Martin, Julianne M. Gee & Dana M. Meaney-Delman, for the CDC v-safe COVID-19 Pregnancy Registry Team

Walach 2021

Harald Walach, Ronald Weikl, Juliane Prentice, Andreas Diemer, Helmut Traindl, Anna Kappes & Stefan Hockertz, *Experimental Assessment of Carbon Dioxide Content in Inhaled Air With or Without Face Masks in Healthy Children, A Randomized Clinical Trial*. JAMA Pediatrics **2021**, June 30. DOI:10.1001/jamapediatrics.2021.2659.

JamaPediatrics2021-06.30-Retraction.pdf, JamaPediatrics2021-06.30-Supplement1.pdf, JamaPediatrics2021-06.30-Supplement2.pdf

We measured means (SDs) between 13 120 (384) and 13 910 (374) ppm of carbon dioxide in inhaled air under surgical and filtering facepiece 2 (FFP2) masks, which is higher than what is already deemed unacceptable by the German Federal Environmental Office by a factor of 6.

Anthropologie

Zavala 2021

Elena I. Zavala, Zenobia Jacobs, Richard G. Roberts & Matthias Meyer et al., *Pleistocene sediment DNA reveals hominin and faunal turnovers at Denisova Cave*. nature **595** (2021), 399–403.

n595-0399-Supplement.pdf

Denisova Cave in southern Siberia is the type locality of the Denisovans, an archaic hominin group who were related to Neanderthals1–4. The dozen hominin remains recovered from the deposits also include Neanderthals5,6 and the child of a Neanderthal and a Denisovan7, which suggests that Denisova Cave was a contact zone between these archaic hominins. However, uncertainties persist about the order in which these groups appeared at the site, the timing and environmental context of hominin occupation, and the association of particular hominin groups with archaeological assemblages5,8–11. Here we report the analysis of DNA from 728 sediment samples that were collected in a grid-like manner from layers dating to the Pleistocene epoch. We retrieved ancient faunal and hominin mitochondrial (mt) DNA from 685 and 175 samples, respectively. The earliest evidence for hominin mtDNA is of Denisovans, and is associated with early Middle Palaeolithic stone tools that were deposited approximately 250,000 to 170,000 years ago; Neanderthal mtDNA first appears towards the end of this period. We detect a turnover in the mtDNA of Denisovans that coincides with changes in the composition of faunal mtDNA, and evidence that Denisovans and Neanderthals occupied the site repeatedly—possibly until, or after, the onset of the Initial Upper Palaeolithic at least 45,000 years ago, when modern human mtDNA is first recorded in the sediments.

Elena I. Zavala, Zenobia Jacobs, Benjamin Vernot, Michael V. Shunkov, Maxim B. Kozlikin, Anatoly P. Derevianko, Elena Essel, Cesare de Fillipo, Sarah Nagel, Julia Richter, Frédéric Romagné, Anna Schmidt, Bo Li, Kieran O'Gorman, Viviane Slon, Janet Kelso, Svante Pääbo, Richard G. Roberts & Matthias Meyer

Archäologie

Pearson 2000

Heath Pearson, *Homo Economicus Goes Native, 1859–1945, The Rise and Fall of Primitive Economics*. History of Political Economy **32** (2000), 933–989.

This essay will argue that three distinct positions were defended, sometimes explicitly, often implicitly, sometimes more or less simultaneously by the same author. The first, most radical, position was that the aborigine's mind was essentially different from the modern's, and specifically that the assumption of instrumental rationality would have to be drastically relativized. The second position allowed that aborigines did pursue their goals deliberately and rationally, but it went on to argue that their goals were irreconcilable to the principles of hedonism. The third position, which by 1945 had gained ascendancy in the economics profession, was that, mutatis mutandis, the naked tribesman was every bit as much a Homo economicus as the waistcoated banker. In what follows we will explore each of these positions in some detail, and ask why it was that the last of theme ventually won out.

Bibel

Faust 2021

Avraham Faust, *The "United Monarchy" on the Ground, The Disruptive Character of the Iron Age I–II Transition and the Nature of Political Transformations*. Jerusalem Journal of Archaeology **1** (2021), 15–67.

It is commonly agreed that the Iron Age I–II transition was gradual and that processes of social complexity initiated in the Iron Age I simply matured in the Iron Age II. The emergence of Levantine kingdoms – whether the so-called "United Monarchy" (i.e., the highland polity) or other polities – was therefore seen as an outcome of this gradual maturation, even if the date of their emergence is hotly debated. The present paper challenges both the perceived gradual nature of Iron Age complexity and the dated understanding of state formation processes that lies behind the common scholarly reconstructions of Iron Age political developments. Instead, the paper shows that the Iron Age I–II transition was troubled and was accompanied by drastic changes in many parameters, whether settlement patterns, settlement forms, or various material traits. Acknowledging these transformations is therefore the first step in understanding the process through which local kingdoms emerged. The main part of the paper briefly outlines these changes, which are later incorporated into a suggested historical scenario, reconstructing the processes leading to the emergence of the monarchy in Iron Age Israel and accompanying it. The final part of the paper briefly embeds these processes within a broader discussion of state formation in general and within the debate about the highland polity (the "United Monarchy") in particular, and reconstructs the emergence and expansion of the latter.

Keywords: United Monarchy | highland polity | Iron Age I–II transition | state formation | abandonment | social complexity | "empire before the state"

Finkelstein 2021

Israel Finkelstein, Yuval Gadot & Dafna Langgut, *The Unique Specialised Economy of Judah under Assyrian Rule and its Impact on the*

Material Culture of the Kingdom. Palestine Exploration Quarterly (2021), preprint, 1–19. DOI:10.1080/00310328.2021.1949531.

The geography of Judah is unique among the territorial kingdoms of the southern Levant, featuring four distinct regions with the potential for exploitation in different economic strategies. In the Iron IIB the vassal kingdom experienced a dramatic economic transformation directed by the Assyrian empire, from traditional Mediterranean subsistence to specialised economy based on its four zones: viticulture in the highlands, oleo-culture in the Shephelah, services to the Arabian trade in the Beersheba Valley and date and exotic plant groves in the Dead Sea Valley oases. This high-risk/high-gain system may clarify the development of advanced administration, which, in turn, explains the unique features in the material culture of Judah compared to neighbouring kingdoms: The system of stamped handles and weights and the proliferation of scribal activity. The division of the kingdom into districts, as portrayed in Josh 15, is connected to this reality, and hence probably originated slightly earlier than conventionally argued.

Keywords: Judah | agricultural | specialisation | viticulture | olive horticulture | administration | lmlk stamped handles | ostraca | writing | Joshua 15

Mazar 2001

Amihai Mazar & Israel Carmi, *Radiocarbon Dates from Iron Age Strata at Tel Beth Shean and Tel Rehov*. Radiocarbon **43** (2001), 1333–1342.

We discuss the significance of 32 radiocarbon dates from the archaeological sites of Tel Beth Shean and Tel Rehov in northern Israel. All dates are from Iron Age I and II archaeological contexts (12th–8th centuries BCE). Most of the dates were done on short-lived samples (seeds and olive pits), while some are on charred timber. The samples are organized in several homogeneous clusters according to their context. This series is one of the largest groups of 14C dates from the Iron Age in the Levant. The paper discusses the correlation between the 14C dates and the traditional archaeological dates of the same context. Results from two laboratories and two calibration curves are compared, showing some significant differences in one case. We conclude with an evaluation of the relevance of 14C dating for the current debate about the chronology of the Iron Age in Israel, and in historical periods in general.

Shveka 2020

Avi Shveka & Avraham Faust, *Premarital Sex in Biblical Law, A Cross-Cultural Perspective*. Vetus Testamentum **70** (2020), 316–339.

It is commonly held in recent scholarship that biblical law, like the society in which it was generated, did not regard premarital sex as a severe offence. The law of the slandered bride (Deut 22:13-22), which determines that a bride that was found non-virgin on her wedding night shall be killed, has therefore become during the last decades a riddle for biblical law researchers, who try to explain the girl's sin in various ways. We claim that this view ignores the wealth of ethnographic data that shows that harsh treatment of premarital sex is common, especially in patrilineal and patrilocal societies (as was ancient Israelite society). Moreover, a reexamination of other biblical laws regarding sexual conduct in light of the same ethnographic data shows that they reflect the very same attitudes. The different laws are not contradictory but rather complementary—all reflecting a typical patriarchal, androcentric, traditional society.

Keywords: biblical law | premarital sex | slandered bride | virginity | Israelite society | marriage | anthropology

Biologie

Craighead 2021

Daniel H. Craighead et al., *Time-Efficient Inspiratory Muscle Strength Training Lowers Blood Pressure and Improves Endothelial Function, NO Bioavailability, and Oxidative Stress in Midlife/Older Adults With Above-Normal Blood Pressure*. Journal of the American Heart Association **10** (2021), e20980. DOI:10.1161/JAHA.121.020980.

High- resistance IMST is a safe, highly adherable lifestyle intervention for improving blood pressure and endothelial function in midlife/older adults with above-normal initial systolic blood pressure.

Daniel H. Craighead, Thomas C. Heinbockel, Kaitlin A. Freeberg, Matthew J. Rossman, Rachel A. Jackman, Lindsey R. Jankowski, Makinzie N. Hamilton, Brian P. Ziemba, Julie A. Reisz, Angelo D'Alessandro, L. Madden Brewster, Christopher A. DeSouza, Zhiying You, Michel Chonchol, E. Fiona Bailey & Douglas R. Seals

Sciencedaily 2021

5-minute breathing workout lowers blood pressure as much as exercise, drugs, 'Strength training for breathing muscles' holds promise for host of health benefits. Online **2021**, June 30. <http://www.sciencedaily.com/releases/2021/06/210630135033.htm> (2021-07-27).

A new study shows that a breathing exercise known as Inspiratory Muscle Strength Training can reduce blood pressure in weeks, with benefits on par with daily exercise or medication.

Energie

Bieker 2021

Georg Bieker, *A global comparison of the life-cycle greenhouse gas emissions of combustion engine and electric passenger cars*. TheICCT.org **2021**, July 25.

As shown for average new medium-size cars in Figure ES.1, the assessment finds that the life-cycle emissions over the lifetime of BEVs registered today in Europe, the United States, China, and India are already lower than a comparable gasoline car by 66 %–69 % in Europe, 60 %–68 % in the United States, 37 %–45 % in China, and 19 %–34 % in India. For medium-size cars projected to be registered in 2030, as the electricity mix continues to decarbonize, the life-cycle emissions gap between BEVs and gasoline vehicles increases to 74 %–77 % in Europe, 62 %–76 % in the United States, 48 %–64 % in China, and 30 %–56 % in India.

Klima

Denning 2021

Scott Denning, *Southeast Amazonia is no longer a carbon sink*. nature **595** (2021), 354–355.

Atmospheric measurements show that deforestation and rapid local warming have reduced or eliminated the capacity of the eastern Amazonian forest to absorb carbon dioxide — with worrying implications for future global warming.

Gatti 2021

Luciana V. Gatti et al., *Amazonia as a carbon source linked to deforestation and climate change*. nature **595** (2021), 388–393.

n595-0388-Supplement.pdf

Amazonia hosts the Earth's largest tropical forests and has been shown to be an important carbon sink over recent decades1–3. This carbon sink seems to be in decline, however, as a result of factors such as deforestation and climate change1–3. Here we investigate Amazonia's carbon budget and the main drivers responsible for its change into a carbon source. We performed 590 aircraft vertical profiling measurements of lower-tropospheric concentrations of carbon dioxide and carbon monoxide at four sites in Amazonia from 2010 to 20184. We find that total carbon emissions are greater in eastern Amazonia than in the western part, mostly as a result of spatial differences in carbon-monoxide-derived fire emissions. Southeastern Amazonia, in particular, acts as a net carbon source (total carbon flux minus fire emissions) to the atmosphere. Over the past 40 years, eastern Amazonia has been subjected to more deforestation, warming and moisture stress than the western part, especially during the dry season, with the southeast experiencing the strongest trends5–9. We explore the effect of climate change and deforestation trends on carbon emissions at our study sites, and find that the intensification of the dry season and an increase in deforestation seem to promote ecosystem stress, increase in fire occurrence, and higher carbon emissions in the eastern Amazon. This is in line with recent studies that indicate an increase in tree mortality and a reduction in photosynthesis as a result of climatic changes across Amazonia1,10.

Luciana V. Gatti, Luana S. Basso, John B. Miller, Manuel Gloor, Lucas Gatti Domingues, Henrique L. G. Cassol, Graciela Tejada, Luiz E. O. C. Aragão, Carlos Nobre, Wouter Peters, Luciano Marani, Egidio Arai, Alber H. Sanches, Sergio M. Corrêa, Liana Anderson, Celso Von Randow, Caio S. C. Correia, Stephane P. Crispim & Raiane A. L. Neves

Klima Mathematik

Black 2021

Benjamin A. Black, Jean-Franois Lamarque, Daniel R. Marsh, Anja Schmidt & Charles G. Bardeen, *Global climate disruption and regional climate shelter safter the Toba supereruption*. PNAS **118** (2021), e2013046118.

pnas118-e2013046118-Supplement.pdf

The Toba eruption ≈74,000 y ago was the largest volcanic eruption since the start of the Pleistocene and represents an important test case for understanding the effects of large explosive eruptions on climate and ecosystems. However, the magnitude and repercussions of climatic changes driven by the eruption are strongly debated. High-resolution paleoclimate and archaeological records from Africa find little evidence for the disruption of climate or human activity in the wake of the eruption in contrast with a controversial link with a bottleneck in human evolution and climate model simulations predicting strong volcanic cooling for up to a decade after a Toba-scale eruption. Here, we use a large ensemble of high-resolution Community Earth System Model (CESM1.3) simulations to reconcile climate model predictions with paleoclimate records, accounting for uncertainties in the magnitude of Toba sulfur emissions with high and low emission scenarios. We find a near-zero probability of annual mean surface temperature anomalies exceeding 4 °C in most of Africa in contrast with near 100 % probabilities of cooling

this severe in Asia and North America for the high sulfur emission case. The likelihood of strong decreases in precipitation is low in most of Africa. Therefore, even Toba sulfur release at the upper range of plausible estimates remains consistent with the muted response in Africa indicated by paleoclimate proxies. Our results provide a probabilistic view of the uneven patterns of volcanic climate disruption during a crucial interval in human evolution, with implications for understanding the range of environmental impacts from past and future supereruptions.

Keywords: Toba | human evolution | volcanism and climate | paleoclimate

Significance: The Younger Toba Tuff is the largest volcanic eruption of the past 2 million years, but its climatic consequences have been strongly debated. Resolving this debate is important for understanding environmental changes during a key interval in human evolution. This work uses a large ensemble of global climate model simulations to demonstrate that the climate response to Toba was likely to be pronounced in Europe, North America, and central Asia but muted in the Southern Hemisphere. Our results reconcile the simulated distribution of climate impacts from the eruption with paleoclimate and archaeological records. This probabilistic view of climate disruption from Earth's most recent supereruption underscores the uneven expected distribution of societal and environmental impacts from future very large explosive eruptions.

Metallzeiten

Radivojević 2021

Miljana Radivojević & Benjamin W. Roberts, *Early Balkan Metallurgy, Origins, Evolution and Society, 6200–3700 BC*. Journal of World Prehistory (2021), preprint, 1–84. DOI:10.1007/s10963-021-09155-7.

This paper analyses and re-evaluates current explanations and interpretations of the origins, development and societal context of metallurgy in the Balkans (c. 6200– 3700 BC). The early metallurgy in this region encompasses the production, distribution and consumption of copper, gold, tin bronze, lead and silver. The paper draws upon a wide range of existing archaeometallurgical and archaeological data, the diversity and depth of which make the Balkans one of the most intensively investigated of all early metallurgical heartlands across the world. We focus specifically on the ongoing debates relating to (1) the independent invention and innovation of different metals and metal production techniques; (2) the analysis and interpretation of early metallurgical production cores and peripheries, and their collapses; and (3) the relationships between metals, metallurgy and society. We argue that metal production in the Balkans throughout this period reflects changes in the organisation of communities and their patterns of cooperation, rather than being the fundamental basis for the emergence of elites in an increasingly hierarchical society.

Keywords: Metallurgy | Balkans | Invention | Innovation | Colour | Networks | Complexity | Community

Politik

Blaut 2017

Karl-Heinz Blaut & Katharina Gerlach, *Die unterschätzten Risiken "Starkregen " und "Sturzfluten", Prävention im baulichen Bevölkerungsschutz*. Bundesamt für Bevölkerungsschutz und Katastrophenhilfe **2017**, Jan. 28.

Anzahl der Beschäftigten: ≈ 350; Haushaltsvolumen 2016: ≈ 100 Mio. E
* Erstellen eines hydrologischen Abflussmodells
- zur Prognose
* Einzugsgebiet festlegen
* Ermittlung potentieller Überflutungsbereiche
- bei unterschiedlichen Niederschlagsmengen
- mit zu erwartenden Wassertiefen
- Fließwege
* Starkregengefahrenkarte
- Unterschied zur Hochwassergefahrenkarte!

Petersen 2021

Michael Bang Petersen, Alexander Bor, Frederik Jrgensen & Marie Fly Lindholt, *Transparent communication about negative features of COVID-19 vaccines decreases acceptance but increases trust*. PNAS **118** (2021), e2024597118.

pnas118-e2024597118-Supplement.pdf

During the rapid development and rolling out of vaccines against COVID-19, researchers have called for an approach of "radical transparency," in which vaccine information is transparently disclosed to the public, even if negative information can decrease vaccine uptake. Consistent with theories about the psychology of conspiracy beliefs, these calls predict that a lack of transparency may reduce trust in health authorities and may facilitate the spread of conspiracy theories, which may limit the long-term capabilities of health authorities during and after the pandemic. On the basis of preregistered experiments conducted on large, representative samples of Americans and Danes (N > 13,000), the current study contrasts the effects of vague vaccine communication with transparent communication, which discloses either positive or negative vaccine features. The evidence demonstrates that transparent negative communication may indeed harm vaccine acceptance here and now but that it increases trust in health authorities. Furthermore, the alternative of vague, reassuring communication does not increase vaccine acceptance either and leads to both lower trust and higher endorsement of conspiracy theories.

Keywords: COVID-19 | vaccine acceptance | health communication | transparency | trust

Significance: During a pandemic, governments face incentives to not disclose negative information about vaccines to not jeopardize public vaccine acceptance. Against these incentives, the current study provides an experimental, cross-national demonstration of the importance of transparency in communication about a vaccine against COVID-19. While disclosing negative information may increase hesitancy, transparency sustains trust in health authorities and hinders the spread of conspiracy beliefs. Accordingly, the current results provide a clear warning against succumbing to the short-term incentive of withholding information. Sustaining trust during the pandemic is critical for health authorities, both if repeated vaccinations are necessary and in preparation for future health emergencies. Among those who have already lost trust, health communication has little persuasive effect.