Liste erstellt am 2021-12-27

References

Aktuell

Gupta 2021

Ravindra K. Gupta & Eric J. Topol, *COVID-19 vaccine breakthrough infections*. science **374** (2021), 1561–1562. DOI:10.1126/science.abl8487.

Vaccine efficacy wanes over time but can be fully restored with a booster dose.

Ledford 2021

Heidi Ledford, *How severe are Omicron infections?* nature **600** (2021), 577–578.

As cases spread and countries plan their responses, researchers await crucial data on the severity of the disease caused by the coronavirus variant.

On 14 December, the South African private health insurer Discovery Health in Johannesburg announced that hospitalization risk has been 29 % lower among people infected with Omicron, than among people infected with a previous variant.

McGrew 2021

William C. McGrew, *Cultural diffusion occurs in chimpanzees*. PNAS **118** (2021), e2116042118.

Twenty years ago, Whiten et al. (2) proposed four models of cultural diffusion in living wild chimpanzees and provided evidence for them from eight study sites across Africa, from Senegal to Tanzania. They identified 39 cultural variants that showed cross-populational differences. These findings from living apes suggest that cultural diffusion emerged much earlier than 400 kya, perhaps as long ago as the Last Common Ancestor of living chimpanzees and humans, at 6 Mya to 7 Mya.

Mallapaty 2021

Smriti Mallapaty, Ewen Callaway, Max Kozlov, Heidi Ledford, John Pickrell & Richard Van Noorden, *How Covid vaccines shaped 2021*, *In eight powerful charts*. nature **600** (2021), 580–583.

The extraordinary vaccination of more than four billion people, and lack of access for others, were major forces this year — while Omicron's arrival complicated things.

Martínez-Colón 2021

Giovanny J. Martínez-Colón, Kalani Ratnasiri, Catherine A. Blish & Tracey L. McLaughlin et al., *SARS-CoV-2 infects human adipose tissue and elicits an inflammatory response consistent with severe COVID-19*. bioRxiv **2021**, Oct. 25. DOI:10.1101/2021.10.24.465626.

Our work provides the first in vivo evidence of SARS-CoV-2 infection in human adipose tissue and describes the associated inflammation.

The COVID-19 pandemic, caused by the viral pathogen SARS-CoV-2, has taken the lives of millions of individuals around the world. Obesity is associated with adverse COVID-19 outcomes, but the underlying mechanism is unknown. In this report, we demonstrate that human adipose tissue from multiple depots is

permissive to SARS-CoV-2 infection and that infection elicits an inflammatory response, including the secretion of known inflammatory mediators of severe COVID-19. We identify two cellular targets of SARS-CoV-2 infection in adipose tissue: mature adipocytes and adipose tissue macrophages. Adipose tissue macrophage infection is largely restricted to a highly inflammatory subpopulation of macrophages, present at baseline, that is further activated in response to SARS-CoV-2 infection. Preadipocytes, while not infected, adopt a proinflammatory phenotype. We further demonstrate that SARS-CoV-2 RNA is detectable in adipocytes in COVID-19 autopsy cases and is associated with an inflammatory infiltrate. Collectively, our findings indicate that adipose tissue supports SARS-CoV-2 infection and pathogenic inflammation and may explain the link between obesity and severe COVID-19.

Giovanny J. Martínez-Colón, Kalani Ratnasiri, Heping Chen, Sizun Jiang, Elizabeth Zanley, Arjun Rustagi, Renu Verma, Han Chen, Jason R. Andrews, Kirsten D. Mertz, Alexandar Tzankov, Dan Azagury, Jack Boyd, Garry P. Nolan, Christian M. Schürch, Matthias S. Matter, Catherine A. Blish & Tracey L. McLaughlin

Pozzetto 2021

Bruno Pozzetto et al., *Immunogenicity and efficacy of heterologous ChAdOx1–BNT162b2 vaccination*. nature **600** (2021), 701–706. DOI:10.1038/s41586-021-04120-y.

Following severe adverse reactions to the AstraZeneca ChAdOx1-S-nCoV-19 vaccine1,2, European health authorities recommended that patients under the age of 55 years who received one dose of ChAdOx1-S-nCoV-19 receive a second dose of the Pfizer BNT162b2 vaccine as a booster. However, the effectiveness and the immunogenicity of this vaccination regimen have not been formally tested. Here we show that the heterologous ChAdOx1-S-nCoV-19 and BNT162b2 combination confers better protection against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection than the homologous BNT162b2 and BNT162b2 combination in a real-world observational study of healthcare workers (n = 13,121). To understand the underlying mechanism, we conducted a longitudinal survey of the anti-spike immunity conferred by each vaccine combination. Both combinations induced strong anti-spike antibody responses, but sera from heterologous vaccinated individuals displayed a stronger neutralizing activity regardless of the SARS-CoV-2 variant. This enhanced neutralizing potential correlated with increased frequencies of switched and activated memory B cells that recognize the SARS-CoV-2 receptor binding domain. The ChAdOx1-S-nCoV-19 vaccine induced a weaker IgG response but a stronger T cell response than the BNT162b2 vaccine after the priming dose, which could explain the complementarity of both vaccines when used in combination. The heterologous vaccination regimen could therefore be particularly suitable for immunocompromised individuals.

Bruno Pozzetto, Vincent Legros, Sophia Djebali, Véronique Barateau, Nicolas Guibert, Marine Villard, Loïc Peyrot, Omran Allatif, Jean-Baptiste Fassier, Amélie Massardier-Pilonchéry, Karen Brengel-Pesce, Melyssa Yaugel-Novoa, Solène Denolly, Bertrand Boson, Thomas Bourlet, Antonin Bal, Martine Valette, Thibault Andrieu, Bruno Lina, Covid-Ser study grou, François-Loïc Cosset, Stéphane Paul, Thierry Defrance, Jacqueline Marvel, Thierry Walzer & Sophie Trouillet-Assant

Vaesen 2021

Krist Vaesen, Katharine MacDonald, Fulco Scherjon, Eva van Veen & Wil Roebroeks, *Chimpanzees do not exhibit widespread cultural diffusion, Reply to McGrew*. PNAS **118** (2021), e2116917118.

To determine the rate at which behaviors spread, temporal data are required, and it is diffusion rates, not just the spatial distribution of behaviors, that put one in a position to discriminate between cultural diffusion and other processes.

For a trait to be distinctly characteristic of a species, it should conform to a statistical regularity (8): The trait should be observed not once but on a regular basis. Cultural diffusion in chimpanzees does not seem to fit the bill.

Anthropologie

KRAFT 2021

Thomas S. Kraft, Michael Gurven & Herman Pontzer et al., *The energetics of uniquely human subsistence strategies*. science **374** (2021), 1576.

The suite of derived human traits, including enlarged brains, elevated fertility rates, and long developmental periods and life spans, imposes extraordinarily high energetic costs relative to other great apes. How do human subsistence strategies accommodate our expanded energy budgets? We found that relative to other great apes, human hunter-gatherers and subsistence farmers spend more energy but less time on subsistence, acquire substantially more energy per hour, and achieve similar energy efficiencies. These findings revise our understanding of human energetic evolution by indicating that humans afford expanded energy budgets primarily by increasing rates of energy acquisition, not through energy-saving adaptations such as economical bipedalism or sophisticated tool use that decrease subsistence costs and improve the energetic efficiency of subsistence. We argue that the time saved by human subsistence strategies providesmore leisure time for social interaction and social learning in central-place locations and would have been critical for cumulative cultural evolution.

Thomas S. Kraft, Vivek V. Venkataraman, Ian J. Wallace, Alyssa N. Crittenden, Nicholas B. Holowka, Jonathan Stieglitz, Jacob Harris, David A. Raichlen, Brian Wood, Michael Gurven & Herman Pontzer

Datierung

SCHARF 2004

Andreas Scharf, Wolfgang Kretschmer, Gerhard Morgenroth, Thomas Uhl, Karin Kritzler, Katja Hunger & Ernst Pernicka, *Radiocarbon dating of iron artifacts at the Erlangen AMS facility*. Radiocarbon **46** (2004), 175–180.

One problem in preparing iron for radiocarbon dating is the low carbon content which makes the sample size needed too large for some sample combustion systems. Also, the metallic character of the samples complicates sample combustion or oxidation. The Erlangen accelerator mass spectrometry group uses an elemental analyzer for the sample combustion, directly followed by a reduction facility. As the carbon content and sample size for iron samples are unsuitable for combustion in an elemental analyzer, 2 alternative approaches are to (a) avoid oxidation and reduction, or (b) extract the carbon from the iron, prior to combustion. Therefore, 2 different pathways were explored. One is direct sputtering of the unprocessed iron sample in the ion source. The other is the complete chemical extraction of carbon from the iron sample and dating of the carbonaceous residue. Also, different methods for cleaning samples and removing contamination were tested. In Erlangen, a Soxhlet extraction is employed for this purpose. Also, the sampling of

the iron sample by drilling or cutting can be a source of contamination. Thus, the measurement of iron drill shavings yielded ages that were far too high. The first results for iron samples of known age from 2 archaeological sites in Germany are presented and discussed.

Energie

Tyne 2021

R. L. Tyne et al., *Rapid microbial methanogenesis during CO_2 storage in hydrocarbon reservoirs*. nature **600** (2021), 670–674.

Carbon capture and storage (CCS) is a key technology to mitigate the environmental impact of carbon dioxide (CO2) emissions. An understanding of the potential trapping and storage mechanisms is required to provide confidence in safe and secure CO2 geological sequestration1,2. Depleted hydrocarbon reservoirs have substantial CO2 storage potential1,3, and numerous hydrocarbon reservoirs have undergone CO2 injection as a means of enhanced oil recovery (CO2-EOR), providing an opportunity to evaluate the (bio)geochemical behaviour of injected carbon. Here we present noble gas, stable isotope, clumped isotope and gene-sequencing analyses from a CO2-EOR project in the Olla Field (Louisiana, USA). We show that microbial methanogenesis converted as much as 13–19 % of the injected CO2 to methane (CH4) and up to an additional 74 % of CO2 was dissolved in the groundwater. We calculate an in situ microbial methanogenesis rate from within a natural system of 73–109 millimoles of CH4 per cubic metre (standard temperature and pressure) per year for the Olla Field. Similar geochemical trends in both injected and natural CO2 fields suggest that microbial methanogenesis may be an important subsurface sink of CO2 globally. For CO2 sequestration sites within the environmental window for microbial methanogenesis, conversion to CH4 should be considered in site selection.

R. L. Tyne, P. H. Barry, M. Lawson, D. J. Byrne, O. Warr, H. Xie, D. J. Hillegonds, M. Formolo, Z. M. Summers, B. Skinner, J. M. Eiler & C. J. Ballentine

Kultur

Papasavvas 2021

George Papasavvas, *What could a copper oxhide ingot 'buy' in the markets of the Late Bronze Age Eastern Mediterranean?* In: Mauro Perra & Fulvia Lo Schiavo (Hrsg.), *Cultural Contacts and Trade in Nuragic Sardinia: The Southern Route (Sardinia, Sicily, Crete and Cyprus), Proceedings of the Fourth Festival of the Nuragic Civilization (Orroli, Cagliari)*. (Cagliari 2021), 127–150.

No matter what the exact equivalences were in different times and places, there is much evidence that copper was utterly undervalued in comparison with precious metals.