

***NATIONAL INSTITUTE OF OCCUPATIONAL HEALTH
(ICMR-NIOH)***

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July, 2021

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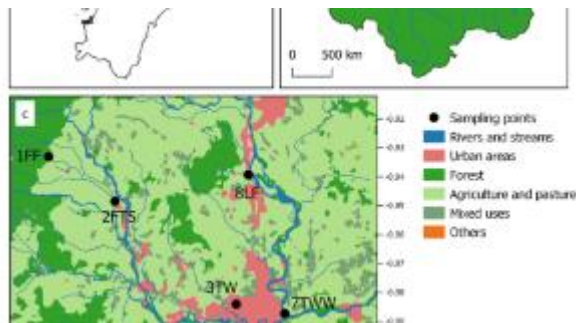
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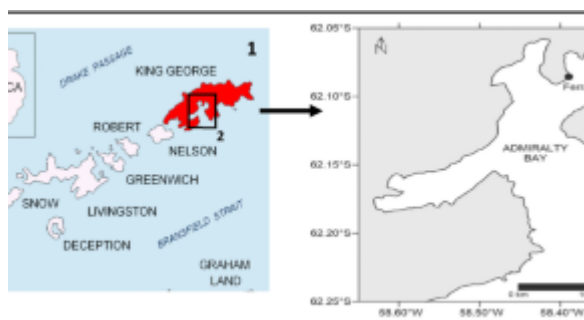
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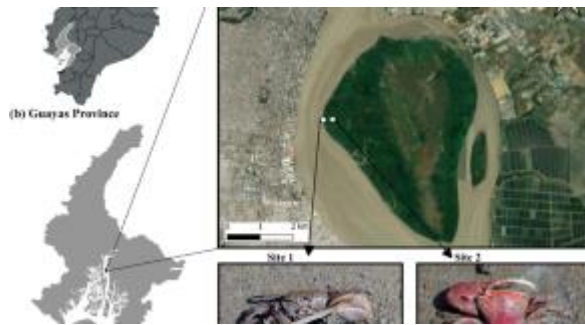
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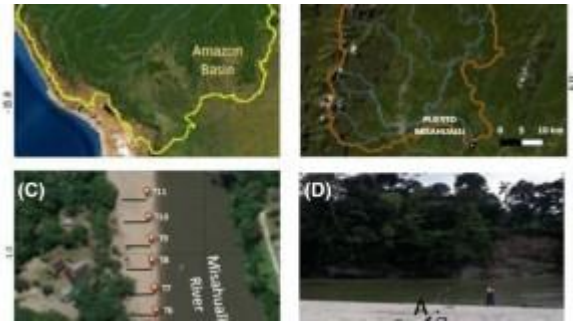
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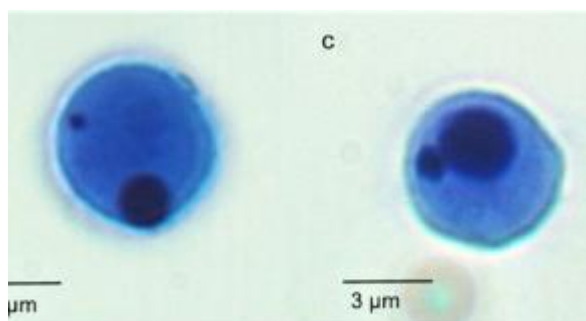
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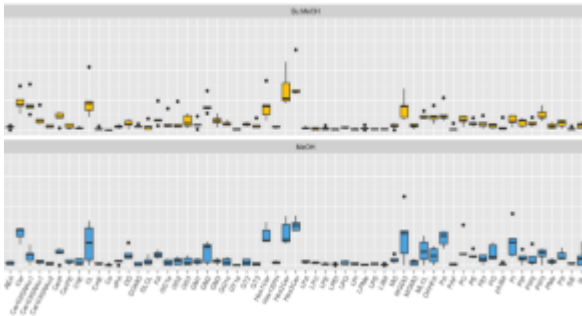
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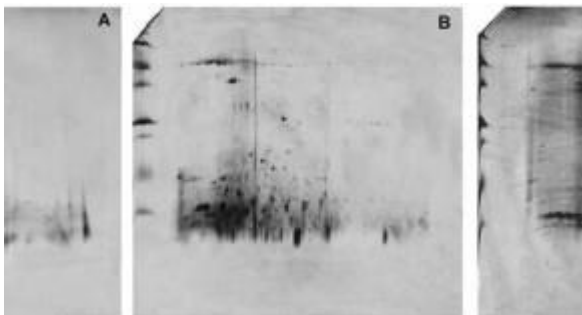
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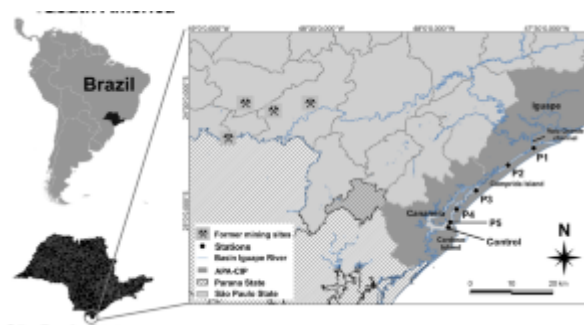
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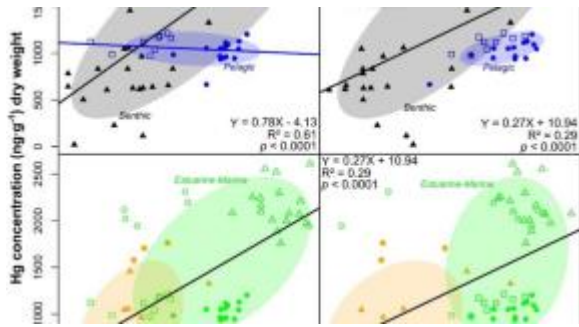
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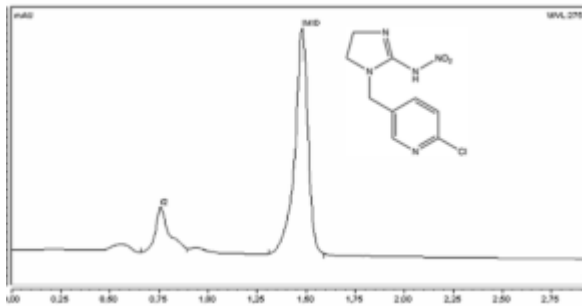
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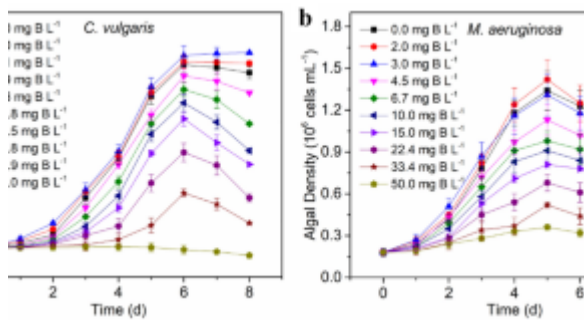


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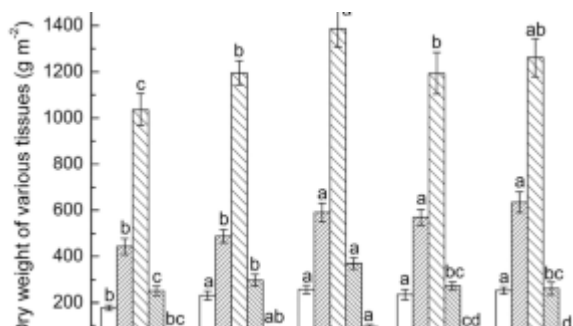
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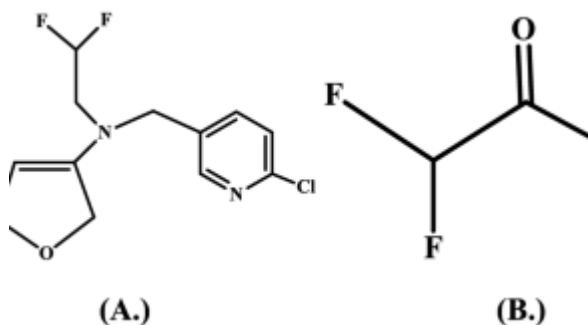
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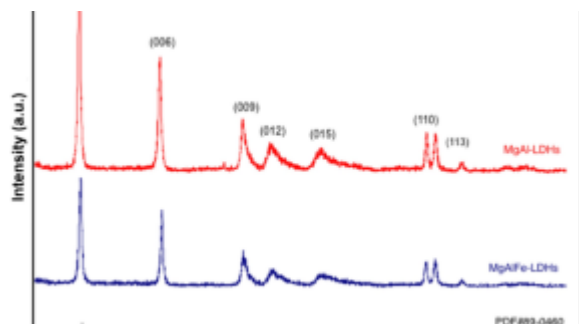
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p. 0233 | Suresh, Abidha; Sreedhar, K. Vijesh; Mathew, Jessu; Vijayakumar, K. N.; Ajithlal, P. M.; Saini, Prasanta; Kumar, N. Pradeep; Kumar, Ashwani
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Quantitative assessment of BIGV and structural response based on velocity and frequency around an opencast mine

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doi: 10.18520/cs/v121/i2/275-285

Do conspecific herbivores track resource depletion through host phenology-specific HIPVs?

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doi: 10.18520/cs/v121/i2/286-293

Native shade trees aid bird conservation in tea plantations in southern India

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Black palm squirrel (*Funambulus palmarum* Linn.) from India: association with a frame shift mutation in the MC1R gene

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Elements of Dynamical Systems, Texts and Readings in Mathematics, Vol. 79. Anima Nagar, Riddhi Shah and Shrihari Sridharan (eds)

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- Nrf2 mediates the neuroprotective effect of isoflurane preconditioning in cortical neuron injury induced by oxygen-glucose deprivation 1163
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Editor's Picks for July

[Impact of Covid-19 in Global Health and Psychosocial Risks at Work](#)

Gaspar, Tania; Paiva, Teresa; Matos, Margarida Gaspar

Journal of Occupational and Environmental Medicine. 63(7):581-587, July 2021.

[Saliva Pooling Strategy for the Large-Scale Detection of SARS-CoV-2, Through Working-Groups Testing of Asymptomatic Subjects for Potential Applications in Different Workplaces](#)

Girón-Pérez, Daniel Alberto; Ruiz-Manzano, Rocío Alejandra; Benitez-Trinidad, Alma Betsaida; More

Journal of Occupational and Environmental Medicine. 63(7):541-547, July 2021.

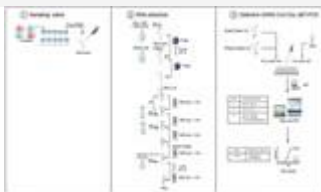
[COVID-19 Workplace Outbreaks by Industry Sector and Their Associated Household Transmission, Ontario, Canada, January to June, 2020](#)

Murti, Michelle; Achonu, Camille; Smith, Brendan T.; More

Journal of Occupational and Environmental Medicine. 63(7):574-580, July 2021.

Current Issue Highlights

ORIGINAL ARTICLE

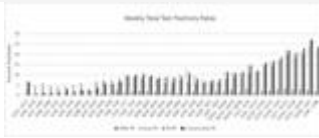


[Saliva Pooling Strategy for the Large-Scale Detection of SARS-CoV-2, Through Working-Groups Testing of Asymptomatic Subjects for Potential Applications in Different Workplaces](#)

Girón-Pérez, Daniel Alberto; Ruiz-Manzano, Rocío Alejandra; Benitez-Trinidad, Alma Betsaida; More

Journal of Occupational and Environmental Medicine. 63(7):541-547, July 2021.

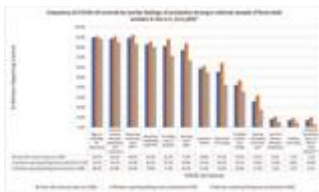
FAST TRACK ARTICLES



Benchmarking SARS CoV-2 Infection in the Workplace to Support Continuity of Operations

Iddins, Bart O.; Waugh, Mark H.; Buck, Brandon; More

Journal of Occupational and Environmental Medicine. 63(7):548-556, July 2021.



Frequency of Workplace Controls and Associations With Safety Perceptions Among a National Sample of US Food Retail Workers During the COVID-19 Pandemic

Ceryes, Caitlin; Robinson, Joelle; Biehl, Erin; More

Journal of Occupational and Environmental Medicine. 63(7):557-564, July 2021.

ORIGINAL ARTICLES

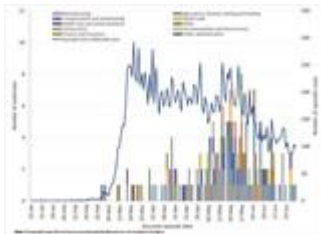
Table 1. Descriptive Statistics for Selected Variables for All Respondents (N=10,000) and for Two Subgroups (N=5,000).

| Variable | All | Subgroup 1 | Subgroup 2 | Female | Male |
|---------------------|-------------|-------------|-------------|-------------|-------------|
| Demographics | | | | | |
| Age (years) | 38.5 (10.2) | 38.5 (10.2) | 38.5 (10.2) | 38.5 (10.2) | 38.5 (10.2) |
| Gender | 50% Male | 50% Male | 50% Male | 50% Male | 50% Male |
| Education | 12.5 (1.5) | 12.5 (1.5) | 12.5 (1.5) | 12.5 (1.5) | 12.5 (1.5) |
| Income | \$35,000 | \$35,000 | \$35,000 | \$35,000 | \$35,000 |
| Occupation | Food Retail | Food Retail | Food Retail | Food Retail | Food Retail |
| Workplace | Food Retail | Food Retail | Food Retail | Food Retail | Food Retail |
| Control Frequency | 90% | 90% | 90% | 90% | 90% |
| Hand hygiene | 95% | 95% | 95% | 95% | 95% |
| Physical distancing | 90% | 90% | 90% | 90% | 90% |
| Wearing face mask | 95% | 95% | 95% | 95% | 95% |
| Workplace safety | 85% | 85% | 85% | 85% | 85% |
| Perceptions | 75% | 75% | 75% | 75% | 75% |
| Hand hygiene | 85% | 85% | 85% | 85% | 85% |
| Physical distancing | 80% | 80% | 80% | 80% | 80% |
| Wearing face mask | 85% | 85% | 85% | 85% | 85% |
| Workplace safety | 75% | 75% | 75% | 75% | 75% |
| Perceptions | 65% | 65% | 65% | 65% | 65% |
| Hand hygiene | 75% | 75% | 75% | 75% | 75% |
| Physical distancing | 70% | 70% | 70% | 70% | 70% |
| Wearing face mask | 75% | 75% | 75% | 75% | 75% |
| Workplace safety | 65% | 65% | 65% | 65% | 65% |
| Perceptions | 55% | 55% | 55% | 55% | 55% |
| Hand hygiene | 65% | 65% | 65% | 65% | 65% |
| Physical distancing | 60% | 60% | 60% | 60% | 60% |
| Wearing face mask | 65% | 65% | 65% | 65% | 65% |
| Workplace safety | 55% | 55% | 55% | 55% | 55% |
| Perceptions | 45% | 45% | 45% | 45% | 45% |
| Hand hygiene | 55% | 55% | 55% | 55% | 55% |
| Physical distancing | 50% | 50% | 50% | 50% | 50% |
| Wearing face mask | 55% | 55% | 55% | 55% | 55% |
| Workplace safety | 45% | 45% | 45% | 45% | 45% |
| Perceptions | 35% | 35% | 35% | 35% | 35% |
| Hand hygiene | 45% | 45% | 45% | 45% | 45% |
| Physical distancing | 40% | 40% | 40% | 40% | 40% |
| Wearing face mask | 45% | 45% | 45% | 45% | 45% |
| Workplace safety | 35% | 35% | 35% | 35% | 35% |
| Perceptions | 25% | 25% | 25% | 25% | 25% |
| Hand hygiene | 35% | 35% | 35% | 35% | 35% |
| Physical distancing | 30% | 30% | 30% | 30% | 30% |
| Wearing face mask | 35% | 35% | 35% | 35% | 35% |
| Workplace safety | 25% | 25% | 25% | 25% | 25% |
| Perceptions | 15% | 15% | 15% | 15% | 15% |
| Hand hygiene | 25% | 25% | 25% | 25% | 25% |
| Physical distancing | 20% | 20% | 20% | 20% | 20% |
| Wearing face mask | 25% | 25% | 25% | 25% | 25% |
| Workplace safety | 15% | 15% | 15% | 15% | 15% |
| Perceptions | 5% | 5% | 5% | 5% | 5% |

Job Absenteeism Costs of Obesity in the United States: National and State-Level Estimates

Cawley, John; Biener, Adam; Meyerhoefer, Chad; More

Journal of Occupational and Environmental Medicine. 63(7):565-573, July 2021.



COVID-19 Workplace Outbreaks by Industry Sector and Their Associated Household Transmission, Ontario, Canada, January to June, 2020

Murti, Michelle; Achonu, Camille; Smith, Brendan T.; More

Journal of Occupational and Environmental Medicine. 63(7):574-580, July 2021.

FAST TRACK ARTICLE

TABLE 1 - Values of Reliability (CR) and Convergent (AVE) and Discriminant (MSV) Validity

| | CR | AVE | MSV |
|------------------------------|------|------|------|
| F-W conflict | 0.88 | 0.64 | 0.47 |
| Social isolation | 0.94 | 0.79 | 0.47 |
| Distracting work environment | 0.89 | 0.73 | 0.32 |
| Job autonomy | 0.81 | 0.53 | 0.12 |
| Self leadership | 0.80 | 0.58 | 0.68 |
| Work engagement | 0.79 | 0.57 | 0.28 |
| Stress | 0.89 | 0.67 | 0.11 |

AVE, average variance extracted; CR, composite reliability; MSV, maximum shared variance.

Work From Home During the COVID-19 Outbreak: The Impact on Employees' Remote Work Productivity, Engagement, and Stress

Galanti, Teresa; Guidetti, Gloria; Mazzei, Elisabetta; More

Journal of Occupational and Environmental Medicine. 63(7):e426-e432, July 2021.

ACOEM GUIDANCE STATEMENT

ACOEM OEM Core Competencies: 2021

Hartenbaum, Natalie P.; Baker, Beth A.; Levin, Jeffrey L.; More

Journal of Occupational and Environmental Medicine. 63(7):e445-e461, July 2021.

OCCUPATIONAL MEDICINE FORUM

What are the Risks to Minors Who Work in the Construction Industry?

Journal of Occupational and Environmental Medicine. 63(7):e462-e463, July 2021.

EDITORIALS



Early Pandemic Experiences and Lessons Learned Within A Multinational Corporation: A Testimonial of the COVID-19 Pandemic

Burrowes, Vanessa J.; Usoro, Ini-Abasi; Campbell, Lydia

Journal of Occupational and Environmental Medicine. 63(7):e464-e470, July 2021.

The B Reader Program, Silicosis, and Physician Workload Management: A Niche for AI Technologies

Gowda, Vrushab; Cheng, Glen; Saito, Kenji

Journal of Occupational and Environmental Medicine. 63(7):e471-e473, July 2021.

LETTERS TO THE EDITOR



SARS-CoV-2 Transmission Risk to Household and Family Contacts by Vaccinated Healthcare Workers

Pratò, Simone; Paladino, Maria Emilia; Riva, Michele Augusto; More

Journal of Occupational and Environmental Medicine. 63(7):e474-e476, July 2021.

Obesity is a Pulmonary Function Confounder, Re: Mathias KC, Graham E, Stewart D, Smith DL. Decreased Pulmonary Function in US Firefighters. JOEM 2020;62(10):816-819.

Kurt, Thomas L.

Journal of Occupational and Environmental Medicine. 63(7):e477, July 2021.

Nature

Volume 595 Issue 7865, 1 July 2021

This Week

Editorial

- Editorial | 29 June 2021

[Lithium-ion batteries need to be greener and more ethical](#)

Batteries are key to humanity's future — but they come with environmental and human costs, which must be mitigated.

World View

- World View | 29 June 2021

[COVID's lesson for climate research: go local](#)

To help planners adapt to a warming world, find ways to make predictions practical.

- Alice C. Hill

Research Highlights

- Research Highlight | 24 June 2021

[Meddling with RNA slicing cuts a tumour down to size](#)

Experiments in mice show promise for drugs that modify the integral process called RNA splicing.

- Research Highlight | 24 June 2021

[Lead used in petrol decades ago dirties London's air today](#)

Use of the toxic pollutant in fuel was curbed in the 1980s, but it lingers in airborne particles.

- Research Highlight | 21 June 2021

[Climate warming leaves the US Southwest high and dry](#)

Humidity on summer days has declined since 1950, threatening water supplies and increasing the risk of wildfires.

- Research Highlight | 22 June 2021

[Prehistoric dwarf elephants lost weight in no time](#)

Natural selection tends to shrink large animals living in places with limited food.

- Research Highlight | 24 June 2021

[Red light, green light: both signal 'go' to deadly algae](#)

Artificial lighting thought to be more wildlife-friendly than white light could encourage algal blooms.

- Research Highlight | 23 June 2021

[When digging up the dead was decorous](#)

Death cults in early medieval Europe included inspections of mortal remains.

- Research Highlight | 22 June 2021

[Household water crisis affects millions in the United States](#)

People living in poor neighbourhoods often lack access to running water and plumbing.

Research

News & Views

- News & Views | 30 June 2021

[Programmable capillary action controls fluid flows](#)

A technological platform has been developed in which millimetre-scale cubes are assembled into 3D structures that control capillary action — enabling programmable fluid flows and modelling of a range of fluidic processes.

- Tammi L. van Neel, Ashleigh B. Theberge

- News & Views | 23 June 2021

[Designer fibre meals sway human gut microbes](#)

Understanding how diet affects gut microbes and thereby influences human health might lead to targeted dietary strategies. A clinical trial now provides some steps on the path towards this goal.

- Avner Leshem, Eran Elinav

- News & Views | 23 June 2021

[**Migratory birds aid the redistribution of plants to new climates**](#)

Birds that travel long distances can disperse seeds far and wide. An assessment of the timing and direction of European bird migration reveals how these patterns might affect seed dispersal as the planet warms.

- Barnabas H. Daru

- News & Views | 09 June 2021

[**A base-pair view of interactions between genes and their enhancers**](#)

A technique reveals how folded chromosomal DNA interacts in the nucleus, providing information at the level of single base pairs. The achievement offers an unprecedented level of detail about how gene activity is regulated.

- Anne van Schoonhoven, Ralph Stadhouders

Articles

- Article | 30 June 2021

[**A highly magnetized and rapidly rotating white dwarf as small as the Moon**](#)

A binary star merger has produced a white dwarf with a spin period of under 7 minutes, a magnetic field of 600 to 900 million gauss and a radius only slightly larger than that of our Moon.

- Ilaria Caiazzo
- Kevin B. Burdge
- Maayane T. Soumagnac

- Article | 30 June 2021

[**Demonstration of a trapped-ion atomic clock in space**](#)

Operating in space, NASA's Deep Space Atomic Clock, a trapped-ion clock, is shown to have long-term stability and drift that are an order of magnitude better than current space clocks.

- E. A. Burt
- J. D. Prestage

- T. A. Ely

- Article | 30 June 2021

[**Bilayer Wigner crystals in a transition metal dichalcogenide heterostructure**](#)

Optical signatures reveal correlated insulating Wigner crystals—electron solids—in a bilayer of a two-dimensional transition metal dichalcogenide, MoSe_2 , with hexagonal boron nitride between the layers.

- You Zhou

- Jiho Sung

- Hongkun Park

- Article | 30 June 2021

[**Signatures of Wigner crystal of electrons in a monolayer semiconductor**](#)

The signature of a Wigner crystal—the analogue of a solid phase for electrons—is observed via the optical reflection spectrum in a monolayer transition metal dichalcogenide.

- Tomasz Smoleński

- Pavel E. Dolgirev

- Ataç Imamoğlu

- Article | 30 June 2021

[**Cellular fluidics**](#)

Cellular fluidics provides a platform of unit-cell-based, three-dimensional structures for the deterministic control of multiphase flow, transport and reaction processes.

- Nikola A. Dudukovic

- Erika J. Fong

- Eric B. Duoss

- Article | 30 June 2021

[Precise date for the Laacher See eruption synchronizes the Younger Dryas](#)

A revised date for the Laacher See eruption using measurements of subfossil trees shifts the chronology of European varved lakes relative to the Greenland ice core record, synchronizing the onset of the Younger Dryas across the North Atlantic–European sector.

- Frederick Reinig
- Lukas Wacker
- Ulf Büntgen

- Article | 30 June 2021

[Ridgecrest aftershocks at Coso suppressed by thermal destressing](#)

Thirty years of geothermal heat production at Coso in California depleted shear stresses within the geothermal reservoir, which changed its faulting style and inhibited aftershocks from the 2019 Ridgecrest earthquake.

- Kyungjae Im
- Jean-Philippe Avouac
- Derek Elsworth

- Article | 23 June 2021

[Limited potential for bird migration to disperse plants to cooler latitudes](#)

Interactions between European bird and plant species show that fruiting period has a major effect on seed dispersal by migrating birds, which will influence plant adaptations to climate change through latitudinal dispersal.

- Juan P. González-Varo
- Beatriz Rumeu
- Anna Traveset

- Article | 16 June 2021

[Geometry of abstract learned knowledge in the hippocampus](#)

The hippocampus geometrically represents both physical location and abstract variables on a neural manifold in mice performing a decision-making task in virtual reality.

- Edward H. Nieh
- Manuel Schottdorf
- David W. Tank

- Article | 12 May 2021

[Lineage tracing of human development through somatic mutations](#)

Whole-genome sequencing of haematopoietic colonies from human fetuses reveals the somatic mutations acquired by individual progenitors, which are used as barcodes to construct a phylogenetic tree of blood development.

- Michael Spencer Chapman
- Anna Maria Ranzoni
- Ana Cvejic

- Article | 23 June 2021

[Evaluating microbiome-directed fibre snacks in gnotobiotic mice and humans](#)

Fibre snacks that target distinct features of the microbiomes of donors with obesity transplanted into gnotobiotic mice also lead to fibre-specific changes in the microbiome and physiology when used in controlled-diet human studies.

- Omar Delannoy-Bruno
- Chandani Desai
- Jeffrey I. Gordon

- Article | 26 May 2021

[An invariant *Trypanosoma vivax* vaccine antigen induces protective immunity](#)

Systemic genome-led vaccinology and a mouse model of *Trypanosoma vivax* infection identify protective invariant subunit vaccine antigens, and demonstrate the possibility of generating effective vaccines that induce long-lasting protection against trypanosome infections.

- Delphine Autheman
- Cécile Crosnier
- Gavin J. Wright

- Article | 09 June 2021

[TIM-3 restrains anti-tumour immunity by regulating inflammasome activation](#)

Mouse genetic studies and single-cell transcriptome analysis demonstrate that TIM-3 on dendritic cells has a key role in regulating antitumour immunity via inflammasome activation and is a potential target for anticancer therapy.

- Karen O. Dixon
- Marcin Tabaka
- Vijay K. Kuchroo

- Article | 29 April 2021

[COVID-19 tissue atlases reveal SARS-CoV-2 pathology and cellular targets](#)

Single-cell analysis of lung, heart, kidney and liver autopsy samples shows the molecular and cellular changes and immune response resulting from severe COVID-19 infection.

- Toni M. Delorey
- Carly G. K. Ziegler
- Aviv Regev

- Article | 29 April 2021

[A molecular single-cell lung atlas of lethal COVID-19](#)

Lung samples collected soon after death from COVID-19 are used to provide a single-cell atlas of SARS-CoV-2 infection and the ensuing molecular changes.

- Johannes C. Melms
- Jana Biermann
- Benjamin Izar

- Article | 02 June 2021

[A proximity-dependent biotinylation map of a human cell](#)

A proximity-dependent biotinylation technique defines the location of more than 4,000 proteins in a human cell, and almost 36,000 proximal interactions between proteins, including those at the interface of the mitochondria and ER.

- Christopher D. Go
- James D. R. Knight
- Anne-Claude Gingras

- Article | 09 June 2021

[Defining genome architecture at base-pair resolution](#)

Micro Capture-C allows physical contacts to be determined at base-pair resolution, revealing that transcription factors have an important role in the maintenance of the contacts between enhancers and promoters.

- Peng Hua
- Mohsin Badat
- James O. J. Davies

- Article | 26 May 2021

[Structural basis of antifolate recognition and transport by PCFT](#)

Cryo-electron microscopy structures of PCFT in a substrate-free state and bound to the antifolate drug pemetrexed provide insights into

how this protein recognizes folates and mediates their transport into cells.

- Joanne L. Parker
- Justin C. Deme
- Simon Newstead

Volume 595 Issue 7866, 8 July 2021

This Week

Editorial

- Editorial | 01 July 2021

[The powers and perils of using digital data to understand human behaviour](#)

Computational social science is a powerful research tool. But it needs its different disciplines to find a common language.

- Editorial | 07 July 2021

[Research managers are essential to a healthy research culture](#)

But for maximal benefit, more of these academic administrators need to get involved in the scholarly aspect of research.

World View

- World View | 06 July 2021

[Beware performative reproducibility](#)

Well-meant changes to improve science could become empty gestures unless underlying values change.

- Stuart Buck

Research Highlights

- Research Highlight | 30 June 2021

[A piece of Triassic poo yields a beautifully preserved beetle](#)

The dung of a dinosaur-like animal that lived more than 200 million years ago springs a surprise: a new insect species.

- Research Highlight | 01 July 2021

[Scraping icebergs trigger sea-floor landslides — and the risk is growing](#)

Climate change will allow more chunks of ice to break away from melting glaciers, with potentially grave effects.

- Research Highlight | 29 June 2021

[When was cosmic dawn? Some of the most distant galaxies known hold a clue](#)

Light from the early days of the Universe helps to pin-point when the stars switched on after the Big Bang.

- Research Highlight | 30 June 2021

[The 'time neurons' that help the brain keep track](#)

Cells in the hippocampus play a part in time-stamping unfolding events.

- Research Highlight | 30 June 2021

[Tracking a photon without leaving a trace](#)

Conventional detectors often obliterate photons, but the particles can escape a vacuum-based device unscathed.

- Research Highlight | 30 June 2021

[Supersonic strikes leave just a dent in this super-light material](#)

Honeycomb-like structure thwarts a projectile travelling as fast as a speeding bullet.

- Research Highlight | 29 June 2021

[A hunter-gatherer's tooth yields the oldest known strain of plague](#)

Genomic analysis suggests that the Black Death began as a less virulent and less transmissible disease.

Research

News & Views

- News & Views | 30 June 2021

[Malaria vaccine gets a parasite boost in the liver](#)

Effective malaria vaccines are urgently needed. Now, clinical evidence indicates that a vaccination approach that uses live parasites growing

in the liver can generate high levels of immune protection from infection.

- Nana K. Minkah
- Stefan H. I. Kappe
- News & Views | 07 July 2021

[How to buffer against an urban food shortage](#)

There is widespread concern that the risk of food shocks — sudden disruptions to food supply — is increasing. It emerges that a city's vulnerability to food shocks can be reduced by diversifying its supply chains.

- Zia Mehrabi
- News & Views | 30 June 2021

[Engineered single-domain antibodies tackle COVID variants](#)

Camels and llamas make antibodies that bind to targets using small, 'nanobody' protein domains. Mice have now been engineered to make nanobodies that might be more effective than conventional antibodies in treating COVID-19.

- James E. Voss
- News & Views | 07 July 2021

[Fluid-rich extinct volcanoes cause small earthquakes beneath New Zealand](#)

Imaging of a region where an oceanic tectonic plate descends below another plate reveals evidence that fluid-rich extinct volcanoes can help to lubricate the interface between plates — reducing the potential for large earthquakes.

- Catherine A. Rychert
- Nicholas Harmon

Articles

- Article | 07 July 2021

[r-Process elements from magnetorotational hypernovae](#)

Observations of an extremely metal-poor star suggest that rapidly rotating massive stars with large magnetic fields were a source of r-process elements in the early Universe.

- D. Yong
- C. Kobayashi
- B. P. Schmidt

- Article | 07 July 2021

[Quantum phases of matter on a 256-atom programmable quantum simulator](#)

A programmable quantum simulator with 256 qubits is created using neutral atoms in two-dimensional optical tweezer arrays, demonstrating a quantum phase transition and revealing new quantum phases of matter.

- Sepehr Ebadi
- Tout T. Wang
- Mikhail D. Lukin

- Article | 07 July 2021

[Quantum simulation of 2D antiferromagnets with hundreds of Rydberg atoms](#)

Programmable quantum simulation of two-dimensional antiferromagnets is achieved with up to 196 neutral atoms, and the capability of the platform is demonstrated on square and triangular arrays.

- Pascal Scholl
- Michael Schuler
- Antoine Browaeys

- Article | 07 July 2021

[Optical manipulation of electronic dimensionality in a quantum material](#)

Two-dimensional electronic states are observed at the induced domain walls of a three-dimensional charge density wave material by

manipulating the periodic lattice distortion via femtosecond infrared pulses.

- Shaofeng Duan
- Yun Cheng
- Wentao Zhang
- Article | 07 July 2021

[Bifunctional nanoprecipitates strengthen and ductilize a medium-entropy alloy](#)

Increased strength and ductility in a medium-entropy alloy of Fe, Ni, Al and Ti is demonstrated using nanoprecipitates that simultaneously hinder phase transformation and block dislocation motion.

- Ying Yang
- Tianyi Chen
- Easo P. George
- Article | 07 July 2021

[Supply chain diversity buffers cities against food shocks](#)

An intensity–duration–frequency model linking food shock risk to supply chain diversity in the USA finds that boosting a city’s food supply chain diversity increases the resistance of a city to food shocks of mild to moderate severity.

- Michael Gomez
- Alfonso Mejia
- Richard R. Rushforth
- Article | 07 July 2021

[Fluid-rich subducting topography generates anomalous forearc porosity](#)

Electromagnetic data collected at the northern Hikurangi Margin, New Zealand show that a seamount on the incoming plate allows more water to subduct, compared with normal, unfaulted oceanic lithosphere.

- Christine Chesley
- Samer Naif
- Dan Bassett

- Article | 16 June 2021

[GluD1 is a signal transduction device disguised as an ionotropic receptor](#)

The ionotropic glutamate delta receptors GluD1 and GluD2 form distinct neurexin–cerebellin complexes that differentially regulate postsynaptic glutamate receptor activities.

- Jinye Dai
- Christopher Patzke
- Thomas C. Südhof

- Article | 23 June 2021

[Obesity accelerates hair thinning by stem cell-centric converging mechanisms](#)

Obesity in mice, caused by a high-fat diet, induces hair loss as a result of changes in the differentiation of hair follicle stem cells.

- Hironobu Morinaga
- Yasuaki Mohri
- Emi K. Nishimura

- Article | 23 June 2021

[Caloric restriction disrupts the microbiota and colonization resistance](#)

Severe caloric restriction in humans leads to reversible changes in the gut microbiota that promote weight loss and the expansion of an enteric pathogen in mice.

- Reiner Jumpertz von Schwartzberg
- Jordan E. Bisanz
- Peter J. Turnbaugh

- Article | 07 June 2021 | Open Access

[Nanobodies from camelid mice and llamas neutralize SARS-CoV-2 variants](#)

Multivalent nanobodies against SARS-CoV-2 from mice engineered to produce camelid nanobodies recognize conserved epitopes that are inaccessible to human antibodies and show promise as a strategy for dealing with viral escape mutations.

- Jianliang Xu
- Kai Xu

- Article | 19 May 2021

Diverse functional autoantibodies in patients with COVID-19

Rapid extracellular antigen profiling of a cohort of 194 individuals infected with SARS-CoV-2 uncovers diverse autoantibody responses that affect COVID-19 disease severity, progression and clinical and immunological characteristics.

- Eric Y. Wang
- Tianyang Mao
- Aaron M. Ring

- Article | 30 June 2021

Two chemoattenuated PfSPZ malaria vaccines induce sterile hepatic immunity

Two malaria vaccines comprising *Plasmodium falciparum* sporozoites and treatment with either pyrimethamine or chloroquine induced durable protective responses against both the African vaccine strain and a heterologous South American strain of *P. falciparum*.

- Agnes Mwakingwe-Omari
- Sara A. Healy
- Patrick E. Duffy

- Article | 02 June 2021

Base editing of haematopoietic stem cells rescues sickle cell disease in mice

A custom adenine base editor can edit the variant of the β -globin gene that causes sickle cell disease into a non-pathogenic variant in human and mouse cells, and transplantation of the edited cells rescues sickle cell disease in mice.

- Gregory A. Newby
- Jonathan S. Yen
- David R. Liu

- Article | 09 June 2021

[NORAD-induced Pumilio phase separation is required for genome stability](#)

The noncoding RNA *NORAD* maintains genome stability in mammalian cells by sequestering Pumilio proteins in phase-separated compartments.

- Mahmoud M. Elguindy
- Joshua T. Mendell

- Article | 05 May 2021

[Epigenetic silencing by SETDB1 suppresses tumour intrinsic immunogenicity](#)

A CRISPR–Cas9 screen of chromatin regulators in mouse tumour models treated with immune checkpoint blockade identifies SETDB1 as an epigenetic checkpoint protein that suppresses tumour-intrinsic immunogenicity.

- Gabriel K. Griffin
- Jingyi Wu
- Bradley E. Bernstein

- Article | 16 June 2021

[Structural basis of omega-3 fatty acid transport across the blood–brain barrier](#)

Cryo-electron microscopy and molecular dynamics simulations reveal how MFSD2A transports essential omega-3 fatty acids across the blood–brain and blood–retina barriers as lysolipids.

- Rosemary J. Cater
- Geok Lin Chua
- Filippo Mancina

Volume 595 Issue 7867, 15 July 2021

This Week

Editorial

- Editorial | 14 July 2021

[Cities must protect people from extreme heat](#)

The North American heatwave highlights the need for urban planners to target extreme heat when designing climate-adaptation strategies.

- Editorial | 13 July 2021

[Does the fight against hunger need its own IPCC?](#)

Any plan to create an intergovernmental science panel on food science and policy must protect its independence.

World View

- World View | 12 July 2021

[I critiqued my past papers on social media — here's what I learnt](#)

The systems of science must reward honesty about mistakes to speed progress.

- Nicholas P. Holmes

Research Highlights

- Research Highlight | 07 July 2021

[Genomics charts a deadly bacterium's leap from pigs to humans](#)

Samples collected over several decades help scientists to trace the path taken by *Streptococcus suis*.

- Research Highlight | 07 July 2021

[Beetles make 'Teflon' to grease their knees](#)

The protein-based substance found in the leg joints of beetles and at least one other insect is a superb lubricant.

- Research Highlight | 07 July 2021

[Newfound 'fairy lantern' could soon be snuffed out forever](#)

Wild boars have destroyed three of the four known specimens of a bizarre plant in the forests of Malaysia.

- Research Highlight | 12 July 2021

[**A swarm of black holes could explain Galactic fluffiness**](#)

Diffuse Milky Way formation might have been depleted by star-hurling black holes.

- Research Highlight | 07 July 2021

[**A graphene cloak keeps artworks' colours ageless**](#)

A layer of carbon atoms preserves a painting's vibrant hues — and can be applied and removed without damage.

- Research Highlight | 08 July 2021

[**Telecoms satellites' new purpose: spying on Earth's magnetic field**](#)

Clues to the forces generated by the planet's core emerge from observations intended for satellite navigation.

- Research Highlight | 06 July 2021

[**Meth-addicted trout swim for a hit**](#)

Fish that have been exposed to the highly addictive stimulant for several weeks show signs of withdrawal if deprived of the drug.

Research

News & Views

- News & Views | 14 July 2021

[**Southeast Amazonia is no longer a carbon sink**](#)

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.

- Scott Denning

- News & Views | 14 July 2021

[**Deciphering metabolism, one microbe at a time**](#)

Small molecules produced and modified by gut microorganisms can influence human physiology. An atlas of metabolic outputs of diverse gut microbes offers new ways to decipher the microbial mechanisms behind their production.

- William F. Kindschuh
- Tal Korem
- News & Views | 14 July 2021

[Measurement-based system provides quantum control of nanoparticles](#)

Precise measurements of the position of a levitating nanosphere have been used to control forces that damp the nanosphere's motion — potentially opening the way to quantum control of larger objects.

- Tania S. Monteiro
- News & Views | 14 June 2021

[A long-term perspective on immunity to COVID](#)

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.

- Andreas Radbruch
- Hyun-Dong Chang

Perspective

- Perspective | 14 July 2021

[Designing the next generation of proton-exchange membrane fuel cells](#)

This Perspective reviews the recent technical developments in the components of the fuel cell stack in proton-exchange membrane fuel cell vehicles and outlines the road towards large-scale commercialization of such vehicles.

- Kui Jiao
- Jin Xuan
- Michael D. Guiver

Articles

- Article | 14 July 2021

[The \$^{13}\text{C}\$ -rich atmosphere of a young accreting super-Jupiter](#)

Observations of ^{13}CO in the atmosphere of a young, accreting super-Jupiter indicate a ^{13}C -rich atmosphere, which is attributed to the accretion of carbon from ices enriched in ^{13}C through fractionation.

- Yapeng Zhang
- Ignas A. G. Snellen
- Frans Snik

- Article | 14 July 2021

[Real-time optimal quantum control of mechanical motion at room temperature](#)

Optimal quantum control of an optically trapped nanoparticle in its ground state is demonstrated at room temperature, using Kalman filtering to track its quantum trajectory in real time.

- Lorenzo Magrini
- Philipp Rosenzweig
- Markus Aspelmeyer

- Article | 14 July 2021

[Quantum control of a nanoparticle optically levitated in cryogenic free space](#)

Quantum control of an optically levitated nanoparticle with a mass of just one femtogram is demonstrated in a cryogenic environment by feedback-cooling the motion of the particle to the quantum ground state.

- Felix Tebbenjohanns
- M. Luisa Mattana
- Lukas Novotny

- Article | 14 July 2021 | Open Access

[Exponential suppression of bit or phase errors with cyclic error correction](#)

Repetition codes running many cycles of quantum error correction achieve exponential suppression of errors with increasing numbers of qubits.

- Zijun Chen
- Kevin J. Satzinger
- Julian Kelly
- Article | 14 July 2021

[Amazonia as a carbon source linked to deforestation and climate change](#)

Aircraft observations of atmospheric carbon dioxide and monoxide concentrations in Brazil show higher carbon emissions in eastern Amazonia than in the western part, which are linked to increased ecosystem stress and fire occurrence.

- Luciana V. Gatti
- Luana S. Basso
- Raiane A. L. Neves
- Article | 14 July 2021

[A lithium-isotope perspective on the evolution of carbon and silicon cycles](#)

Analysis of shallow-water marine carbonate samples from 101 stratigraphic units allows construction of a record of lithium isotopes from the past 3 billion years, tracking the evolution of the global carbon and silicon cycles.

- Borianna Kalderon-Asael
- Joachim A. R. Katchinoff
- Philip A. E. Pogge von Strandmann
- Article | 23 June 2021 | Open Access

[Pleistocene sediment DNA reveals hominin and faunal turnovers at Denisova Cave](#)

Ancient mitochondrial DNA from sediments reveals the sequence of Denisovan, Neanderthal and faunal occupation of Denisova Cave, and evidence for the appearance of modern humans at least 45,000 years ago.

- Elena I. Zavala
- Zenobia Jacobs
- Matthias Meyer

- Article | 23 June 2021 | Open Access

[Mechanism of disease and therapeutic rescue of *Dok7* congenital myasthenia](#)

In a mouse model of congenital myasthenia caused by mutations in the *Dok7* gene, agonist antibodies against MUSK restore synaptic function and survival.

- Julien Oury
- Wei Zhang
- Steven J. Burden

- Article | 30 June 2021

[Microbiota regulate social behaviour via stress response neurons in the brain](#)

The gut microbiota in mice can modulate social behaviour by influencing activity in stress-related brain areas.

- Wei-Li Wu
- Mark D. Adame
- Sarkis K. Mazmanian

- Article | 14 July 2021

[A metabolomics pipeline for the mechanistic interrogation of the gut microbiome](#)

A microbiome-focused metabolomics pipeline and interactive metabolomics profile explorer are a powerful tool for the characterization of gut-resident microorganisms and the interactions between microorganisms and their host.

- Shuo Han
- Will Van Treuren
- Justin L. Sonnenburg

- Article | 24 May 2021

[SARS-CoV-2 infection induces long-lived bone marrow plasma cells in humans](#)

SARS-CoV-2 infection induces long-lived bone marrow plasma cells that correlate with anti-SARS-CoV-2 spike protein antibody titres in individuals who have recovered from COVID-19.

- Jackson S. Turner

- Wooseob Kim
- Ali H. Ellebedy
- Article | 14 June 2021 | Open Access

[Naturally enhanced neutralizing breadth against SARS-CoV-2 one year after infection](#)

Antibodies against SARS-CoV-2 continue to evolve 6 to 12 months after infection in patients who have recovered from COVID-19, increasing in potency and breadth with time.

- Zijun Wang
- Frauke Muecksch
- Michel C. Nussenzweig
- Article | 16 June 2021

[ctDNA guiding adjuvant immunotherapy in urothelial carcinoma](#)

The authors report on prospective exploratory analyses of circulating tumour DNA in an urothelial carcinoma immunotherapy clinical trial.

- Thomas Powles
- Zoe June Assaf
- Sanjeev Mariathasan
- Article | 23 June 2021

[A transcriptional switch governs fibroblast activation in heart disease](#)

BET proteins regulate a reversible transcriptional switch that governs fibroblast activation in heart disease through the transcription factor MEOX1.

- Michael Alexanian
- Pawel F. Przytycki
- Deepak Srivastava

- Article | 30 June 2021

[Shape of promoter antisense RNAs regulates ligand-induced transcription activation](#)

The authors describe a role for the non-coding antisense transcripts produced at promoters in regulating ligand-induced activation of gene transcription.

- Fan Yang
 - Bogdan Tanasa
 - Michael G. Rosenfeld
- Article | 30 June 2021

[G-protein activation by a metabotropic glutamate receptor](#)

Cryo-electron microscopy structures show that metabotropic glutamate receptor 2 forms a dimer to which only one G protein is coupled, revealing the basis for asymmetric signal transduction.

- Alpay B. Seven
 - Ximena Barros-Álvarez
 - Georgios Skiniotis
- Article | 30 June 2021

[Asymmetric activation of the calcium-sensing receptor homodimer](#)

Cryo-EM structures of human calcium-sensing receptor reveal intrinsic asymmetry in the receptor homodimer upon activation that is stabilized by calcimimetic drugs adopting distinct poses in the two protomers, priming one protomer for G-protein coupling.

- Yang Gao
- Michael J. Robertson
- Georgios Skiniotis

This Week

Editorial

- Editorial | 21 July 2021

[Responsible research assessment faces the acid test](#)

The University of Liverpool is planning to make lay-offs on the basis of controversial measures. How should the global movement for responsible research respond?

- Editorial | 20 July 2021

[Vulnerable nations lead by example on Sustainable Development Goals research](#)

A United Nations study of world science is a wake-up call that richer countries must also shift science towards the SDGs.

Research Highlights

- Research Highlight | 15 July 2021

[While you sleep, a device harvests energy from your sweaty fingertips](#)

An energy collector in contact with the skin is efficient enough to power some electronic devices.

- Research Highlight | 09 July 2021

[Cruise ships could sail now-icy Arctic seas by century's end](#)

Without carbon cuts, many cargo ships could ply the Northwest Passage, between the Atlantic and Pacific oceans, in 2040.

- Research Highlight | 16 July 2021

[Tied in knots: Zika virus tangles are the most stable RNA known](#)

A dangerous virus uses a ring-shaped structure to make its RNA resistant to attack.

- Research Highlight | 14 July 2021

[Damage to a royal town on the Danube warns of seismic danger](#)

Documents and physical evidence hint that a major earthquake struck Visegrád in Hungary, once home to kings.

- Research Highlight | 15 July 2021

[Why a meat-free diet boosts health: protein levels might hit the spot](#)

An analysis shows that the amino-acid profiles of vegan, vegetarian and omnivorous diets are similar.

- Research Highlight | 14 July 2021

[Why breastfeeding is becoming less reliable for birth control](#)

As countries become more prosperous, people nursing their babies become fertile sooner after birth.

- Research Highlight | 13 July 2021

[Destructive fires serve as pest control for lizards](#)

Mediterranean lizards in burnt areas are less likely to be afflicted by mites than their neighbours in unburnt woodlands.

Research

News & Views

- News & Views | 21 July 2021

[Superconductivity in a graphene system survives a strong magnetic field](#)

A material system known as magic-angle twisted trilayer graphene exhibits superconductivity. The observation that this superconductivity persists under a strong magnetic field could lead to advances in quantum computation.

- Yi-Ting Hsu

- News & Views | 21 July 2021

[A step closer to compact X-ray lasers](#)

Light sources known as free-electron lasers can produce intense X-ray radiation for a wide range of applications. The process usually needs huge particle accelerators, but an experiment shows how to overcome this limitation.

- Luca Giannessi

- News & Views | 21 July 2021

[Fluid flow through a deep-sea sponge could inspire engineering designs](#)

Sophisticated numerical simulations reveal that the beautiful structure of a sponge known as Venus's flower basket reduces hydrodynamic drag, and probably aids the capture of food particles, as well as sperm for sexual reproduction.

- Laura A. Miller

- News & Views | 14 July 2021

[Receptor–enzyme complex structures show how receptors start to switch off](#)

The structure of rhodopsin, an archetypal member of the G-protein-coupled family of receptors, in complex with its specific kinase enzyme, reveals the molecular mechanism of the first step of receptor inactivation.

- Vsevolod V. Gurevich
- Eugenia V. Gurevich

Reviews

- Review Article | 21 July 2021

[A multilayered immune system through the lens of unconventional T cells](#)

This Review provides an overview of our current understanding of the unconventional T cell compartment and discusses the development and function of unconventional T cells from an evolutionary perspective.

- Toufic Mayassi
- Luis B. Barreiro
- Bana Jabri

Articles

- Article | 21 July 2021

[The nightside cloud-top circulation of the atmosphere of Venus](#)

Cloud-top thermal images obtained by the Akatsuki orbiter show that Venus has almost null mean meridional circulation at the cloud top, because poleward circulation on the dayside is offset by equatorward circulation on the nightside.

- Kiichi Fukuya
- Takeshi Imamura
- Masato Nakamura

- Article | 21 July 2021

[Free-electron lasing at 27 nanometres based on a laser wakefield accelerator](#)

Lasing in the extreme-ultraviolet range is demonstrated using a laser wakefield accelerator, as a step towards compact X-ray free-electron lasers.

- Wentao Wang
- Ke Feng
- Zhizhan Xu

- Article | 21 July 2021

[Layer Hall effect in a 2D topological axion antiferromagnet](#)

A new type of Hall effect—the layer Hall effect—is produced in a 2D antiferromagnet that does not exhibit any net magnetization.

- Anyuan Gao
- Yu-Fei Liu
- Su-Yang Xu

- Article | 21 July 2021

[Pauli-limit violation and re-entrant superconductivity in moiré graphene](#)

A large violation of the Pauli limit and re-entrant superconductivity in a magnetic field is reported for magic-angle twisted trilayer graphene, suggesting that the spin configuration of the superconducting state of this material is unlikely to consist of spin singlets.

- Yuan Cao
- Jeong Min Park
- Pablo Jarillo-Herrero

- Article | 21 July 2021

[A natively flexible 32-bit Arm microprocessor](#)

Flexible electronic platforms would enable the integration of functional electronic circuitry with many everyday objects; here, a low-cost and fully flexible 32-bit microprocessor is produced.

- John Biggs

- James Myers
- Scott White
- Article | 21 July 2021

[Extreme flow simulations reveal skeletal adaptations of deep-sea sponges](#)

High-performance hydrodynamic simulations show that the skeletal structure of the deep-sea sponge *Euplectella aspergillum* reduces the hydrodynamic stresses on it, while possibly being beneficial for feeding and reproduction.

- Giacomo Falcucci
- Giorgio Amati
- Sauro Succi
- Article | 21 July 2021

[Orthogonal-array dynamic molecular sieving of propylene/propane mixtures](#)

A dynamic molecular sieve made from a metal–organic framework with orthogonally arrayed pockets is capable of separating propylene (C_3H_6) from a propylene (C_3H_6)/propane (C_3H_8) gas mixture.

- Heng Zeng
- Mo Xie
- Dan Li
- Article | 07 July 2021

[Sexual arousal gates visual processing during *Drosophila* courtship](#)

Specific neurons in the fly brain that are activated when males are aroused modulate visual processing to underlie courtship.

- Tom Hindmarsh Sten
- Rufei Li
- Vanessa Ruta

- Article | 23 June 2021

[Molecular logic of cellular diversification in the mouse cerebral cortex](#)

A single-cell atlas of the developing mouse cortex provides a temporal and spatial assessment of the molecular logic that drives the establishment and organization of cortical cell types.

- Daniela J. Di Bella
- Ehsan Habibi
- Paola Arlotta

- Article | 14 July 2021

[Acetate differentially regulates IgA reactivity to commensal bacteria](#)

Acetate—a major gut microbial metabolite—increases the production of IgA in the colon, alters the capacity of the IgA pool to bind to specific microorganisms and alters the localization of these bacteria within the colon.

- Tadashi Takeuchi
- Eiji Miyauchi
- Hiroshi Ohno

- Article | 21 June 2021

[Dysregulation of brain and choroid plexus cell types in severe COVID-19](#)

Single-nucleus transcriptomes of frontal cortex and choroid plexus samples from patients with COVID-19 reveal pathological cell states that are similar to those associated with human neurodegenerative diseases and chronic brain disorders.

- Andrew C. Yang
- Fabian Kern
- Tony Wyss-Coray

- Article | 27 May 2021

[BNT162b2 vaccine induces neutralizing antibodies and poly-specific T cells in humans](#)

In a phase-I/II trial in healthy adults, the BNT162b2 vaccine induces neutralizing antibodies and poly-specific T cells against SARS-CoV-2

epitopes that are conserved in a wide range of currently circulating variants.

- Ugur Sahin
- Alexander Muik
- Özlem Türeci
- Article | 16 June 2021

[Tissue-resident macrophages provide a pro-tumorigenic niche to early NSCLC cells](#)

Single-cell RNA sequencing and imaging of macrophages in human non-small cell lung cancer and in a mouse model of lung adenocarcinoma show that tissue-resident macrophages have a key role in early tumour progression.

- María Casanova-Acebes
- Erica Dalla
- Miriam Merad
- Article | 23 June 2021

[Clonal fitness inferred from time-series modelling of single-cell cancer genomes](#)

Whole-genome sequencing of human cancer cells in patient-derived mouse xenograft models indicates a key role for TP53 in determining the fitness landscape of polyclonal cancer cell populations.

- Sohrab Salehi
- Farhia Kabeer
- Sohrab P. Shah
- Article | 23 June 2021

[Phase separation drives aberrant chromatin looping and cancer development](#)

The NUP98–HOXA9 oncogenic fusion protein found in leukaemia undergoes phase separation in the nucleus, which helps to promote activation of leukaemic genes and to establish aberrant chromatin looping.

- Jeong Hyun Ahn
- Eric S. Davis

- Gang Greg Wang
- Article | 07 July 2021

[A condensate-hardening drug blocks RSV replication in vivo](#)

Cyclopamine and its chemical analogue A3E inhibit replication of human respiratory syncytial virus (RSV) by hardening the liquid–liquid phase-separated inclusion bodies, resulting in the inhibition of virus replication in the lungs of RSV-infected mice.

- Jennifer Risso-Ballester
- Marie Galloux
- Ralf Altmeyer
- Article | 14 July 2021

[Structures of rhodopsin in complex with G-protein-coupled receptor kinase 1](#)

Cryo-EM structures of complexes between GRK1 and rhodopsin shed light on how a small number of GRKs can selectively recognize and be activated by hundreds of different G-protein-coupled receptors.

- Qiuyan Chen
- Manolo Plasencia
- John J. G. Tesmer
- Article | 30 June 2021

[cAMP binding to closed pacemaker ion channels is non-cooperative](#)

Direct monitoring of individual cAMP molecules binding to HCN ion channels reveals the binding dynamics underlying the distinct physiological responses of ion channel isoforms.

- David S. White
- Sandipan Chowdhury
- Baron Chanda

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This Week

Editorial

- Editorial | 27 July 2021

[Artificial intelligence in structural biology is here to stay](#)

Machine learning will transform our understanding of protein folding. And it's essential that all data be open.

- Editorial | 28 July 2021

[The lack of people of colour in science images must be fixed](#)

Archives, libraries, photo agencies and publishers need to do better to reflect science's true past and present.

World View

- World View | 27 July 2021

[Remember Ebola: stop mass COVID deaths in Africa](#)

The wealthy world must rally or nations will collapse across Africa.

- Mosoka Fallah

Research Highlights

- Research Highlight | 21 July 2021

[The surprising place where pot farming first blossomed](#)

Humans first began cultivating cannabis, a source of both fibres and drugs, some 12,000 years ago.

- Research Highlight | 22 July 2021

[Rubbish-raiding parrots take lessons from co-conspirators](#)

Sulphur-crested cockatoos are the first parrots known to have complex culture centred on food-gathering.

- Research Highlight | 22 July 2021

[A telescope watches as a black hole spews stuff into space](#)

The trailblazing collaboration that first imaged a black hole turns its sights on a nearby black-hole jet.

- Research Highlight | 21 July 2021

[How to win big for the climate: rein in the 'super polluters'](#)

Just 5% of the world's power plants account for almost three-quarters of carbon emissions from electricity generation.

- Research Highlight | 15 July 2021

[China wastes almost 30% of its food](#)

Out-of-home dining accounts for some of the nation's wasted food, but much more is lost during food storage and processing.

- Research Highlight | 20 July 2021

[The guts of a 'bog body' reveal sacrificed man's final meal](#)

Tollund Man, who lived more than 2,000 years ago, ate well before he was hanged.

- Research Highlight | 19 July 2021

[Pikas in high places have a winter-time treat: yak poo](#)

Snacks of faeces help the pocket-sized mammals survive the cold and wind atop a vast plateau that abuts the Himalayas.

Research

News & Views

- News & Views | 14 July 2021

[A protective signal between the brain's supporting cells in Alzheimer's disease](#)

In a mouse model of Alzheimer's disease, interleukin-3 protein released by cells called astrocytes activates microglia, the immune cells of the brain. These then cluster around disease-associated protein aggregates and help to clear them.

- Jerika J. Barron
- Anna V. Molofsky

- News & Views | 26 July 2021

[Direct installation of boron groups offers boost to medicinal chemistry](#)

Compounds called borylated azines have untapped potential for organic synthesis, but have faced problems associated with their preparation, stability and reactivity. A new class of these compounds provides a solution.

- Christine M. Le

- News & Views | 21 July 2021

[Sperm CatSper ion channel swims into sharper focus](#)

Activation of the CatSper membrane ion channel triggers enhanced sperm motility, and this protein complex is required for male fertility. Structural data now provide insights into the channel, and offer a few surprises, too.

- David E. Clapham
- Raymond E. Hulse

- News & Views | 28 July 2021

[Earthquakes triggered by underground fluid injection modelled for a tectonically active oil field](#)

An analysis of the Val d'Agri oil field in Italy provides insight into how processes associated with wastewater disposal trigger earthquakes — and how such effects can be reduced to maintain the economic viability of mature oil fields.

- Mirko van der Baan

Articles

- Article | 28 July 2021

[Light bending and X-ray echoes from behind a supermassive black hole](#)

One of the key predictions of general relativity, the bending of light around massive, compact objects, is observed for a supermassive black hole in the galaxy I Zwicky 1.

- D. R. Wilkins
- L. C. Gallo
- R. D. Blandford

- Article | 28 July 2021

[Incoherent transport across the strange-metal regime of overdoped cuprates](#)

Measurements of high-field magnetotransport in overdoped cuprates indicate that the strange-metal regime exists beyond the critical doping, and that it has both coherent and incoherent contributions.

- J. Ayres
- M. Berben
- N. E. Hussey

- Article | 28 July 2021

[Linear-in temperature resistivity from an isotropic Planckian scattering rate](#)

Angle-dependent magnetoresistance measurements of a strange-metal phase of a hole-doped cuprate show a well defined Fermi surface and an isotropic linear-in-temperature scattering rate that saturates at the Planckian limit.

- Gaël Grissonnanche
- Yawen Fang
- B. J. Ramshaw

- Article | 28 July 2021

[Spectroscopic evidence for a gold-coloured metallic water solution](#)

Spectroscopic measurements confirm that when water is adsorbed on drops of an alkali alloy at low pressure a gold-coloured metallic layer forms as electrons rapidly move from the drop into the water.

- Philip E. Mason
- H. Christian Schewe
- Pavel Jungwirth

- Article | 20 May 2021

[**A radical approach for the selective C–H borylation of azines**](#)

Selective borylation of azines—nitrogen-containing aromatic heterocycles used in the synthesis of many pharmaceuticals—is made possible by forming a radical from an aminoborane using a photocatalyst.

- Ji Hye Kim
- Timothée Constantin
- Daniele Leonori

- Article | 28 July 2021

[**A process-based approach to understanding and managing triggered seismicity**](#)

A multidisciplinary method for managing triggered seismicity is developed using detailed subsurface information to calibrate geomechanical and earthquake source physics models, and is applied to the Val d’Agri oil field in seismically active southern Italy.

- Bradford H. Hager
- James Dieterich
- Andreas Plesch

- Article | 14 July 2021

[**Dynamical prefrontal population coding during defensive behaviours**](#)

Dorsomedial prefrontal cortex represents threat and defensive action initiation, and the dynamic interplay between those representations dictates the temporal evolution of avoidance response to threats.

- Daniel Jercog
- Nanci Winke
- Cyril Herry

- Article | 14 July 2021

[**Food cue regulation of AGRP hunger neurons guides learning**](#)

In response to food cues, a hypothalamic circuit in the mouse brain transiently inhibits neurons expressing agouti-related peptide, and this promotes learning of cue-initiated food-seeking tasks.

- Janet Berrios
- Chia Li
- Bradford B. Lowell

- Article | 14 July 2021

[**Astrocytic interleukin-3 programs microglia and limits Alzheimer's disease**](#)

Interleukin-3 signalling from astrocytes to microglia readies microglia to defend against Alzheimer's disease.

- Cameron S. McAlpine
- Joseph Park
- Filip K. Swirski

- Article | 07 June 2021

[**Spread of a SARS-CoV-2 variant through Europe in the summer of 2020**](#)

Analysis of the spread of the 20E (EU1) variant of SARS-CoV-2 through Europe suggests that international travel and insufficient containment, rather than increased transmissibility, led to a resurgence of infections.

- Emma B. Hodcroft
- Moira Zuber
- Richard A. Neher

- Article | 30 June 2021

[**Untangling introductions and persistence in COVID-19 resurgence in Europe**](#)

In many European countries, more than half of the SARS-CoV-2 lineages circulating in late summer 2020 resulted from new

introductions, highlighting the threat of viral dissemination when restrictions are lifted.

- Philippe Lemey
- Nick Ruktanonchai
- Simon Dellicour

- Article | 03 June 2021

[Nasal delivery of an IgM offers broad protection from SARS-CoV-2 variants](#)

An engineered IgM antibody administered intranasally in mice shows high prophylactic efficacy and therapeutic efficacy against SARS-CoV-2, and is also effective against multiple variants of concern that are resistant to IgG-based therapeutics.

- Zhiqiang Ku
- Xuping Xie
- Zhiqiang An

- Article | 07 July 2021

[Metabolic control of T_{FH} cells and humoral immunity by phosphatidylethanolamine](#)

Enzymes in the cytidine diphosphate–ethanolamine metabolic pathway, which promotes de novo synthesis of phosphatidylethanolamine, are shown to act as post-transcriptional mediators of the differentiation of T follicular helper (T_{FH}) cells, by regulating the chemokine receptor CXCR5.

- Guotong Fu
- Clifford S. Guy
- Hongbo Chi

- Article | 21 July 2021

[EGFR activation limits the response of liver cancer to lenvatinib](#)

EGFR inhibition and lenvatinib treatment of liver cancer cells in vitro and in in vivo mouse models has potent anti-proliferative effects, and

lenvatinib plus gefitinib treatment of 12 patients with advanced liver cancer resulted in meaningful clinical responses.

- Haojie Jin
- Yaoping Shi
- René Bernards

- Article | 26 May 2021

[Enhancer release and retargeting activates disease-susceptibility genes](#)

Disruption of a promoter can release its partner enhancer to activate other promoters in the same contact domain, and this process, named 'enhancer release and retargeting', can often lead to gene alterations that cause disease.

- Soohwan Oh
- Jiaofang Shao
- Michael G. Rosenfeld

- Article | 07 July 2021 | Open Access

[Structural basis of early translocation events on the ribosome](#)

Cryo-electron microscopy and single-molecule fluorescence methods are used to elucidate the mechanism of early translocation events on the bacterial ribosome.

- Emily J. Rundlet
- Mikael Holm
- Scott C. Blanchard

- Article | 05 July 2021

[Structure of a mammalian sperm cation channel complex](#)

A structure of the sperm-specific CatSper complex features a number of additional components; together, these components and the CatSper complex are termed the CatSpermasome.

- Shiyi Lin
- Meng Ke
- Jianping Wu



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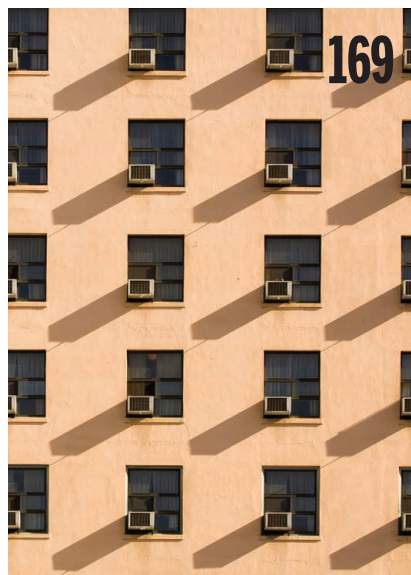
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The fractal-like forms of the Romanesco cauliflower are some of the most spectacular in the plant kingdom. These structures arose from the transformation of the cabbage inflorescence during the domestication process. Researchers



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Photo: Laura Chase de Formigny Photography

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A 7-week-old spotted hyena cub explores the area around its den in Masai Mara National Reserve, Kenya, while its mother looks on. The cub, still in its natal coat of fur, has already started to learn which clanmates its mother



associates with most closely. This months-long learning process is most likely the mechanism by which young hyenas "inherit" their mothers' social networks. See pages 274 and 348.
Photo: Lily Johnson-Ulrich

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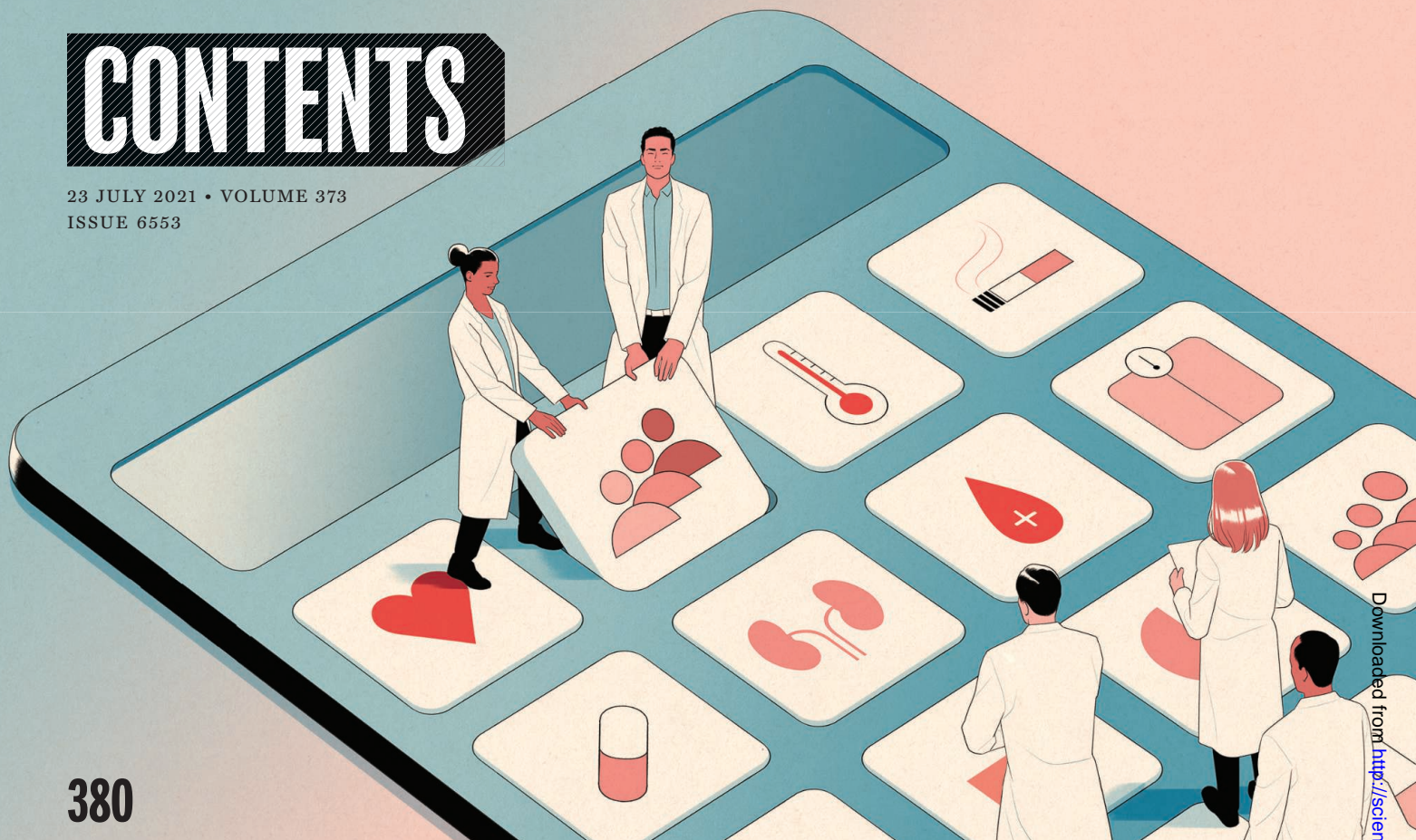
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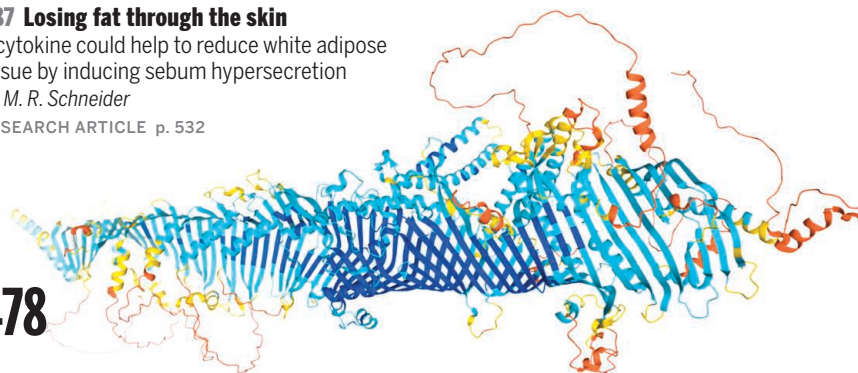
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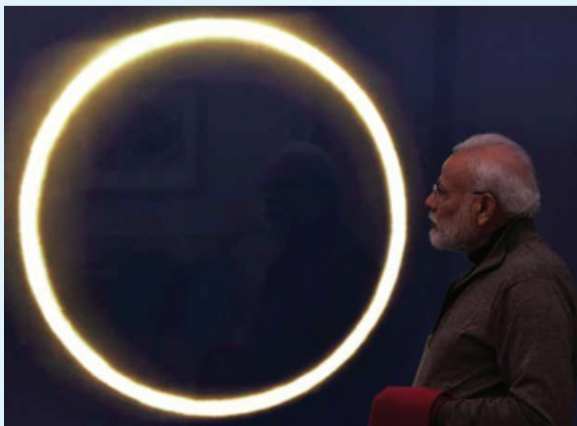
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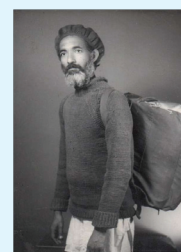
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P.T. Heath and Others

Prevention and Attenuation of Covid-19 with the BNT162b2 and mRNA-1273 Vaccines

M.G. Thompson and Others

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Confronting Our Next National Health Disaster — Long-Haul Covid

S. Phillips and M.A. Williams

A Half-Century of Progress in Health: The National Academy of Medicine at 50: Advancing the Learning Health System

J.M. McGinnis, H.V. Fineberg, and V.J. Dzau

N Engl J Med 2021;385:1-5 | Published Online June 26, 2021

Is Learning Worth the Trouble? — Improving Health Care System Participation in Embedded Research

R. Platt, G.E. Simon, and A.F. Hernandez

N Engl J Med 2021;385:5-7 | Published Online June 26, 2021

Covid-19 and the Investigator Pipeline

K. Armstrong

N Engl J Med 2021;385:7-9 | Published Online March 24, 2021

Incentives for Immunity — Strategies for Increasing Covid-19 Vaccine Uptake

K.G. Volpp and C.C. Cannuscio

N Engl J Med 2021;385:e1 | Published Online May 26, 2021

Protecting Olympic Participants from Covid-19 — The Urgent Need for a Risk-Management Approach

A.K. Sparrow, L.M. Brosseau, R.J. Harrison, and M.T. Osterholm

N Engl J Med 2021;385:e2 | Published Online May 25, 2021

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A.J. McArdle and Others

N Engl J Med 2021;385:11-22 | Published Online June 16, 2021

Multisystem Inflammatory Syndrome in Children — Initial Therapy and Outcomes

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N Engl J Med 2021;385:23-34 | Published Online June 16, 2021

A Randomized Trial of a Transglutaminase 2 Inhibitor for Celiac Disease

D. Schuppan and Others

N Engl J Med 2021;385:35-45

Daratumumab-Based Treatment for Immunoglobulin Light-Chain Amyloidosis

E. Kastiris and Others

N Engl J Med 2021;385:46-58

Cardiovascular and Renal Outcomes with Efpeglenatide in Type 2 Diabetes

H.C. Gerstein and Others

DOI: 10.1056/NEJMoa2108269 | June 28, 2021

CRISPR-Cas9 In Vivo Gene Editing for Transthyretin Amyloidosis

J.D. Gillmore and Others

DOI: 10.1056/NEJMoa2107454 | June 26, 2021

Tirzepatide versus Semaglutide Once Weekly in Patients with Type 2 Diabetes

J.P. Frías and Others

DOI: 10.1056/NEJMoa2107519 | June 25, 2021

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A.H. Ropper and J.P. Klein

N Engl J Med 2021;385:59-64

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R. Humphries and M. Cameron

N Engl J Med 2021;385:65

Perivalvular Abscess Causing Coronary-Artery Compression

D.L. Varela and T.L. Jones

N Engl J Med 2021;385:e3 | Published Online June 26, 2021

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L. Pischel and Others

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N Engl J Med 2021;385:74-75 | Published Online June 16, 2021

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B. Jabri

N Engl J Med 2021;385:76-77

Audio Interview: Another New Covid-19 Vaccine

E.J. Rubin, L.R. Baden, and S. Morrissey

N Engl J Med 2021;385:e13

Breaking New Ground with Incretin Therapy in Diabetes

K.R. Tuttle

DOI: 10.1056/NEJMe2109957 | June 25, 2021

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N Engl J Med 2021;385:78-86

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The Placenta — Fast, Loose, and in Control

J.F. Costello and S.J. Fisher

N Engl J Med 2021;385:87-89

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SARS-CoV-2 Antibody Response in Persons with Past Natural Infection

Published Online April 14, 2021

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Effectiveness of an Inactivated SARS-CoV-2 Vaccine in Chile

A. Jara and Others

DOI: [10.1056/NEJMoa2107715](https://doi.org/10.1056/NEJMoa2107715) | July 7, 2021

Therapeutic Plasma Exchange in Vaccine-Induced Immune Thrombotic Thrombocytopenia

C.J. Patriquin and Others

DOI: [10.1056/NEJMc2109465](https://doi.org/10.1056/NEJMc2109465) | July 7, 2021

Infection and Vaccine-Induced Neutralizing-Antibody Responses to the SARS-CoV-2 B.1.617 Variants

V.-V. Edara and Others

DOI: [10.1056/NEJMc2107799](https://doi.org/10.1056/NEJMc2107799) | July 7, 2021

Breakthrough SARS-CoV-2 Infections in Prison after Vaccination

L. Brinkley-Rubinstein and Others

DOI: [10.1056/NEJMc2108479](https://doi.org/10.1056/NEJMc2108479) | July 7, 2021

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Addressing Vaccine Hesitancy in BIPOC Communities — Toward Trustworthiness, Partnership, and Reciprocity

S.C. Quinn and M.P. Andrasik

N Engl J Med 2021;385:97-100 | Published Online March 31, 2021

Beyond the First Dose — Covid-19 Vaccine Follow-through and Continued

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J.L. Goldfarb, S. Kreps, J.S. Brownstein, and D.L. Kriner
N Engl J Med 2021;385:101-103 | Published Online April 28, 2021

History of Medicine: The CT Scan after 50 years — Continuity and Change

J.D. Howell
N Engl J Med 2021;385:104-105 | Published Online July 3, 2021

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Randomized Trial of Fetal Surgery for Severe Left Diaphragmatic Hernia

J.A. Deprest and Others
N Engl J Med 2021;385:107-118 | Published Online June 8, 2021

Randomized Trial of Fetal Surgery for Moderate Left Diaphragmatic Hernia

J.A. Deprest and Others
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Bimekizumab versus Adalimumab in Plaque Psoriasis

R.B. Warren and Others
N Engl J Med 2021;385:130-141 | Published Online April 23, 2021

Bimekizumab versus Secukinumab in Plaque Psoriasis

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Audio Interview: How Well Are Covid-19 Vaccines Working?

E.J. Rubin, L.R. Baden, and S. Morrissey

N Engl J Med 2021;385:e15

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N Engl J Med 2021;385:179-186 | Published Online June 23, 2021

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Effectiveness of the BNT162b2 Covid-19 Vaccine against the B.1.1.7 and B.1.351 Variants

Published Online May 5, 2021

PTH Infusion for Seizures in Autosomal Dominant Hypocalcemia Type 1

Moving beyond “Red Man Syndrome”

Semaglutide or Placebo for Nonalcoholic Steatohepatitis

Vaccine Breakthrough Infections with SARS-CoV-2 Variants

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More on SARS-CoV-2 Infection after Vaccination in Health Care Workers

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Bamlanivimab plus Etesevimab in Mild or Moderate Covid-19

M. Dougan and Others

DOI: 10.1056/NEJMoa2102685 | July 14, 2021

Durable Humoral and Cellular Immune Responses 8 Months after Ad26.COV2.S Vaccination

D.H. Barouch and Others

DOI: 10.1056/NEJMc2108829 | July 14, 2021

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J. Normark and Others

DOI: 10.1056/NEJMc2110716 | July 14, 2021

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N Engl J Med 2021;385:193-196 | Published Online July 10, 2021

Scaling Up Covid-19 Vaccination in Africa — Lessons from the HIV Pandemic

J.B. Nachega and Others

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Graphic Perspective: Medical Home

R. Montoya

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Neuroprosthesis for Decoding Speech in a Paralyzed Person with Anarthria

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R.W. Frenck, Jr., and Others

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M. Eklund and Others

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Infantile Hepatic Hemangiomas

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Efficacy of Single-Dose Ad26.COV2.S Vaccine against Covid-19

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Thrombotic Thrombocytopenia after ChAdOx1 nCoV-19 Vaccination

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Effectiveness of Covid-19 Vaccines against the B.1.617.2 (Delta) Variant

J. Lopez Bernal and Others

DOI: 10.1056/NEJMoa2108891 | July 21, 2021

Vaccine Effectiveness Studies in the Field

S.J.W. Evans and N.P. Jewell

DOI: 10.1056/NEJMe2110605 | July 21, 2021

Household Transmission of SARS-CoV-2 from Children and Adolescents

V.T. Chu and Others

DOI: 10.1056/NEJMc2031915 | July 21, 2021

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SARS-CoV-2 Human Challenge Studies — Establishing the Model during an Evolving Pandemic

G. Rapeport and Others

DOI: 10.1056/NEJMp2106970 | July 21, 2021

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L.E. Marcil, K.G. Barnett, and B. Zuckerman

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S. Mangione and M.L. Tykocinski

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One Hundred Years of Insulin for Some

A. Moran-Thomas

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Trial of Pimavanserin in Dementia-Related Psychosis

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Dolutegravir or Darunavir in Combination with Zidovudine or Tenofovir to Treat HIV

N.I. Paton and Others

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Abelacimab for Prevention of Venous Thromboembolism

P. Verhamme and Others

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N.E. Morden, D. Chyn, A. Wood, and E. Meara
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Substance Use among Men Who Have Sex with Men

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Acute Febrile Neutrophilic Dermatitis

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N Engl J Med 2021;385:e14 | Published Online July 17, 2021

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Case 22-2021: A 64-Year-Old Woman with Cognitive Impairment, Headache, and Memory Loss

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E.J. Rubin, L.R. Baden, K.A. Armstrong, and S. Morrissey

N Engl J Med 2021;385:e21

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Covid-19 Vaccine Acceptance in California State Prisons

Published Online May 12, 2021

PF4 Immunoassays in Vaccine-Induced Thrombotic Thrombocytopenia

Published Online May 19, 2021

Glycemic Index, Glycemic Load, and Cardiovascular Disease and Mortality

Vestibular Schwannomas

Atrial Fibrillation

ChAdOx1 nCoV-19 Vaccine Efficacy against the B.1.351 Variant

DOI: 10.1056/NEJMc2110093 | July 21, 2021



The NEW ENGLAND JOURNAL of MEDICINE

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CLINICAL DECISIONS

Anticoagulation after Ablation for Atrial Fibrillation

S.R. Kadire, S.M. Al-Khatib, and H. Calkins | N Engl J Med 2021;385:466-468

This interactive feature about management of atrial fibrillation offers a case vignette accompanied by two essays supporting different approaches to the use of anticoagulants after ablation for atrial fibrillation.



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M. Gnant and Others

N Engl J Med 2021;385:395-405

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B.L. Hughes and Others
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G.C. Alexander and Others
DOI: 10.1056/NEJMp2110468 | July 28, 2021

Controversy and Progress in Alzheimer's Disease — FDA Approval of Aducanumab

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DOI: 10.1056/NEJMp2111320 | July 28, 2021

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N.P. Morris
N Engl J Med 2021;385:385-387 | Published Online July 24, 2021

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N Engl J Med 2021;385:391-393 | Published Online July 24, 2021

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An Icteric Tongue

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N Engl J Med 2021;385:e17

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Published Online May 12, 2021

Incident SARS-CoV-2 Infection among mRNA-Vaccinated and Unvaccinated Nursing Home Residents

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Insights into Glomerular Filtration and Albuminuria

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