

***NATIONAL INSTITUTE OF OCCUPATIONAL HEALTH
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April, 2020

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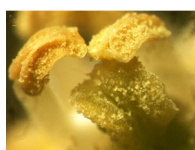
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NUMBER 04

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CODEN: IJEB (A6) 58(04) 231-292 (2020)

ISSN: 0019-5189 (Print); 0975-1009 (Online)

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Journal of Occupational and Environmental Medicine

April 2020 - Volume 62 - Issue 4

Editor's Picks for April

An Approach to Hazardous Medication Surveillance

Breeher, Laura E.; Stonelake-French, Heather L.

Journal of Occupational and Environmental Medicine. 62(4):260-262, April 2020.

Air Pollution, Physical Activity, and Cardiovascular Function of Patients With Implanted Cardioverter Defibrillators: A Randomized Controlled Trial of Indoor Versus Outdoor Activity

Liu, Ling; Urch, Bruce; Nanthakumar, Kumaraswamy; More

Journal of Occupational and Environmental Medicine. 62(4):263-271, April 2020.

Evaluation of Interventions to Reduce Firefighter Exposures

Burgess, Jefferey L.; Hoppe-Jones, Christiane; Griffin, Stephanie C.; More

Journal of Occupational and Environmental Medicine. 62(4):279-288, April 2020.

Featured Supplement (s)

December 2019 - Volume 61 - Supplement 12

Deployment Exposures, Biomarkers, and Risk of Adverse Health Outcomes Guest Editors: Timothy M. Mallon, MD, MPH and Joel C. Gaydos, MD, MPH

Published December 2019

Current Issue Highlights

ORIGINAL ARTICLES

	Range	% / Mean (SD)
Survey year: 2003	0/1	30.7%
Survey year: 2008	0/1	32.5%
Survey year: 2013	0/1	36.8%
Age	17-65	44.11 (11.06)
Male	0/1	47.3%
Female	0/1	52.7%
Basic education	0/1	13.3%
Secondary education	0/1	42.7%
High education	0/1	44.0%
Living with a spouse and dependent children	0/1	36.6%
Living with a spouse without dependent children	0/1	36.4%
Living without a spouse, but with dependent children	0/1	4.0%
Living without a spouse and dependent children	0/1	20.0%
Duration of employment	1-50	12.18 (10.3)
Manager	0/1	4.3%
Specialist	0/1	23.0%
Expert	0/1	19.1%
Employee	0/1	51.6%
Supervisory position	0/1	48.2%
No supervisory position	0/1	51.8%
Fixed contract	0/1	93.8%
Temporary contract	0/1	6.2%
Public sector	0/1	38.1%
Private sector	0/1	61.9%

Note: Range indicates the minimum and maximum response options, but for age and duration of employment the range represents minimum and maximum observed values.
SD: standard deviation

Bending Work Time: Curvilinear Relationship Between Working Time Dimensions and Psychological and Somatic Symptoms

Tanskanen, Jussi

Journal of Occupational and Environmental Medicine. 62(4):253-259, April 2020.

An Approach to Hazardous Medication Surveillance

Breeher, Laura E.; Stonelake-French, Heather L.

Journal of Occupational and Environmental Medicine. 62(4):260-262, April 2020.

FAST TRACK ARTICLE

System	Blood Test
Endocrine	Fasting glucose and hemoglobin A1C
Infectious disorders	Syphilis (Treponema pallidum IgG/Ab), Lyme (R. burgdorferi)
Nutritional	B12, methylmalonic acid, folate
Autoimmune disorders	Antinuclear antibody, antibodies to deamidated gliadin peptide (associated with celiac disease)
Hematologic	SPEP with immunofixation
Inflammatory markers	C-reactive protein
Toxic exposures	Blood lead concentration

SPEP: serum protein electrophoresis

Case-Control Study of Paresthesia Among World Trade Center-Exposed Community Members

Marmor, Michael; Thawani, Sujata; Cotrina, Maria Luisa; More

Journal of Occupational and Environmental Medicine. 62(4):307-316, April 2020.

Interrupting Sedentary Time in the Workplace Using Regular Short Activity Breaks: Practicality From an Employee Perspective

Hargreaves, Elaine Anne; Hayr, Kirsty Therese; Jenkins, Matthew; More

Journal of Occupational and Environmental Medicine. 62(4):317-324, April 2020.

JOEM Updates and Thank-You to the 2019 Reviewers

Brandt-Rauf, Paul W.; Yuhasz, Stacieann C.

Journal of Occupational and Environmental Medicine. 62(4):e167-e169, April 2020.

LETTERS TO THE EDITOR

Letter to the Editor: Re Fordyce et al. (2019) Vermont Talc Miners and Millers Cohort Study Update

Finkelstein, Murray M.

Journal of Occupational and Environmental Medicine. 62(4):e170-e171, April 2020.

Letter to the Editor: Response to Finkelstein Re: .

Fordyce, Tiffani Ann; Leonhard, Megan J.; Mowat, Fionna; More

Journal of Occupational and Environmental Medicine. 62(4):e172-e173, April 2020.

Nature

Volume 580 Issue 7801, 2 April 2020

This Week

Editorial

- Editorial | 01 April 2020

[Researchers: show world leaders how to behave in a crisis](#)

Scientists are teaming up to fight COVID-19. Presidents and prime ministers should, too.

- Editorial | 31 March 2020

[We need more researchers in Women's History Month](#)

This year's event was derailed by the COVID-19 pandemic. Next year, we need to hear about more scientists, clinicians and engineers.

Research

News & Views

- News & Views | 01 April 2020

[Strong chemical reducing agents produced by light](#)

An electrically neutral radical has been found to be a potent chemical reducing agent when excited by light. Remarkably, it is produced from a positively charged precursor that has long been used as a strong excited-state oxidizing agent.

- Radek Cibulka

- News & Views | 01 April 2020

[The clock that controls spine development modelled in a dish](#)

Visualization of the rhythmic oscillations of the mouse and human segmentation clocks, which are crucial to spine development, is now possible thanks to the development of sophisticated cell-culture systems.

- Adelaida Palla & Helen Blau

- News & Views | 18 March 2020

[Predators on track for ocean protection around Antarctica](#)

Satellite tracking of marine predators in the Southern Ocean has revealed key ecological areas under disproportionate pressure from human activities. These results show the value of tracking data for informing conservation efforts.

- Ana M. M. Sequeira

- News & Views | 18 March 2020

[Ghostly metabolic messages from dying cells](#)

Cell death by a process called apoptosis inhibits inflammation in surrounding tissue. The finding that dying apoptotic cells release a tailored cocktail of metabolite molecules reveals a way in which they influence their living neighbours.

- Douglas R. Green

- News & Views | 01 April 2020

[Mirror symmetry broken for nuclear ground states](#)

The principle of mirror symmetry, which states that nuclear structure remains the same when protons are swapped for neutrons and vice versa, has been found to be broken in the lowest-energy forms of a mirror pair of nuclei.

- Bertram Blank

Reviews

- Review Article | 01 April 2020

[Rebuilding marine life](#)

Analyses of the recovery of marine populations, habitats and ecosystems following past conservation interventions indicate that substantial recovery of the abundance, structure and function of marine life could be achieved by 2050 if major pressures, including climate change, are mitigated.

- Carlos M. Duarte, Susana Agusti & Boris Worm

Articles

- Article | 01 April 2020

[Mirror-symmetry violation in bound nuclear ground states](#)

Observations of the decay of ^{73}Sr , when compared to its mirror nucleus ^{73}Br , indicate that the spin assignment of their ground states differ, demonstrating mirror-symmetry violation.

- D. E. M. Hoff, A. M. Rogers & S. Waniganeththi

- Article | 23 March 2020
[Spin-cooling of the motion of a trapped diamond](#)
Coupling the spins of many nitrogen–vacancy centres in a trapped diamond to its orientation produces a spin-dependent torque and spin-cooling of the motion of the diamond.
 - T. Delord, P. Huillery & G. Hétet
- Article | 23 March 2020
[Experimental demonstration of memory-enhanced quantum communication](#)
A solid-state spin memory is used to demonstrate quantum repeater functionality, which has the potential to overcome photon losses involved in long-distance transmission of quantum information.
 - M. K. Bhaskar, R. Riedinger & M. D. Lukin
- Article | 01 April 2020
[Imaging the energy gap modulations of the cuprate pair-density-wave state](#)
Using a spectroscopic technique based on scanning tunnelling microscopy, the superconducting energy gap modulations in a copper oxide are visualized, demonstrating that a pair-density-wave state coexists with superconductivity.
 - Zengyi Du, Hui Li & Kazuhiro Fujita
- Article | 01 April 2020
[A map of the amine–carboxylic acid coupling system](#)
All possible chemical transformations between amine and carboxylic acid groups are mapped using an automated string-based combinatorics method, showing that the properties and functions of the products vary considerably over all plausible reactions.
 - Babak Mahjour, Yuning Shen & Tim Cernak
- Article | 01 April 2020
[Discovery and characterization of an acridine radical photoreductant](#)
Photoexcited acridine radical catalysts are found to have redox potentials more reducing than lithium, which is attributed to the population of higher-energy doublet excited states via a twisted intramolecular charge-transfer species.
 - Ian A. MacKenzie, Leifeng Wang & David A. Nicewicz

- Article | 01 April 2020
[Temperate rainforests near the South Pole during peak Cretaceous warmth](#)
 Multi-proxy core data and model simulations support the presence of temperate rainforests near the South Pole during mid-Cretaceous warmth, indicating very high CO₂ levels and the absence of Antarctic ice.
 - Johann P. Klages, Ulrich Salzmann & M. Scheinert

- Article | 18 March 2020
[Tracking of marine predators to protect Southern Ocean ecosystems](#)
 Tracking data from 17 marine predator species in the Southern Ocean are used to identify Areas of Ecological Significance, the protection of which could help to mitigate increasing pressures on Southern Ocean ecosystems.
 - Mark A. Hindell, Ryan R. Reisinger & Ben Raymond

- Article | 25 March 2020
[A genomic and epigenomic atlas of prostate cancer in Asian populations](#)
 Genomic, transcriptomic and DNA methylation data from tissue samples from 208 Chinese patients with prostate cancer define the landscape of alterations in this population, and comparison with data from Western cohorts suggests that the disease may stratify into different molecular subtypes.
 - Jing Li, Chuanliang Xu & Yinghao Sun

- Article | 18 March 2020
[Fundamental bounds on the fidelity of sensory cortical coding](#)
 A microscopy system that enables simultaneous recording from hundreds of neurons in the mouse visual cortex reveals that the brain enhances its coding capacity by representing visual inputs in dimensions perpendicular to correlated noise.
 - Oleg I. Rumyantsev, Jérôme A. Lecoq & Mark J. Schnitzer

- Article | 25 March 2020
[Centrosome anchoring regulates progenitor properties and cortical formation](#)
 CEP83-mediated anchoring of the centrosome to the apical membrane in radial glial progenitor cells regulates their mechanical properties and thereby influences the size and configuration of the mammalian cortex.
 - Wei Shao, Jiajun Yang & Song-Hai Shi

- Article | 08 January 2020
[In vitro characterization of the human segmentation clock](#)
 Human presomitic mesoderm cells derived in vitro demonstrate oscillations of the segmentation clock, thus providing a window into an otherwise inaccessible stage of human development.
 - Margarete Diaz-Cuadros, Daniel E. Wagner & Olivier Pourquié

- Article | 08 January 2020
[Coupling delay controls synchronized oscillation in the segmentation clock](#)
 Monitoring cells of the mouse presomitic mesoderm using the Achilles reporter fused to HES7 sheds light on the mechanisms that underpin synchronous oscillations in the expression of clock genes between neighbouring cells.
 - Kumiko Yoshioka-Kobayashi, Marina Matsumiya & Ryoichiro Kageyama

- Article | 01 April 2020
[Recapitulating the human segmentation clock with pluripotent stem cells](#)
 A system involving in vitro induction of presomitic mesoderm recapitulates oscillatory expression of core segmentation clock genes and travelling-wave-like gene expression, suggesting that this system can be used to study the human segmentation clock and provide insights into diseases associated with human axial skeletogenesis.
 - Mitsuhiro Matsuda, Yoshihiro Yamanaka & Cantas Alev

- Article | 18 March 2020
[Metabolites released from apoptotic cells act as tissue messengers](#)
 Apoptotic cells communicate with neighbouring cells by the regulated release of specific metabolites, and a cocktail of select apoptotic metabolites reduces disease severity in mouse models of inflammatory arthritis and lung transplant rejection.
 - Christopher B. Medina, Parul Mehrotra & Kodi S. Ravichandran

- Article | 11 March 2020
[CRISPR screens in cancer spheroids identify 3D growth-specific vulnerabilities](#)
 CRISPR screens in a 3D spheroid cancer model system more accurately recapitulate cancer phenotypes than existing 2D models and were used to identify carboxypeptidase D, acting via the IGF1R, as a 3D-specific driver of cancer growth.
 - Kyuho Han, Sarah E. Pierce & Michael C. Bassik

- Article | 25 March 2020
[Parental-to-embryo switch of chromosome organization in early embryogenesis](#)
Single-cell allelic HiC analysis, combined with allelic gene expression and chromatin states, reveals parent-of-origin-specific dynamics of chromosome organization and gene expression during mouse preimplantation development.
 - Samuel Collombet, Noémie Ranisavljevic & Edith Heard
- Article | 11 March 2020
[U1 snRNP regulates chromatin retention of noncoding RNAs](#)
Long noncoding RNAs and certain unstable transcripts tend to localize to chromatin, in a process that is shown here to depend on an RNA motif that recognizes the small nuclear ribonuclear protein U1, and to rely on transcription.
 - Yafei Yin, J. Yuyang Lu & Xiaohua Shen

Volume 580 Issue 7802, 9 April 2020

This Week

Editorial

Editorial | 07 April 2020

[Stop the coronavirus stigma now](#)

The pandemic is fuelling deplorable racism and discrimination, especially against Asian people. Education and research will also pay the price.

Research

News & Views

- News & Views | 18 March 2020
[A zinc-sensing protein gives flies a gut feeling for growth](#)
A zinc-sensing ion channel, Hodor, has now been found in the intestine of fruit flies. Hodor activates the TORC1 signalling pathway, and in doing so, influences organism-wide growth and metabolism.
 - Y. Rose Citron & Roberto Zoncu

- News & Views | 08 April 2020
[Nanostructured alloys light the way to silicon-based photonics](#)
 Silicon used for electronics has a cubic crystal lattice, which makes the material unsuitable for photonics applications. A method for producing germanium and silicon–germanium alloys that have hexagonal lattices offers a solution.
 - Anna Fontcuberta i Morral

- News & Views | 30 March 2020
[How stress can cause a fever](#)
 Psychological stress can trigger physiological responses, including an increase in body temperature. A neural circuit that underlies this stress-induced heat response has been identified.
 - Dayu Lin

- News & Views | 08 April 2020
[Mature forest shows little increase in carbon uptake in a CO₂-enriched atmosphere](#)
 Will mature forests absorb enough carbon from the atmosphere to mitigate climate change as levels of carbon dioxide increase? An experiment in a eucalyptus forest provides fresh evidence.
 - Yiqi Luo & Shuli Niu

- News & Views | 25 March 2020
[AI tracks a beating heart's function over time](#)
 Clinicians use ultrasound videos of heartbeats to assess subtle changes in the heart's pumping function. A method that uses artificial intelligence might simplify these complex assessments when heartbeats are out of rhythm.
 - Partho P. Sengupta & Donald A. Adjeroh

- News & Views | 23 March 2020
[A mutational signature that can be made by a bacterium arises in human colon cancer](#)
 Studies have pointed to a link between colon cancer and a gut bacterium that produces DNA-damaging molecules. The discovery of a mutational signature linked to these bacteria in human colon cancer supports this association.
 - Ye Yang & Christian Jobin

Articles

- Article | 08 April 2020

Collisional cooling of ultracold molecules

NaLi molecules are cooled to micro- and nanokelvin temperatures through collisions with ultracold Na atoms by using molecules and atoms in stretched hyperfine spin states and applying two evaporation stages.

- Hyungmok Son, Juliana J. Park & Alan O. Jamison

- Article | 30 March 2020

Control and single-shot readout of an ion embedded in a nanophotonic cavity

Single ytterbium ion qubits in nanophotonic cavities have long coherence times and can be optically read out in a single shot, establishing them as excellent candidates for optical quantum networks.

- Jonathan M. Kindem, Andrei Ruskuc & Andrei Faraon

- Article | 08 April 2020

Direct-bandgap emission from hexagonal Ge and SiGe alloys

A hexagonal (rather than cubic) alloy of silicon and germanium that has a direct (rather than indirect) bandgap emits light efficiently across a range of wavelengths, enabling electronic and optoelectronic functionalities to be combined on a single chip.

- Elham M. T. Fadaly, Alain Dijkstra & Erik P. A. M. Bakkers

- Article | 08 April 2020

Layered nanocomposites by shear-flow-induced alignment of nanosheets

Layered nanocomposites fabricated using a continuous and scalable process achieve properties exceeding those of natural nacre, the result of stiffened matrix polymer chains confined between highly aligned nanosheets.

- Chuangqi Zhao, Pengchao Zhang & Mingjie Liu

- Article | 08 April 2020

An engineered PET depolymerase to break down and recycle plastic bottles

Computer-aided engineering produces improvements to an enzyme that breaks down poly(ethylene terephthalate) (PET) into its constituent monomers, which are used to synthesize PET of near-petrochemical grade that can be further processed into bottles.

- V. Tournier, C. M. Topham & A. Marty

- Article | 17 February 2020

Copper-mediated synthesis of drug-like bicyclopentanes

A one-step, three-component radical coupling of [1.1.1]propellane by a photoredox reaction mediated by a copper catalyst produces drug-like bicyclopentanes.

- Xiaoheng Zhang, Russell T. Smith & David W. C. MacMillan
- Article | 08 April 2020
[The fate of carbon in a mature forest under carbon dioxide enrichment](#)
 Carbon dioxide enrichment of a mature forest resulted in the emission of the excess carbon back into the atmosphere via enhanced ecosystem respiration, suggesting that mature forests may be limited in their capacity to mitigate climate change.
- Mingkai Jiang, Belinda E. Medlyn & David S. Ellsworth
- Article | 25 March 2020
[Global conservation of species' niches](#)
 Protected areas would need to expand to 33.8% of the total land surface to adequately represent environmental conditions across the habitats of amphibians, birds and terrestrial mammals, far exceeding the current 17% target.
- Jeffrey O. Hanson, Jonathan R. Rhodes & Richard A. Fuller
- Article | 01 April 2020
[The dental proteome of *Homo antecessor*](#)
 Analyses of the proteomes of dental enamel from *Homo antecessor* and *Homo erectus* demonstrate that the Early Pleistocene *H. antecessor* is a close sister lineage of later *Homo sapiens*, Neanderthal and Denisovan populations in Eurasia.
- Frido Welker, Jazmín Ramos-Madrigal & Enrico Cappellini
- Article | 01 April 2020
[Local and global consequences of reward-evoked striatal dopamine release](#)
 Molecular and functional magnetic resonance imaging in the rat reveals distinct neuromodulatory effects of striatal dopamine that extend beyond peak release sites and activate remote neural populations necessary for performing motivated actions.
- Nan Li & Alan Jasanoff
- Article | 25 March 2020
[Integrating genomic features for non-invasive early lung cancer detection](#)
 Circulating tumour DNA in blood is analysed to identify genomic features that distinguish early-stage lung cancer patients from risk-matched controls, and these are integrated into a machine-learning method for blood-based lung cancer screening.
- Jacob J. Chabon, Emily G. Hamilton & Maximilian Diehn

- Article | 25 March 2020
[Video-based AI for beat-to-beat assessment of cardiac function](#)
 A video-based deep learning algorithm—EchoNet-Dynamic—accurately identifies subtle changes in ejection fraction and classifies heart failure with reduced ejection fraction using information from multiple cardiac cycles.
 - David Ouyang, Bryan He & James Y. Zou

- Article | 25 March 2020
[A conserved dendritic-cell regulatory program limits antitumour immunity](#)
 After taking up tumour-associated antigens, dendritic cells in mouse and human tumours upregulate a regulatory gene program that limits dendritic cell immunostimulatory function, and modulating this program can rescue antitumor immunity in mice.
 - Barbara Maier, Andrew M. Leader & Miriam Merad

- Article | 18 March 2020
[An intestinal zinc sensor regulates food intake and developmental growth](#)
 Hodor, an intestinal zinc-gated chloride channel, controls systemic growth in *Drosophila* by promoting food intake and by modulating Tor signalling and lysosomal homeostasis within enterocytes.
 - Siamak Redhai, Clare Pilgrim & Irene Miguel-Aliaga

- Article | 27 February 2020
[Mutational signature in colorectal cancer caused by genotoxic *pks*⁺ *E. coli*](#)
 Organoids derived from human intestinal cells that are co-cultured with bacteria carrying the genotoxic *pks*⁺ island develop a distinct mutational signature associated with colorectal cancer.
 - Cayetano Pleguezuelos-Manzano, Jens Puschhof & Hans Clevers

- Article | 01 April 2020
[A satellite repeat-derived piRNA controls embryonic development of *Aedes*](#)
 A conserved satellite repeat in the mosquito *Aedes aegypti* encodes PIWI-interacting RNAs that promote sequence-specific gene silencing in *trans* and have an essential role in embryonic development.
 - Rebecca Halbach, Pascal Miesen & Ronald P. van Rij

- Article | 11 March 2020
[DNA clamp function of the monoubiquitinated Fanconi anaemia ID complex](#)
 Cryo-EM structures of the FANCI–FANCD2 complex bound to DNA reveal that monoubiquitination triggers structural changes that enable the complex
 - David Ouyang, Bryan He & James Y. Zou

to function as a sliding DNA clamp and coordinate the repair of DNA interstrand crosslinks.

- Renjing Wang, Shengliu Wang & Nikola P. Pavletich

- Article | 12 February 2020
[Novel tau filament fold in corticobasal degeneration](#)
Cryo-electron microscopy of tau filaments from people with corticobasal degeneration reveals a previously unseen four-layered fold, distinct from the filament structures seen in Alzheimer's disease, Pick's disease and chronic traumatic encephalopathy.
- Wenjuan Zhang, Airi Tarutani & Sjors H. W. Scheres

- Article | 18 March 2020
[Ball-and-chain inactivation in a calcium-gated potassium channel](#)
Cryo-electron microscopy structures and molecular dynamics simulations of the calcium-activated potassium channel MthK from *Methanobacterium thermoautotrophicum* are used to show that gating of this channel involves a ball-and-chain inactivation mechanism mediated by a previously unresolved N-terminal peptide.
- Chen Fan, Nattakan Sukomon & Crina M. Nimigean

Volume 580 Issue 7803, 16 April 2020

This Week

Editorial

Editorial | 15 April 2020

[Neutrinos could shed light on why the Universe has so much more matter than antimatter](#)

A major finding in particle physics reminds us of the importance of robust preliminary results — and paves the way for more exciting discoveries.

Research

News & Views

- News & Views | 15 April 2020

Matter–antimatter symmetry violated

In a mirror world, antiparticles should behave in the same way as particles. But it emerges that leptons — neutrinos, electrons and their more exotic cousins — might not obey this expected pattern.

- Silvia Pascoli & Jessica Turner

- News & Views | 15 April 2020

Nitrogen variations in the mantle might have survived since Earth's formation

A method for identifying atmospheric contamination of volcanic-gas samples reveals variations in the isotopic composition of nitrogen in the mantle, and provides a clearer view of the origins of this element in Earth's interior.

- Rita Parai

- News & Views | 01 April 2020

A receptor that lets dementia-associated tau proteins into neurons

In many neurodegenerative disorders, the spread of protein aggregates underlies disease progression in the brain. A receptor molecule has now been found that mediates the neuronal uptake of one such harmful protein.

- Katrin Deinhardt

Articles

- Article | 15 April 2020

Constraint on the matter–antimatter symmetry-violating phase in neutrino oscillations

The T2K experiment constrains CP symmetry in neutrino oscillations, excluding 46% of possible values of the CP violating parameter at a significance of three standard deviations; this is an important milestone to test CP symmetry conservation in leptons and whether the Universe's matter–antimatter imbalance originates from leptons.

- K. Abe, R. Akutsu & A. Zykova

- Article | 15 April 2020

Submicrosecond entangling gate between trapped ions via Rydberg interaction

A quantum system combining the accuracy of trapped ions and the speed of Rydberg atoms is reported; the implemented fast gate is a step towards a scalable quantum computer.

- Chi Zhang, Fabian Pokorny & Markus Hennrich

- Article | 15 April 2020
[Operation of a silicon quantum processor unit cell above one kelvin](#)
 A scalable silicon quantum processor unit cell made of two qubits confined to quantum dots operates at about 1.5 K, achieving 98.6% single-qubit gate fidelities and a 2 μ s coherence time.
 - C. H. Yang, R. C. C. Leon & A. S. Dzurak

- Article | 15 April 2020
[Universal quantum logic in hot silicon qubits](#)
 Lithographically defined qubits are shown to support full two-qubit logic at temperatures above one kelvin by using electron spin states in silicon quantum dots.
 - L. Petit, H. G. J. Eenink & M. Veldhorst

- Article | 15 April 2020
[Performance-limiting nanoscale trap clusters at grain junctions in halide perovskites](#)
 Photoemission electron microscopy images of trap states in halide perovskites, spatially correlated with their structural and compositional factors, may help in managing power losses in optoelectronic applications.
 - Tiarnan A. S. Doherty, Andrew J. Winchester & Samuel D. Stranks

- Article | 15 April 2020
[Hydrothermal \$^{15}\text{N}^{15}\text{N}\$ abundances constrain the origins of mantle nitrogen](#)
 A rare nitrogen isotopologue is used to detect contamination by air in volcanic gas effusions, and thereby derive the isotopic compositions of mantle endmembers.
 - J. Labidi, P. H. Barry & E. D. Young

- Article | 01 April 2020
[Dating the skull from Broken Hill, Zambia, and its position in human evolution](#)
 Analyses of the hominin skull from Broken Hill, Zambia, place it at an earlier date than previously thought, confirming that later Middle Pleistocene Africa was home to at least three lineages of hominin.
 - Rainer Grün, Alistair Pike & Chris Stringer

- Article | 08 April 2020
[A neural circuit mechanism for mechanosensory feedback control of ingestion](#)
 A population of neurons in the parabrachial nucleus that expresses prodynorphin monitors ingestion using mechanosensory signals from the upper digestive tract, and mediates negative feedback control of intake when the digestive tract is distended.
 - Rainer Grün, Alistair Pike & Chris Stringer

- Dong-Yoon Kim, Gyuryang Heo & Sung-Yon Kim
- Article | 01 April 2020
[LRP1 is a master regulator of tau uptake and spread](#)
Low-density lipoprotein receptor-related protein 1 (LRP1) is shown to be a critical determinant of tau propagation in the brain.
- Jennifer N. Rauch, Gabriel Luna & Kenneth S. Kosik
- Article | 25 March 2020
[Gut stem cell necroptosis by genome instability triggers bowel inflammation](#)
In mouse models of bowel inflammation, depletion of the SETDB1 histone methyltransferase leads to genome instability, which releases repression of endogenous retroviruses that triggers ZBP1-dependent necroptosis and inflammation in gut.
- Ruicong Wang, Hongda Li & Wei Mo
- Article | 25 March 2020
[Z-nucleic-acid sensing triggers ZBP1-dependent necroptosis and inflammation](#)
Analyses of mouse models of inflammation suggest some chronic inflammatory conditions may result from Z-DNA-binding protein 1 sensing endogenous Z-form nucleic acids—such as those of endogenous retroelements—through its Z α domains.
- Huipeng Jiao, Laurens Wachsmuth & Manolis Pasparakis
- Article | 01 April 2020
[Germline Elongator mutations in Sonic Hedgehog medulloblastoma](#)
Germline mutations in the Elongator complex gene *ELP1* predispose individuals to the development of childhood medulloblastoma.
- Sebastian M. Waszak, Giles W, Robinson & Stefan M. Pfister
- Article | 08 April 2020
[A reference map of the human binary protein interactome](#)
A human binary protein interactome map that includes around 53,000 protein–protein interactions involving more than 8,000 proteins provides a reference for the study of human cellular function in health and disease.
- Katja Luck, Dae-Kyum Kim & Michael A. Calderwood

- Article | 25 March 2020
[A mycobacterial ABC transporter mediates the uptake of hydrophilic compounds](#)
Analysis of cryo-electron microscopy structures of the *Mycobacterium tuberculosis* ABC transporter Rv1819c suggests that it is a multi-solute transporter for hydrophilic molecules.
 - S. Rempel, C. Gati & D. J. Slotboom
- Article | 25 March 2020
[The ABC exporter IrtAB imports and reduces mycobacterial siderophores](#)
The mycobacterial ABC transporter IrtAB functions as a siderophore importer despite exhibiting an exporter fold in its structure, and contains a siderophore interaction domain capable of siderophore reduction and iron release inside the cell.
 - Fabian M. Arnold, Miriam S. Weber & Markus A. Seeger

Volume 580 Issue 7804, 23 April 2020

This Week

Editorial

Editorial | 17 April 2020

[Withholding funding from the World Health Organization is wrong and dangerous, and must be reversed](#)

Researchers everywhere must continue to press their lawmakers to act now and challenge US President Donald Trump's undermining of the global health agency.

Research

News & Views

- News & Views | 22 April 2020

When it rains, lava pours

Early 2018 saw unusually heavy rainfall in Hawaii. Modelling now suggests that groundwater pressure increased owing to rainfall: this might have triggered changes in the eruption of the island's Kīlauea volcano.

- Michael Manga

- News & Views | 22 April 2020

Electric control of a spin current has potential for low-power computing

The development of low-power methods for controlling a property of electrons known as spin could help to maintain the historic rates of progress that are occurring in computational power. Just such a method has now been reported.

- Stefano Gariglio

- News & Views | 08 April 2020

The pace of biodiversity change in a warming climate

The timing of disruptions to biodiversity associated with global warming is a key, but little-explored, dimension of change. Will losses in biodiversity occur all at once, or be spread out over time?

- Jennifer M. Sunday

- News & Views | 15 April 2020

Evolutionary trees can't reveal speciation and extinction rates

Evolutionary-tree diagrams, which show the branching relationships between species, are widely used to estimate the rates at which new species arise and existing ones become extinct. New work casts doubt on this approach.

- Mark Pagel

Articles

- Article | 22 April 2020

The wide-binary origin of (2014) MU₆₉-like Kuiper belt contact binaries

The high obliquity and low rotation period of the Kuiper belt object (2014) MU₆₉ and other similar contact binaries is successfully reproduced from the collision and post-collision characteristics of initially wide binaries.

- Evgeni Grishin, Uri Malamud & Christoph M. Schäfer

- Article | 22 April 2020

Observation of topologically enabled unidirectional guided resonances

Unidirectional radiation is achieved in a photonic crystal slab without the use of mirrors by merging a pair of topological defects carrying half-integer charges.

- Xuefan Yin, Jicheng Jin & Bo Zhen

- Article | 13 April 2020

Strongly correlated electrons and hybrid excitons in a moiré heterostructure

Optical spectroscopy is used to probe correlated electronic states in a moiré heterostructure, showing many-body effects such as strong layer paramagnetism and an incompressible Mott-like state of electrons.

- Yuya Shimazaki, Ido Schwartz & Ataç Imamoğlu

- Article | 22 April 2020

Enhanced ferroelectricity in ultrathin films grown directly on silicon

Enhanced switchable ferroelectric polarization is achieved in doped hafnium oxide films grown directly onto silicon using low-temperature atomic layer deposition, even at thicknesses of just one nanometre.

- Suraj S. Cheema, Daewoong Kwon & Sayeef Salahuddin

- Article | 22 April 2020

Non-volatile electric control of spin–charge conversion in a SrTiO₃ Rashba system

The polarization direction of a ferroelectric-like state can be used to control the conversion of spin currents into charge currents at the surface of strontium titanate, a non-magnetic oxide.

- Paul Noël, Felix Trier & Jean-Philippe Attané

- Article | 22 April 2020

Ionic solids from common colloids

Oppositely charged colloidal particles are assembled in water through an approach that allows electrostatic interactions to be precisely tuned to generate macroscopic single crystals.

- Theodore Hueckel, Glen M. Hocky & Stefano Sacanna

- Article | 22 April 2020

Extreme rainfall triggered the 2018 rift eruption at Kīlauea Volcano

Immediately before and during the eruption of Kīlauea Volcano in May 2018, anomalously high rainfall increased the pore pressure in the subsurface to its highest level in 50 years, causing weakening and mechanical failure of the edifice.

- Jamie I. Farquharson & Falk Amelung

- Article | 08 April 2020
[The projected timing of abrupt ecological disruption from climate change](#)
 Using annual projections of temperature and precipitation to estimate when species will be exposed to potentially harmful climate conditions reveals that disruption of ecological assemblages as a result of climate change will be abrupt and could start as early as the current decade.
 - Christopher H. Trisos, Cory Merow & Alex L. Pigot

- Article | 15 April 2020
[Extant timetrees are consistent with a myriad of diversification histories](#)
 An infinite number of alternative diversification scenarios—which may have markedly different, but equally plausible, dynamics—can underpin a given time-calibrated phylogeny of extant species, suggesting many previous studies have over-interpreted phylogenetic evidence.
 - Stilianos Louca & Matthew W. Pennell

- Article | 08 April 2020
[Accurate compound-specific ¹⁴C dating of archaeological pottery vessels](#)
 Using lipid residues absorbed in potsherds, the ages of pottery from various archaeological sites are determined and validated using sites for which the dates are well known from other methods.
 - Emmanuelle Casanova, Timothy D. J. Knowles & Richard P. Evershed

- Article | 15 April 2020
[The gut–brain axis mediates sugar preference](#)
 Experiments in mice show that a population of neurons in the vagal ganglia respond to the presence of glucose in the gut and connect to neurons in the brainstem, revealing the circuit that underlies the neural basis for the behavioural preference for sugar.
 - Hwei-Ee Tan, Alexander C. Sisti & Charles S. Zuker

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[Mechanisms and therapeutic implications of hypermutation in gliomas](#)
 Temozolomide therapy seems to lead to mismatch repair deficiency and hypermutation in gliomas, but not to an increase in response to immunotherapy.
 - Mehdi Touat, Yvonne Y. Li & Keith L. Ligon

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[Paracrine orchestration of intestinal tumorigenesis by a mesenchymal niche](#)
 Single-cell RNA-sequencing analysis of intestinal mesenchyme identified a population of fibroblasts that produce prostaglandin E₂, which, when disrupted, prevented initiation of intestinal tumours.
 - Manolis Roulis, Aimilios Kaklamanos & Richard A. Flavell

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[The gluconeogenic enzyme PCK1 phosphorylates INSIG1/2 for lipogenesis](#)
 Phosphorylation of INSIG1 and INSIG2 by PCK1 leads to a reduction in the binding of sterols, the activation of SREBP1 and SREBP2 and the downstream transcription of lipogenesis-associated genes that promote tumour growth.
 - Daqian Xu, Zheng Wang & Zhimin Lu

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[Securin-independent regulation of separase by checkpoint-induced shugoshin–MAD2](#)
 Shugoshin and MAD2 regulate separase-mediated chromosome separation during mitosis, in parallel to a previously identified mechanism involving the anaphase inhibitor securin.
 - Susanne Hellmuth, Laura Gómez-H & Olaf Stemmann

- Article | 08 April 2020
[Separase-triggered apoptosis enforces minimal length of mitosis](#)
 If early mitosis is too short, separase induces apoptosis by cleaving MCL2 and BCL-XL, thereby eliminating cells that are prone to chromosome missegregation.
 - Susanne Hellmuth & Olaf Stemmann

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- Editorial | 29 April 2020

[Show evidence that apps for COVID-19 contact-tracing are secure and effective](#)

Governments see coronavirus apps as key to releasing lockdowns. In exchange for people's health data, they must promise to work together to develop the highest standards of safety and efficacy.

- Editorial | 28 April 2020

[Too many children miss out on education — but better data can help](#)

A massive assessment of education shows that only 61% of children worldwide will complete secondary education.

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- News & Views | 15 April 2020

[**Tracking inequalities in education around the globe**](#)

Tools have been developed to project inequalities in education around the world to 2030. They reveal that overall inequality will decline, but that all world regions will fall short of achieving universal secondary education.

- Monica Grant

- News & Views | 29 April 2020

[**Manganese catalyst enables exploration of the magic methyl effect**](#)

The addition of a methyl group to a drug molecule can greatly alter the drug's pharmacological properties. A catalyst has been developed that enables this 'magic methyl effect' to be rapidly explored for drug discovery.

- Emily B. Corcoran & Danielle M. Schultz

- News & Views | 20 April 2020

[**Gut pain sensors help to combat infection**](#)

The mammalian gut must defend against a variety of infectious agents. Neurons, cells not usually thought of as first-responders during infection, are now found to aid the gut's barrier function and stop bacteria from spreading elsewhere.

- Romana R. Gerner & Manuela Raffatellu
- News & Views | 22 April 2020
A catalogue of cancer-driving mutations in healthy tissue
 A study of cancer-associated mutations in normal endometrial glands of the uterus has now been performed using whole-genome sequencing. The analysis sheds light on the early changes that lead to invasive disease.
- Victoria L. Bae-Jump & Douglas A. Levine

Articles

- Article | 11 March 2020
Nightside condensation of iron in an ultrahot giant exoplanet
 Absorption lines of iron in the dayside atmosphere of an ultrahot giant exoplanet disappear after travelling across the nightside, showing that the iron has condensed during its travel.
- David Ehrenreich, Christophe Lovis & Filippo Zerbi
- Article | 29 April 2020
Exploring dynamical phase transitions with cold atoms in an optical cavity
 Interactions between light and an ensemble of strontium atoms in an optical cavity can serve as a testbed for studying dynamical phase transitions, which are currently not well understood.
- Juan A. Muniz, Diego Barberena & James K. Thompson
- Article | 20 April 2020
Electrical manipulation of a topological antiferromagnetic state
 Room-temperature electrical switching of a topological antiferromagnetic state in polycrystalline Mn_3Sn thin films is demonstrated using the same protocol as that used for conventional ferromagnetic metals.
- Hanshen Tsai, Tomoya Higo & Satoru Nakatsuji
- Article | 29 April 2020
Two-dimensional halide perovskite lateral epitaxial heterostructures
 An epitaxial growth strategy that improves the stability of two-dimensional halide perovskites by inhibiting ion diffusion in their heterostructures using rigid π -conjugated ligands is demonstrated, and shows near-atomically sharp interfaces.
- Enzheng Shi, Biao Yuan & Letian Dou

- Article | 16 March 2020
Late-stage oxidative C(sp³)-H methylation
 A manganese-catalysed oxidative C(sp³)-H methylation method allows a methyl group to be selectively installed into medicinally important heterocycles, providing a way to improve pharmaceuticals and better understand the ‘magic methyl effect’.
- Kaibo Feng, Raundi E. Quevedo & M. Christina White

- Article | 29 April 2020
Months-long thousand-kilometre-scale wobbling before great subduction earthquakes
 Observed reversals in GNSS surface motions suggests greatly enhanced slab pull in the months preceding the great subduction earthquakes in Maule (Chile, 2010) and Tohoku-oki (Japan, 2011) of moment magnitudes 8.8 and 9.0.
- Jonathan R. Bedford, Marcos Moreno & Michael Bevis

- Article | 15 April 2020 | Open Access
Measuring and forecasting progress towards the education-related SDG targets
 Great progress toward the education-related SDG targets has been made; however, global estimates of within-country distributions of education reveal gender disparities and high levels of total inequality in many parts of the world.
- Joseph Friedman, Hunter York & Emmanuela Gakidou

- Article | 22 April 2020
The mutational landscape of normal human endometrial epithelium
 Whole-genome sequencing of normal human endometrial glands shows that most are clonal cell populations and frequently carry cancer driver mutations that occur early in life, and that parity has a protective effect.
- Luiza Moore, Daniel Leongamornlert & Michael R. Stratton

- Article | 08 April 2020
AIM2 inflammasome surveillance of DNA damage shapes neurodevelopment
 The sensing of DNA damage by the AIM2 inflammasome promotes the death of central nervous system cells and is required for normal brain development.
- Catherine R. Lammert, Elizabeth L. Frost & John R. Lukens

- Article | 08 April 2020
A plant genetic network for preventing dysbiosis in the phyllosphere
 Mutations in genes involved in immune signalling and vesicle trafficking cause defects in the leaf microbiome of *Arabidopsis thaliana* that result in damage to leaf tissues, suggesting mechanisms by which terrestrial plants control the level and diversity of endophytic phyllosphere microbiota.
 - Tao Chen, Kinya Nomura & Sheng Yang He

- Article | 15 April 2020
Action of a minimal contractile bactericidal nanomachine
 The authors report near-atomic resolution structures of the R-type bacteriocin from *Pseudomonas aeruginosa* in the pre-contraction and post-contraction states, and these structures provide insight into the mechanism of action of molecular syringes.
 - Peng Ge, Dean Scholl & Z. Hong Zhou

- Article | 09 March 2020
An open-source drug discovery platform enables ultra-large virtual screens
 VirtualFlow, an open-source drug discovery platform, enables the efficient preparation and virtual screening of ultra-large ligand libraries to identify molecules that bind with high affinity to target proteins.
 - Christoph Gorgulla, Andras Boeszoermyeni & Haribabu Arthanari

- Article | 22 April 2020
Nucleosome-bound SOX2 and SOX11 structures elucidate pioneer factor function
 Cryo-electron microscopy structures of the DNA-binding domains of the pioneer transcription factor SOX2 and its close homologue SOX11 elucidate the role of these factors in initiating chromatin opening and nucleosome remodelling.
 - Svetlana O. Dodonova, Fangjie Zhu & Patrick Cramer



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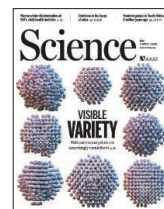
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A selection of three-dimensional (3D) atomic structures of platinum nanocrystals in solution. Transmission electron microscopy images of individual rotating nanocrystals were reconstructed to generate the 3D density maps. The resultant atomic structures represent the intrinsic structural heterogeneity of ligand-protected nanocrystals synthesized in a single batch. See page 60. *Illustration: Younghee Lee*

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SCIENCE (ISSN 0036-8075) is published weekly on Friday, except last week in December, by the American Association for the Advancement of Science, 1200 New York Avenue, NW, Washington, DC 20005. Periodicals mail postage (publication No. 484460) paid at Washington, DC, and additional mailing offices. Copyright © 2020 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership, including subscription (12 months): \$165 (\$74 allocated to subscription). Domestic institutional subscription (51 issues): \$2148; Foreign postage extra: Air assist delivery: \$98. First class, airmail, student, and emeritus rates on request. Canadian rates with GST available upon request. GST #R125488122. Publications Mail Agreement Number 1069624. Printed in the U.S.A.
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368 (6486)

Science **368** (6486), 7-98.

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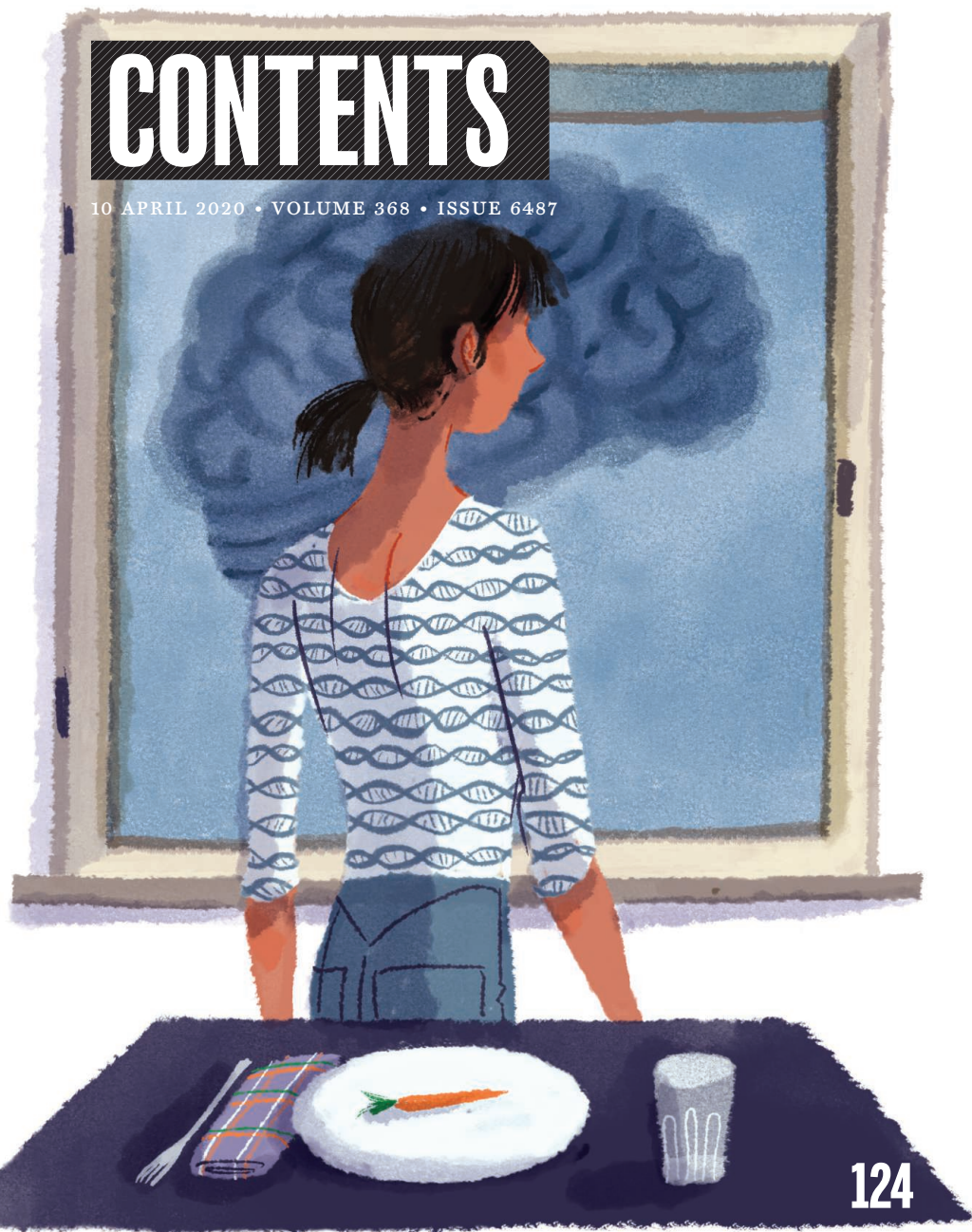
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Artist's impression of an anyon collider implemented in a two-dimensional conductor. When colliding on the beamsplitter (at center), fermions (gray) always exit in two different outputs whereas bosons (yellow) always bunch together in the same output. Anyons (orange) display an intermediate behavior, revealing that their fractional statistics interpolate between those of bosons and fermions. See pages 131 and 173. *Illustration: C. Bickel/Science*

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SCIENCE (ISSN 0036-8075) is published weekly on Friday, except last week in December, by the American Association for the Advancement of Science, 1200 New York Avenue, NW, Washington, DC 20005. Periodicals mail postage (publication No. 484460) paid at Washington, DC, and additional mailing offices. Copyright © 2020 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership, including subscription (12 months): \$165 (\$74 allocated to subscription). Domestic institutional subscription (51 issues): \$2148; Foreign postage extra: \$98. First class, airmail, student, and emeritus rates on request. Canadian rates with GST available upon request. GST #125488122. Publications Mail Agreement Number 1069624. Printed in the U.S.A.
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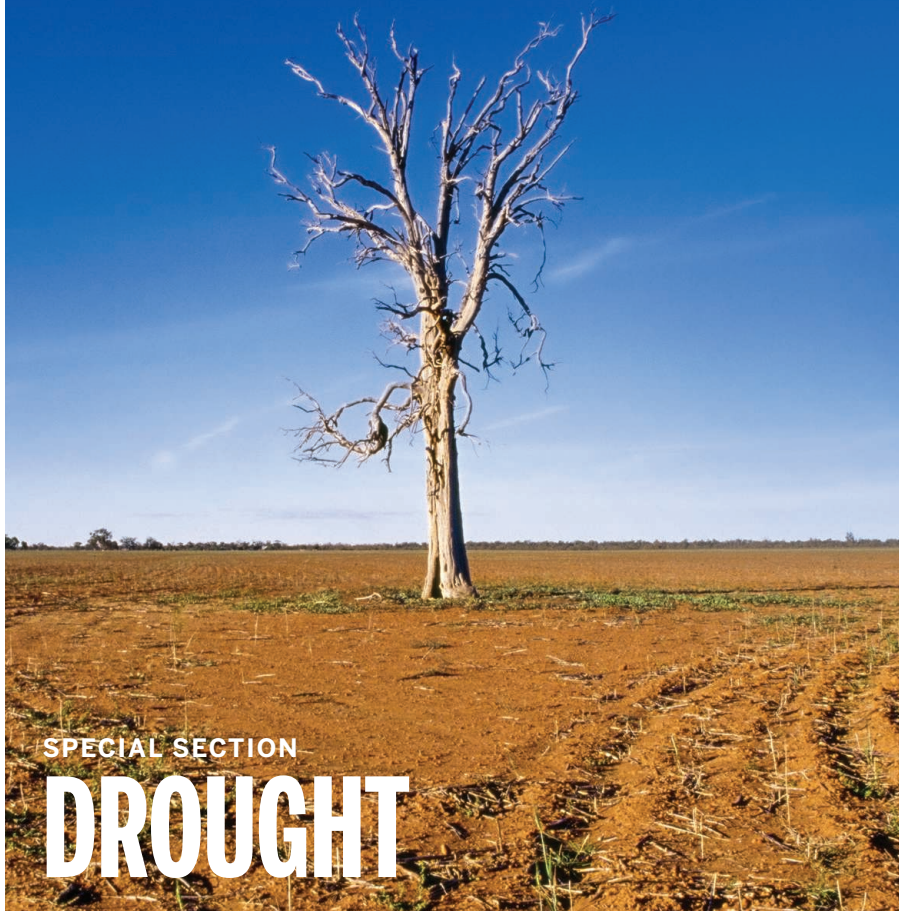
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Famines related to droughts can take a heavy toll. In 2011, dry conditions exacerbated hardships for some 430,000 refugees fleeing violence in Somalia. Here, Somali refugees seek aid in

a camp near Dadaab, Kenya. Scientists are using new monitoring tools to identify regions at risk of famine and help ward off hunger before it is too late. See page 254. Photo: *Jacky Ghossein/The Sydney Morning Herald/Fairfax Media via Getty Images*

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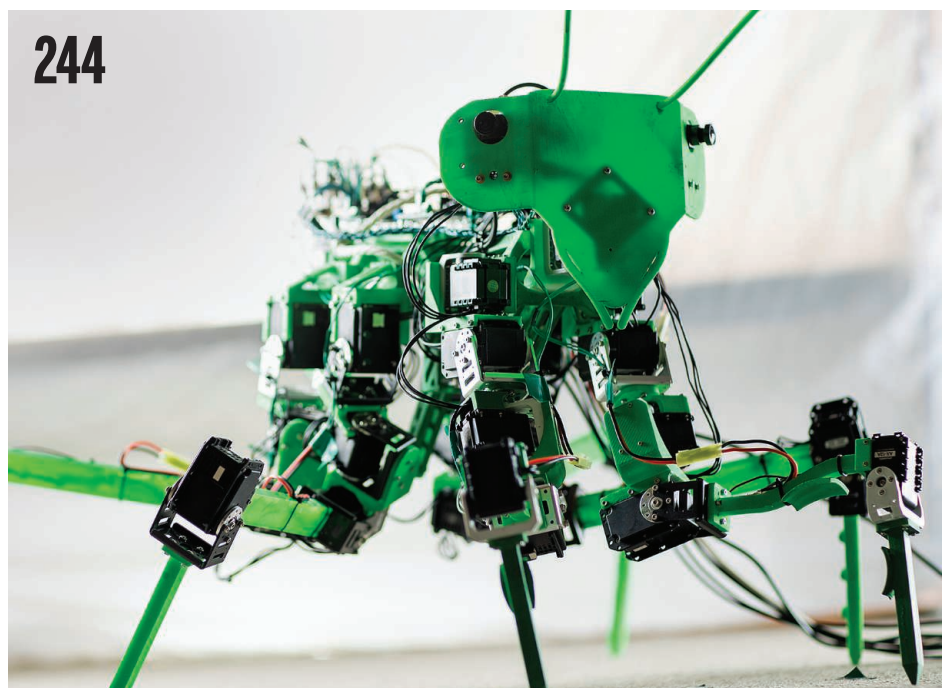


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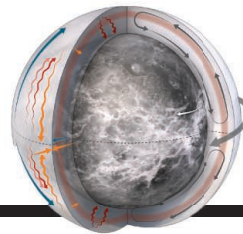
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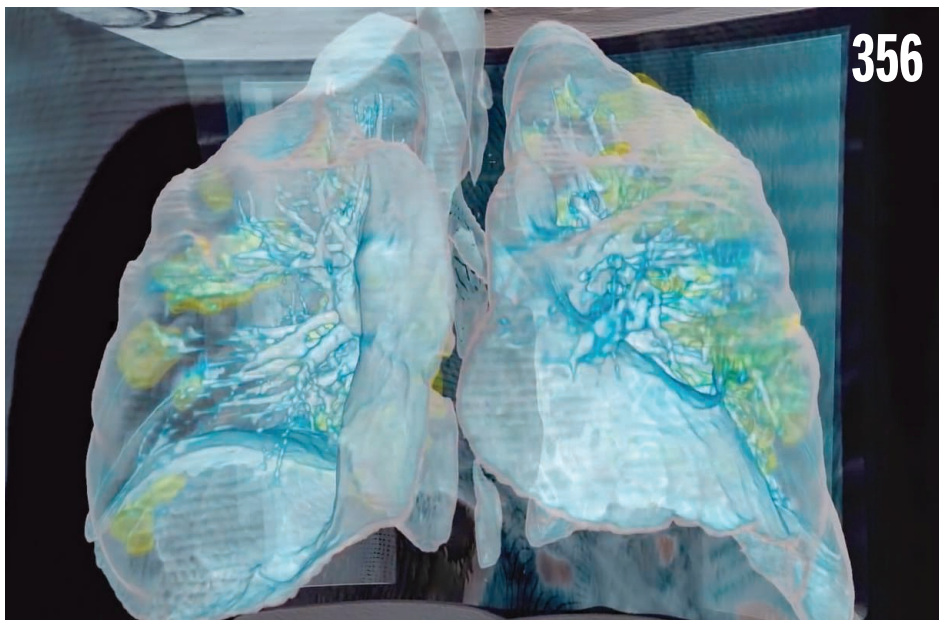
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A collection of insects from different orders, representing some of the diversity of species found in North America. A new synthesis of existing data indicates overall declines among terrestrial

insect assemblages but increases among freshwater assemblages. To accommodate as many orders as possible, insect sizes are not shown to scale. See pages 368 and 417.
Photo: David Liittschwager

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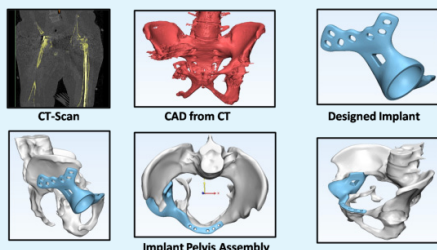
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[Medicine and meteorology: Cloud, connectivity, and care](#)

[Modelling can only tell us so much: politics explains the rest](#)

[The history of the RTS,S/AS01 malaria vaccine trial](#)



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[SARS-CoV-2 shedding and infectivity](#)

[SARS-CoV-2 shedding and infectivity – Authors' reply](#)

[The political nature of medicine](#)

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[Triple artemisinin-based combination therapies versus artemisinin-based combination therapies for uncomplicated Plasmodium falciparum malaria: a multicentre, open-label, randomised clinical trial](#)

[Open Access](#)

[Effectiveness of reactive focal mass drug administration and reactive focal vector control to reduce malaria transmission in the low malaria-endemic setting of Namibia: a cluster-randomised controlled, open-label, two-by-two factorial design trial](#)

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[Clopidogrel versus ticagrelor or prasugrel in patients aged 70 years or older with non-ST-elevation acute coronary syndrome \(POPular AGE\): the randomised, open-label, non-inferiority trial](#)

[First-wave COVID-19 transmissibility and severity in China outside Hubei after control measures, and second-wave scenario planning: a modelling impact assessment](#)

CLINICAL PICTURE

[Bilateral pseudohypopyon causing white eyes in a patient with lymphoma](#)

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[Control of malaria vectors and management of insecticide resistance through universal coverage with next-generation insecticide-treated nets](#)



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CASE CHALLENGE

A Man with Fever, Cough, and Dyspnea

A 24-year-old man had fever, cough, and dyspnea with rapid progression to respiratory failure. He had had multiple exposures, including a rodent bite, mosquito bites, an unattached tick, and e-cigarette use. What is the most likely diagnosis?

COVID-19

Ten Weeks to Crush the Curve

H.V. Fineberg

DOI: 10.1056/NEJMe2007263 | April 1, 2020

Covid-19 Cases: An Uncomplicated Delivery in a Patient with Covid-19 in the United States

S.N. Iqbal and Others

DOI: 10.1056/NEJMc2007605 | April 1, 2020

Detection of Covid-19 in Children in Early January 2020 in Wuhan, China

Published Online March 12, 2020

Universal Masking in Hospitals in the Covid-19 Era

M. Klompas and Others

DOI: 10.1056/NEJMp2006372 | April 1, 2020

Harnessing Our Humanity — How Washington’s Health Care Workers Have Risen to the Pandemic Challenge

L. Rosenbaum

DOI: 10.1056/NEJMp2007466 | April 1, 2020

Escaping Pandora’s Box — Another Novel Coronavirus

D.M. Morens, P. Daszak, and J.K. Taubenberger

N Engl J Med 2020;382:1293-1295 | Published Online February 26, 2020

Paying for Medicaid — State Budgets and the Case for Expansion in the Time of Coronavirus

J. Gruber and B.D. Sommers

DOI: 10.1056/NEJMp2007124 | March 31, 2020

Audio Interview: Lessons from Covid-19 Hotspots

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

N Engl J Med 2020;382:e35

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Medicare Part D and Insulin Affordability — The Devil Is in the Details

S.B. Dusetzina and Others

DOI: 10.1056/NEJMp1917065 | April 1, 2020

Stigma and the Toll of Addiction

N.D. Volkow

N Engl J Med 2020;382:1289-1290

Stigma Reduction to Combat the Addiction Crisis — Developing an Evidence Base

E.E. McGinty and C.L. Barry
N Engl J Med 2020;382:1291-1292



Waste, Worry, and the Seven Sins of Medicine

B.M. Reilly
N Engl J Med 2020;382:1295-1297

Interactive Perspective: Tuberculosis in 2020 — New Approaches to a Continuing Global Health Crisis

A. Zaheen and B.R. Bloom
N Engl J Med 2020;382:e26

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Timing of Endoscopy for Acute Upper Gastrointestinal Bleeding

J.Y.W. Lau and Others
N Engl J Med 2020;382:1299-1308

Multidrug-Resistant Bacterial Infections in U.S. Hospitalized Patients, 2012–2017

J.A. Jernigan and Others
N Engl J Med 2020;382:1309-1319

Trends in U.S. Burden of *Clostridioides difficile* Infection and Outcomes

A.Y. Guh and Others
N Engl J Med 2020;382:1320-1330

KTE-X19 CAR T-Cell Therapy in Relapsed or Refractory Mantle-Cell Lymphoma

M. Wang and Others

N Engl J Med 2020;382:1331-1342

A Randomized, Controlled Trial of Liraglutide for Adolescents with Obesity

A.S. Kelly and Others

DOI: 10.1056/NEJMoa1916038 | March 31, 2020

Initial Invasive or Conservative Strategy for Stable Coronary Disease

D.J. Maron and Others

DOI: 10.1056/NEJMoa1915922 | March 30, 2020

Health-Status Outcomes with Invasive or Conservative Care in Coronary Disease

J.A. Spertus and Others

DOI: 10.1056/NEJMoa1916370 | March 30, 2020

Management of Coronary Disease in Patients with Advanced Kidney Disease

S. Bangalore and Others

DOI: 10.1056/NEJMoa1915925 | March 30, 2020

Health Status after Invasive or Conservative Care in Coronary and Advanced Kidney Disease

J.A. Spertus and Others

DOI: 10.1056/NEJMoa1916374 | March 30, 2020

Apixaban for the Treatment of Venous Thromboembolism Associated with Cancer

G. Agnelli and Others

DOI: 10.1056/NEJMoa1915103 | March 29, 2020

Anticoagulation with or without Clopidogrel after Transcatheter Aortic-Valve Implantation

V.J. Nijenhuis and Others

DOI: 10.1056/NEJMoa1915152 | March 29, 2020

Rivaroxaban or Enoxaparin in Nonmajor Orthopedic Surgery

C.M. Samama and Others

DOI: 10.1056/NEJMoa1913808 | March 29, 2020

Vericiguat in Patients with Heart Failure and Reduced Ejection Fraction

P.W. Armstrong and Others

DOI: 10.1056/NEJMoa1915928 | March 28, 2020

Rivaroxaban in Peripheral Artery Disease after Revascularization

M.P. Bonaca and Others

DOI: 10.1056/NEJMoa2000052 | March 28, 2020

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J.E. Mitchell and C.B. Peterson

N Engl J Med 2020;382:1343-1351

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Orbital Hydatid Cyst

S.F. Assimakopoulos and M. Marangos

N Engl J Med 2020;382:1352

Advanced Mycosis Fungoides

H. Maredia and S. Rozati
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C. Iriarte and Others
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Antimicrobial Resistance — The Glass Is Half Full

F.C. Fang and R.T. Schooley
N Engl J Med 2020;382:1363-1365

Managing Stable Ischemic Heart Disease

E.M. Antman and E. Braunwald
DOI: 10.1056/NEJMe2000239 | March 30, 2020

Anticoagulant Therapy for Venous Thromboembolism in Cancer

A.Y.Y. Lee
DOI: 10.1056/NEJMe2004220 | March 29, 2020

How Un-POPular Is Bleeding in Patients with TAVI?

F. Feit

DOI: 10.1056/NEJMe2003031 | March 29, 2020

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Creating a Framework for Conducting Randomized Clinical Trials during Disease Outbreaks

N.E. Dean and Others

N Engl J Med 2020;382:1366-1369

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Acquisition of Antibiotic-Resistant Bacteria by U.S. International Travelers

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More on Venous Thrombosis during Spaceflight



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Y. Zhang and Others

DOI: 10.1056/NEJMc2007575 | April 8, 2020

SARS-CoV-2 Infection among Travelers Returning from Wuhan, China

Published Online March 12, 2020

Barrier Enclosure during Endotracheal Intubation

R. Canelli and Others

DOI: 10.1056/NEJMc2007589 | April 3, 2020

Covid-19 in South Korea — Challenges of Subclinical Manifestations

J.-Y. Song and Others

DOI: 10.1056/NEJMc2001801 | April 6, 2020

Covid-19 — The Law and Limits of Quarantine

W.E. Parmet and M.S. Sinha

N Engl J Med 2020;382:e28 | Published Online March 18, 2020

Flattening the Curve for Incarcerated Populations — Covid-19 in Jails and Prisons

M.J. Akiyama, A.C. Spaulding, and J.D. Rich

DOI: 10.1056/NEJMp2005687 | April 2, 2020

Covid-19 and Health Care’s Digital Revolution

S. Keesara, A. Jonas, and K. Schulman

DOI: 10.1056/NEJMp2005835 | April 2, 2020

Thinking Globally, Acting Locally — The U.S. Response to Covid-19

R.L. Haffajee and M.M. Mello

DOI: 10.1056/NEJMp2006740 | April 2, 2020

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M.M. Kittleson

DOI: 10.1056/NEJMp2006607 | April 2, 2020

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M.A. Lewis

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Age, Complexity, and Crisis — A Prescription for Progress in Pandemic

L. Aronson

DOI: 10.1056/NEJMp2006115 | April 7, 2020

Ensuring and Sustaining a Pandemic Workforce

E.P. Fraher and Others

DOI: 10.1056/NEJMp2006376 | April 8, 2020

“We Signed Up for This!” — Student and Trainee Responses to the Covid-19 Pandemic

T.H. Gallagher and A.M. Schleyer
DOI: 10.1056/NEJMp2005234 | April 8, 2020

Audio Interview: Emerging Tools in the Fight against Covid-19

E.J. Rubin, L.R. Baden, and S. Morrissey
N Engl J Med 2020;382:e39

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Standing Up against Gender Bias and Harassment — A Matter of Professional Ethics

M.M. Mello and R. Jagsi
N Engl J Med 2020;382:1385-1387

Hospital Mergers and Conscience-Based Objections — Growing Threats to Access and Quality of Care

I.D. Wolfe and T.M. Pope
N Engl J Med 2020;382:1388-1389

A New Era for Mind–Body Medicine

M.L. Dossett, G.L. Fricchione, and H. Benson
N Engl J Med 2020;382:1390-1391

Chart Warfare

N.P. Morris
N Engl J Med 2020;382:1392-1393

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Initial Invasive or Conservative Strategy for Stable Coronary

Disease

D.J. Maron and Others

N Engl J Med 2020;382:1395-1407 | Published Online March 30, 2020

Health-Status Outcomes with Invasive or Conservative Care in Coronary Disease

J.A. Spertus and Others

N Engl J Med 2020;382:1408-1419 | Published Online March 30, 2020

Physical Therapy versus Glucocorticoid Injection for Osteoarthritis of the Knee

G.D. Deyle and Others

N Engl J Med 2020;382:1420-1429

Selumetinib in Children with Inoperable Plexiform Neurofibromas

A.M. Gross and Others

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Alpha₁-Antitrypsin Deficiency

P. Strnad, N.G. McElvaney, and D.A. Lomas

N Engl J Med 2020;382:1443-1455

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Frey's Syndrome

A. Smith and N. Jonas

N Engl J Med 2020;382:1456

The Cowden Syndrome

S. Molière and C. Mathelin
N Engl J Med 2020;382:e29

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Case 11-2020: A 37-Year-Old Man with Facial Droop, Dysarthria, and Kidney Failure

J.S. Berns and Others
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Managing Stable Ischemic Heart Disease

E.M. Antman and E. Braunwald
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Physical Therapy before the Needle for Osteoarthritis of the Knee

K.L. Bennell and D.J. Hunter
N Engl J Med 2020;382:1470-1471

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Balancing the Effect of Leukotrienes in Asthma

C. Godson
N Engl J Med 2020;382:1472-1475

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Consequences of Abrupt Cessation of Alpha₁-Antitrypsin

Replacement Therapy

LDL Cholesterol Targets after Ischemic Stroke

Care of Transgender Persons



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DOI: 10.1056/NEJMc2010472 | April 15, 2020

Covid-19 Cases: An Uncomplicated Delivery in a Patient with Covid-19 in the United States

Published Online April 1, 2020

Covid-19 Notes: From a Sprint to a Marathon in Hong Kong

G.M. Leung, B.J. Cowling, and J.T. Wu

DOI: 10.1056/NEJMc2009790 | April 15, 2020

Covid-19 Notes: Staying Ahead of the Wave

A.J. Singer, E.J. Morley, and M.C. Henry

DOI: 10.1056/NEJMc2009409 | April 13, 2020

Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1

Published Online March 17, 2020

Death from Covid-19 of 23 Health Care Workers in China

M. Zhan and Others

DOI: 10.1056/NEJMc2005696 | April 15, 2020

Visualizing Speech-Generated Oral Fluid Droplets with Laser Light Scattering

P. Anfinrud and Others

DOI: 10.1056/NEJMc2007800 | April 15, 2020

Droplets and Aerosols in the Transmission of SARS-CoV-2

M. Meselson

DOI: 10.1056/NEJMc2009324 | April 15, 2020

Neurologic Features in Severe SARS-CoV-2 Infection

J. Helms and Others

DOI: 10.1056/NEJMc2008597 | April 15, 2020

Universal Screening for SARS-CoV-2 in Women Admitted for Delivery

D. Sutton and Others

DOI: 10.1056/NEJMc2009316 | April 13, 2020

Not a Perfect Storm — Covid-19 and the Importance of Language

A.M. Brandt and A. Botelho
N Engl J Med 2020;382:1493-1495

Mental Health and the Covid-19 Pandemic

B. Pfefferbaum and C.S. North
DOI: 10.1056/NEJMp2008017 | April 13, 2020

Waiting

E.J. Rourke
DOI: 10.1056/NEJMp2007073 | April 13, 2020

They Call Us and We Go

S. Koven
DOI: 10.1056/NEJMp2009027 | April 13, 2020

Stability and Viability of SARS-CoV-2

J.H. Rubens and Others
DOI: 10.1056/NEJMc2007942 | April 13, 2020

Covid-19 and the Stiff Upper Lip — The Pandemic Response in the United Kingdom

D.J. Hunter
N Engl J Med 2020;382:e31 | Published Online March 20, 2020

Audio Interview: Caring for Patients with Covid-19

E.J. Rubin, L.R. Baden, and S. Morrissey
N Engl J Med 2020;382:e50

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A Strategy for Improving U.S. Health Care Delivery —

Conducting More Randomized, Controlled Trials

A. Finkelstein

N Engl J Med 2020;382:1485-1488

Evidence from Pragmatic Trials during Routine Care — Slouching toward a Learning Health System

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

N Engl J Med 2020;382:1488-1491

One in Four — The Importance of Comprehensive Fertility Benefits for the Medical Workforce

E.C. Kaye

N Engl J Med 2020;382:1491-1493 | Published Online February 26, 2020

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A Non-D2-Receptor-Binding Drug for the Treatment of Schizophrenia

K.S. Koblán and Others

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Two Phase 3 Trials of Inclisiran in Patients with Elevated LDL Cholesterol

K.K. Ray and Others

N Engl J Med 2020;382:1507-1519 | Published Online March 18, 2020

Inclisiran for the Treatment of Heterozygous Familial Hypercholesterolemia

F.J. Raal and Others

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Artificial Intelligence to Detect Papilledema from Ocular

Fundus Photographs

D. Milea and Others

DOI: 10.1056/NEJMoa1917130 | April 14, 2020

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Cochlear Implantation in Adults

M.L. Carlson

N Engl J Med 2020;382:1531-1542

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Sweet's Syndrome

A. Pulido-Pérez and M. Bergon-Sendin

N Engl J Med 2020;382:1543

“Starry Sky” Appearance from Multiple Biliary Hamartomas

T. Taguchi and T. Kohsaki

N Engl J Med 2020;382:e33

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Case 12-2020: A 24-Year-Old Man with Fever, Cough, and Dyspnea

N. Barros, S. McDermott, A.K. Wong, and S.E. Turbett

N Engl J Med 2020;382:1544-1553

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Promising Evidence of Antipsychotic Efficacy without

Dopamine D2-Receptor Binding

D.C. Goff

N Engl J Med 2020;382:1555-1556

AI for the Eye — Automated Assistance for Clinicians Screening for Papilledema

I. Kohane

DOI: 10.1056/NEJMe2004551 | April 14, 2020

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Reconsidering Prostate Cancer Mortality — The Future of PSA Screening

H.G. Welch and P.C. Albertsen

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SARS-CoV-2 Infection in Children

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A. Coronado Munoz and Others

DOI: 10.1056/NEJMc2010614 | April 22, 2020

Covid-19 Cases: Coagulopathy and Antiphospholipid Antibodies in Patients with Covid-19

Published Online April 8, 2020

Covid-19 Notes: French Pandemic Resistance

C. Haug

DOI: 10.1056/NEJMc2010122 | April 22, 2020

Waiting for Something Positive

A. Jayawardena

DOI: 10.1056/NEJMp2008797 | April 22, 2020

The Invisible Hand — Medical Care during the Pandemic

M.M. Kittleson

N Engl J Med 2020;382:1586-1587 | Published Online April 2, 2020

Renin–Angiotensin–Aldosterone System Inhibitors in Patients with Covid-19

M. Vaduganathan and Others

N Engl J Med 2020;382:1653-1659 | Published Online March 30, 2020

First Case of Covid-19 in the United States

L. Weng and Others

DOI: 10.1056/NEJMc2004794 | April 22, 2020

Ten Weeks to Crush the Curve

H.V. Fineberg

N Engl J Med 2020;382:e37 | Published Online April 1, 2020

Audio Interview: Approaches to Covid-19 Vaccines and Antivirals

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

N Engl J Med 2020;382:e58

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Clinical and Social Risk Adjustment — Reconsidering Distinctions

S.K. Agrawal and W.H. Shrank

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Prediction Models — Development, Evaluation, and Clinical Application

M.J. Pencina, B.A. Goldstein, and R.B. D'Agostino

N Engl J Med 2020;382:1583-1586

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Hospitalizations and Deaths Associated with EVALI

A.K. Werner and Others

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Apixaban for the Treatment of Venous Thromboembolism Associated with Cancer

G. Agnelli and Others

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Management of Coronary Disease in Patients with Advanced Kidney Disease

S. Bangalore and Others

N Engl J Med 2020;382:1608-1618 | Published Online March 30, 2020

Health Status after Invasive or Conservative Care in Coronary and Advanced Kidney Disease

J.A. Spertus and Others

N Engl J Med 2020;382:1619-1628 | Published Online March 30, 2020

Ruxolitinib for Glucocorticoid-Refractory Acute Graft-versus-Host Disease

R. Zeiser and Others

DOI: 10.1056/NEJMoa1917635 | April 22, 2020

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Evaluation and Care of Patients with Diabetic Retinopathy

L.M. Jampol, A.R. Glassman, and J. Sun

N Engl J Med 2020;382:1629-1637

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Infectious Proctitis

W.T. Siddiqui and H.M. Schwartz
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Cerebral Metastases

A. Budhram and B. Shettar
N Engl J Med 2020;382:e36

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Case 13-2020: A 29-Year-Old Man with High Blood Pressure, Renal Insufficiency, and Hematuria

A.L. Lundquist, S. Kalim, A. Mojtahed, and K.J. Tomaszewski
N Engl J Med 2020;382:1639-1647

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Vaping-Induced Lung Disease — A Look Forward by Looking Back

M.B. Stanbrook and J.M. Drazen
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Anticoagulant Therapy for Venous Thromboembolism in Cancer

A.Y.Y. Lee
N Engl J Med 2020;382:1650-1652 | Published Online March 29, 2020

Finally, a Successful Randomized Trial for GVHD

N. Chao

DOI: 10.1056/NEJMe2003331 | April 22, 2020

CLINICAL IMPLICATIONS OF BASIC RESEARCH

Teasing the Immune System to Repair the Heart

J.A. Epstein, N. Rosenthal, and A.M. Feldman

N Engl J Med 2020;382:1660-1662

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Anifrolumab in Systemic Lupus Erythematosus

Low-Dose Colchicine after Myocardial Infarction

High-Dose Vitamin D₃ for Critically Ill Vitamin D–Deficient Patients

Prevention of Early Ventilator-Associated Pneumonia

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[Covid-19 in Immune-Mediated Inflammatory Diseases —
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R. Haberman and Others

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[Out-of-Hospital Cardiac Arrest during the Covid-19 Outbreak
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E. Baldi and Others

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[Audio Interview: Loosening Covid-19 Restrictions](#)

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B. Gates

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Virtually Perfect? Telemedicine for Covid-19

J.E. Hollander and B.G. Carr

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History in a Crisis — Lessons for Covid-19

D.S. Jones

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Am I Part of the Cure or Am I Part of the Disease? Keeping Coronavirus Out When a Doctor Comes Home

C. Rose

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Feeding Low-Income Children during the Covid-19 Pandemic

C.G. Dunn, E. Kenney, S.E. Fleischacker, and S.N. Bleich

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Critical Supply Shortages — The Need for Ventilators and Personal Protective Equipment during the Covid-19 Pandemic

M.L. Ranney, V. Griffeth, and A.K. Jha

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Artificial Intelligence to Detect Papilledema from Ocular Fundus Photographs

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Clinical Characteristics of Coronavirus Disease 2019 in China

W. Guan and Others

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Association between Mental Disorders and Subsequent Medical Conditions

N.C. Momen and Others

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M. Ortiz-Catalan and Others

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Olaparib for Metastatic Castration-Resistant Prostate Cancer

J. de Bono and Others

DOI: 10.1056/NEJMoa1911440 | April 28, 2020

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Ingestion of Caustic Substances

R.S. Hoffman, M.M. Burns, and S. Gosselin

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HLH Associated with Disseminated Tuberculosis

M. Kessler and E. Reinig
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Corkscrew Esophagus in Achalasia

S. Han and M.S. Wagh
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Case 14-2020: A 37-Year-Old Man with Joint Pain and Eye Redness

L. Sobrin and Others
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