

***NATIONAL INSTITUTE OF OCCUPATIONAL HEALTH
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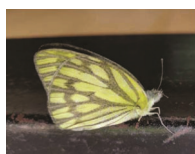
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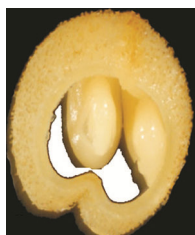
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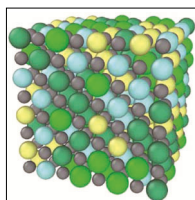


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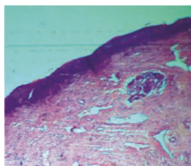
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Journal of Occupational and Environmental Medicine. 62(5):325-330, May 2020.

Does Organization Matter for Health? The Association Between Workplace Social Capital and Self-Rated Health

Han, Sehee; Park, Kwang Kook; Lee, Jong Won

Journal of Occupational and Environmental Medicine. 62(5):331-336, May 2020.

Respiratory Diseases in Post-9/11 Military Personnel Following Southwest Asia Deployment

Krefftt, Silpa D.; Wolff, Jenna; Zell-Baran, Lauren; More

Journal of Occupational and Environmental Medicine. 62(5):337-343, May 2020.

Opioid Use Disorder and Employee Work Presenteeism, Absences, and Health Care Costs

Henke, Rachel Mosher; Ellsworth, David; Wier, Lauren; More

Journal of Occupational and Environmental Medicine. 62(5):344-349, May 2020.

How does Organizational Climate Motivate Employee Safe and Healthy Behavior in Small Business?: A Self-Determination Theory Perspective

Schwatka, Natalie V.; Sinclair, Robert R.; Fan, Wenyi; More

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Public Health Surveillance for the Prevention of Pesticide-Related Illness in Illinois

Kyeremateng-Amoah, Emmanuel; Friedman, Lee; Wahl, Michael; More

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Association of Disability Benefits and/or Litigation With Time to Return to Work After Tibia Shaft Fracture Fixation

Rehman, Yasir; Jones, Aaron; Madden, Kim; More

Journal of Occupational and Environmental Medicine. 62(5):370-374, May 2020.

Carpal Tunnel Syndrome as Sentinel for Harmful Hand Activities at Work: A Nationwide Danish Cohort Study

Tabatabaeifar, Sorosh; Svendsen, Susanne Wulff; Frost, Poul

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Mental Demands at the Workplace—Are Information Load, Time Control, and Exploration Associated With Depressiveness?

Hussenoeder, Felix S.; Conrad, Ines; Riedel-Heller, Steffi G.; More

Journal of Occupational and Environmental Medicine. 62(5):383-387, May 2020.

A Descriptive Analysis of Body Composition Among Forest Firefighters in Spain

Crespo-Ruiz, Beatriz; Esteban García, Paula; Fernández-Vega, Cristina; More

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What is Number of Days in Number of Times? Associations Between, and Responsiveness of, Two Sickness Presenteeism Measures

Aboagye, Emmanuel; Gustafsson, Klas; Jensen, Irene; More

Journal of Occupational and Environmental Medicine. 62(5):e180-e185, May 2020.

The Association Between Unit-Level Workplace Social Capital and Intention to Leave Among Employees in Health Care Settings: A Cross-Sectional Multilevel Study

Iida, Mako; Watanabe, Kazuhiro; Ando, Emiko; More

Journal of Occupational and Environmental Medicine. 62(5):e186-e191, May 2020.

Safety and Health Innovation in Preschools: A Total Worker Health Pilot Project

Farewell, Charlotte V.; Powers, Jamie; Puma, Jini

Journal of Occupational and Environmental Medicine. 62(5):e192-e199, May 2020.

Urban-Rural Differences in the Duration of Injury-Related Work Disability in Six Canadian Provinces

Macpherson, Robert A.; Amick, Benjamin C. III; Collie, Alex; More

Journal of Occupational and Environmental Medicine. 62(5):e200-e207, May 2020.

☐ ACOEM GUIDANCE STATEMENT

Spirometry in Occupational Health—2020

Townsend, Mary C.

Journal of Occupational and Environmental Medicine. 62(5):e208-e230, May 2020.

☐ LETTERS TO THE EDITOR

Impact of New Occupational and Clinical Standards on Spirometry

Townsend, Mary C.; Graham, Brian L.

Journal of Occupational and Environmental Medicine. 62(5):e231-e232, May 2020.

Follow-Up of the Libby, Montana Screening Cohort: A 17-Year Mortality Study: Likely Underestimation of Nonmalignant Asbestos-Related Disease

Miller, Albert; Loewen, Gregory M.; Szeinuk, Jaime

Journal of Occupational and Environmental Medicine. 62(5):e233-e234, May 2020.

Response to ‘Follow-Up of the Libby, Montana Screening Cohort: A 17-year Mortality Study: Likely Underestimation of Nonmalignant Asbestos-Related Disease’

Larson, Theodore C.; Williamson, Laura; Antao, Vinicius C.

Journal of Occupational and Environmental Medicine. 62(5):e235, May 2020.

Acute Musculoskeletal Pain Reported Among Rideshare Drivers in the Health/Safety Investigation Among Non-Standard Workers in the Gig Economy (H.I.N.G.E.) Pilot Study

Caban-Martinez, Alberto J.; Santiago, Katerina M.; Louzado Feliciano, Paola; More

Journal of Occupational and Environmental Medicine. 62(5):e236-e239, May 2020.

Nature

Volume 581 Issue 7806, 7 May 2020

This Week

Editorial

- Editorial | 05 May 2020

[The sustained undermining of science by the EPA's leaders is a travesty](#)

Researchers and businesses, continue to raise your voices: the agency's beleaguered staff need to hear that they have your support.

- Editorial | 06 May 2020

[Coronavirus: share lessons on lifting lockdowns](#)

Countries are starting to lift restrictions on movement, but there is little consensus on how this should be done. Sharing best practice is the way forward.

Research

News & Views

- News & Views | 29 April 2020

[Risk factor for Alzheimer's disease breaks the blood–brain barrier](#)

People who carry the gene variant *APOE4* are at higher-than-average risk of developing Alzheimer's disease. It emerges that this variant is linked to defects in the blood–brain barrier and subsequent cognitive decline.

- Makoto Ishii & Costantino Iadecola

- News & Views | 06 May 2020

[Exotic helium atom lit up](#)

An elusive type of atom known as pionic helium has been directly excited by laser light for the first time. The work establishes a promising experimental platform for probing fundamental physics.

- Niels Madsen

- News & Views | 22 April 2020
[Pancreatic cancer hidden in plain sight](#)
Pancreatic cancer does not respond to certain anticancer treatments that boost immune responses. A mechanism active in tumour cells that contributes to this evasion of immune targeting has been uncovered.
- Anirban Maitra
- News & Views | 06 May 2020
[Mass spectrometry for future atomic clocks](#)
Highly charged ions could form the basis of the next generation of ultra-precise clocks, using electronic transitions in the ions as the ‘pendulum’. An ingenious method for characterizing such transitions has been reported.
- Marianna S. Safronova

Articles

- Article | 06 May 2020
[Laser spectroscopy of pionic helium atoms](#)
Long-lived pionic helium atoms (composed of a helium-4 nucleus, an electron and a negatively charged pion) are synthesized in a superfluid-helium target, as confirmed by laser spectroscopy involving the pion-occupied orbitals.
- Masaki Hori, Hossein Aghai-Khozani & Daniel Barna
- Article | 06 May 2020
[Detection of metastable electronic states by Penning trap mass spectrometry](#)
Penning trap mass spectrometry is used to measure the electronic transition energy from a long-lived metastable state to the ground state in highly charged rhenium ions with a precision of 10^{-11} .
- R. X. Schüssler, H. Bekker & K. Blaum
- Article | 06 May 2020
[Mapping the twist-angle disorder and Landau levels in magic-angle graphene](#)
SQUID-on-tip tomographic imaging of Landau levels in magic-angle graphene provides nanoscale maps of local twist-angle disorder and shows that its properties are fundamentally different from common types of disorder.
- A. Uri, S. Grover & E. Zeldov

- Article | 27 April 2020
[Iron-based binary ferromagnets for transverse thermoelectric conversion](#)
 Aluminium- and gallium-doped iron compounds show a large anomalous Nernst effect owing to a topological electronic structure, and their films are potentially suitable for designing low-cost, flexible microelectronic thermoelectric generators.
 - Akito Sakai, Susumu Minami & Satoru Nakatsuji

- Article | 06 May 2020
[Liquid flow and control without solid walls](#)
 Wall-free liquid channels surrounded by an immiscible magnetic liquid can be used to create liquid circuitry or to transport human blood without damaging the blood cells by moving permanent magnets.
 - Peter Dunne, Takuji Adachi & Thomas M. Hermans

- Article | 06 May 2020
[Millennial-scale hydroclimate control of tropical soil carbon storage](#)
 Over the past 18,000 years, the residence time and amount of soil carbon stored in the Ganges–Brahmaputra basin have been controlled by the intensity of Indian Summer Monsoon rainfall, with greater carbon destabilization during wetter, warmer conditions.
 - Christopher J. Hein, Muhammed Usman & Valier V. Galy

- Article | 29 April 2020
[Tail-propelled aquatic locomotion in a theropod dinosaur](#)
 Discovery that the giant theropod dinosaur *Spinosaurus* has a large flexible tail indicates that it was primarily aquatic and swam in a similar manner to extant tail-propelled aquatic vertebrates.
 - Nizar Ibrahim, Simone Maganuco & Stephanie E. Pierce

- Article | 29 April 2020
[APOE4 leads to blood–brain barrier dysfunction predicting cognitive decline](#)
 Breakdown of the blood–brain barrier in individuals carrying the $\epsilon 4$ allele of the *APOE* gene, but not the $\epsilon 3$ allele, increases with and predicts cognitive impairment and is independent of amyloid β or tau pathology.
 - Axel Montagne, Daniel A. Nation & Berislav V. Zlokovic

- Article | 15 April 2020
[Injured adult neurons regress to an embryonic transcriptional growth state](#)
 In mouse models of central nervous system injury, *Htt* is shown to be a key component of the regulatory program associated with reversion of the neuronal transcriptome to a less-mature state.
 - Gunnar H. D. Poplawski, Riki Kawaguchi & Mark H. Tuszynski

- Article | 15 April 2020
[Pharmacologic fibroblast reprogramming into photoreceptors restores vision](#)
 A set of five small molecules can induce the transformation of fibroblasts into rod photoreceptor-like cells, which can partially restore pupil reflex and visual function when transplanted into a rod degeneration mouse model.
 - Biraj Mahato, Koray Dogan Kaya & Sai H. Chavala

- Article | 29 April 2020
[Plant 22-nt siRNAs mediate translational repression and stress adaptation](#)
 Characterization of 22-nucleotide short interfering RNAs in plants finds that they accumulate in response to environmental stress, causing translational repression, inhibition of plant growth and enhanced stress responses.
 - Huihui Wu, Bosheng Li & Hongwei Guo

- Article | 29 April 2020 | Open Access
[Childhood vaccines and antibiotic use in low- and middle-income countries](#)
 Pneumococcal and rotavirus vaccines have reduced antibiotic consumption substantially among children under five years old in low- and middle-income countries; however, this effect could be doubled if all countries were to implement vaccination programmes and meet universal vaccine coverage targets.
 - Joseph A. Lewnard, Nathan C. Lo & Ramanan Laxminarayan

- Article | 22 April 2020
[Autophagy promotes immune evasion of pancreatic cancer by degrading MHC-I](#)
 Inhibition of the autophagy–lysosome system upregulates surface expression of MHC class I proteins and enhances antigen presentation, and evokes a potent anti-tumour immune response that is mediated by CD8⁺ T cells.
 - Keisuke Yamamoto, Anthony Venida & Alec C. Kimmelman

This Week

Editorial

- Editorial | 12 May 2020

[Include the true value of nature when rebuilding economies after coronavirus](#)

The pandemic is devastating economies. As countries look to revive growth, recovery must go with — not against — the grain of nature.

- Editorial | 13 May 2020

[Coronavirus drugs trials must get bigger and more collaborative](#)

The pandemic has given rise to too many small and uncontrolled clinical trials.

Research

News & Views

- News & Views | 13 May 2020

[A glimpse inside \$\delta\$ Scuti stars](#)

Patterns in the vibrations of stars produce a sort of natural music that offers clues to the stars' internal structure. Astronomers have identified such patterns for some δ Scuti stars, a group for which this music had been elusive.

- József M. Benkő & Margit Párapó

- News & Views | 29 April 2020

[Brain–spleen connection aids antibody production](#)

Elucidating how the brain controls peripheral organs in the fight against infection is crucial for our understanding of brain–body interactions. A study in mice reveals one such pathway worthy of further investigation.

- Flurin Cathomas & Scott J. Russo

- News & Views | 06 May 2020

[Formation of liquid-like cellular organelles depends on their composition](#)

Liquid-like organelles in cells form when key constituents reach a certain concentration and then condense. Evidence now indicates that the concentration at which condensation occurs can vary, contrary to previous assumptions.

- Chiu Fan Lee
- News & Views | 13 May 2020
[Airborne particles might grow fast in cities](#)
 Nanoscale particles have been observed to form and grow in the atmospheres of many cities, contradicting our understanding of particle-formation processes. Experiments now reveal a possible explanation for this mystery.
- Hugh Coe

Articles

- Article | 13 May 2020
[Very regular high-frequency pulsation modes in young intermediate-mass stars](#)
 The pulsation spectra of intermediate-mass stars (so-called δ Scuti stars) have been challenging to analyse, but new observations of 60 such stars reveal remarkably regular sequences of high-frequency pulsation modes.
- Timothy R. Bedding, Simon J. Murphy & Roland K. Vanderspek
- Article | 06 May 2020
[Precise test of quantum electrodynamics and determination of fundamental constants with HD⁺ ions](#)
 A rotational spectroscopy technique is improved and used on clusters of trapped molecular hydrogen ions to demonstrate excellent agreement with high-precision ab initio quantum theory and to determine fundamental constants.
- S. Alighanbari, G. S. Giri & S. Schiller
- Article | 13 May 2020
[Spin squeezing of 10¹¹ atoms by prediction and retrodiction measurements](#)
 A squeezed collective state of 10¹¹ rubidium atoms is generated by quantum non-demolition measurements, and the accuracy of the estimation of their collective spin is improved using past quantum state retrodiction.
- Han Bao, Junlei Duan & Yanhong Xiao
- Article | 13 May 2020
[Massively parallel coherent laser ranging using a soliton microcomb](#)
 A massively parallel coherent light detection and ranging (lidar) scheme using a soliton microcomb—a light source that emits a wide spectrum of sharp lines with equally spaced frequencies—is described.
- Johann Riemensberger, Anton Lukashchuk & Tobias J. Kippenberg

- Article | 13 May 2020
[Engineering covalently bonded 2D layered materials by self-intercalation](#)
 The intercalation of native atoms into bilayer transition metal dichalcogenides during growth generates ultrathin, covalently bonded materials into which ferromagnetic ordering can be introduced.
 - Xiaoxu Zhao, Peng Song & Kian Ping Loh

- Article | 13 May 2020
[Accelerated discovery of CO₂ electrocatalysts using active machine learning](#)
 Machine learning predicts Cu-Al electrocatalysts provide better efficiency and productivity than copper when using intermittent renewable electricity to convert carbon dioxide to useful chemicals and fuels.
 - Miao Zhong, Kevin Tran & Edward H. Sargent

- Article | 13 May 2020 | Open Access
[Rapid growth of new atmospheric particles by nitric acid and ammonia condensation](#)
 Measurements in the CLOUD chamber at CERN show that the rapid condensation of ammonia and nitric acid vapours could be important for the formation and survival of new particles in wintertime urban conditions, contributing to urban smog.
 - Mingyi Wang, Weimeng Kong & Neil M. Donahue

- Article | 08 April 2020
[Early Holocene crop cultivation and landscape modification in Amazonia](#)
 Archaeological evidence that anthropic landscape changes and crop cultivation in southwestern Amazonia began about 10,000–11,000 years ago confirms that the region is a centre of early plant domestication.
 - Umberto Lombardo, José Iriarte & Heinz Veit

- Article | 22 April 2020
[Retinal innervation tunes circuits that drive nonphotic entrainment to food](#)
 Ablating retinal input at early postnatal stages—but not later time points—impaired entrainment to time-restricted feeding in adult mice, as did silencing intergeniculate-leaflet neurons that express neuropeptide Y and project to the central pacemaker
 - Diego Carlos Fernandez, Ruchi Komal & Samer Hattar

- Article | 22 April 2020
Ligand-induced monoubiquitination of BIK1 regulates plant immunity
The detection of microorganism-associated ligands by plant cells activates a signalling cascade in which the kinase BIK1 is monoubiquitinated, released from the FLS2–BAK1 complex, and internalized by endocytosis.
 - Xiyu Ma, Lucas A. N. Claus & Libo Shan

- Article | 29 April 2020
Brain control of humoral immune responses amenable to behavioural modulation
Neuronal activities in the central amygdala and paraventricular nucleus are transmitted via the splenic nerve to increase plasma cell formation after immunization, and this process can be behaviourally enhanced in mice.
 - Xu Zhang, Bo Lei & Hai Qi

- Article | 06 May 2020
Composition-dependent thermodynamics of intracellular phase separation
Heterotypic multicomponent interactions are shown to dominate the liquid–liquid phase separation that enables the formation of intracellular condensates.
 - Joshua A. Riback, Lian Zhu & Clifford P. Brangwynne

- Article | 30 March 2020
Structure of the SARS-CoV-2 spike receptor-binding domain bound to the ACE2 receptor
High-resolution crystal structures of the receptor-binding domain of the spike protein of SARS-CoV-2 and SARS-CoV in complex with ACE2 provide insights into the binding mode of these coronaviruses and highlight essential ACE2-interacting residues.
 - Jun Lan, Jiwan Ge & Xinquan Wang

This Week

Editorial

- Editorial | 19 May 2020

[Tackle coronavirus in vulnerable communities](#)

The pandemic has hit care homes, prisons and low-income communities hardest. Researchers are ready to help, but need data to be collected and shared.

- Editorial | 20 May 2020

[Coronavirus: everyone wins when patents are pooled](#)

It took a collaborative global effort to reveal the structures of key coronavirus proteins. That spirit is being tested as vaccine development gets under way.

Research

News & Views

- News & Views | 06 May 2020

[Statin drugs might boost healthy gut microbes](#)

An analysis of faecal samples reveals that obese people who take cholesterol-lowering statin drugs have a 'healthier' community of gut microorganisms than would be expected. What are the implications of this surprising finding?

- Peter Libby

- News & Views | 20 May 2020

[Artificial eye boosted by hemispherical retina](#)

An artificial eye has been reported that incorporates densely packed, nanometre-scale light sensors into a hemispherical retina-like component. Some of its sensory capabilities are comparable to that of its biological counterpart.

- Hongrui Jiang

- News & Views | 13 May 2020
[Fourth defence molecule completes antiviral line-up](#)
Toll-like receptors can initiate an immune response when they detect signs of a viral or microbial threat. New insight into how such receptor activation drives defence programs should aid our efforts to understand autoimmune diseases.
 - Niklas A. Schmacke & Veit Hornung
- News & Views | 20 May 2020
[Galaxy disk observed to have formed shortly after the Big Bang](#)
A powerful radio telescope has peered back through time to observe a galaxy that contained a cold, rotating disk of gas not long after the Big Bang — fuelling the debate about when and how disks first formed in galaxies.
 - Alfred Tiley

Articles

- Article | 20 May 2020
[A cold, massive, rotating disk galaxy 1.5 billion years after the Big Bang](#)
A massive rotating disk galaxy was formed a mere 1.5 billion years after the Big Bang, a surprisingly short time after the origin of the Universe.
 - Marcel Neeleman, J. Xavier Prochaska & Marc Rafelski
- Article | 20 May 2020
[Quantum entanglement between an atom and a molecule](#)
Quantum entanglement is realized between rotational levels of a molecular ion with energy differences spanning several orders of magnitude and long-lived internal states of a single atomic ion.
 - Yiheng Lin, David R. Leibbrandt & Chin-wen Chou
- Article | 20 May 2020
[A biomimetic eye with a hemispherical perovskite nanowire array retina](#)
A biomimetic electrochemical eye is presented that has a hemispherical retina made from a high-density array of perovskite nanowires that are sensitive to light, mimicking the photoreceptors of a biological retina.
 - Leilei Gu, Swapnadeep Poddar & Zhiyong Fan
- Article | 20 May 2020
[Short-range order and its impact on the CrCoNi medium-entropy alloy](#)
Metal alloys consisting of three or more major elemental components show enhanced mechanical properties, which are now shown to be correlated with short-range order observed with electron microscopy.

- Ruopeng Zhang, Shiteng Zhao & Andrew M. Minor
- Article | 20 May 2020
[Preparation of cyclohexene isotopologues and stereoisotopomers from benzene](#)
 Cyclohexene isotopologues and stereoisotopomers with varying degrees of deuteration are formed by binding a tungsten complex to benzene, which facilitates the selective incorporation of deuterium into any position on the ring.
- Jacob A. Smith, Katy B. Wilson & W. Dean Harman
- Article | 20 May 2020
[Patterns and trends of Northern Hemisphere snow mass from 1980 to 2018](#)
 Applying a bias correction to a state-of-the-art dataset covering non-alpine regions of the Northern Hemisphere and to three other datasets yields a more constrained quantification of snow mass in March from 1980 to 2018.
- Jouni Pulliainen, Kari Luojus & Johannes Norberg
- Article | 11 May 2020
[Initial Upper Palaeolithic *Homo sapiens* from Bacho Kiro Cave, Bulgaria](#)
 Direct dates for human remains found in association with Initial Upper Palaeolithic artefacts at Bacho Kiro Cave (Bulgaria) demonstrate the presence of *Homo sapiens* in the mid-latitudes of Europe before 45 thousand years ago.
- Jean-Jacques Hublin, Nikolay Sirakov & Tsenka Tsanova
- Article | 25 March 2020
[Construction of a human cell landscape at single-cell level](#)
 Single-cell RNA sequencing is used to generate a dataset covering all major human organs in both adult and fetal stages, enabling comparison with similar datasets for mouse tissues.
- Xiaoping Han, Ziming Zhou & Guoji Guo
- Article | 06 May 2020
[Statin therapy is associated with lower prevalence of gut microbiota dysbiosis](#)
 A cross-sectional analysis of participants in the MetaCardis Body Mass Index Spectrum cohort finds that the higher prevalence of gut microbiota dysbiosis in individuals with obesity is not observed in those who take statin drugs.
- Sara Vieira-Silva, Gwen Falony & Jeroen Raes

- Article | 13 May 2020
[TASL is the SLC15A4-associated adaptor for IRF5 activation by TLR7–9](#)
 The interaction between TASL and SLC15A4 links endolysosomal Toll-like receptors to the transcription factor IRF5, providing a mechanistic explanation for the involvement of the complex in systemic lupus erythematosus.
 - Leonhard X. Heinz, JangEun Lee & Giulio Superti-Furga

- Article | 13 May 2020
[Structure and catalytic mechanism of a human triacylglycerol-synthesis enzyme](#)
 Cryo-electron microscopy structures and functional and mutagenesis studies provide insights into the catalysis of triacylglycerol synthesis by human acyl-CoA diacylglycerol acyltransferase at its intramembrane active site.
 - Xuewu Sui, Kun Wang & Robert V. Farese Jr

- Article | 13 May 2020
[Structure and mechanism of human diacylglycerol *O*-acyltransferase 1](#)
 The structure of human diacylglycerol *O*-acyltransferase 1, a membrane protein that synthesizes triacylglycerides, is solved with cryo-electron microscopy, providing insight into its function and mechanism of enzymatic activity.
 - Lie Wang, Hongwu Qian & Ming Zhou

- Article | 13 May 2020
[Structural basis for catalysis and substrate specificity of human ACAT1](#)
 The structure of human ACAT1, which catalyses the transfer of an acyl group from acyl-coenzyme A to cholesterol to form cholesteryl ester, is resolved by cryo-electron microscopy.
 - Hongwu Qian, Xin Zhao & Nieng Yan

- Article | 13 May 2020
[Structure of nevanimibe-bound tetrameric human ACAT1](#)
 The structure of human ACAT1 in complex with the inhibitor nevanimibe is resolved by cryo-electron microscopy.
 - Tao Long, Yingyuan Sun & Xiaochun Li

Volume 581 Issue 7809, 28 May 2020

This Week

Editorial

- Editorial | 27 May 2020

[Coronavirus misinformation needs researchers to respond](#)

Researchers must be transparent and acknowledge what is known and what isn't.

- Editorial | 27 May 2020

[A milestone in human genetics highlights diversity gaps](#)

Landmark study identifies the genes that it seems people can and cannot live without and highlights ongoing challenges in making data sets more representative of the world's population.

Research

News & Views

- News & Views | 27 May 2020

[Thousands of human sequences provide deep insight into single genomes](#)

A massive genome-sequencing and analysis effort has produced the most comprehensive sets of data and tools for understanding human genetic variation so far. The resource will be invaluable to biologists of every stripe.

- Deanna M. Church

- News & Views | 27 May 2020

[An almost perfectly efficient light-activated catalyst for producing hydrogen from water](#)

Efforts to make hydrogen from water directly using sunlight have been hampered by the inefficiency of the catalysts that promote the process. A model system demonstrates that almost perfectly efficient catalysts can be made.

- Simone Pokrant

- News & Views | 20 May 2020

[Extinct proteins resurrected to reconstruct the evolution of vertebrate haemoglobin](#)

The multi-subunit protein haemoglobin relies on complex interactions between its components to function properly. Analysis of ancient precursors

suggests that its evolution from a simple monomer involved only a few steps.

- Michael Berenbrink

Articles

- Article | 27 May 2020

[A census of baryons in the Universe from localized fast radio bursts](#)

The baryon density determined along the lines of sight to localized fast radio bursts is consistent with that determined from the cosmic microwave background and required by Big Bang nucleosynthesis.

- J.-P. Macquart, J. X. Prochaska & N. Tejos

- Article | 27 May 2020 | Open Access

[Spectroscopy of short-lived radioactive molecules](#)

Measurements of low-energy electronic states of radium monofluoride validate predictions of the use of this short-lived radioactive molecule in exploring fundamental physics and provide evidence of its suitability for laser cooling.

- R. F. Garcia Ruiz, R. Berger & X. F. Yang

- Article | 27 May 2020

[Stable, high-performance sodium-based plasmonic devices in the near infrared](#)

A thermo-assisted spin-coating process followed by packaging is used to fabricate sodium films that are stable for several months, enabling the realization of plasmonic devices with state-of-the-art performance at near-infrared wavelengths.

- Yang Wang, Jianyu Yu & Jia Zhu

- Article | 27 May 2020

[Seeded growth of large single-crystal copper foils with high-index facets](#)

Large-area single-crystal high-index copper and nickel foils with several types of facet are fabricated using mild pre-oxidation of the metal foil surface followed by annealing in a reducing atmosphere.

- Muhong Wu, Zhibin Zhang & Kaihui Liu

- Article | 27 May 2020

[Photocatalytic water splitting with a quantum efficiency of almost unity](#)

Water splitting with an internal quantum efficiency of almost unity is achieved using a modified semiconductor photocatalyst that selectively promotes the hydrogen and oxygen evolution reactions on separate crystal facets.

- Tsuyoshi Takata, Junzhe Jiang & Kazunari Domen

- Article | 08 April 2020
[A general carbonyl alkylative amination for tertiary amine synthesis](#)
 The synthesis of tertiary amines is achieved through a carbonyl alkylative amination reaction facilitated by visible light, in which an aldehyde and an amine condense to form an iminium ion that subsequently reacts with alkyl radical.
 - Roopender Kumar, Nils J. Flodén & Matthew J. Gaunt

- Article | 29 April 2020
[Skeleton of a Cretaceous mammal from Madagascar reflects long-term insularity](#)
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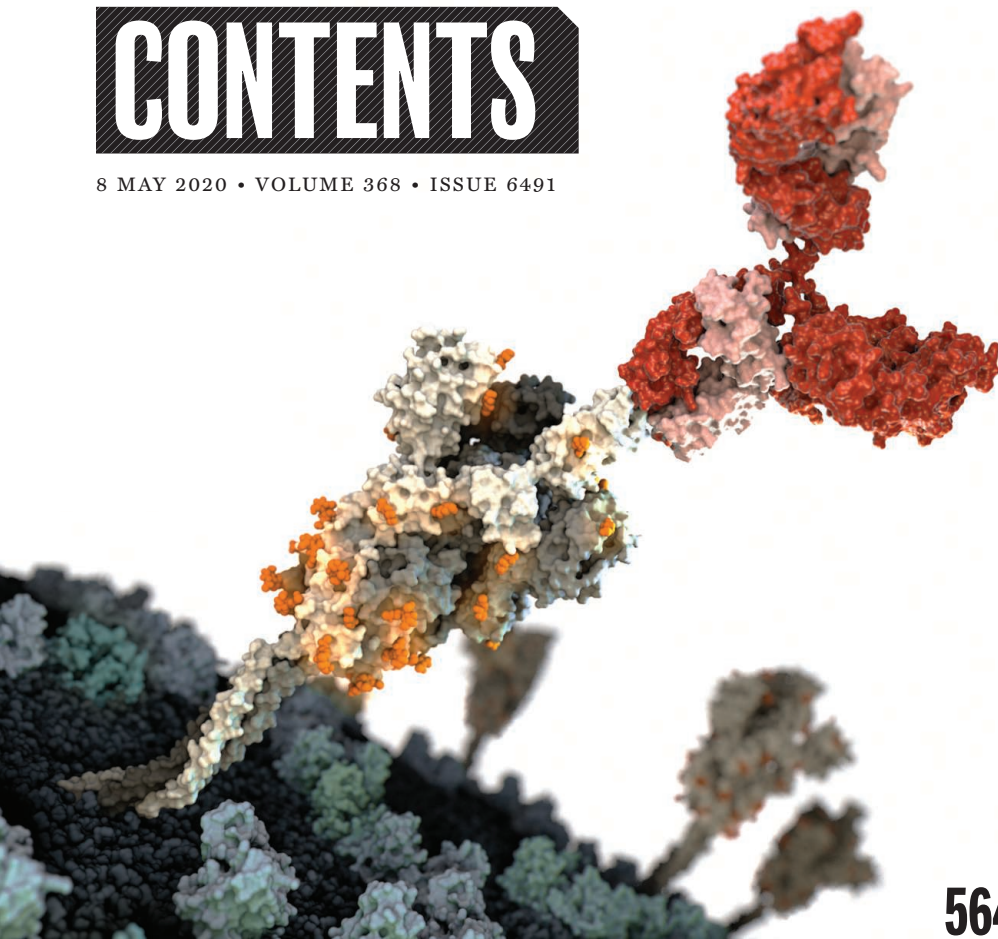
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Light shines through the trees of Eilenriede city forest, Hanover, Germany. Increased tree cover reduces below-canopy temperature extremes. This temperature-buffering effect slows local

warming and protects plants against climate change. By contrast, plant community changes are most pronounced in forests where tree cover is reduced over time. These findings will have important implications for forest management and biodiversity conservation. See pages 711 and 772. *Photo: Julian Stratenschulte/DPA/AFP via Getty Images*

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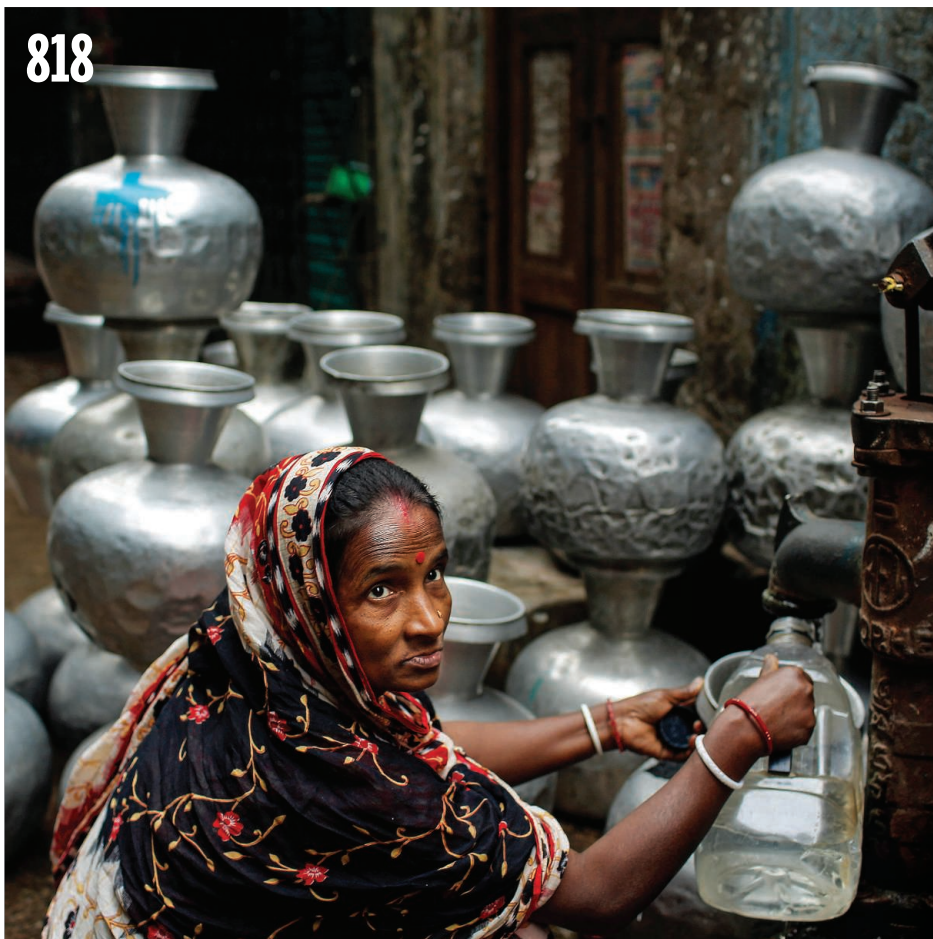
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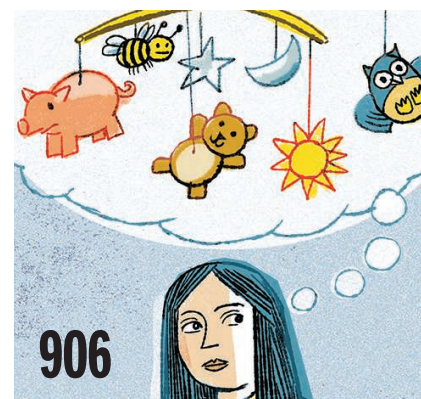
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Fusarium graminearum fungus (orange) growing in a wheat spikelet. The disease *Fusarium* head blight (FHB; also known as wheat scab) threatens the world's wheat supply by reducing grain yield and quality. Researchers

have isolated a gene from wheatgrass (*Thinopyrum elongatum*), a wild relative of cultivated wheat, that decreases *Fusarium* infection and detoxifies mycotoxins in wheat grains. This gene can be introduced to wheat cultivars through breeding to minimize FHB-related losses. See pages 822 and 844. *Photo: Qihui Chen/Jiayang Agricultural Bureau*

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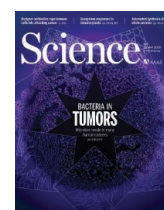


Illustration of bacteria in tissue sections from multiple human tumor types. Bacteria are frequently found in tumors, and different tumor types have distinct microbial compositions, as represented here by the different colors of

bacteria. The image also reflects the observed intracellular localization of tumor bacteria, mostly inside cancer and immune cells. Future studies will explore the role of these bacteria in tumor development and treatment response. See pages 938 and 973. *Illustration: V. Altounian/Science*

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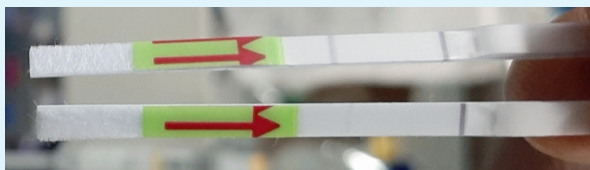
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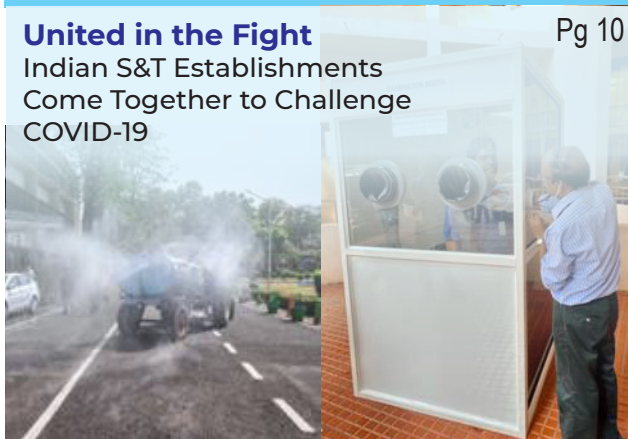
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[Hypertension, renin–angiotensin–aldosterone system inhibition, and COVID-19](#)

[Sharpening the global focus on ethnicity and race in the time of COVID-19](#)

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Authors' reply](#)

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[Triple combination of interferon beta-1b, lopinavir–ritonavir,
and ribavirin in the treatment of patients admitted to
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2 trial](#)

[Use of renin–angiotensin–aldosterone system inhibitors
and risk of COVID-19 requiring admission to hospital: a
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VIEWPOINT

[Access to lifesaving medical resources for African countries: COVID-19 testing and response, ethics, and politics](#)



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CASE CHALLENGE

A Woman with Recurrent Melanoma and Pulmonary Nodules

A 47-year-old woman with malignant melanoma was found to have bilateral pulmonary nodules, hilar and mediastinal lymphadenopathy, and left upper lobe infiltrate. What is the most likely diagnosis?



Vote and comment. Find the answers in the full text of the case, to be published on May 21.

COVID-19

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Covid-19 Notes: Adaptations and Lessons in the Province of Bergamo

S. Faggioli, F.L. Lorini, and G. Remuzzi
DOI: 10.1056/NEJMc2011599 | May 5, 2020

Lupus Anticoagulant and Abnormal Coagulation Tests in Patients with Covid-19

L. Bowles and Others
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A Trial of Lopinavir–Ritonavir in Covid-19

P. Dalerba and Others
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More on Barrier Enclosure during Endotracheal Intubation

W.H. Rosenblatt and Others
DOI: 10.1056/NEJMc2012960 | May 5, 2020

Covid-19 Notes: Opening Up New Supply Chains

M.L. Zeidel, C. Kirk, and B. Linville-Engler
DOI: 10.1056/NEJMc2009432 | May 6, 2020

Covid-19 Cases: Acute Cor Pulmonale in Critically Ill Patients with Covid-19

C. Creel-Bulos and Others
DOI: 10.1056/NEJMc2010459 | May 6, 2020

Racial Health Disparities and Covid-19 — Caution and Context

M. Chowkwanyun and A.L. Reed, Jr.
DOI: 10.1056/NEJMp2012910 | May 6, 2020

Pandemic and Persona

M.W. Kahn
DOI: 10.1056/NEJMp2010377 | May 6, 2020

CPR in the Covid-19 Era — An Ethical Framework

D.B. Kramer, B. Lo, and N.W. Dickert
DOI: 10.1056/NEJMp2010758 | May 6, 2020

Once Upon a Time . . . the Hero Sheltered in Place

L. Rosenbaum
DOI: 10.1056/NEJMp2015556 | May 6, 2020

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Importing Prescription Drugs from Canada — Legal and Practical Problems with the Trump Administration's Proposal

R.E. Sachs and N. Bagley
N Engl J Med 2020;382:1777-1779

Implementing the Cures Act — Bringing Consumer Computing to Health Care

D.W. Rucker

N Engl J Med 2020;382:1779-1781 | Published Online March 11, 2020

Data Citizenship under the 21st Century Cures Act

K.D. Mandl and I.S. Kohane

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Fear and the Front Line

S.L. Murray

N Engl J Med 2020;382:1784-1785

Abortion during the Covid-19 Pandemic — Ensuring Access to an Essential Health Service

M.J. Bayefsky, D. Bartz, and K.L. Watson

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A Trial of Lopinavir–Ritonavir in Adults Hospitalized with Severe Covid-19

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

R. Zeiser and Others

N Engl J Med 2020;382:1800-1810 | Published Online April 22, 2020

Emapalumab in Children with Primary Hemophagocytic Lymphohistiocytosis

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P. Yang and Others

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H. Feldmann, A. Sprecher, and T.W. Geisbert

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Three Kidneys

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Hiding in the Water

D. Micic and Others

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Finally, a Successful Randomized Trial for GVHD

N. Chao

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Thrombolysis before Thrombectomy — To Be or DIRECT-MT?

G.W. Albers

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Mitochondrial Replacement in the Clinic

P.F. Chinnery

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Covid-19 in South Korea — Challenges of Subclinical Manifestations

Clinical Characteristics of Covid-19 in China

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Epidemiology of Covid-19



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M.E. Sise and Others

DOI: 10.1056/NEJMcp2002418 | May 13, 2020

Multiorgan and Renal Tropism of SARS-CoV-2

V.G. Puelles and Others

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E. Cleveland Manchanda, C. Couillard, and K. Sivashanker

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V.J. Dzau, D. Kirch, and T. Nasca

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Facing Covid-19 in Italy — Ethics, Logistics, and Therapeutics on the Epidemic's Front Line

L. Rosenbaum

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The State of Cannabis Research Legislation in 2020

A.J. Zarrabi, J.K. Frediani, and J.M. Levy

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V. Noronha

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Regulating Vaping — Policies, Possibilities, and Perils

J.L. Sindelar

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Vericiguat in Patients with Heart Failure and Reduced Ejection Fraction

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J.S. Schweitzer and Others

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Transient Ischemic Attack

P. Amarenco

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Pneumocephalus Due to a Bronchoatrial Fistula

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Case 15-2020: A 79-Year-Old Man with Hyponatremia and

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R. Ortega, M. Gonzalez, A. Nozari, and R. Canelli

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J.M. Parks and J.C. Smith

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M.D. Solomon and Others

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E.C. Schneider

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I. Holmdahl and C. Buckee

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M.Z. Solomon, M.K. Wynia, and L.O. Gostin
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J. deLima Thomas
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M. Earnest
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Developing Covid-19 Vaccines at Pandemic Speed

N. Lurie, M. Saville, R. Hatchett, and J. Halton
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G. Belkin

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They Call Us and We Go

S. Koven

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N Engl J Med 2020;382:e62 | Published Online March 27, 2020

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P. Yang and Others

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M.P. Bonaca and Others

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P.K. Bhatraju and Others

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D.A. Williamson and M.Y. Chen

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Z. Li and X. Weng

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J. Sevestre and L. Kopec
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K.A. Armstrong and Others
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A Bon VOYAGER for Peripheral Artery Disease

M.A. Creager
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Fair Allocation of Scarce Medical Resources in the Time of Covid-19

E.J. Emanuel and Others
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On Complement, Memory, and Microglia

R.S. Klein

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R. Dolin and M.S. Hirsch

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M. Ackermann and Others

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M.R. Larochelle

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M.I. Brener and S.R. Kaslow

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L. Rosenbaum

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

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E.V. Hempel

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

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N Engl J Med 2020;382:e75 | Published Online April 2, 2020

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Presymptomatic SARS-CoV-2 Infections and Transmission in a Skilled Nursing Facility

M.M. Arons and Others

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A.S. Kelly and Others

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FDA Initiative for Drug Facts Label for Over-the-Counter Naloxone

B.R. Cohen and Others

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F.M. Marty, K. Chen, and K.A. Verrill

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O. Bargas

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The Game Is Afoot

N. Yozamp and Others
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Lung-Cancer Screening and the NELSON Trial

Soluble Urokinase Receptor and Acute Kidney Injury

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