

High-Profile Publishing in the Age of COVID-19

HOLDEN THORP
EDITOR-IN-CHIEF, *SCIENCE*

Science | AAAS



Science (ca. 2019)

Continued strong content in research, insights, and news

- 2019 journal impact factor is 41.9
- Investigative reporting and daily news
- Visuals, animations, videos and podcasts



News from *Science*

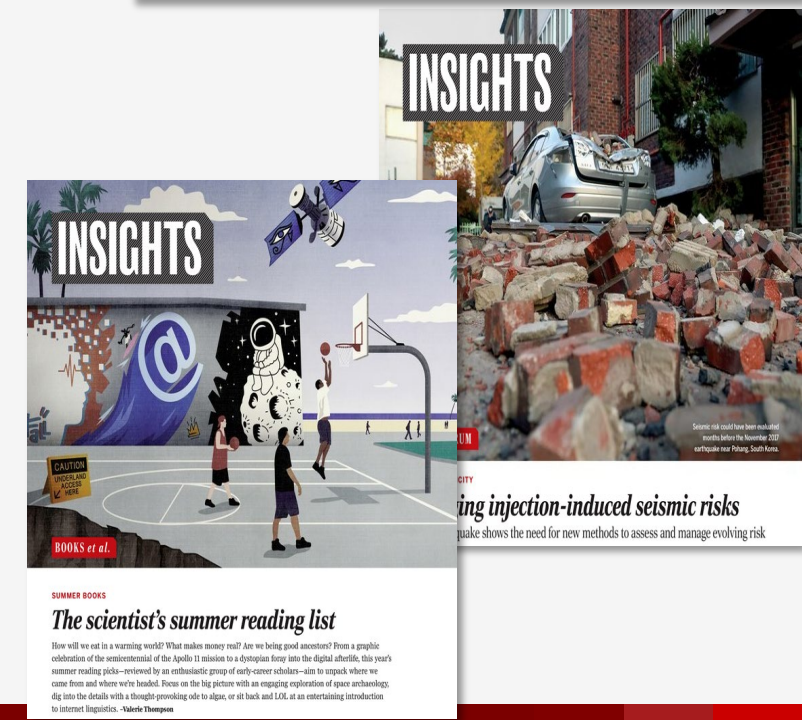
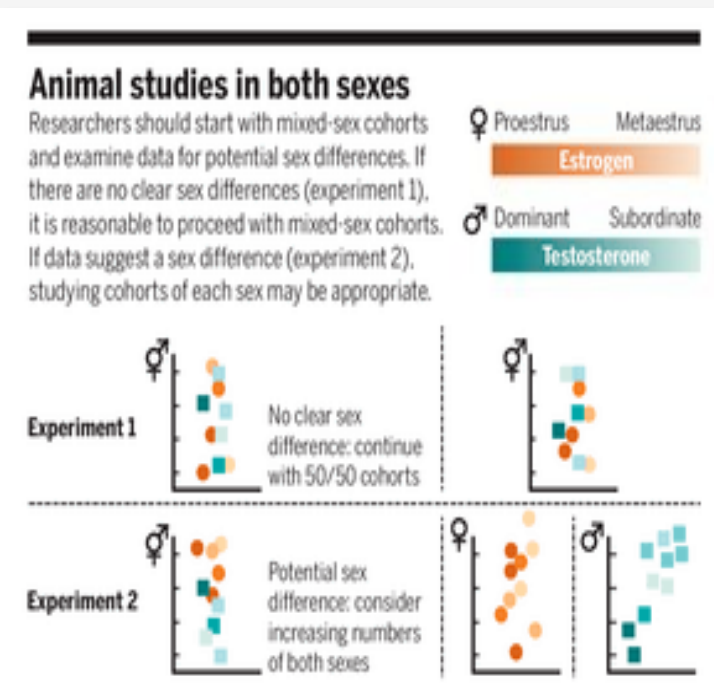
- Over 30 award-winning staff writers, editors, and correspondents.
 - Health Care Journalism Award from NIHCM to Jon Cohen and Jennifer Couzin-Frankel for in-depth look at why Florida can't get its HIV problem under control.
- Donor-funded investigative reporting project resulted in exposes:
 - On sexual harassment in science
 - Overdiagnoses of prediabetes
 - Drop in FDA enforcement actions since Trump took office
- Growing appeal of the Working Life column
 - Draws considerable traffic to the site
 - Lots of engagement on Social Media
- International reach with bureaus in Shanghai, Berlin, Barcelona, Amsterdam, Cambridge, and Mexico City.





Insights

- **Perspectives** – provide context and analysis for research articles and/or highlight recent advances and important issues. Short reviews. Stellar illustrations.
- **Policy Forums** – at the science-policy interface, often emphasizing practical policy steps.
- **Book reviews** – Books blog extends coverage, special sections on summer reading and Subaru award winning books
- **Letters** – brings the voice of our readers into the magazine, particularly the Next-Gen section
- **Editorials** – range from chess to vaccine development to Japanese gender equality to oceans to nuclear energy to science in films. Science editorials are signed.



How *Science* is different

It's typical to hear of CNS papers – *Cell*, *Nature*, *Science*
BUT....

- *Science* family only has 6 journals
- *Science* is non-profit and part of AAAS
- *Science Advances* is run by independent academic editorial board

These are all big differences compared to *Cell* and *Nature*

The best team in all of science

- Monica Bradford
- Lisa Chong
- Valda Vinson
- Jake Yeston
- Tim Appenzeller
- Beth Rakouskas
- Jason Hillman
- Ifor Williams
- Trista Wagoner
- Mike Lee
- Laura Remis
- Orla Smith
- John Foley
- Meagan Phelan
- Editors
- Operations
- Visuals
- News
- Copyediting
- Proofreading
- Editorial Support Teams



And then the world changed

Science



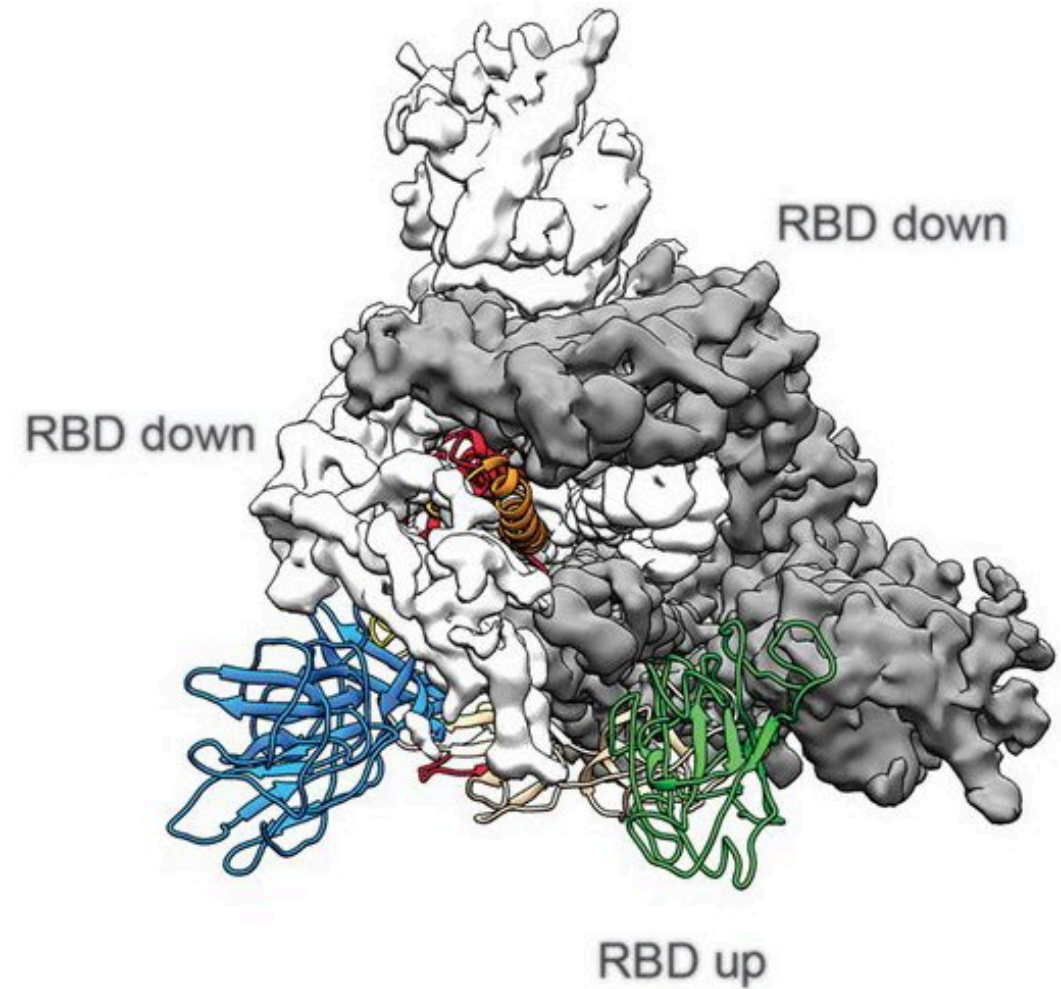
AAAS

Spike protein: February 19

Published 9 days after receipt

From Barney Graham's group
that then did the Moderna
vaccine

The science was progressing
well – policy not so much



First, problems with China

EDITORIAL

The costs of secrecy

“Without freedom of speech there is no modern world, just a barbaric one.” These words from China’s most famous artist and activist, Ai Weiwei, have never been more important. Ai Weiwei would probably agree that China’s actions in the coronavirus crisis require the voice of the scientific community, and he wouldn’t be surprised that getting folks to say something has been a challenge.

I didn’t want to be the person to write this editorial. I felt that it would best come from someone inside China with a direct connection to the situation. Such a person could help dispel or reinforce the scraps of information coming from the intrepid journalists and the few

coronavirus disease 2019 (COVID-19) and the virus that causes it, SARS-coronavirus 2 (SARS-CoV-2). We were proud to cosign a letter led by the Wellcome Trust setting out the terms under which the *Science* family of journals would document the virus and the disease. Under these terms, we are strongly encouraging preprints, making all data and the published paper free immediately, and expediting review. Last week, we published—only 9 days after receiving it—the structure of the SARS-CoV-2 spike protein, which could be important in therapeutic design. The contrast between the mobilization of the scientific community and the political actions of China is striking.

We will never be able to better handle future public health crises without learning lessons from previous



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“Will Western governments do better? We don't know.”

February 25, 2020

"We expect we will see community spread in this country," said Dr. Nancy Messonnier, director of the CDC's National Center for Immunization and Respiratory Diseases. "It's not so much a question of if this will happen anymore, but rather more a question of exactly when this will happen and how many people in this country will have severe illness."



Also on February 25

“I don’t think it’s going to be an economic tragedy at all,” Mr. Kudlow said.

“We have very few people with it, and the people that have it are, in all cases, I have not heard anything other — the people are getting better, they’re all getting better.”
Donald Trump



The assault on science is complete



Donald J. Trump 
@realDonaldTrump



So last year 37,000 Americans died from the common Flu. It averages between 27,000 and 70,000 per year. Nothing is shut down, life & the economy go on. At this moment there are 546 confirmed cases of CoronaVirus, with 22 deaths. Think about that!

10:47 AM · Mar 9, 2020



284.4K



See the latest COVID-19 information on Twitter

End of “the administration”

EDITORIAL

1M downloads
Tweeted 15,000 times

Do us a favor

“Do us a favor and pick it up.” This is what U.S. President Donald Trump said at the National Science Foundation’s State of Science Legislative Conference, recounting what he said to pharmaceutical executives about the progress toward a vaccine for severe acute respiratory syndrome–coronavirus 2 (SARS-CoV-2), the virus that causes coronavirus disease 2019 (COVID-19). Anthony Fauci, the long-time leader of the National Institute of Allergy and Infectious Diseases, has been telling the president repeatedly that developing the vaccine will take at least a year and a half—the same message conveyed by pharmaceutical executives. Apparently, Trump thought that simply repeating his request would change the outcome.

I don’t expect politicians to know Maxwell’s equations for electromagnetism or the Diels-Alder chemical reaction (although I can dream). But you can’t insult science when you don’t like it and then suddenly insist on something that science can’t give on demand. For the past 4 years, President Trump’s budgets have made deep cuts to science, including cuts to funding for the Centers for Disease Control and Prevention and the NIH. With this administration’s disregard for science of the Environmental Protection Agency and the National Oceanic and Atmospheric Administration, and the stalled naming of a director for the Office of Science and Technology Policy—all to support political goals—the nation has had nearly 4 years of harming and



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Flood of submissions on COVID

CORONAVIRUS

Projecting the transmission dynamics of SARS-CoV-2 through the postpandemic period

Stephen M. Kissler^{1*}, Christine Tedijanto^{2*}, Edward Goldstein², Yonatan H. Grad^{1†‡}, Marc Lipsitch^{2†‡}

It is urgent to understand the future of severe acute respiratory syndrome–coronavirus 2 (SARS-CoV-2) transmission. We used estimates of seasonality, immunity, and cross-immunity for human coronavirus OC43 (HCoV-OC43) and HCoV-HKU1 using time-series data from the United States to inform a model of SARS-CoV-2 transmission. We projected that recurrent wintertime outbreaks of SARS-CoV-2 will probably occur after the initial, most severe pandemic wave. Absent other interventions, a key metric for the success of social distancing is whether critical care capacities are exceeded. To avoid this, prolonged or intermittent social distancing may be necessary into 2022. Additional interventions, including expanded critical care capacity and an effective therapeutic, would improve the success of intermittent distancing and hasten the acquisition of herd immunity. Longitudinal serological studies are urgently needed to determine the extent and duration of immunity to SARS-CoV-2. Even in the event of apparent elimination, SARS-CoV-2 surveillance should be maintained because a resurgence in contagion could be possible as late as 2024.

Extraordinary work on COVID research by Valda Vinson, Caroline Ash, and the whole Bio team.

- 3775 research papers, published 128 (3%)
- 1877 Insights papers submitted, published 138 (7% but a lot of these were invited)
- Metrics through the roof – Kissler social distancing paper downloaded 1M times and tweeted 27,000 times

Drawing the blueprints

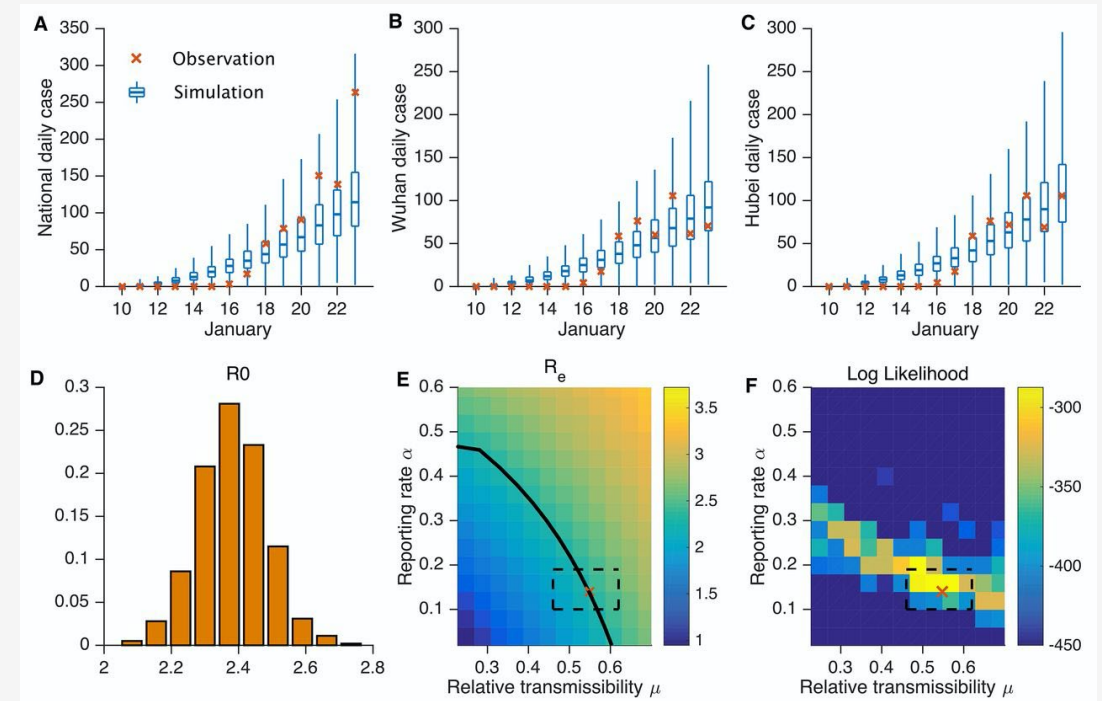
- Structural basis for the recognition of SARS-CoV-2 by full-length human ACE2
- Crystal structure of SARS-CoV-2 main protease provides a basis for design of improved α -ketoamide inhibitors
- A highly conserved cryptic epitope in the receptor-binding domains of SARS-CoV-2 and SARS-CoV
- Structure of the RNA-dependent RNA polymerase from COVID-19 virus
- And many more



First demonstration of undetected infection

- Substantial undocumented infection facilitates the rapid dissemination of novel coronavirus (SARS-CoV2)

First demonstrated only 14% of infections detected in China



This was on **March 16**, but breathless news stories about undocumented infection continue to today.

Vaccines on the way

- Lots of promising macaque studies but monkeys don't develop severe disease
- Spike protein induces strong antibody response in animals and humans
- Still not conclusively demonstrated that high antibody titers provide protection but likely
- Antibodies persist for precisely the amount of time expected

Mainstream media still writing stories about antibodies fading.



VACCINATION: COVID-19

A strategic approach to COVID-19 vaccine R&D

A public-private partnership and platform for harmonized clinical trials aims to accelerate licensure and distribution

By Lawrence Corey^{1,2}, John R. Mascola³, Anthony S. Fauci⁴, Francis S. Collins⁵

There is an unprecedented need to manufacture and distribute enough safe and effective vaccine to immunize an extraordinarily large number of individuals in order to protect the entire global community from the continued threat of morbidity and mortality from severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

Pharmaceutical companies, many of which are bringing forward a variety of vaccine approaches (1). The full development pathway for an effective vaccine for SARS-CoV-2 will require that industry, government, and academia collaborate in unprecedented ways, each adding their individual strengths. We discuss one such collaborative program that has recently emerged: the ACTIV (Accelerating COVID-19 Therapeutic Interventions and Vaccines) public-private partnership. Spearheaded by

Lots of immunology

- Three papers on Regeneron antibodies
- Lots of structures that show antibody-spike characteristics
- Blockbuster papers on IFN response
- Outstanding papers on overall immunology response in *Science*, *STM*, and *Science Immunology*

RESEARCH

CORONAVIRUS

Antibody cocktail to SARS-CoV-2 spike protein prevents rapid mutational escape seen with individual antibodies

Alina Baum, Benjamin O. Fulton, Elzbieta Wloga, Richard Copin, Kristen E. Pascal, Vincenzo Russo, Stephanie Giordano, Kathryn Lanza, Nicole Negron, Min Ni, Yi Wei, Gurinder S. Atwal, Andrew J. Murphy, Neil Stahl, George D. Yancopoulos, Christos A. Kyratsous*

Antibodies targeting the spike protein of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) present a promising approach to combat the coronavirus disease 2019 (COVID-19) pandemic; however, concerns remain that mutations can yield antibody resistance. We investigated the development of resistance against four antibodies to the spike protein that potently neutralize SARS-CoV-2, individually as well as when combined into cocktails. These antibodies remain effective against spike variants that have arisen in the human population. However, novel spike mutants rapidly appeared after in vitro passaging in the presence of individual antibodies, resulting in loss of neutralization; such escape also occurred with combinations of antibodies binding diverse but overlapping regions of the spike protein. Escape mutants were not generated after treatment with a noncompeting antibody cocktail.

News through the roof

- Interview with George Gao changes mask discourse (Jon Cohen)
- Debunking of 'Plandemic' video
- Interview with Moncef Slaoui (JC)
- Interview with Shi Zhengli (JC)
- School openings around the world suggest options (US didn't follow)
- Stunning CDC story by C. Piller

"I know that. I cannot do the impossible."

"What do you expect me to do, Jon?"



Anthony Fauci (far right) attends a recent White House press briefing on the pandemic. AL DRAGO/BLOOMBERG VIA GETTY IMAGES

'I'm going to keep pushing.' Anthony Fauci tries to make the White House listen to facts of the pandemic

By [Jon Cohen](#) | Mar. 22, 2020 , 7:35 PM

Trump talks to Woodward

- “This is deadly stuff”
- “It spreads through the air”
- “I like playing it down”
- “It’s not just old”



And now the headline

Trump lied about science

H. Holden Thorp

+ See all authors and affiliations

Science 11 Sep 2020:

eabe7391

DOI: 10.1126/science.abe7391

Article

Info & Metrics

eLetters

 PDF

When President Donald Trump began talking to the public about coronavirus disease 2019 (COVID-19) in February and March, scientists were stunned at his seeming lack of understanding of the threat. We assumed that he either refused to listen to the White

We strengthened our voice in racial and social justice

- Editorials by A. Wingfield, G. Barabino, E. Hammonds, C. Collins
- Democracy special issue
- Perspectives by R. Benjamin
- Policy Forum by Weaver and Prowse
- Outstanding research papers
- More on the way



And now there's a choir

Zachary Siegel / October 20, 2020

Scientists Are Finally Denouncing Trump. What Took So Long?

Trump's Covid-19 mismanagement has led to top journals criticizing him as the election nears. But conservative disregard

POLICY & ETHICS

Leading Scientists Urge Voters to Dump Trump

Journals and Nobelists, usually cautious, cite unprecedented damage and incompetence in calls for a U.S. leadership change

News > Medscape Medical News

Medical Journals Slam Trump Administration in Unprecedented Editorials

Laird Harrison

October 15, 2020

Science | AAAS

future tense

Three of the Most Prestigious Scientific Journals Have Condemned Trump's Handling of COVID-19

By JANE C. HU

OCT 14, 2020 • 3:26 PM



What have we learned

- Science can't sit on the sidelines and hide behind our processes
- It's going to be messy because we don't all agree with each other and it will be a noisy debate with folks outside science
- Science never was truly apolitical
- See Wolfe, A. "Freedom's Laboratory"



