

## COVID-19 Bulletin

An RSB communication on the  
bioscience behind the outbreak and  
response

13 July 2020

The ninth edition of the RSB COVID-19 bulletin highlights a selection of the bioscience research and news of the last fortnight. It cannot be comprehensive and gives just a glimpse of the huge worldwide effort to understand SARS-CoV-2 and its effects.

**We can all contribute to the response to COVID-19 by engaging with sound science, countering misinformation and increasing awareness. We hope this bulletin is helpful in this.**

Views or opinions presented are those of the original author(s) and do not necessarily represent the views of the Royal Society of Biology; medical and government advice should be consulted regarding personal wellbeing decisions.

For further information and to get in touch, contact our policy team via: [policy@rsb.org.uk](mailto:policy@rsb.org.uk).

To read previous editions and directly sign-up to future editions of this bulletin, please [visit this page](#).

### **This bulletin is divided into six main sections:**

- 1. RSB news:** including key current updates from the RSB.
- 2. Research updates and expert opinion:** relevant research news and outputs under topic headings.
- 3. How else can the bioscience community help?** Resource and expertise calls.
- 4. Positive community news:** community impact aiding the pandemic response.
- 5. Other regularly updated information sources:** useful online information hubs.
- 6. Spotlight on personal and community wellbeing:** articles on mental health and wellbeing during self-isolation and social distancing.

This newsletter provides links to published news articles from a range of sources. Views or opinions presented are those of the original author(s) and do not necessarily represent the views of the Royal Society of Biology.

## RSB news

### *The Biologist* COVID interviews

In the latest interviews from The Biologist's 'COVID Q&A' series, ecologist Professor Kate Jones

explains the [link between biodiversity loss & disease outbreaks](#), and Oxford epidemiologist Sunetra Gupta discusses alternative models of how COVID-19 has spread through the UK.

### [Call for papers for journal special issue on Pandemics](#)

*Emerging Topics in Life Science* (ETLS), the journal co-owned by the Biochemical Society and the RSB, has opened a call for papers for a special issue on pandemics.

Aiming for publication in 2020, the issue will feature short reviews looking at coronaviruses & COVID-19, but also drivers of disease and emerging infections, emerging infectious disease preparedness and novel epidemiological concepts.

**Submission deadline: September 2020**

### [Main RSB webpage on COVID-19](#)

The RSB is working to adapt and ensure our services are delivered to the greatest extent possible whilst also taking into account Public Health England and Government advice during the pandemic. We regularly update this webpage with relevant information about our activities, initiatives and community support.

### [Education during COVID-19](#)

Our education policy team is working with government, awarding bodies and policy partners to provide advice and support to teachers, parents and students. These pages will be updated regularly over the coming weeks.

For more current news, commentary and updates, visit the [RSB on Twitter](#), [LinkedIn](#), [The Biologist](#), and read our latest edition of the weekly [Science Policy Newsletter](#).

## Research updates and expert opinion

*SARS-CoV-2 is a virus in the zoonotic coronavirus family. This novel virus, discovered in 2019, was previously unidentified in humans and causes the disease COVID-19, which has since been characterized as a pandemic.*

### [Coronavirus \(COVID-19\): scientific evidence supporting the UK government response](#)

A collection of the evidence provided to the Government by the Scientific Advisory Group for Emergencies (SAGE) on COVID-19, updated July 10th.

### [Coronavirus research updates: Massive contact-tracing effort finds hundreds of cases linked to nightclubs](#)

*Nature* wades through the literature on the new coronavirus - and summarizes key papers as they appear.

### [Covid-19 news: UK has opted out of EU coronavirus vaccine programme](#)

The latest coronavirus news updated every day including coronavirus cases, the latest news, features and interviews from *New Scientist* and essential information about the covid-19 pandemic.

## SARS-CoV-2 virus characteristics

### [Deep mutational scanning of SARS-CoV-2 receptor binding domain reveals constraints on folding and ACE2 binding, according to a new study](#)

The ACE2 receptor binding domain (RBD) of the SARS-CoV-2 spike glycoprotein mediates viral attachment to ACE2 receptor, and is a major determinant of host range and a dominant target of

neutralizing antibodies. The authors of this **preprint** (not yet peer reviewed) experimentally measured how all amino-acid mutations to the RBD affect expression of folded protein and its affinity for ACE2. They present an interactive visualization and open analysis pipeline to facilitate use of their dataset for vaccine design and functional annotation of mutations observed during viral surveillance.

## COVID-19 pathophysiology

### [We Still Don't Fully Understand The Label 'Asymptomatic' according to a new study](#)

A new paper in *Nature Medicine*, published June 18, documents the clinical patterns of asymptomatic infections. It finds that many of the people studied developed signs of minor lung inflammation - akin to walking pneumonia - while exhibiting no other symptoms of the coronavirus.

### [Probability of symptoms and critical disease after SARS-CoV-2 infection quantified according to a new study](#)

The authors of this **preprint** (not yet peer reviewed) quantified the probability of developing symptoms and critical disease (requiring intensive care or resulting in death) of SARS-CoV-2 positive subjects.

### [World-leading study into long-term health impacts of COVID-19 launched by UKRI and NIHR](#)

UK Research and Innovation and the National Institute for Health Research have announced £8.4 million funding for one of the world's largest studies into the long-term physical and mental health impacts of coronavirus on hospitalised patients.

### [The coronavirus 'long-haulers' show how little we still know: an opinion article in The Guardian](#)

My Covid-19 symptoms lasted for months. As an infectious disease specialist, I know the importance of widespread testing, writes Debbie Bogaert in an opinion article for The Guardian.

## Epidemiology and public health response

### [Refusal to wear mask should be as taboo as drink-driving, says President of the Royal Society](#)

Venki Ramakrishnan, President of the Royal Society, issues call amid evidence coverings protect wearer as well as others.

### [SARS-CoV-2 seroprevalence in COVID-19 hotspots](#)

Comment in *The Lancet* on the first SARS-CoV-2 seroprevalence studies, from cohorts representing the general population, from COVID-19 hotspots such as China, the USA, Switzerland, and Spain. The key finding from these representative cohorts is that most of the population appears to have remained unexposed to SARS-CoV-2, even in areas with widespread virus circulation, leaving them far from reaching natural herd immunity in the population.

### [New findings on T cell immunity in COVID-19](#)

Researchers at the Karolinska University Hospital and University Hospital of Wales report that people who have recovered from asymptomatic or mild cases of coronavirus disease 2019 (COVID-19) may have long-term T-cell immunity against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). A **pre-print** version of the paper is available on the server bioRxiv\*, while the article undergoes peer review.

### [Pre-existing immunity to SARS-CoV-2: the knowns and unknowns](#)

A comment piece in *Nature Reviews Immunology* describes how T cell reactivity against SARS-CoV-2 was observed in unexposed people; however, the source and clinical relevance of the reactivity remains unknown. It is speculated that this reflects T cell memory to circulating 'common cold' coronaviruses.

## The Tricky Math of Herd Immunity for COVID-19

Herd immunity differs from place to place, and many factors influence how it's calculated, writes Kevin Hartnett for Quanta magazine.

## Lockdown measures return as covid-19 cases spike in several countries

NewScientist covers expert opinion on the interplay between ongoing COVID-19 transmission and control measures.

## COVID-19 and the impact on social care

As the Coronavirus pandemic has developed, carers and those receiving care have been significantly affected reports Sophie John for the National Statistical: News and insight from the Office for National Statistics.

## Coronavirus deaths: Taking stock of what ONS have recorded so far - and what might happen next

Every week the ONS has been charting the tragic death toll of the coronavirus pandemic. As we pass the midway point in the year, Sarah Caul looks back on what has happened so far in 2020 and, using trends from previous years, gives her view on what could happen next. Written for the National Statistical: News and insight from the Office for National Statistics.

## Coronavirus in developing countries: Mapping national policy responses

Some predicted that the coronavirus pandemic had the potential to be a health catastrophe for developing countries. But the emerging picture is more complex and nuanced. This House of Commons Library Insight maps the main trends in policy to date among developing countries. It highlights some of the ongoing debates in these countries about the pandemic. The publication of this Insight launches the Commons Library's new [Coronavirus: International dimensions](#) webpage.

## Study reveals extent of coronavirus spread in hospitals during pandemic peak

Researchers studying the spread of SARS-CoV-2 among healthcare workers have found high levels of asymptomatic infections during the peak of the pandemic in London. These results, published as part of correspondence in *The Lancet*, highlight the importance of routinely screening healthcare staff for the virus to protect frontline workers and their patients.

## Testing and ongoing surveillance

### Risks, R numbers and raw data: David Spiegelhalter writes on how to interpret coronavirus statistics

Covid-related facts and definitions are confusing, and as lockdown is eased, clarity is more important than ever, writes David Spiegelhalter, chair of the Winton Centre for Risk and Evidence Communication at Cambridge University, for the Observer.

### Work begins on UK system for estimating COVID-19 cases from wastewater

Scientists will develop a standardised UK-wide system for detecting coronavirus in wastewater, in order to provide an early warning of future outbreaks and reduce reliance on costly testing of large populations.

### Test sensitivity is secondary to frequency and turnaround time for COVID-19 surveillance, according to a new study

The authors of this **preprint** (not yet peer reviewed) modelled surveillance effectiveness considering test sensitivities, frequency, and sample-to-answer reporting time. They concluded

that surveillance should prioritize accessibility, frequency, and sample-to-answer time; analytical limits of detection should be secondary.

### [The mathematical strategy that could transform coronavirus testing](#)

Four charts show how pooling samples from many people can save time or resources, reports *Nature*.

## Prophylaxis and treatment

### [Immunity to Covid-19 rapidly declines, research shows](#)

Two studies looking at levels of antibodies in recovered patients showed that natural immunity cannot be relied on.

### [Coronavirus Vaccine Tracker](#)

The New York Times coronavirus vaccine tracker by Jonathan Corum, Denise Grady, Sui-Lee Wee and Carl Zimmer. The tracker reports on the vaccine testing process, and global progress for vaccine categories including genetic, viral vector, protein based, whole virus and repurposed vaccines.

### [Preliminary trial results find antiviral drug lopinavir/ritonavir does not reduce death in hospitalised patients with COVID-19](#)

The 'RECOVERY' trial has released preliminary results showing lopinavir/ritonavir, an antiviral drug commonly used to treat HIV, had no significant mortality benefit in hospitalised COVID-19 patients. The RECOVERY trial (which stands for 'Randomised Evaluation of COVID-19 thERapY') was funded by UKRI as part of the UKRI/DHSC/NIHR COVID-19 rapid research response.

### [NHS England launches coronavirus recovery service](#)

*Your Covid Recovery* has been set up to aid survivors experiencing long-term effects from the virus, reports The Guardian.

## How else can the bioscience community help?

### [Working safely during coronavirus \(COVID-19\)](#)

Government guidance for people who work in or run offices, contact centres and similar indoor environments. Part of support for businesses and self-employed people during coronavirus.

### [COVID-19 resources from the community](#)

An RSB webpage with links to COVID-19 initiatives and resources available from other bioscience organisations and the wider community. This page is being updated regularly and if you would like to suggest additional content please [send us an email](#).

### [Highlight topics ideas invited for environmental solutions to COVID-19](#)

NERC invites highlight topic ideas (strategic funding for research and innovation) to encourage environmental solutions that learn from the COVID-19 pandemic, and in doing so support the UK environment, economy and society to recover from COVID-19 legacy challenges.

**Closes: 23 July 2020**

### [UK Science, Research and Technology Capability and Influence in Global Disease Outbreaks](#)

The Science and Technology Committee will inquire formally into the place of UK research, science and technology in the national and global response to the COVID-19 pandemic, and what lessons should be learned for the future. If you plan to submit evidence, please let us know by

emailing [consultation@rsb.org.uk](mailto:consultation@rsb.org.uk).

**Closes: 31 July 2020**

### Funding opportunity: Global Effort on COVID-19 (GECO) Health Research

Global Effort on COVID-19 Health Research is a new cross UK government funding call aiming to support applied health research that will address COVID-19 knowledge gaps. The focus is on understanding the pandemic and mitigating its health impacts in LMIC contexts. The call is supported by NIHR and UKRI and prioritises epidemiology, clinical management, infection control and health system responses.

**Closes: 10 August 2020**

### Learn from the pandemic to prevent environmental catastrophe, scientists argue

The dynamics of the SARS-CoV-2 pandemic share "striking similarities" with the twin environmental crises of global heating and species extinction, argue a team of scientists and policy experts from the UK and US.

### Zoonoses: beyond the human–animal–environment interface

A piece in the Lancet Editorial to mark World Zoonosis Day on 6 July 2020.

### COVID-19 and Zoonotic Diseases Panel Discussion (YouTube)

How are apes affected by COVID-19? Does ape tourism contribute to transmission of zoonotic diseases? What can we do to help? By Ape Alliance.

### Invitation from the Valuing Nature Network to participate in a study on the impacts of COVID-19 on human wellbeing and interactions with coastal nature

If you live in or near coastal areas Valuing Nature Network invites you to participate in a research study exploring the impacts of COVID-19 on people's wellbeing and interactions with coastal nature, by completing an anonymous survey and forwarding it to others living in or near coastal areas.

Contact RSB to discuss bioscience community issues or actions via [policy@rsb.org.uk](mailto:policy@rsb.org.uk)

## Positive community news

### Government to protect UK research jobs with major support package

Government announcement stating that two support packages will give greater job protection to thousands of researchers, scientists and technicians working at UK universities during coronavirus (COVID-19).

### The role of the UK life sciences sector in the race to tackle COVID-19

Steve Bates, Chief Executive of the BioIndustry Association writes on how, while COVID-19 has disrupted normal life and business planning across the globe, the UK life sciences industry has stepped up at rapid pace to meet this unprecedented challenge. This response has included vaccine development, new testing methods and exploring digital health solutions to tackle the virus.

### Reframing the obesity narrative in the wake of COVID-19: placing people at the centre

The next City University Centre for Food Policy 2020 Food Thinkers webinar will be given by Johanna Ralston, CEO of World Obesity Federation on **Wednesday 15 July, 5.15pm - 6.45pm**. It is also part of their Women Redesigning Food Systems series. Register to attend [here](#).

## Other regularly updated information sources

### [Additional COVID-19 resources](#)

An RSB webpage collating other regularly updated resources on COVID-19.

### [\[WHO\] Coronavirus disease \(COVID-19\) Situation Dashboard](#)

WHO COVID-19 situation dashboard.

### [Coronavirus COVID-19 Global Cases by Johns Hopkins CSSE](#)

COVID-19 case dashboard.

## Spotlight on personal and community wellbeing

### [The effects of social deprivation on adolescent development and mental health](#)

The physical distancing measures mandated globally to contain the spread of COVID-19 are radically reducing adolescents' opportunities to engage in face-to-face social contact outside their household. This interdisciplinary Viewpoint in *The Lancet* describes literature from a variety of domains that highlight how social deprivation in adolescence might have far-reaching consequences.

### [The Pandemic Experts Are Not Okay: an opinion article in The Atlantic](#)

Many American public-health specialists are at risk of burning out as the coronavirus surges back, writes Ed Yong for *The Atlantic*.



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