

# 2020 Progress Report

A year in review

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# The year of open science

Covid-19 is a challenge like nothing the scientific research community has ever faced. Society turned to scientists for answers and they excelled at delivering solutions, racing to provide insights into a global health emergency and developing treatments and vaccines at a speed never seen before in human history.

While 2020 will be remembered for the shockwave the Covid-19 pandemic sent across the globe, it is also the year in which the power of science – particularly the power of open science – was demonstrated.

## Science saves lives and livelihoods. And open science saves faster.

With a global death toll of 2.8 million people and economic losses in the trillions of dollars, lives and livelihoods depended on treatments and vaccines and it became obvious how essential it is to share scientific results openly, whether it is data or research articles.

The genetic code of the SARS-COV-2 virus was shared with the entire scientific community in January 2020, enabling scientists in academia and industry to instantly start vaccine developments. In 2020, we also saw the balance finally tip to open access: over 180,000 Covid-related articles were peer reviewed and published – most of them open access, even those in subscription journals. What could not be accomplished over decades, was rightfully done for Covid-19 research within a matter of months.

By openly sharing the data and research, scientists were able to collaborate more effectively and deliver treatments and vaccines in less than a year – an astonishing speed which has never been achieved before.

This is the power of science – made open.

## Responding to a pandemic

The 117,000 editorial board members and 750 employees at Frontiers also mobilized to work together and provide concrete support and solutions during the pandemic.

Despite the massive disruption caused by the outbreak, researchers managed to adapt and continue working as revealed in the Frontiers survey of our communities, *The Academic Response to COVID-19*, conducted with more than 25,000 researchers from 152 countries.

This was also apparent in our Covid-19 call to action, which received an overwhelming response and within a matter of weeks we launched our [Coronavirus Knowledge Hub](#), a centralized source of trusted information and analysis on the pandemic. This included expert commentaries on the pandemic, Covid-19 funding and data resources, as well as the latest research articles and 152 article collections covering many aspects of the outbreak, from prevention, treatment and vaccine development to psychological and economic impacts.

To deal with over 10,000 submissions to date, 159 researchers volunteered to join our rapid review task force. They were, and continue to be, on stand-by for any Covid-related submissions to ensure a fast-tracked and rigorous peer review.

This has resulted in over 3,500 published Covid-19 articles. These have been viewed and downloaded more than 20 million times from research and innovation hubs around the world.

In support of the scientific response, we made sure these articles were not only free to read and download, but also free to publish – Frontiers provided more than \$4 million in waivers for Covid-19 publications.

## Being pulled apart brought us closer together

The health and safety of our employees has always been our top priority and on March 16, 2020 we closed our offices in Lausanne, London, Madrid, Seattle, Trivandrum and Beijing. Since then, most of our employees have been working from home.

As a technology company we are accustomed to working online and we were able to seamlessly transition to working from home. But the challenges posed by a sudden global lockdown was new and uncharted territory also for us. From having to support Covid-19 cases to experiencing uncertainty and anxiety, lack of testing capacity, caring for children and dealing with isolation, we had to pull together and support each other through this new reality. We established a Covid support team to provide advice and assistance for employees struggling to cope with the pandemic. This included flexible working arrangements for parents, various wellbeing initiatives, and resources to help us stay connected.

We organized, at first weekly and then later bi-monthly, "town hall" meetings with our staff to share information and support. After an overwhelmingly positive response, we extended this initiative to our editorial boards. In 2020, we organized two virtual [Editors' Summits](#) attended by almost 15,000 editors on our boards, to share experiences, unite against the coronavirus and highlight progress.

We didn't anticipate the impact of reaching and connecting with even more people online, so are pleased to announce that the [Frontiers Forum Speaker Series](#) is going online too. 2021 speakers include David Christian, founder of the Big History Project, and Esther Dufo, Economics Nobel Prize laureate.

## We made tremendous progress

Not only did these initiatives lead to a stronger sense of community, we also made significant progress.

Key milestones reached in 2020 include:

- Frontiers remains the 5th most-cited publisher with the average article citation count increasing from 3.6 in 2019 to 3.9 in 2020.
- In 2020, article views and downloads increased to 380 million, a 62% increase over the previous year, totaling well over one billion.
- The Frontiers scholarly community grew to more than 117,000 editors and 671,000 authors from leading institutions around the world. An additional 16,000 new editors joined our editorial boards in 2020.
- 27 new journals were launched in 2020. Most specifically aligned with the United Nation's Sustainable Development Goals, including *Frontiers in Conservation Science* and *Frontiers in Global Women's Health*. Frontiers now hosts 103 journals across 866 academic disciplines.
- 77 new institutional members joined in the last year, including the University of Oxford, CERN, and Biblioson, bringing the total number to 240. There are now transparent national open access publishing agreements for universities in Austria, Sweden, Qatar, the UK, and Norway.
- *Frontiers for Young Minds*, our journal for kids and teens, now has 581 articles and 7.6 million views and downloads. Articles are available in English and Hebrew, and Arabic versions are planned to launch soon.
- In an industry first, Frontiers' artificial intelligence review assistant (AIRA) was deployed to assist our editors, reviewers, as well as authors, in the peer review process. AIRA currently conducts more than 20 quality checks with the goal to continuously increase integrity and quality in manuscripts and the peer review process.

## A better world through open science

The mission under which all of us at Frontiers unite is to make science open to accelerate the solutions we need to live healthy lives on a healthy planet.

Making science open enabled scientists to deliver treatments and vaccines for Covid-19.

Making science open will better prepare us for future pandemics.

Making science open will also enable us to tackle other public health issues, including respiratory diseases (8 million annual deaths), cancer (10 million annual deaths) and cardiovascular diseases (18 million annual deaths). Only 20-30% of articles in these research areas are open access. We could be saving many more lives and preventing further economic losses by embracing open science as our default *modus operandus*.

Making science open will enable us to address the greatest challenge of our generation – climate change. The challenge of getting to zero greenhouse gas emissions needs to be solved within our lifetime, so a particularly daunting task. Science is key, but only with open science do we stand a chance to win this race.

This is the journey we have been on since 2007 and a challenge we are committed to tackling until all science is open science.

A heartfelt thank you to our authors, editors, reviewers and staff for taking this journey with us, for your invaluable contributions, and for your ongoing commitment to open science.

I am truly proud to be a part of this community and to work alongside people who are making a difference and contributing to healthy lives on a healthy planet.

**Kamila Markram**

April 2021



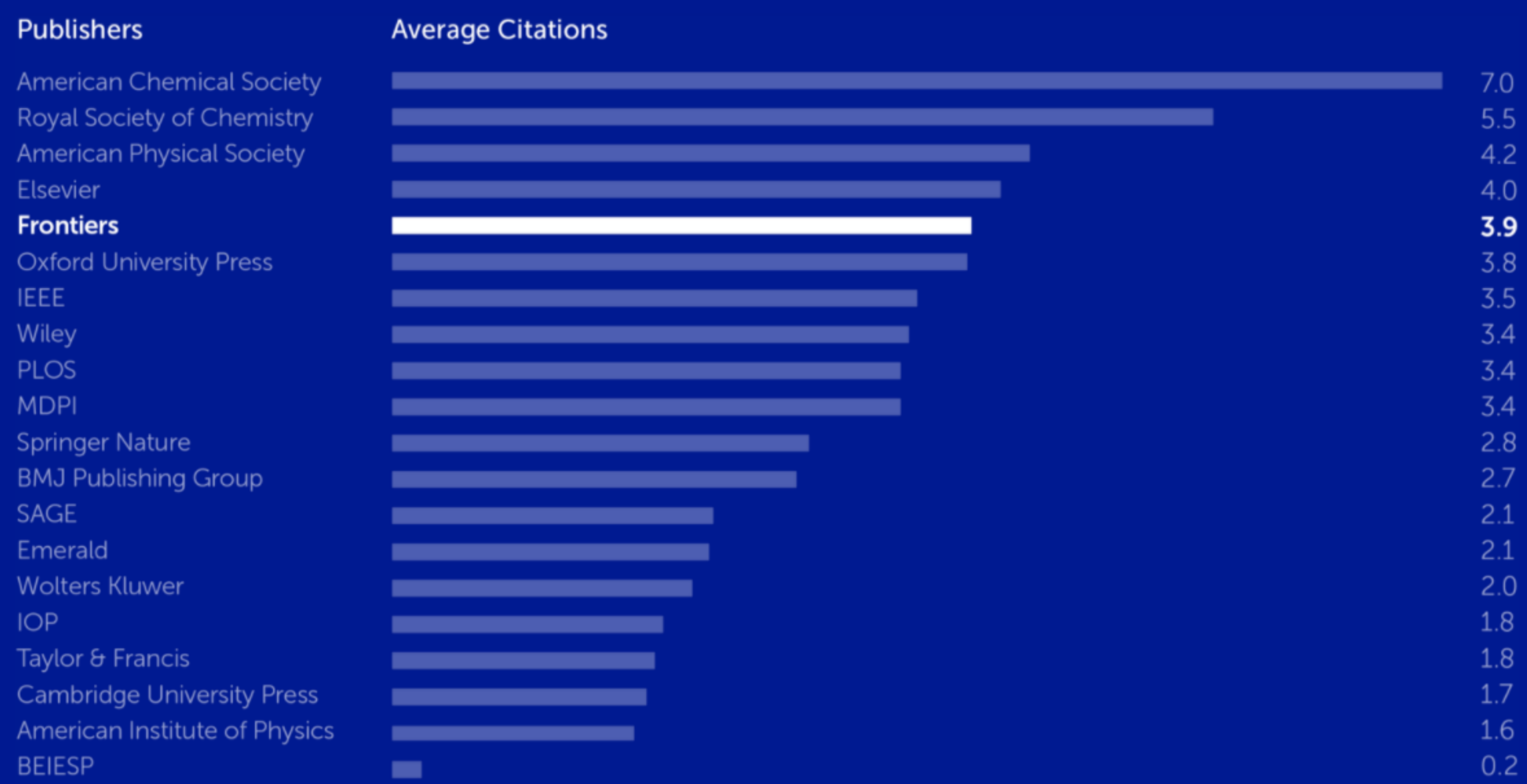
**Dr. Kamila Markram**  
CEO and co-founder,  
Frontiers

# Key figures

## 5th most-cited publisher

Frontiers is an award-winning Open Science platform and leading Open Access scholarly publisher.

In 2020, we were the 5th most-cited publisher, increasing average citations from **3.6** in 2019 to **3.9** in 2020 for every article published with us.

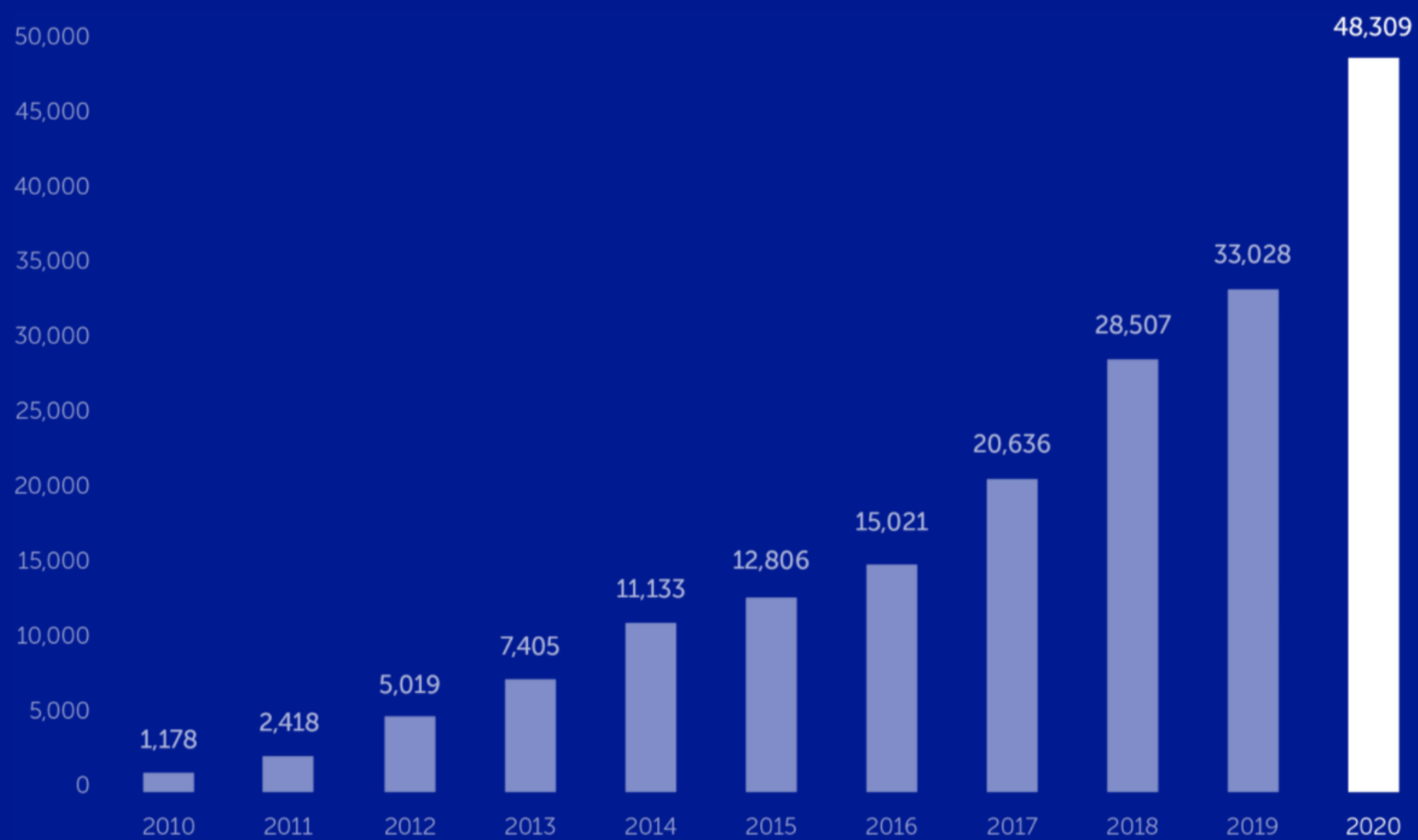


Analysis of the world's 20 largest publishers by volume, ranked by number of average citations received to articles published in 2017, 2018 and 2019 (Scimago, 2020). Frontiers ranks 5th most-cited with an average of 3.9 citations per article.

## 185,000 published articles

We empower scientists with innovative Open Science solutions that radically improve how science is published, evaluated and disseminated to researchers, innovators and the public.

In 2020, we published over **48,000** open access articles, a **46%** increase on the year before. To date, we have published a total of **185,000** articles across **103** journals and spanning **866** academic disciplines.



## 1 billion article views and downloads

Frontiers articles have been viewed and downloaded more than **one billion** times from all over the world.



# Covid-19

A global health emergency like the Covid-19 pandemic can only be overcome when research results are rapidly and openly shared, and when all stakeholders work together.

## Covid-19 research

In 2020, we established a priority peer review process for all Covid-19 research and waived more than **\$4 million** in publishing fees to support the scientific response to the pandemic. To date, our editorial community has reviewed **10,160** Covid-19 article submissions, of which **3,560** have been published. Many of these articles form part of our **152** Covid-19 Research Topics covering many aspects of the outbreak, from prevention and treatment to psychological and economic impacts.

**10,160**

total Covid-19 articles submitted

**3,560**

total Covid-19 articles published

**152**

total Covid-19 Research Topics

**20,306,518**

total Covid-19 article views and downloads

**\$4,028,890**

total Covid-19 fee waivers

**156**

Covid-19 review task force members

**6,037**

reviewers of Covid-19 research

### Press coverage

Covid-19 research articles published in our journals were mentioned by international news outlets, including *The New York Times*' September 2020 feature **The Pandemic Is a 'Mental Health Crisis' for Parents**.



Newsweek

Forbes

### 2020 collection highlights



#### Psychological effects of the pandemic

Investigations and theoretical perspectives on how people are psychologically affected by and coping with the pandemic.

147 articles | 670,000 views

— See collection



#### Public health challenges

Addressing knowledge gaps and generating evidence for the improved clinical management and control of Covid-19.

388 articles | 4,500,000 views

— See collection



#### Molecular mechanisms and therapeutics

Advances in the clinical diagnosis of Covid-19 and the study of molecular mechanisms and pathology in different populations.

116 articles | 510,000 views

— See collection

# Academic Survey

In May and June 2020, we conducted a survey with our editors, reviewers, and authors to gain insights on how the pandemic is impacting their work and the wider implication for science. The research community has been under extraordinary pressure to deliver answers, and a lack of precedent and preparation, combined with severe political and social pressures, has made this an incredibly challenging time.



## Press coverage

The findings of our academic survey were mentioned by 27 international news outlets, including *The Economist's* November 2020 report [Are governments following the science on covid-19?](#)

The Economist

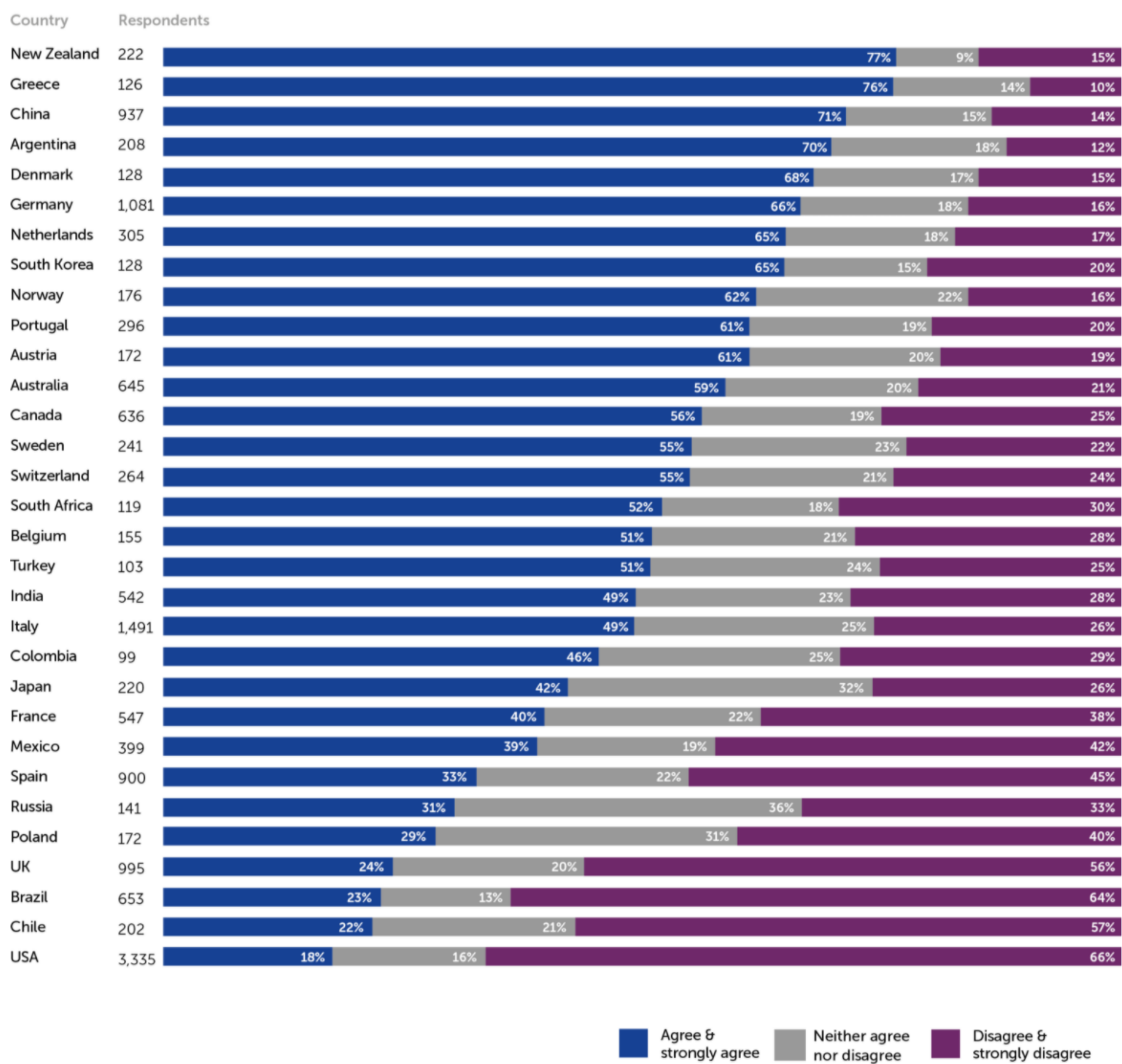
TheScientist

THE TIMES HIGHER EDUCATION

THE CONVERSATION

## Survey highlights

There were mixed reactions to the political response to the pandemic. Researchers in New Zealand had the highest satisfaction levels, with most agreeing that their policy makers had taken scientific advice into account. While the majority of researchers in the USA, Brazil, Chile, and the UK disagreed and did not feel that policymakers had listened to scientific advice.



Despite the massive disruption caused by the outbreak, researchers managed to adapt and continue working. It gives us hope that the academic community will remain resilient to new waves, as well as future disasters.



There are concerns about funding with researchers calling for more investment in basic research – reflecting the need to support long-term challenges and goals, even during a crisis.

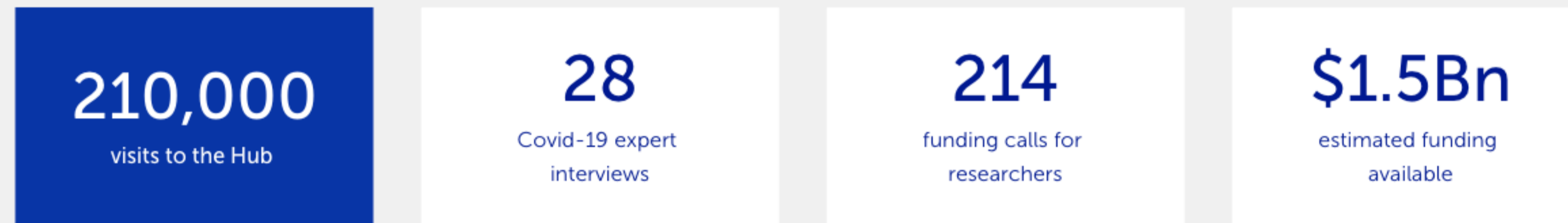


Scientists know how important it is that we learn lessons from 2020 to prepare for future threats to humanity, and are pragmatically considering how to prepare for and mitigate future crises.

See survey

# Coronavirus Knowledge Hub

We launched the Coronavirus Knowledge Hub in March 2020, a centralized source of trusted information and analysis on the pandemic. This includes the latest research articles and collections, expert commentaries on scientific and societal responses to the pandemic, and Covid-19 funding and data resources. The hub also provides a platform for the scientific community to suggest new research directions, stakeholder engagement, and initiatives around Covid-19 and the current global health crisis.



## Covid-19 funding monitor

We set up a funding monitor to help researchers, non-profits, and commercial organizations find funding for their Covid-19 research. The monitor listed **214** open funding calls, including the grant type, deadline, organization, and specific area it supports. An estimated **\$1.5 billion** was made available from funders including Amazon, Pfizer, and the Bill and Melinda Gates Foundation.



## 2020 interview highlights



**Francesca Dominici** from Harvard T.H. Chan discusses new research linking air pollution with higher Covid-19 mortality.

May 29, 2020

— Watch



**Dinesh Bhugra** from King's College London on the mental health impacts of surviving Covid-19, and living and grieving through a pandemic.

May 14, 2020

— Watch



**Thomas Hartung** from Johns Hopkins University explains how coronavirus can affect the human brain.

April 14, 2020

— Watch

Explore the hub

# Our journals

We have over 100 journals spanning science, health, humanities and social sciences, engineering, and sustainability — part of our ongoing commitment to ensure all researchers can publish open access.

**103**

total journals

**866**

total academic disciplines

## Journal launches

We launched **27** new journals in 2020, many of which support the UN's Sustainable Development Goals with research addressing the biggest global challenges of our time. In particular, SDG 3 to ensure healthy lives and promote wellbeing for all and SDG 15 to find sustainable solutions to protect our ecosystems.

### 2020 journal highlights



#### Frontiers in Global Women's Health

Field Chief Editor: **Stephen Kennedy**  
University of Oxford

Solving health inequities with leading research on the physical and mental health problems facing women globally.

— [See journal](#)



#### Frontiers in Conservation Science

Field Chief Editor: **Daniel Blumstein**  
University of California, Los Angeles

The latest research to help preserve ecosystems, achieve biodiversity targets, and restore human-wildlife balance.

— [See journal](#)



#### Frontiers in Oral Health

Field Chief Editor: **Kaumudi Joshipura**  
University of Puerto Rico

Research investigating the diagnosis and treatment of oral diseases, reducing their burden on global healthcare systems.

— [See journal](#)

### 2020 journal launches

Frontiers in Aging  
Frontiers in Allergy  
Frontiers in Animal Science  
Frontiers in Bioinformatics  
Frontiers in Catalysis  
Frontiers in Clinical Diabetes and Healthcare  
Frontiers in Communications and Networks  
Frontiers in Conservation Science  
Frontiers in Control Engineering

Frontiers in Dental Medicine  
Frontiers in Electronics  
Frontiers in Environmental Chemistry  
Frontiers in Fungal Biology  
Frontiers in Future Transportation  
Frontiers in Global Women's Health  
Frontiers in Neuroergonomics  
Frontiers in Oral Health  
Frontiers in Pain Research

Frontiers in Photonics  
Frontiers in Rehabilitation Sciences  
Frontiers in Remote Sensing  
Frontiers in Reproductive Health  
Frontiers in Sensors  
Frontiers in Sustainability  
Frontiers in Space Technologies  
Frontiers in Tropical Diseases  
Frontiers in Virtual Reality

[See all journals](#)



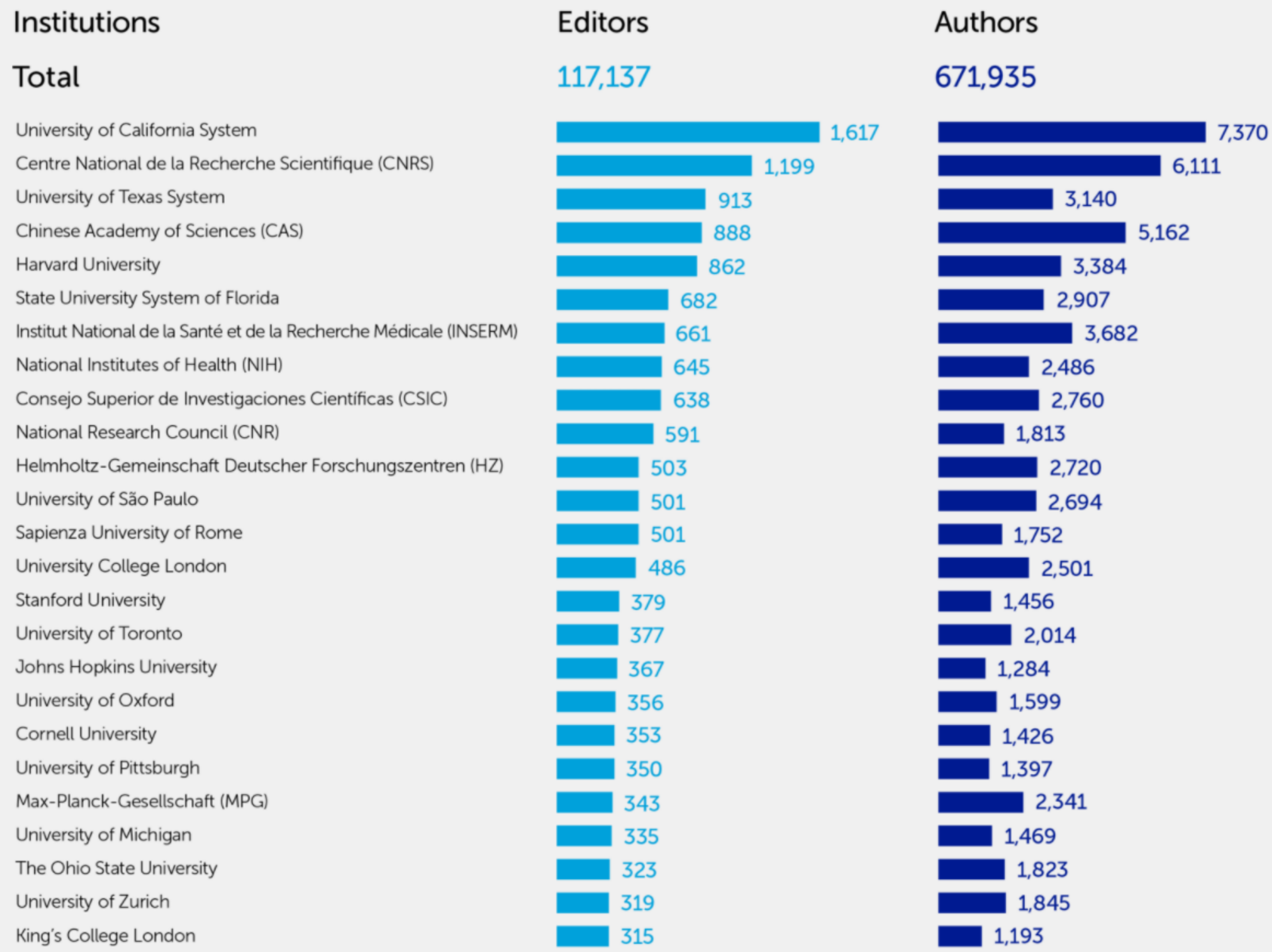
# Authors and editors

We collaborate with leading authors and editors. Our journals are community-run placing publishing back into the hands of active researchers and enabling them to drive progress and shape their fields.

In 2020, the Frontiers community grew to more than **671,000** authors and **117,000** editors.

## Top institutional affiliations

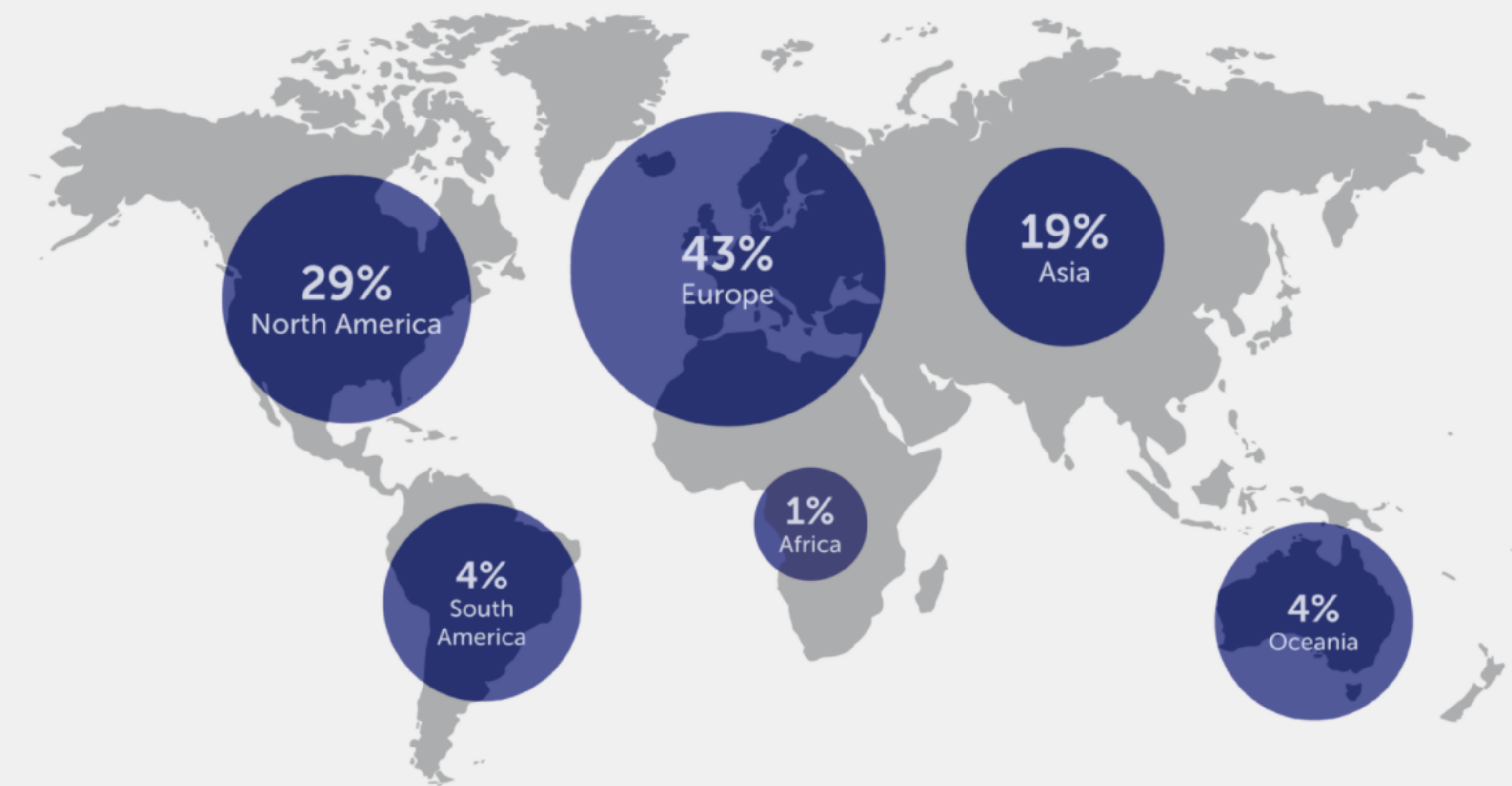
We welcomed more than **16,000** new editors and **150,000** new authors in 2020 from leading institutions around the world.



Top 25 institutional affiliations for Frontiers editors and published authors, ranked by number of editors.

## Editors' geographical locations

Our editorial boards comprise more than **117,000** editors from **177** countries.



## Virtual Editors' Summit

In 2020, our annual Editors' Summit moved online, providing the opportunity for even more of our editors to attend. During the virtual editions, we updated the community on our key company initiatives, including our response to Covid-19 and how we are maximizing research quality on a large scale.

Nearly **15,000** editors tuned in to celebrate our inspiring community's achievements during this challenging year – together making science freely available and helping to address the critical challenges we face as humanity.



## 2020 summit highlights



**Kamila Markram**, Chief Executive Officer, on how the pandemic has highlighted the power of – and critical need for – open science.

[– Watch](#)



**Fred Fenter**, Chief Executive Editor, shares how we're working with our community to make vital Covid-19 research open.

[– Watch](#)



**Mirjam Eckert**, Chief Publishing Officer, discusses the growth of our journals and welcoming over 24,000 new editors.

[– Watch](#)



**Daniel Petrariu**, Chief Technology Officer, introduces our new artificial intelligence review assistant, or AIRA.

[– Watch](#)

[See all talks](#)

# Research Topics

Frontiers Research Topics are multidisciplinary article collections guest edited by leading researchers and addressing wide-ranging topics, from climate change to coronavirus.

**3,151**  
Research Topics with eBooks

**622,798,393**  
total views and downloads

## 2020 collection highlights



### Brain function

A multiscale view of brain function, ranging from molecular to cognitive and behavioral neuroscience.

20 articles | 125,000 views

— See collection



### Women's health

The impact of Covid-19 on women's health and wellbeing, particularly in resource-poor settings.

20 articles | 130,000 views

— See collection



### Protecting forests

Uncovering the human pressures on intact forests, from defaunation to climate change.

15 articles | 100,000 views

— See collection

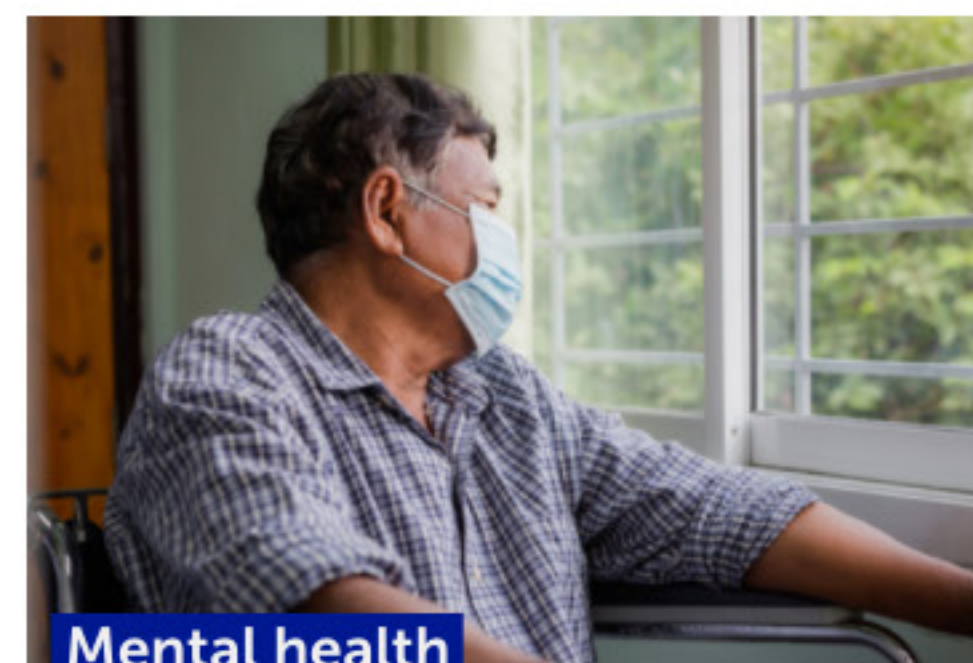


### Treating cancer

Discovering new targeted therapies for cancer, from small molecules to antibodies.

54 articles | 245,000 views

— See collection



### Mental health

How Covid-19 restrictions and social distancing are affecting mental health.

37 articles | 178,000 views

— See collection



### Animal welfare

Investigating the cultural and legal complexities related to spay and neuter of dogs.

11 articles | 430,000 views

— See collection

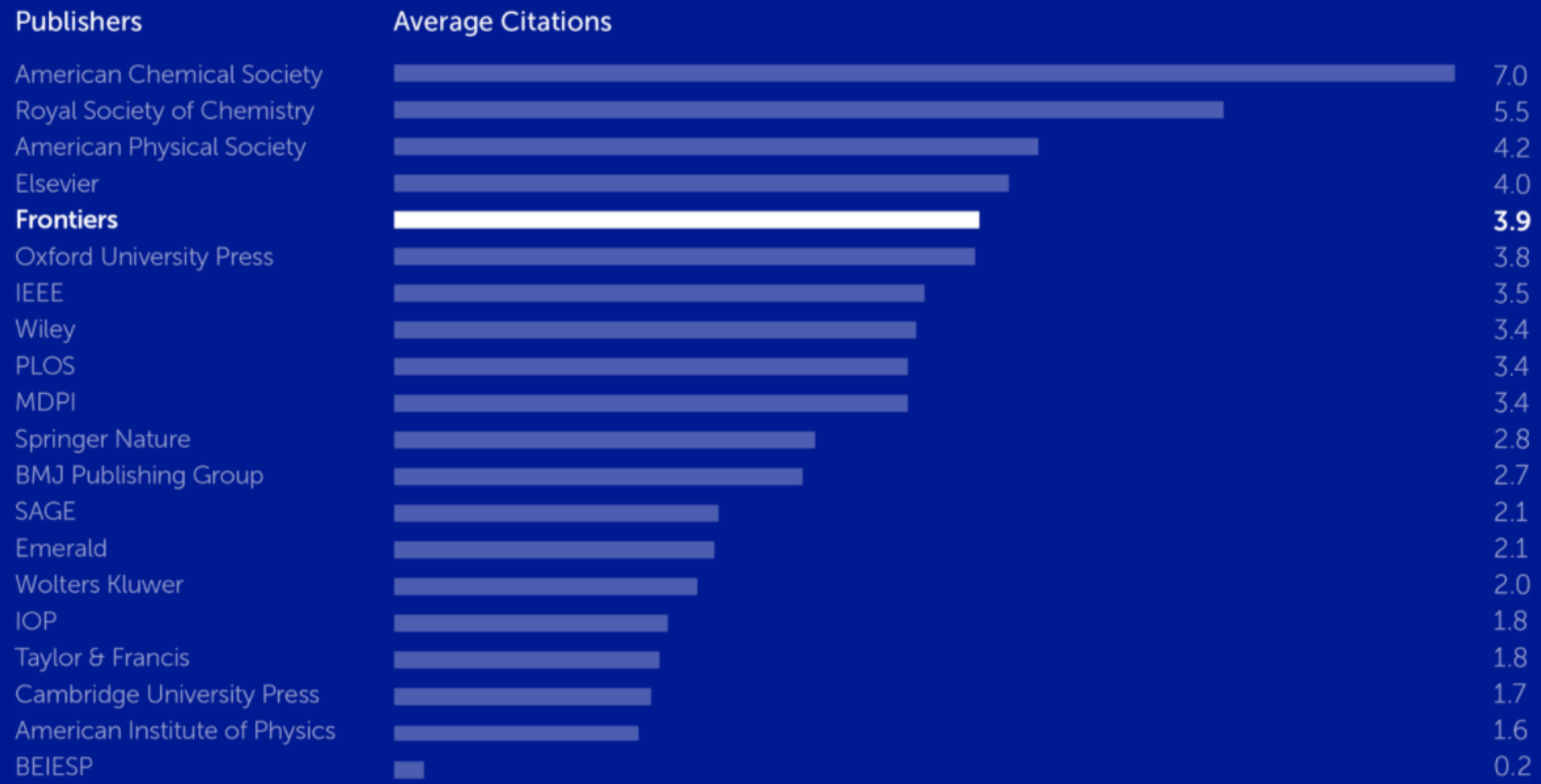
See all collections

# Our impact

Our impact metrics reflect the power of research that is open to all. We measure and communicate a range of metrics, including Impact Factor, CiteScore, overall citation rate, aggregate views and downloads, and news and social media mentions.

## 5th most-cited publisher

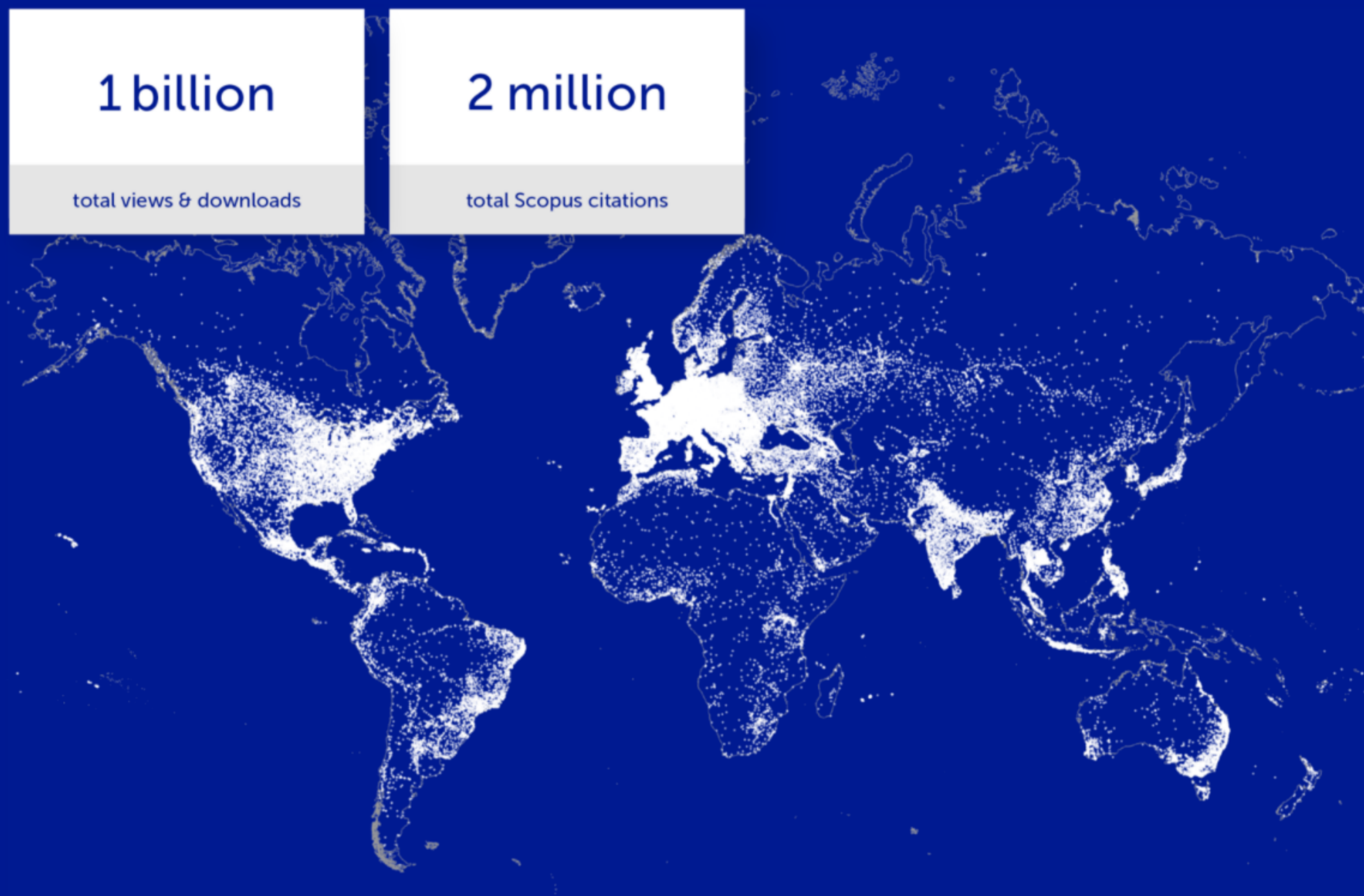
In 2020, we were the 5th most-cited publisher, increasing average citations from **3.6** in 2019 to **3.9** in 2020 for every article published with us.



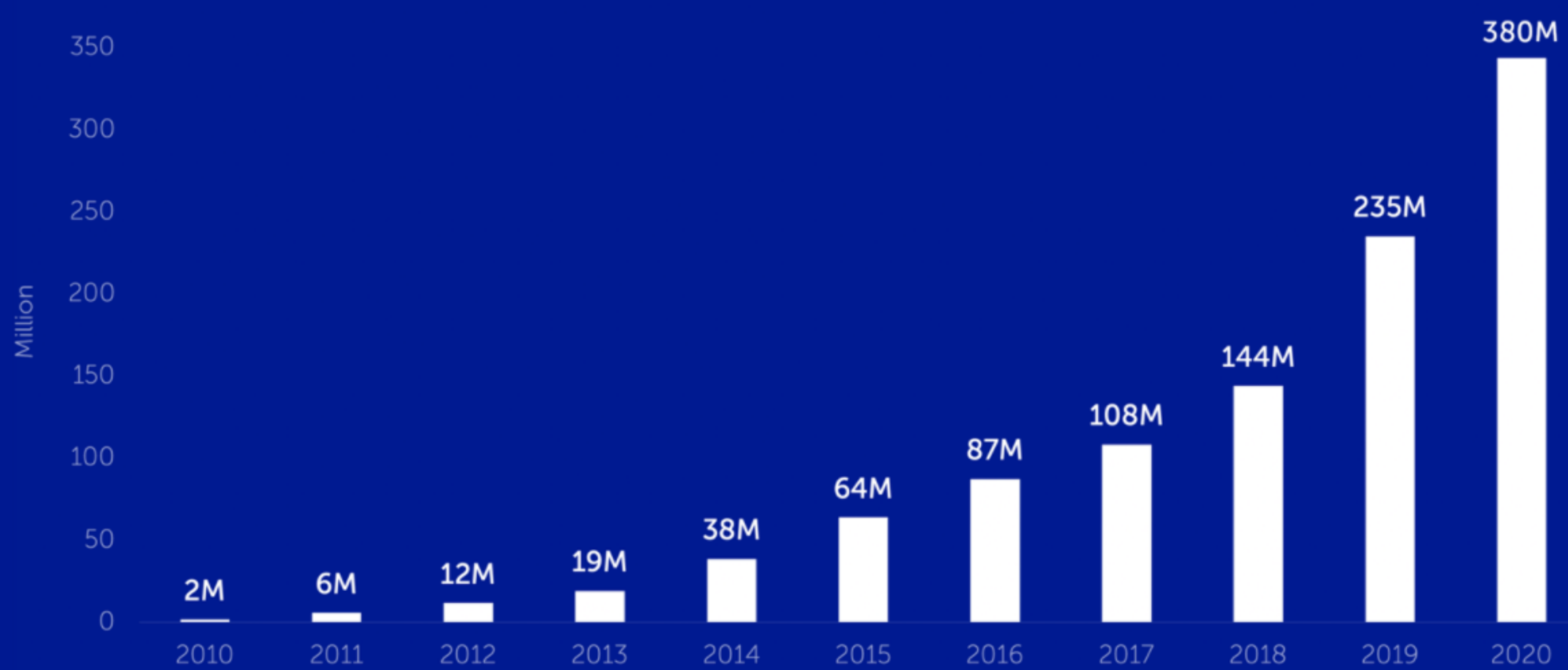
Analysis of the world's 20 largest publishers by volume, ranked by number of average citations received to articles published in 2017, 2018 and 2019 (Scimago, 2020). Frontiers ranks 5th most-cited with an average of 3.9 citations per article.

## 1 billion views and downloads | 2 million citations

In 2020, article views and downloads increased by **62%** over the previous year, totaling **one billion**. Article citations also increased by **50%**, totaling **two million**.



### Article views and downloads (per year)



# Impact Factor and CiteScore

Following the 2020 release of the Web of Science Group's Journal Citation Report (JCR) and Scopus' CiteScore, we have **43** journals with a Journal Impact Factor and **50** journals with a CiteScore.

Journal	Impact Factor	CiteScore
Frontiers in Aging Neuroscience	4.362	6.3
Frontiers in Applied Mathematics and Statistics	2.512	0.2
Frontiers in Astronomy and Space Sciences	-	2.5
Frontiers in Behavioral Neuroscience	-	4.1
Frontiers in Bioengineering and Biotechnology	3.644	3.2
Frontiers in Built Environment	-	2.2
Frontiers in Cardiovascular Medicine	3.915	3.7
Frontiers in Cell and Developmental Biology	5.201	5.8
Frontiers in Cellular and Infection Microbiology	4.123	5.4
Frontiers in Cellular Neuroscience	3.921	5.4
Frontiers in Chemistry	3.693	2.5
Frontiers in Computational Neuroscience	2.535	4.8
Frontiers in Earth Science	2.689	3.3
Frontiers in Ecology and Evolution	2.416	3
Frontiers in Education	-	0.7
Frontiers in Endocrinology	3.644	3.4
Frontiers in Energy Research	2.746	2.5
Frontiers in Environmental Science	2.749	4.4
Frontiers in Genetics	3.258	2.7
Frontiers in Human Neuroscience	2.673	5.4
Frontiers in Immunology	5.085	5.4
Frontiers in Integrative Neuroscience	2.152	3.7
Frontiers in Marine Science	3.661	4.4
Frontiers in Materials	2.705	2.2
Frontiers in Medicine	3.9	4.3
Frontiers in Microbiology	4.235	6.4
Frontiers in Molecular Biosciences	4.188	5.1
Frontiers in Molecular Neuroscience	4.057	5.8
Frontiers in Neural Circuits	3.156	5.9
Frontiers in Neuroanatomy	3.292	5.3
Frontiers in Neuroinformatics	2.649	4.8
Frontiers in Neurology	2.889	3.1
Frontiers in Neurorobotics	2.574	4.6
Frontiers in Neuroscience	3.707	5.1
Frontiers in Nutrition	3.365	4.3
Frontiers in Oncology	4.848	3.5
Frontiers in Pediatrics	2.634	2.6
Frontiers in Pharmacology	4.225	5
Frontiers in Physics	2.638	2.3
Frontiers in Physiology	3.367	4.3
Frontiers in Plant Science	4.402	7.8
Frontiers in Psychiatry	2.849	3.2
Frontiers in Psychology	2.067	3.2
Frontiers in Public Health	2.483	2
Frontiers in Robotics and AI	-	4.7
Frontiers in Surgery	1.826	3.9
Frontiers in Sustainable Food Systems	-	11
Frontiers in Synaptic Neuroscience	-	6.5
Frontiers in Systems Neuroscience	3.293	6.9
Frontiers in Veterinary Science	2.245	2.6

The Journal Impact Factor is the average number of citations received in the last year to articles published in the previous two years. It is measured each year by the Web of Science Group and reported in the Journal Citation Reports (JCR). The JCR analysis released in 2020 is based on citations in 2019 to articles published in 2017 and 2018.

The CiteScore journal impact metric measures the average citations received in a four-year time window to selected documents published in the same four years. The 2019 CiteScore is based on citations received in 2016-2019 to articles, reviews, conference papers, book chapters, and data papers published in 2016-2019, and divides this by the number of these documents published in 2016-2019. CiteScore covers all journal titles in Elsevier's Scopus database and is released once a year.

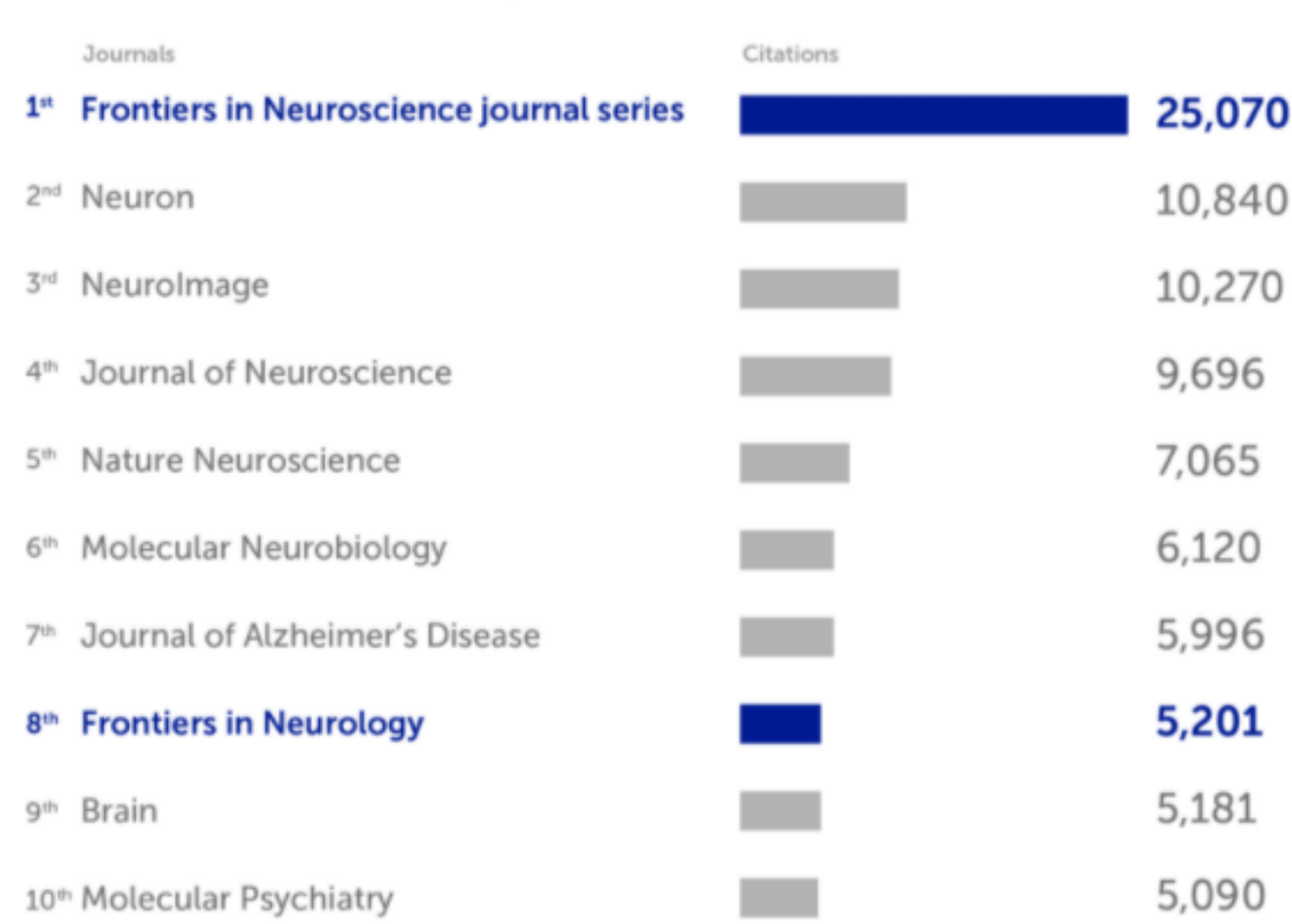
[See all journals](#)

# Most cited journals

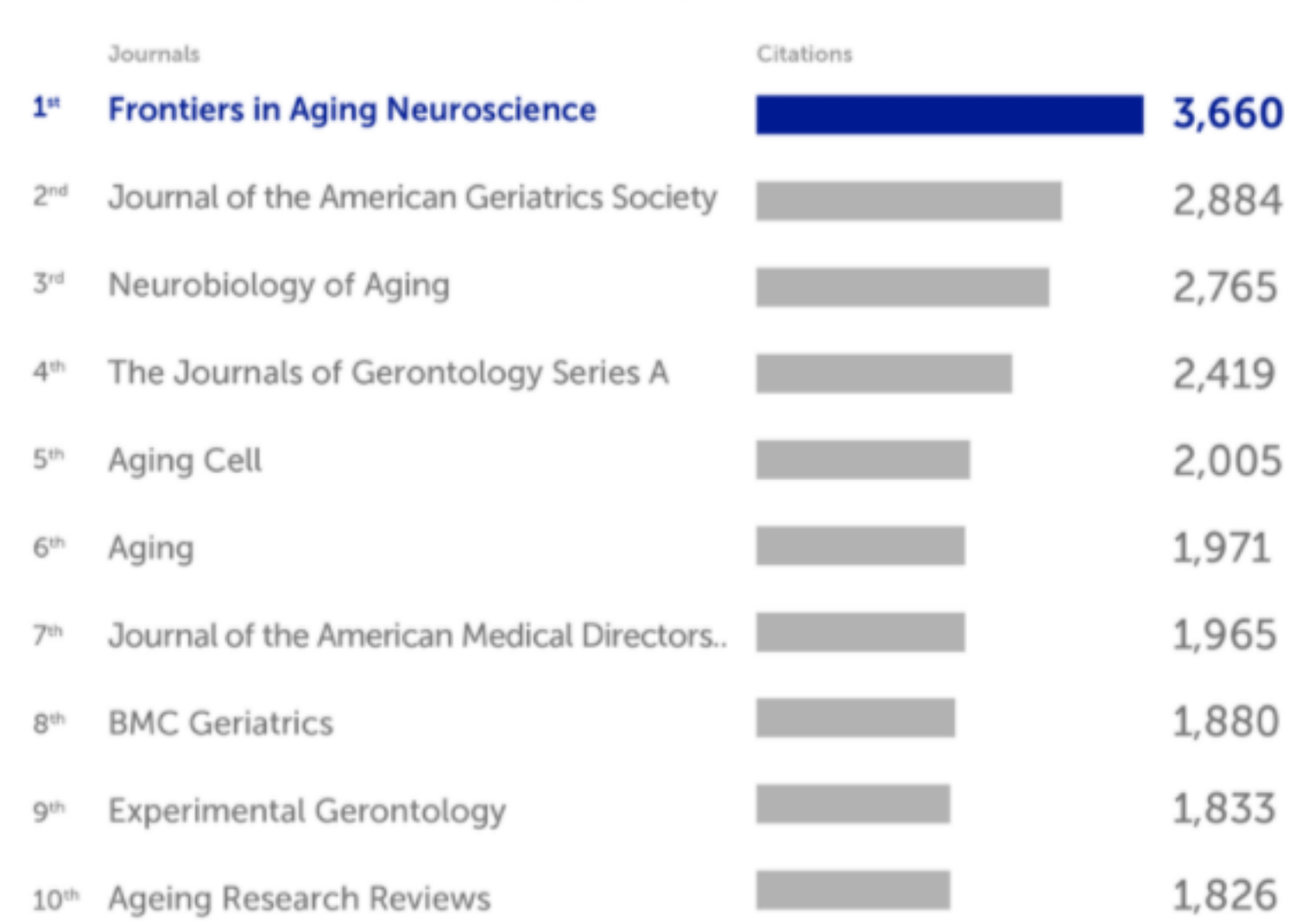
In 2020, many of our journals ranked among the most influential in their fields, including the most cited in **neurosciences, immunology, microbiology, plant science, physiology, and psychology**.

JCR CiteScore

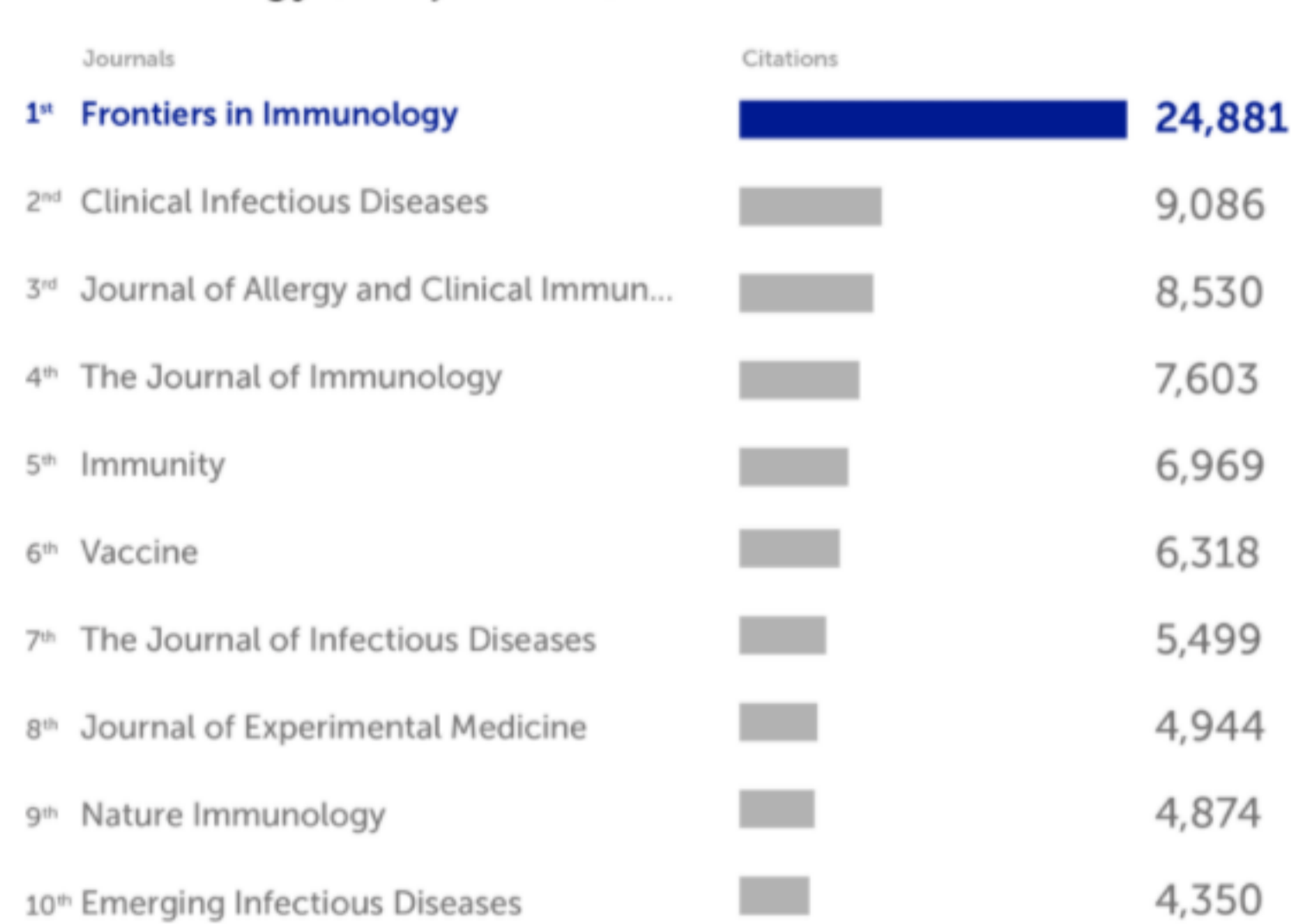
## Neurosciences\* (259 journals)



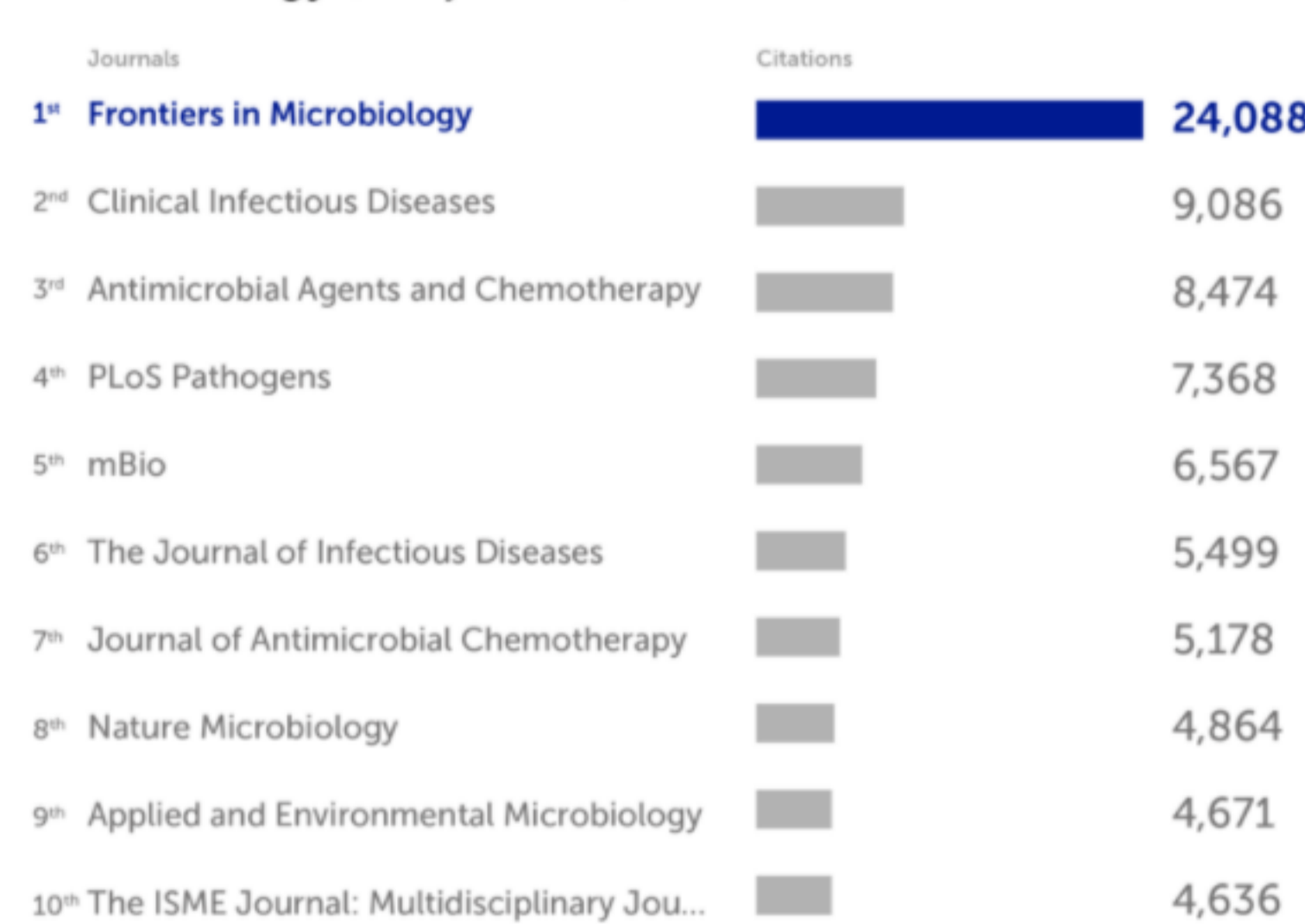
## Geriatrics & Gerontology (51 journals)



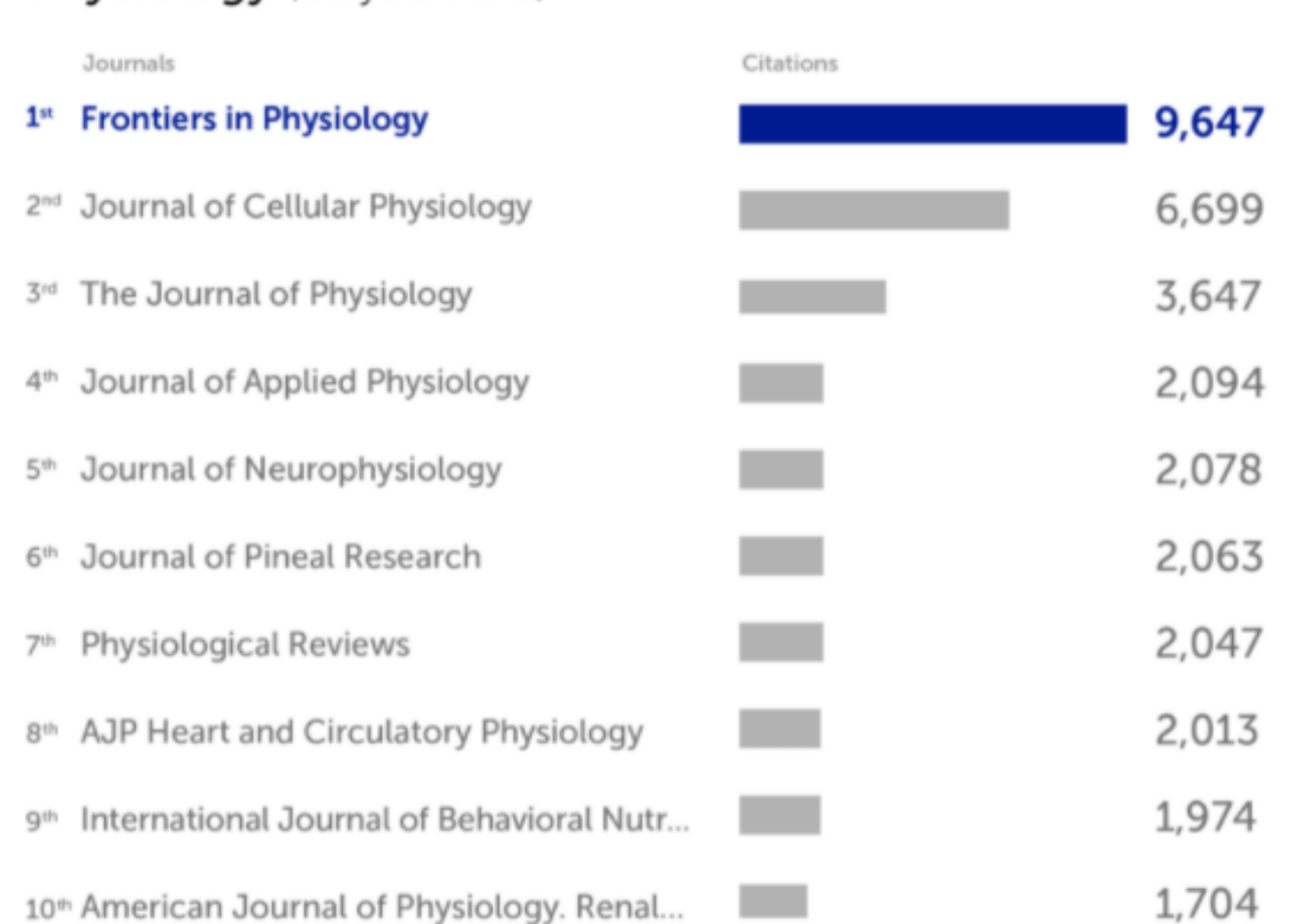
## Immunology (158 journals)



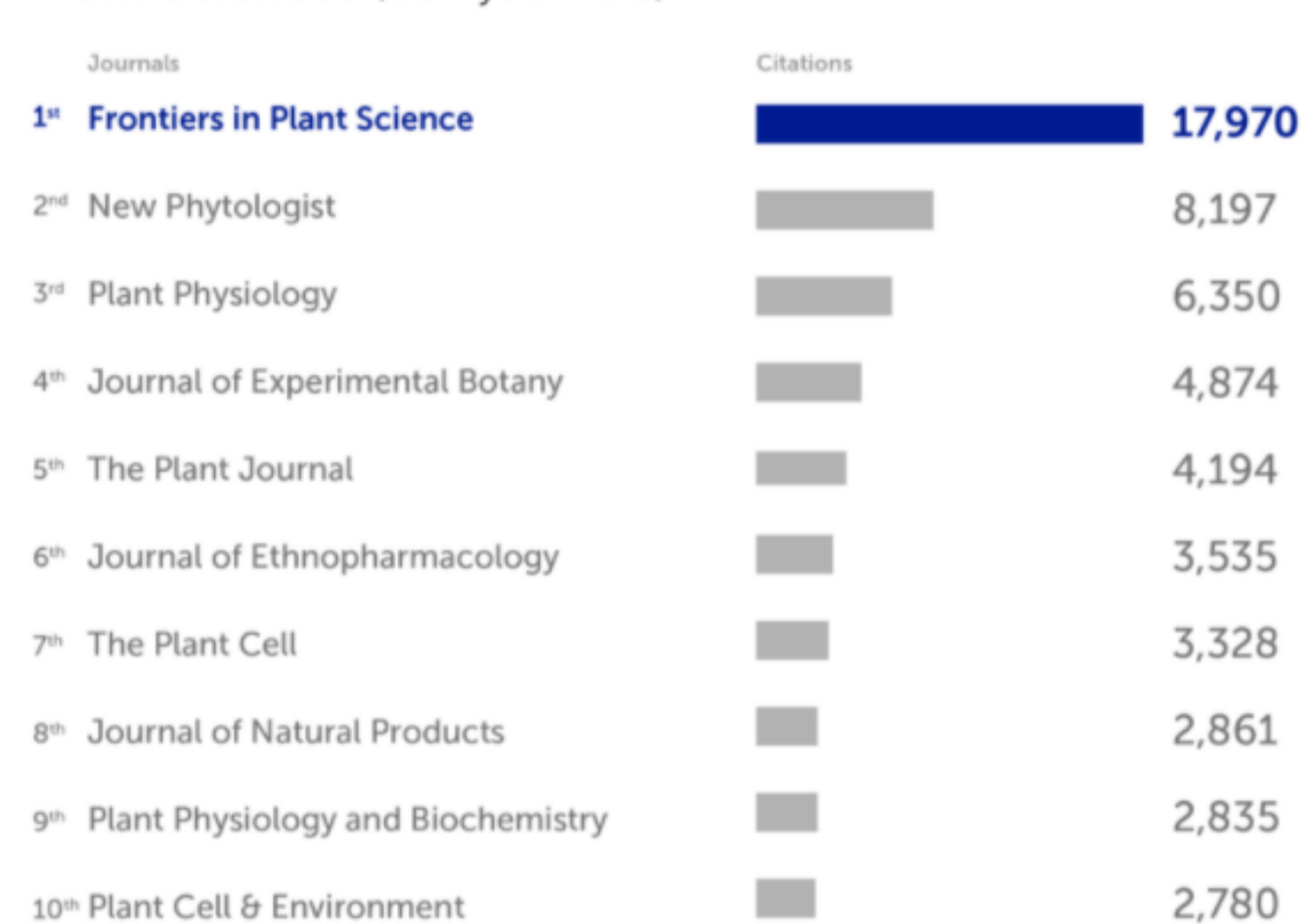
## Microbiology (135 journals)



## Physiology (81 journals)



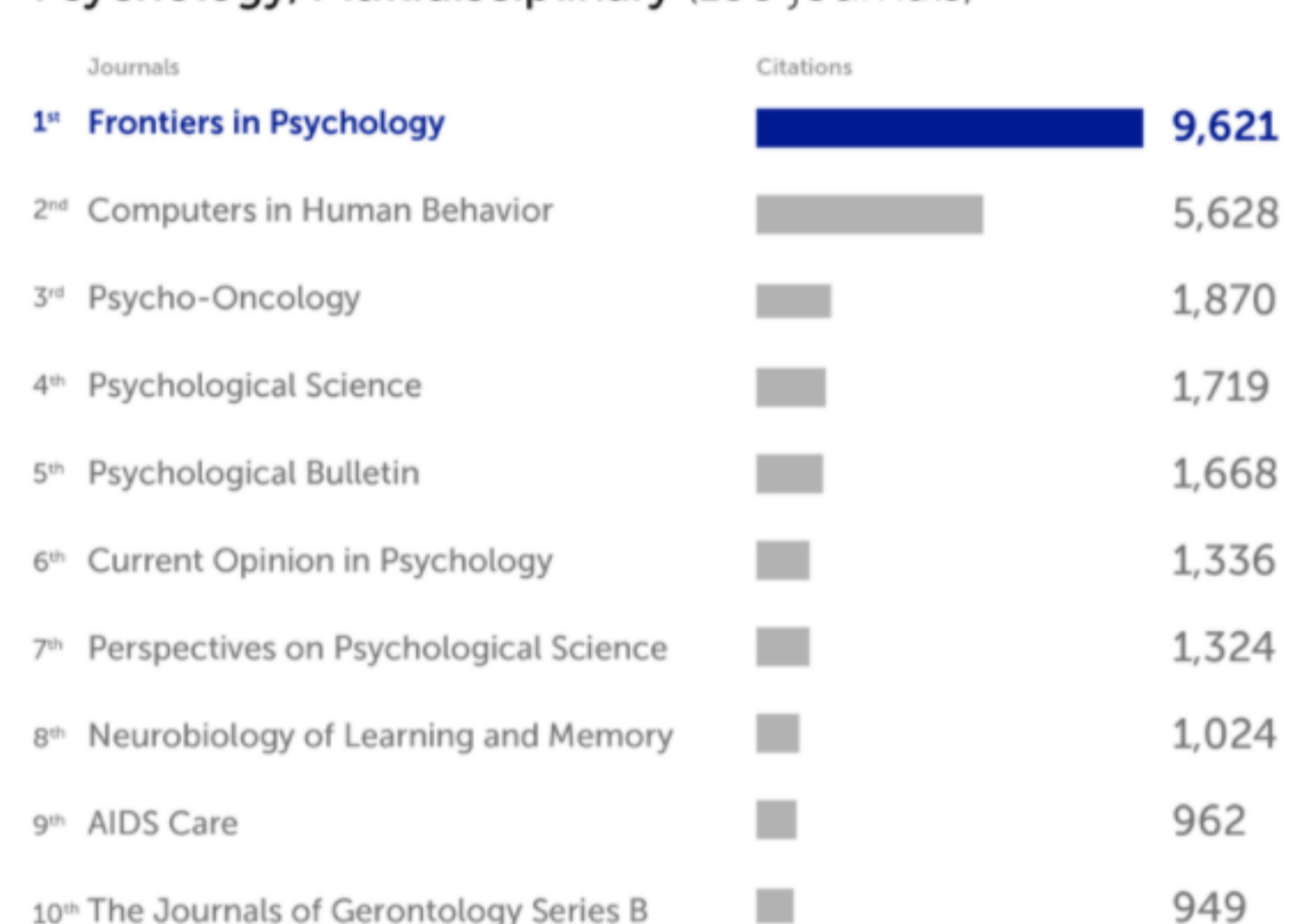
## Plant Sciences (234 journals)



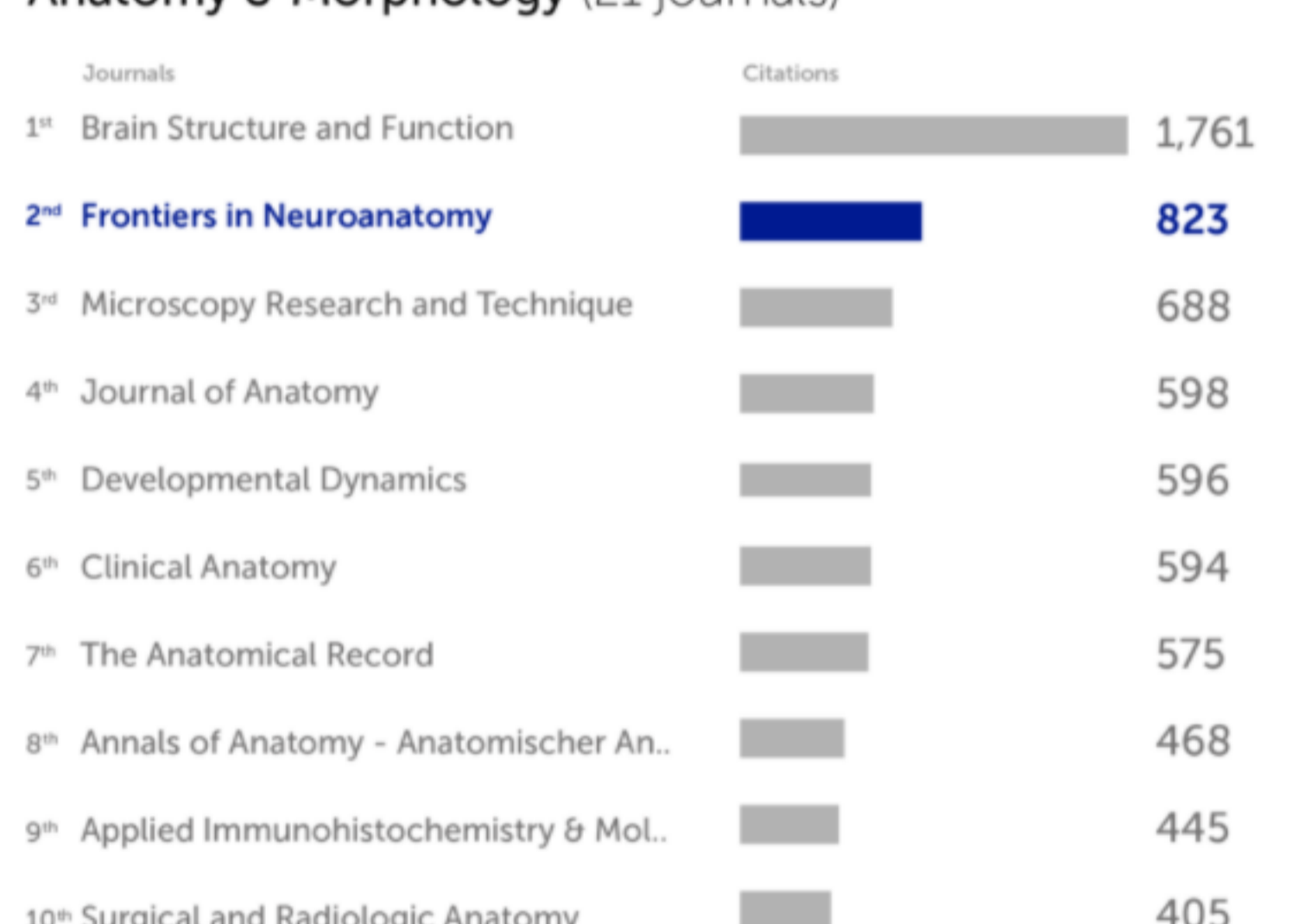
## Psychology (77 journals)



## Psychology, Multidisciplinary (138 journals)



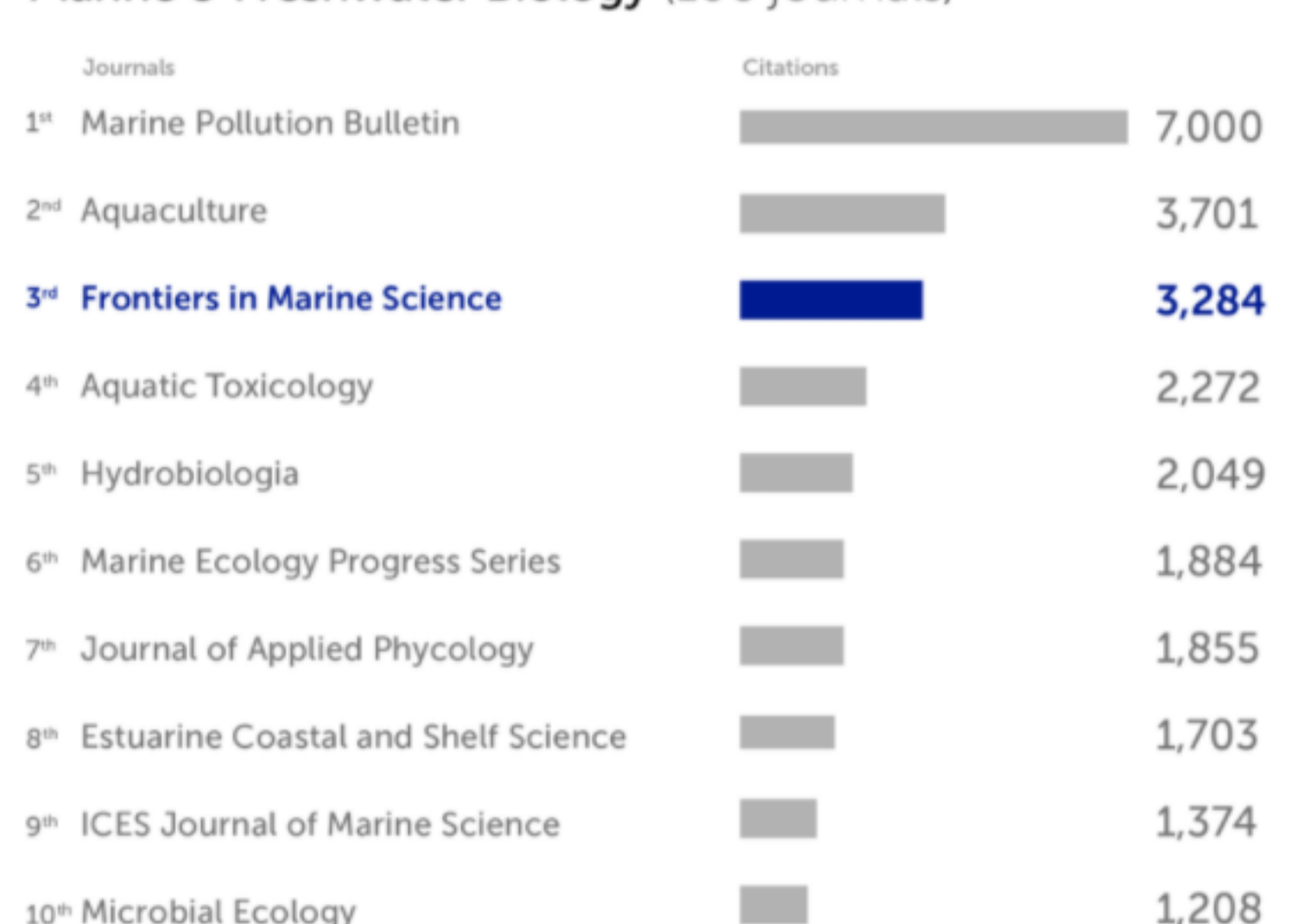
## Anatomy & Morphology (21 journals)



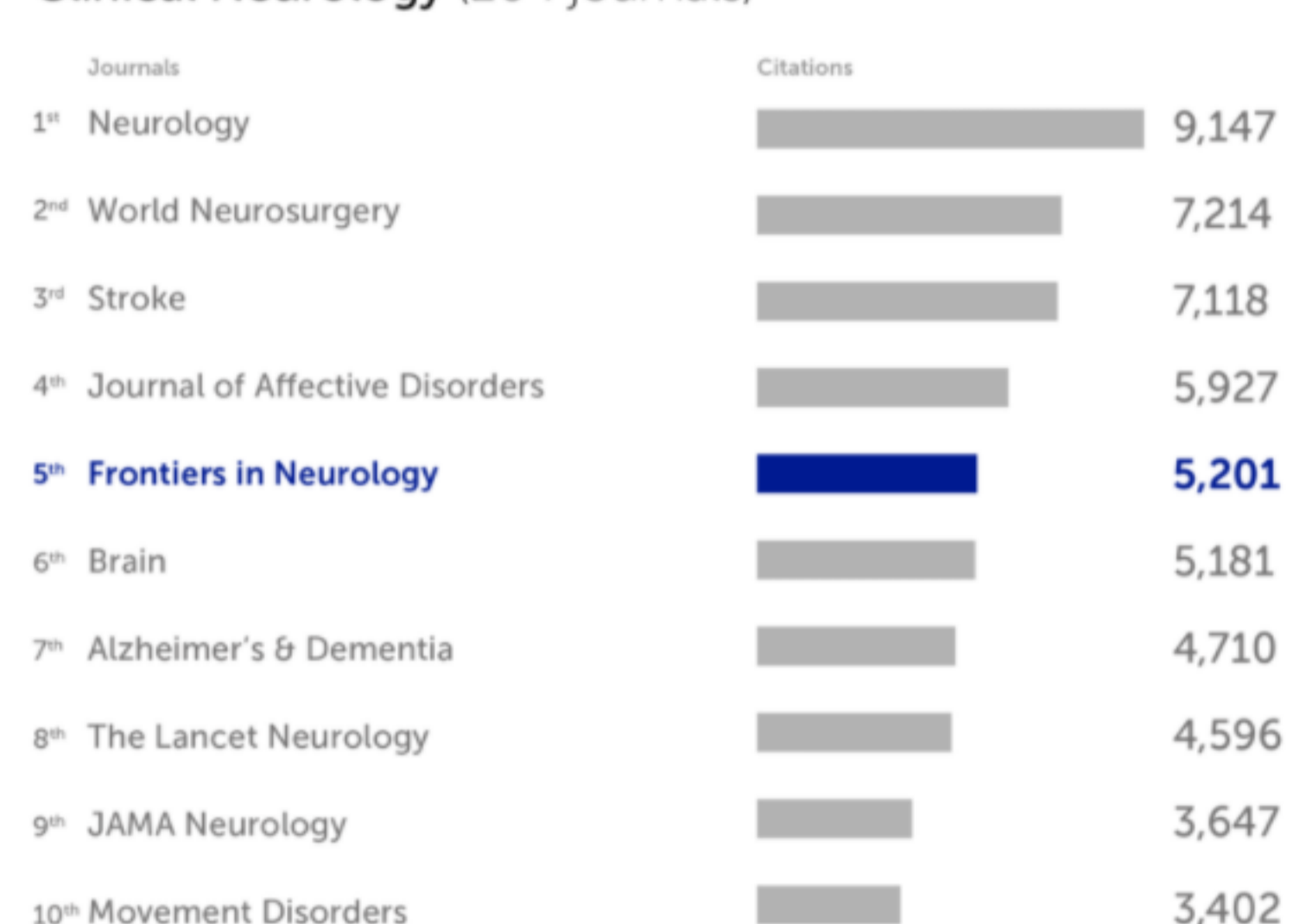
## Pharmacology & Pharmacy (270 journals)



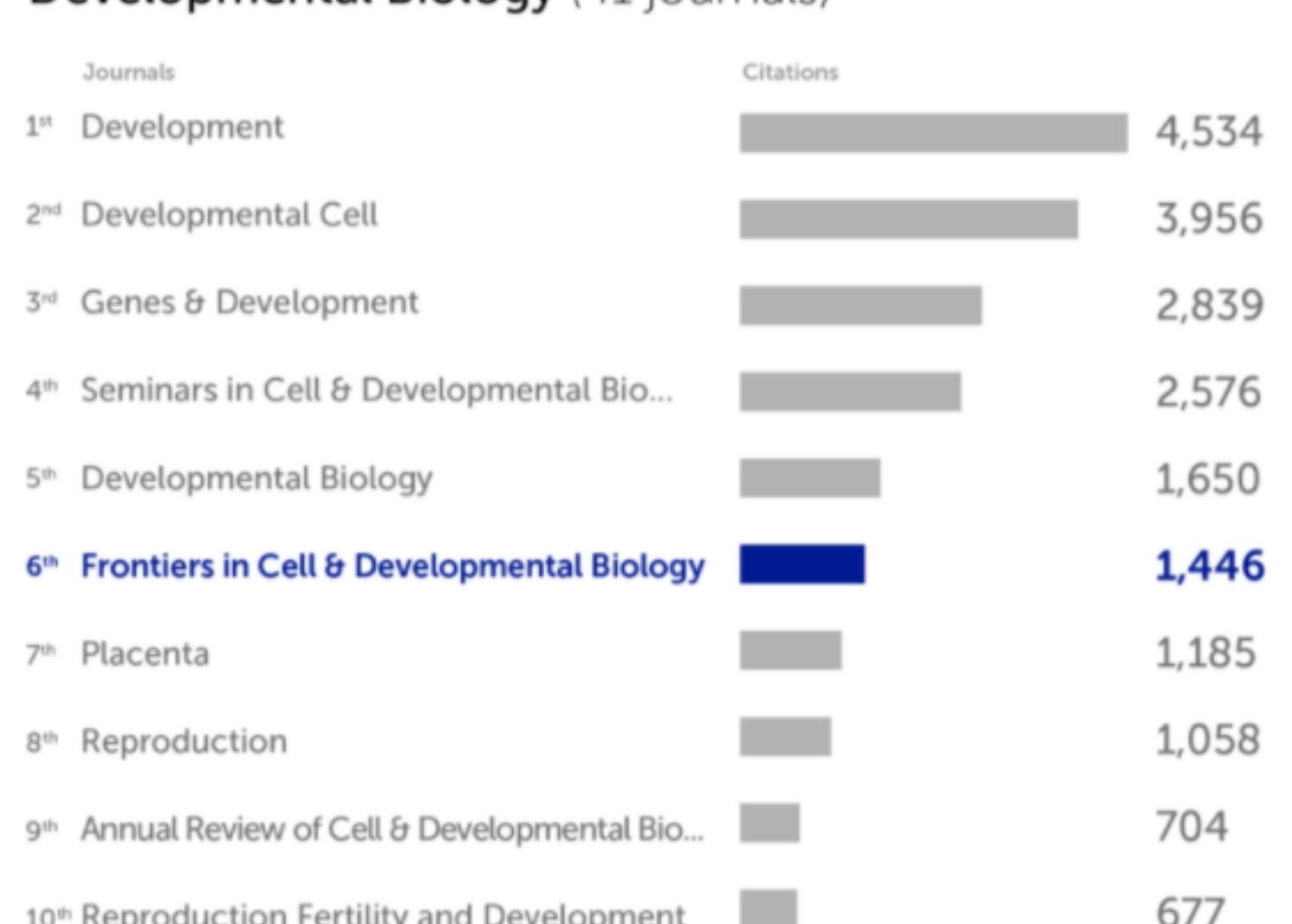
## Marine & Freshwater Biology (106 journals)



## Clinical Neurology (204 journals)



## Developmental Biology (41 journals)



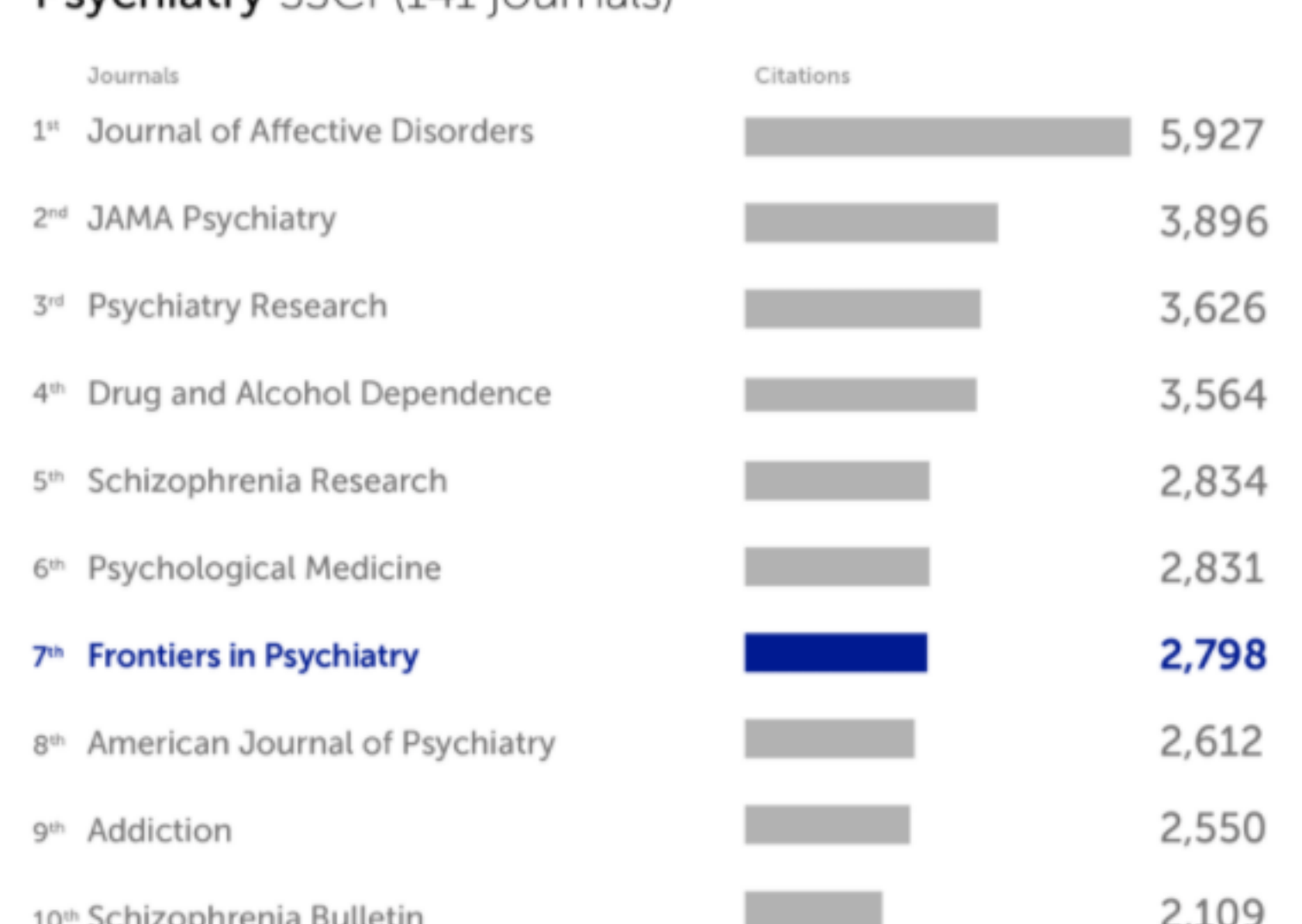
## Endocrinology & Metabolism (143 journals)



## Veterinary Sciences (142 journals)

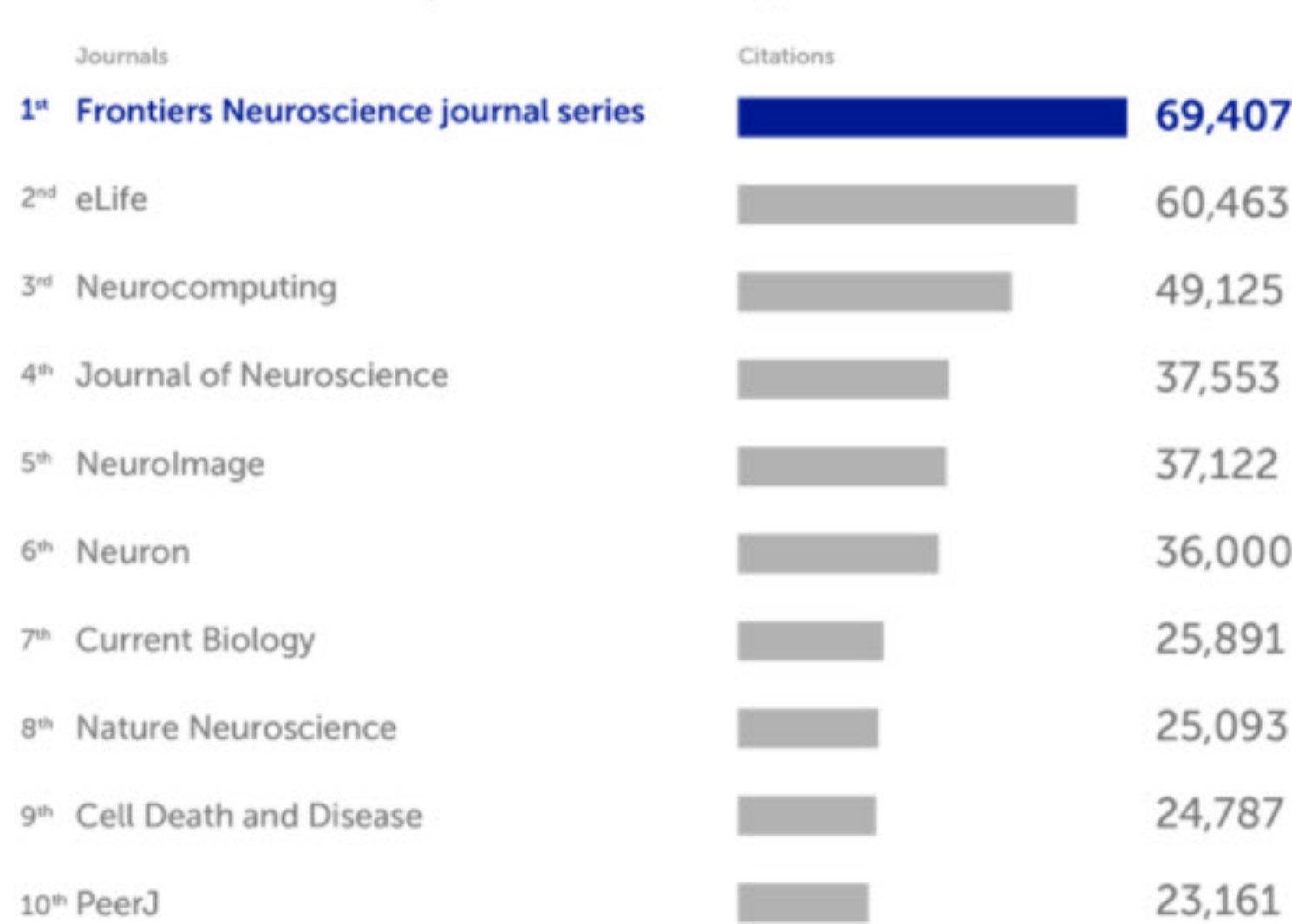


## Psychiatry SSCI (141 journals)

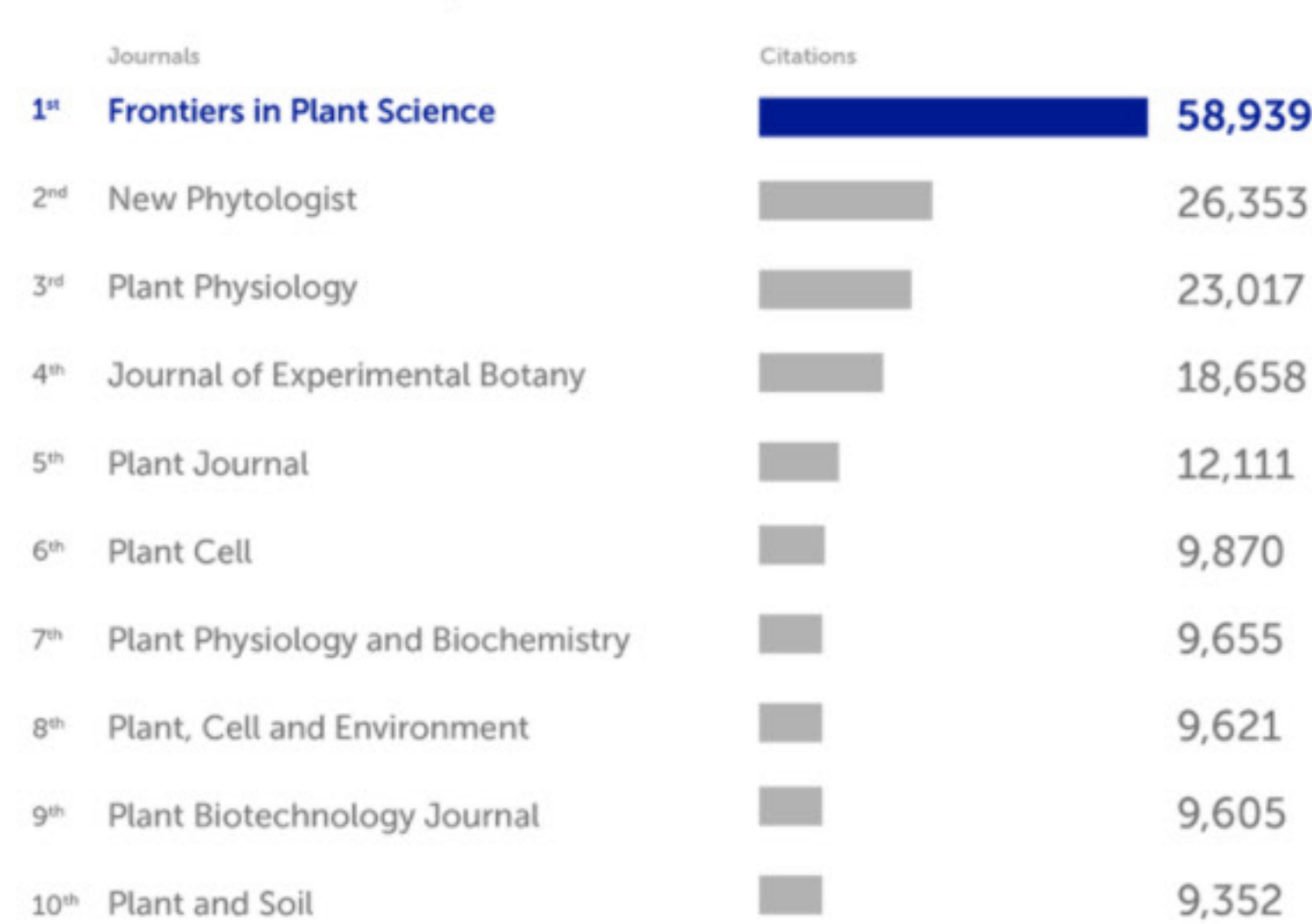


Ranking of the top 10 most-cited journals in several JCR categories (2020 update released by Web of Science Group in June 2020, based on 2019 source data). Bar plots show the total number of citations in 2019 to articles published in 2017 and 2018, with Frontiers journals in blue. \*Neurosciences: The ranking is calculated from total citations for all journals in the Frontiers Neuroscience journal series, in the Neurosciences category (JCR 2020 update). The Frontiers Neuroscience journal series includes all Frontiers journals in the field of Neuroscience.

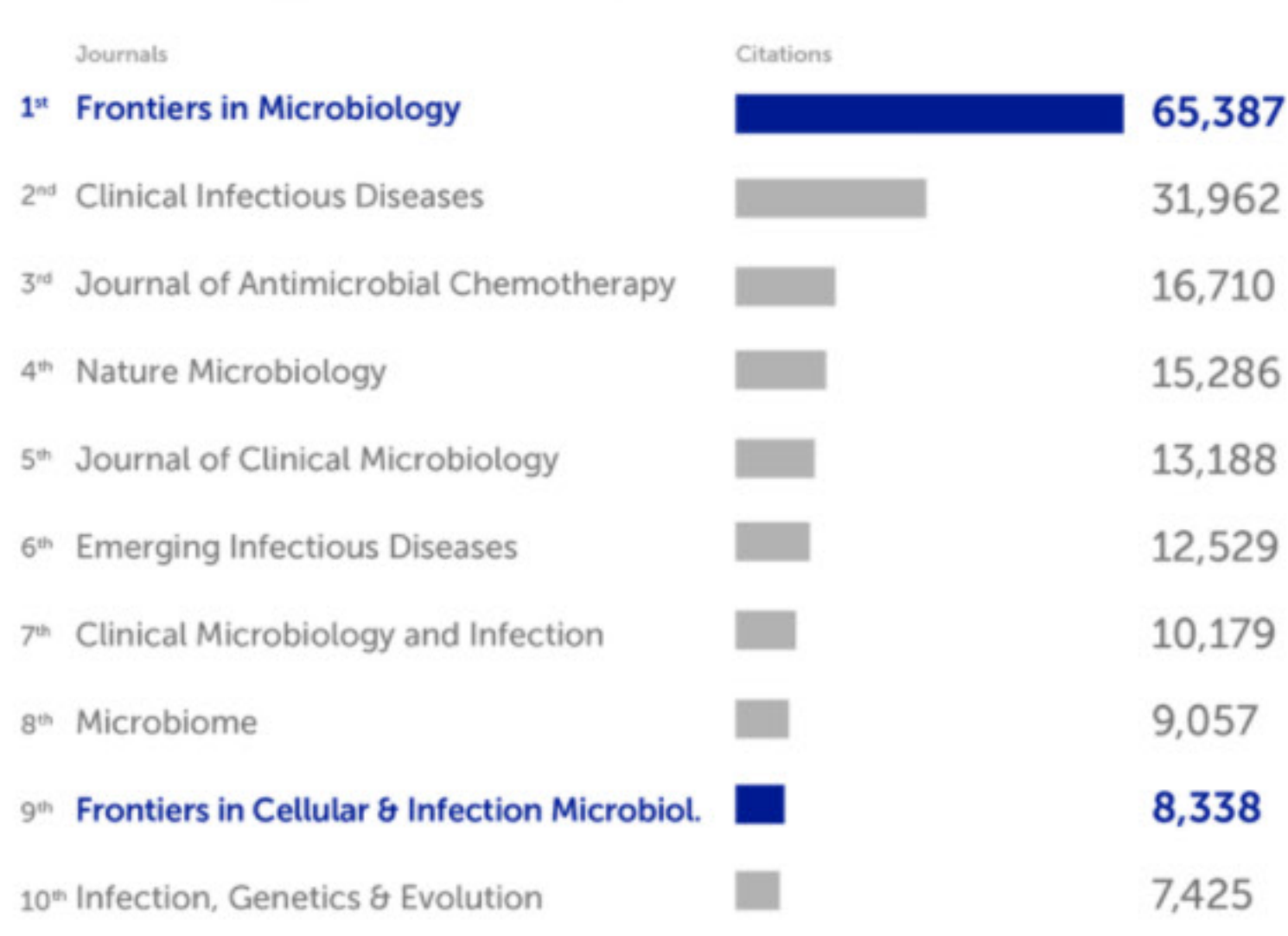
**Neuroscience subject area\* (536 journals)**



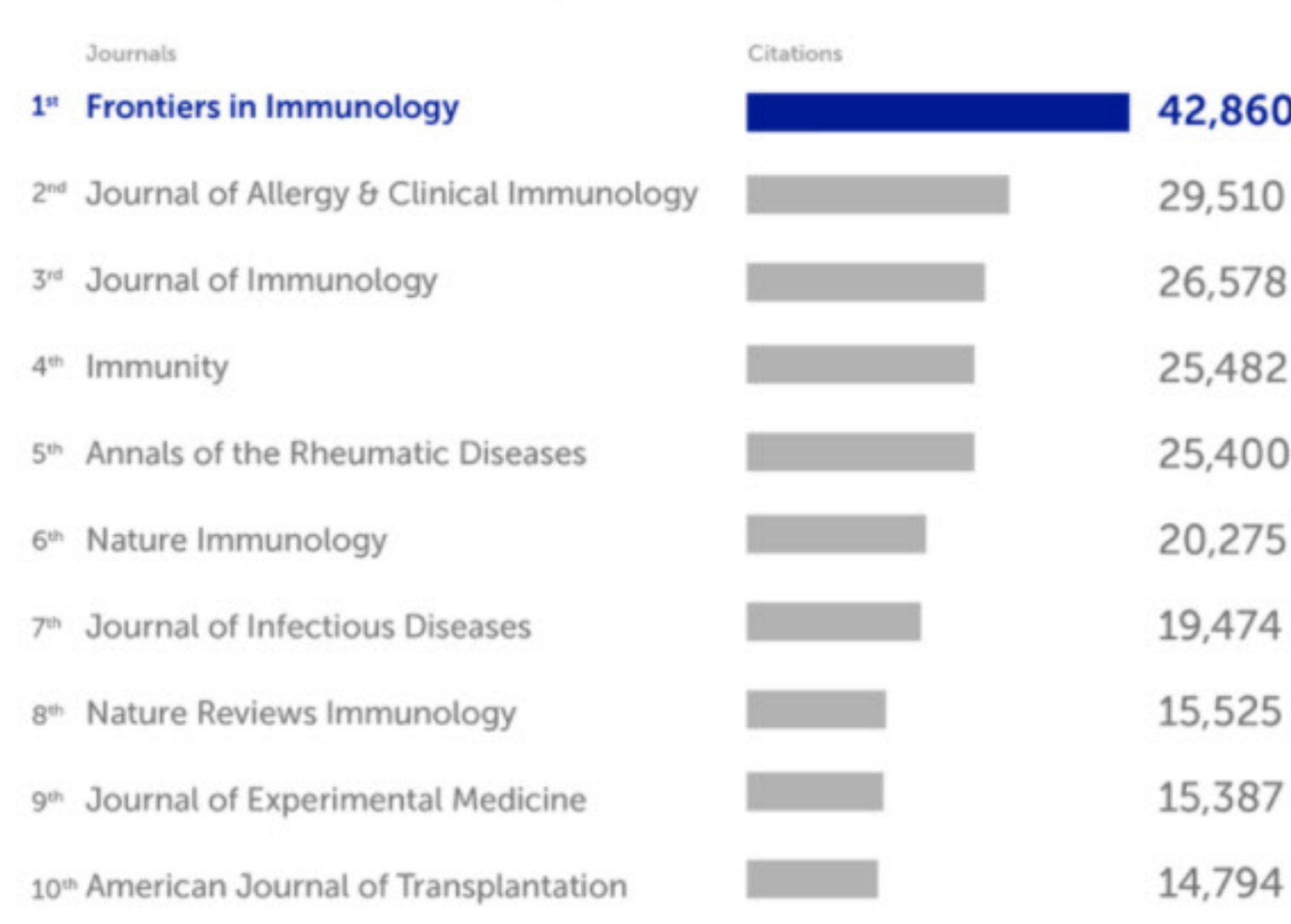
**Plant Science (431 journals)**



**Microbiology medical (115 journals)**



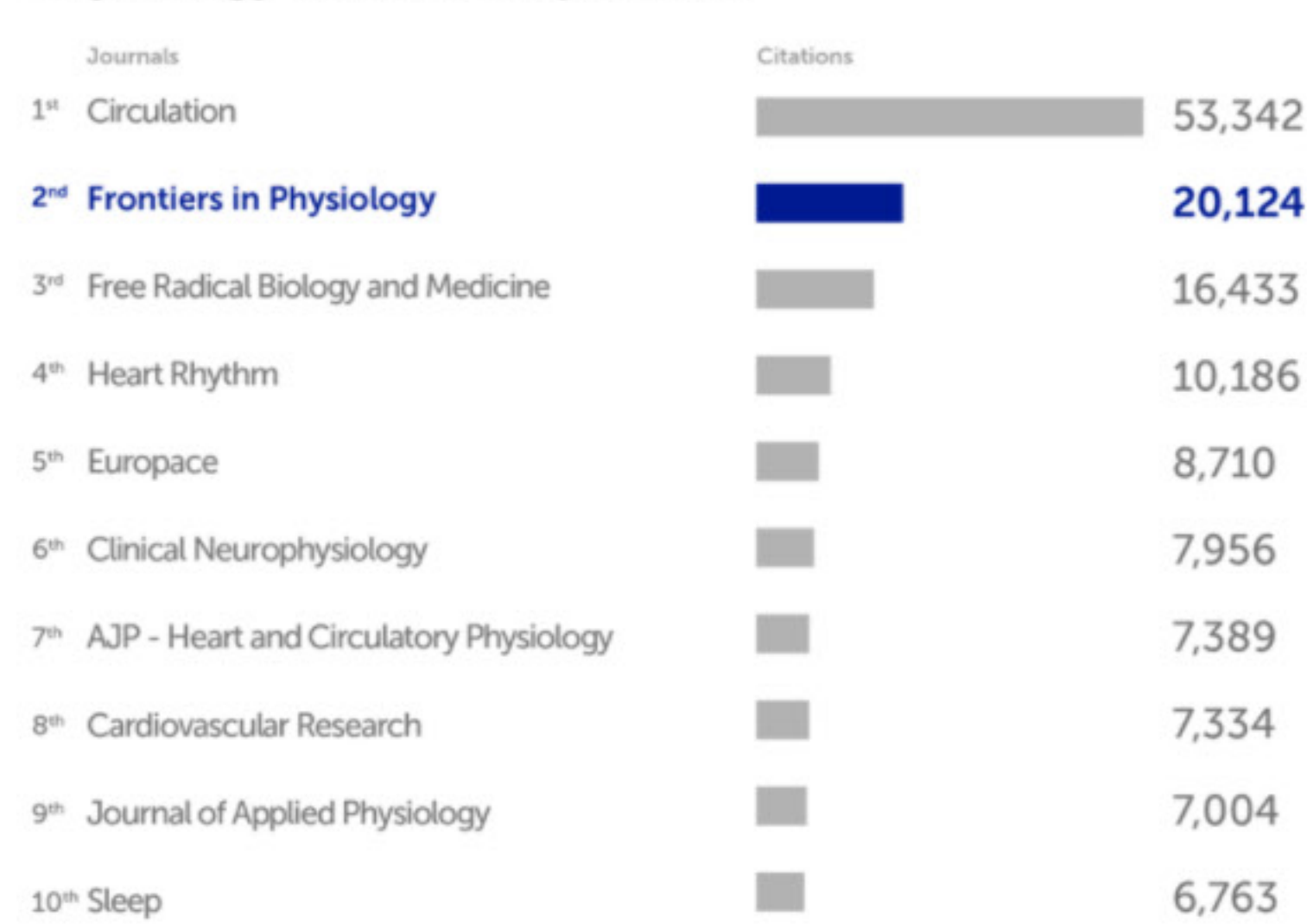
**Immunology and Allergy (180 journals)**



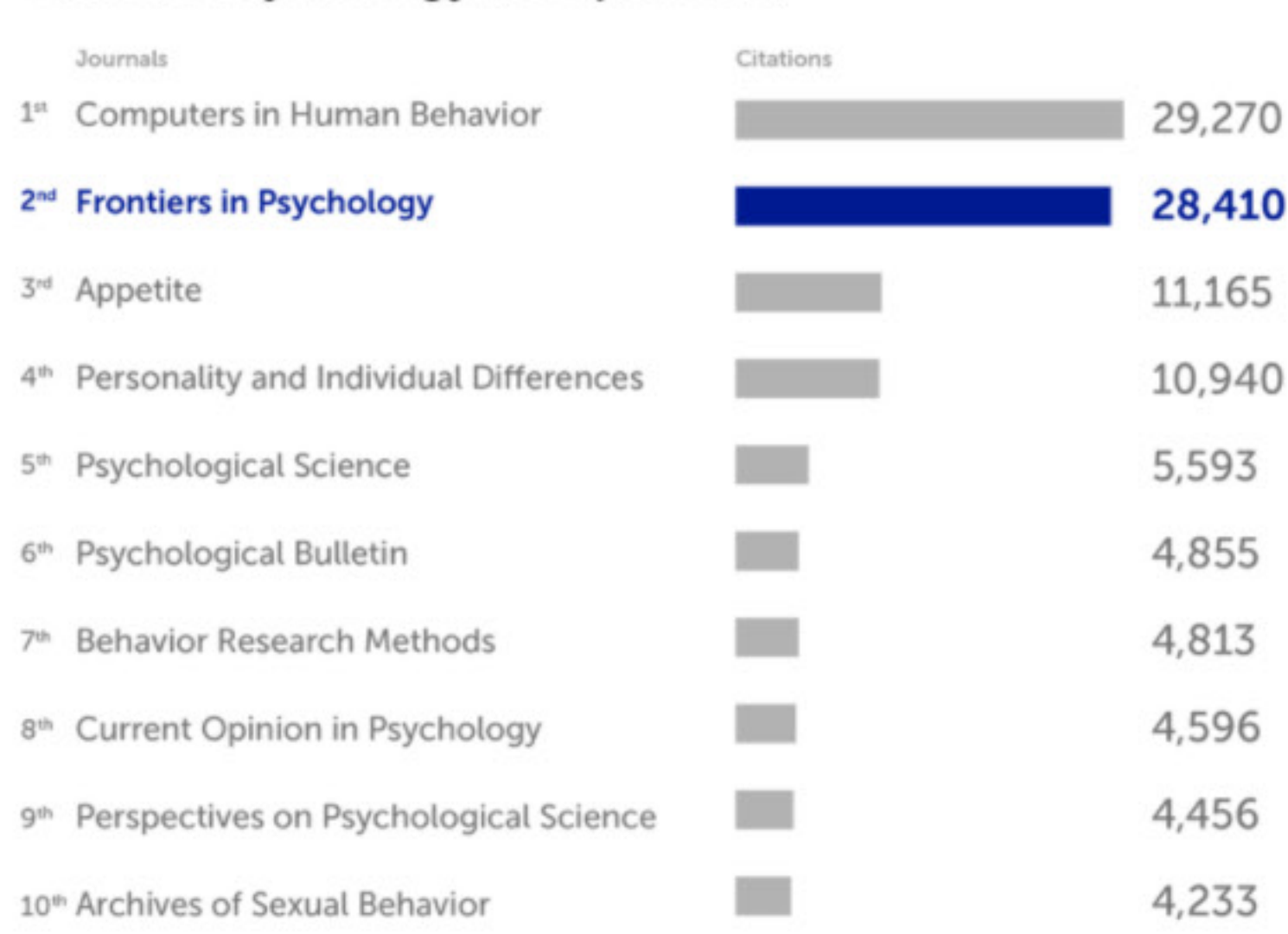
**Microbiology (147 journals)**



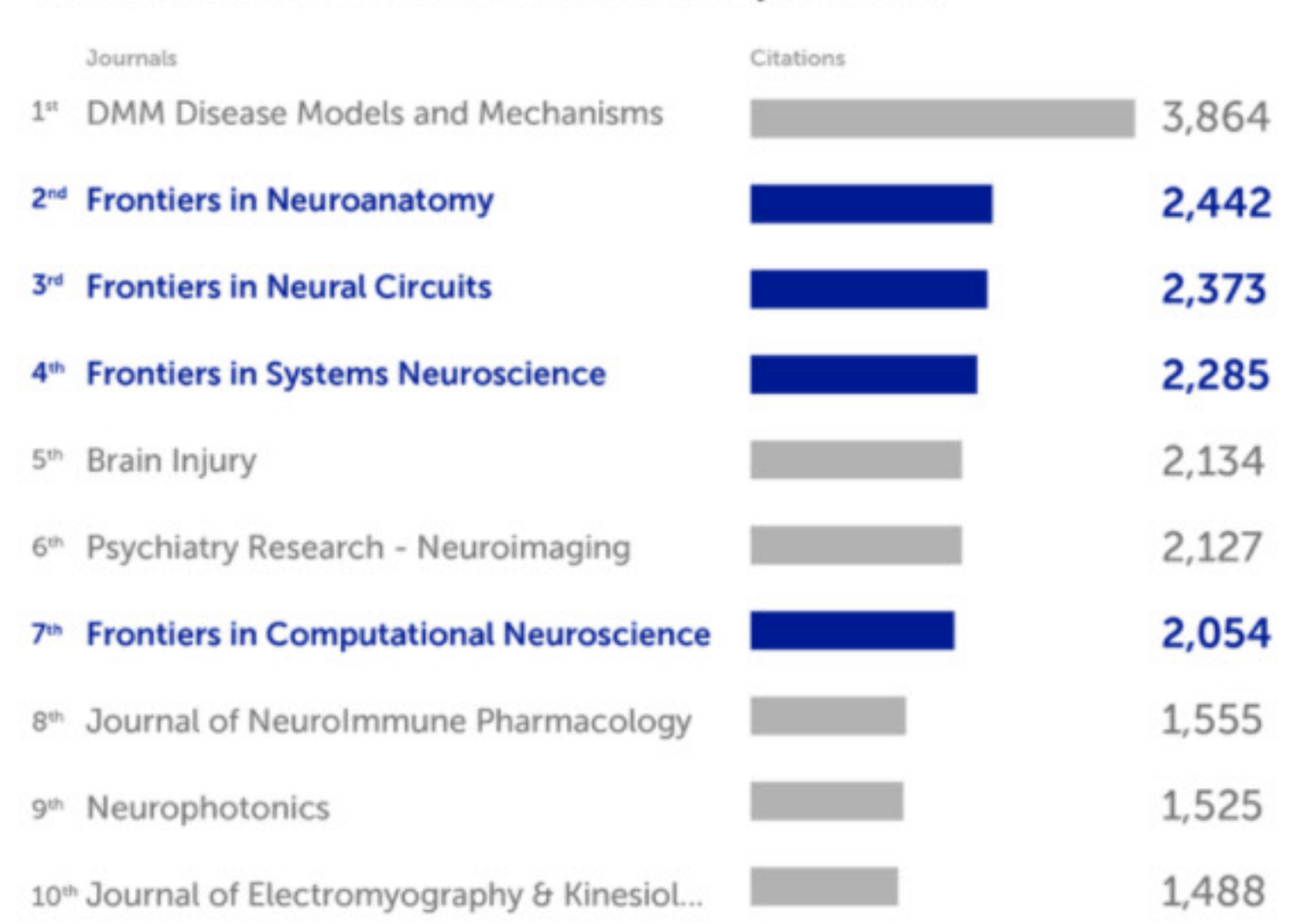
**Physiology medical (99 journals)**



**General Psychology (204 journals)**



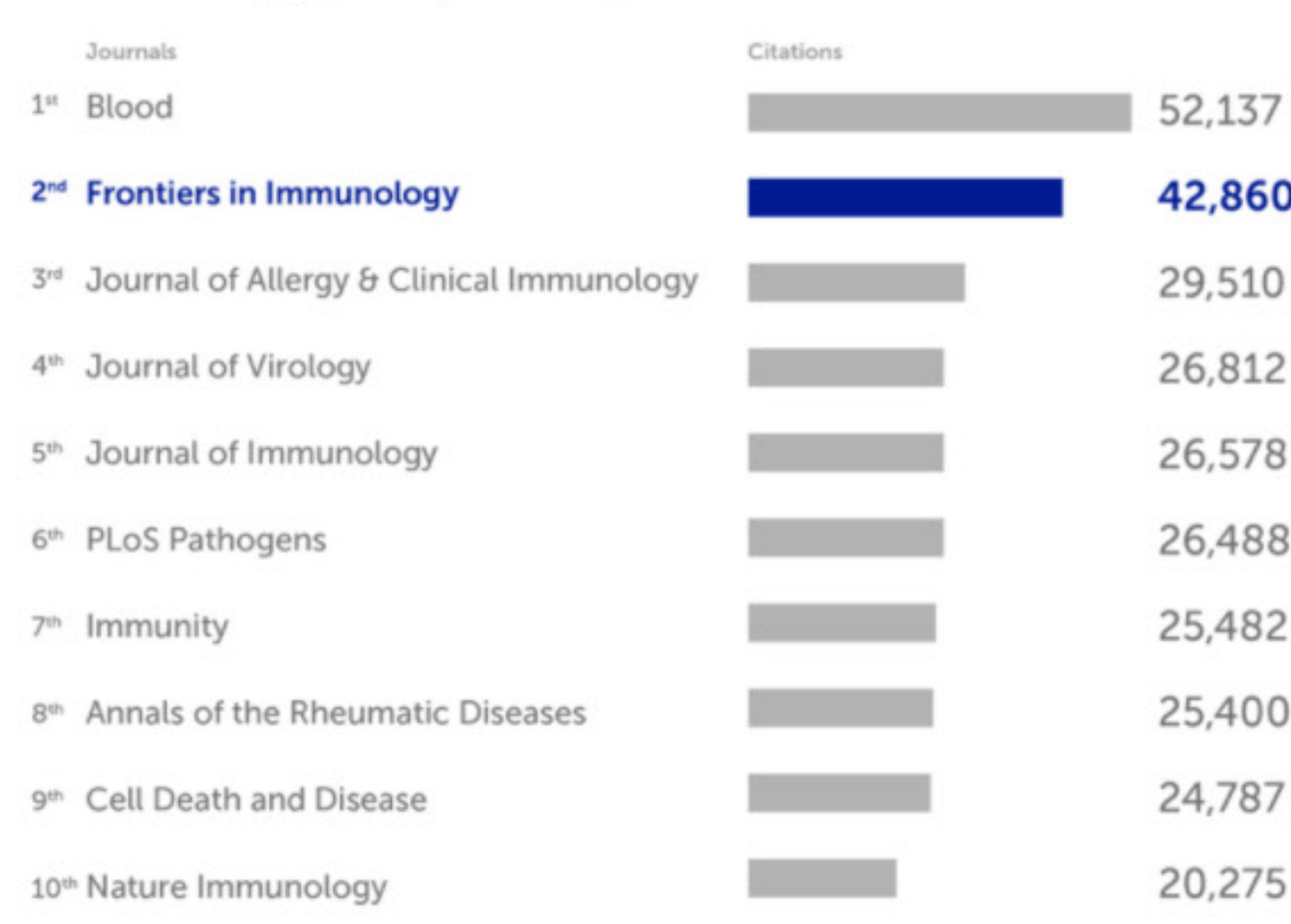
**Neuroscience miscellaneous (24 journals)**



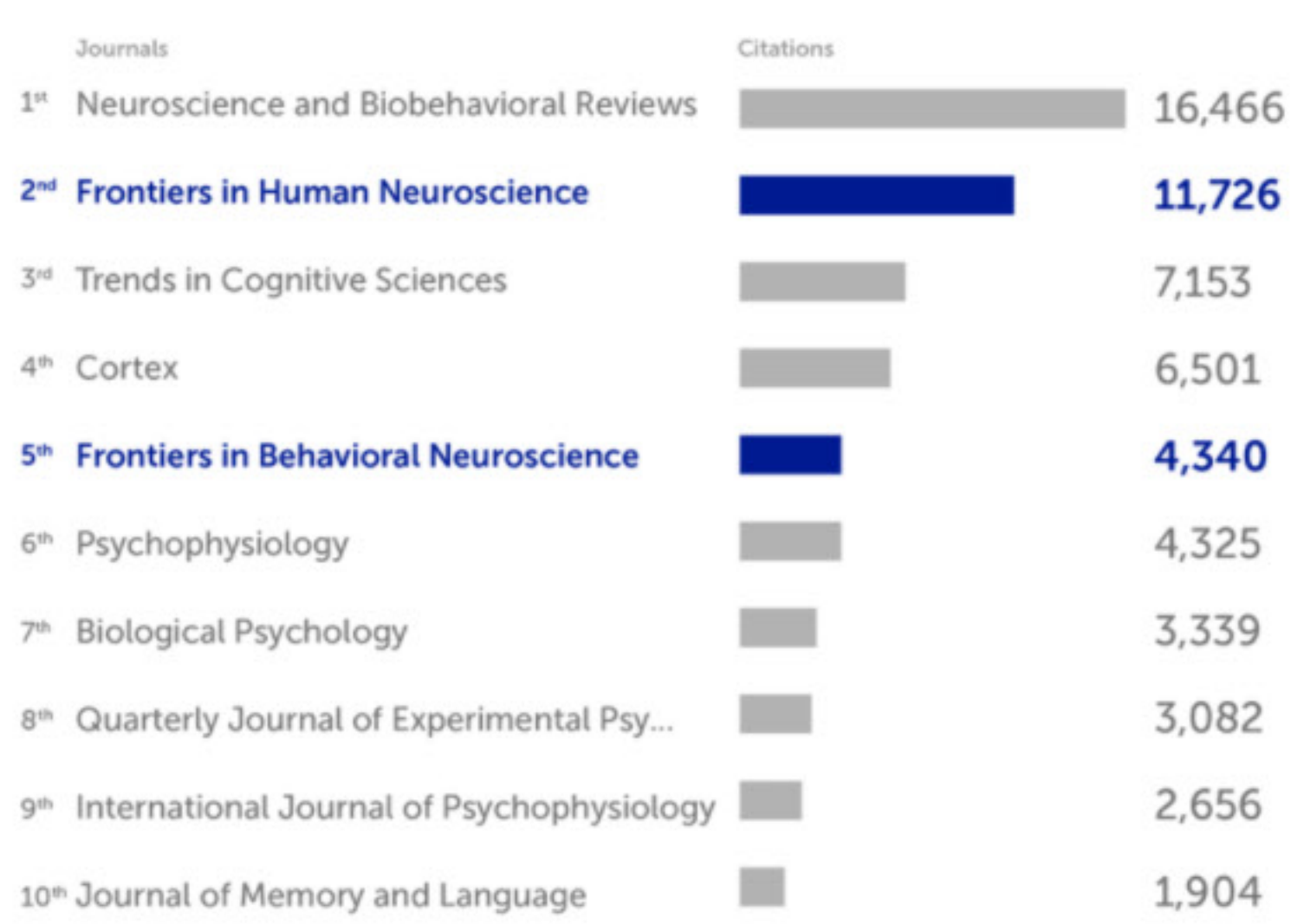
**Biological Psychiatry (38 journals)**



**Immunology (200 journals)**



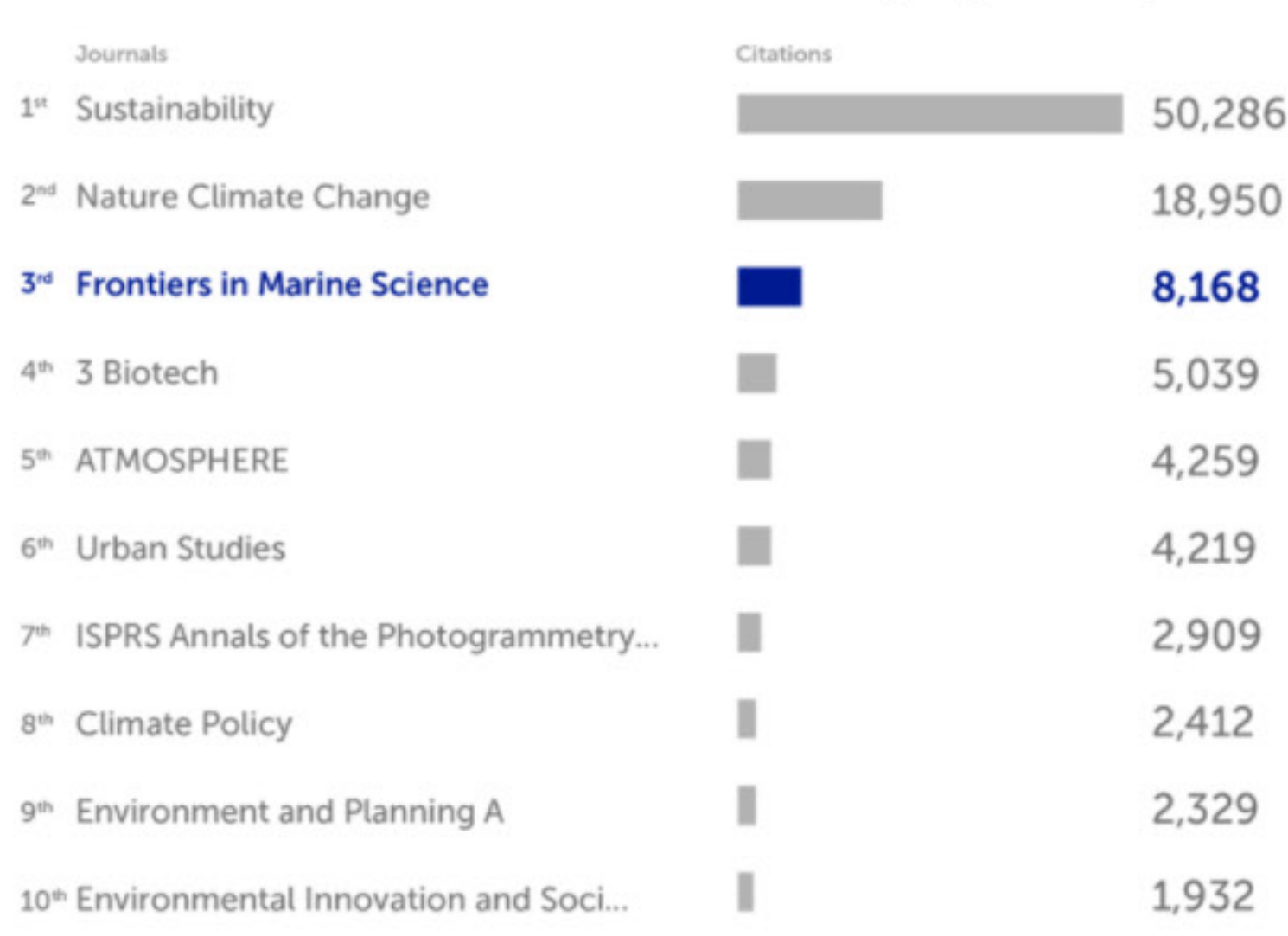
**Neuropsychology and Physiological Psychology (61 journals)**



**Pharmacology medical (237 journals)**



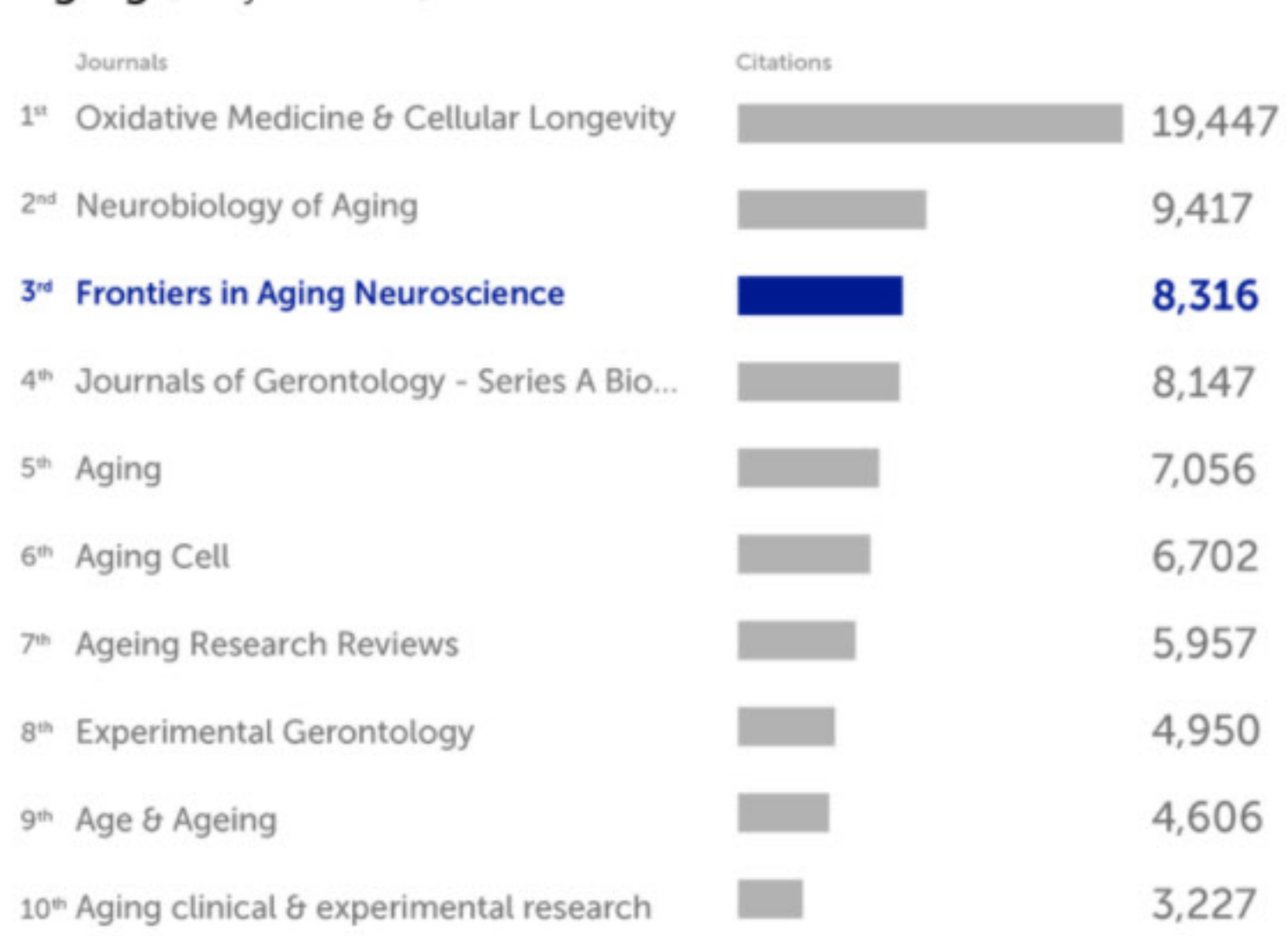
**Environmental Science miscellaneous (82 journals)**



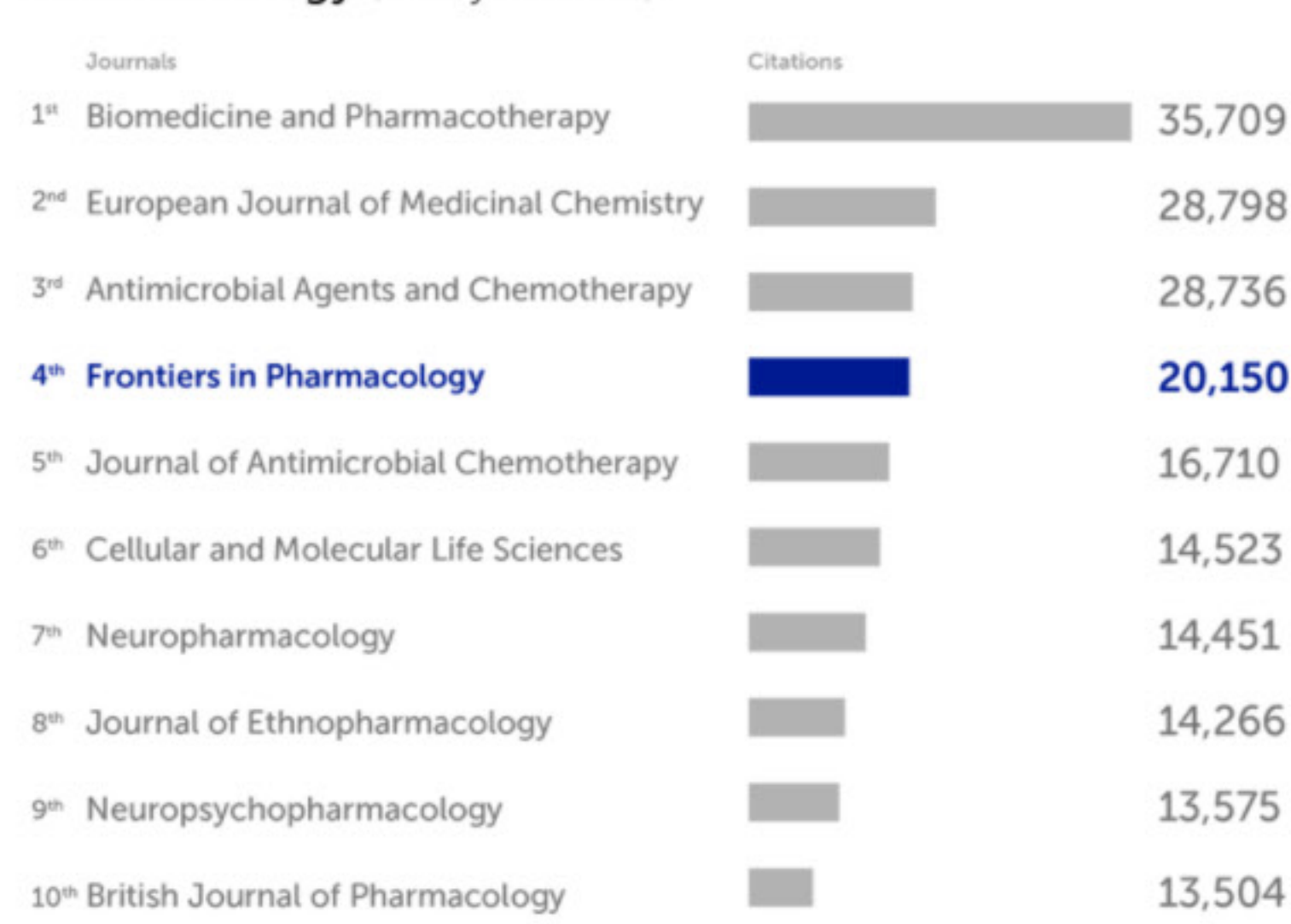
**Behavioral Neuroscience (73 journals)**



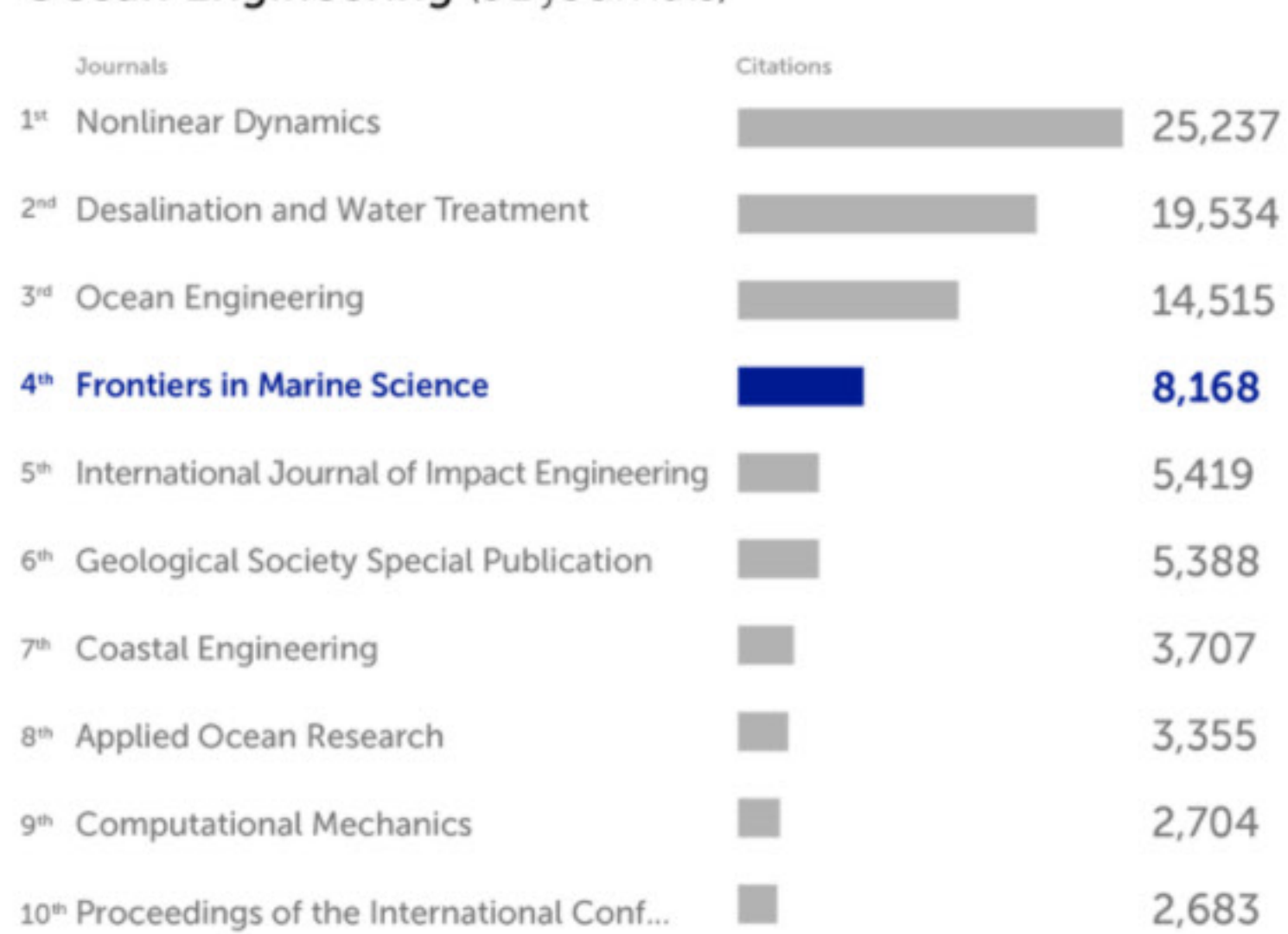
**Aging (34 journals)**



**Pharmacology (301 journals)**



**Ocean Engineering (91 journals)**



# In the news

Frontiers articles achieve high visibility and impact as a result of our promotion strategies. In 2020, Frontiers articles were featured more than **24,000** times in international news outlets.

# 63,744

total news mentions  
(Altmetric)

Most featured by:

Forbes

THE HUFFPOST

The  
New York  
Times

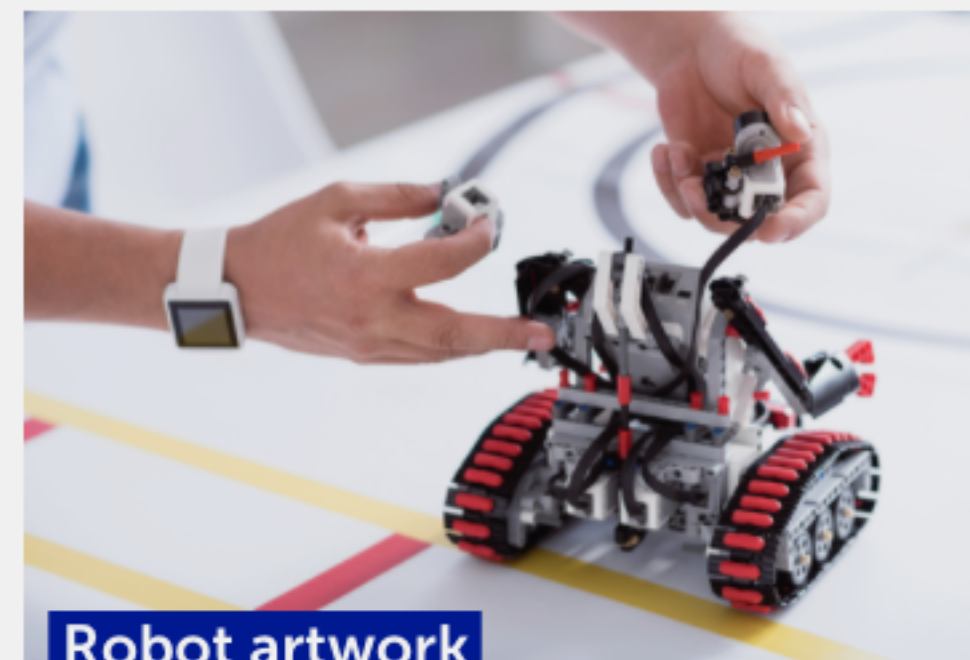
BBC  
WORLD  
NEWS

CNN

The  
Guardian

## 2020 news highlights

See all news

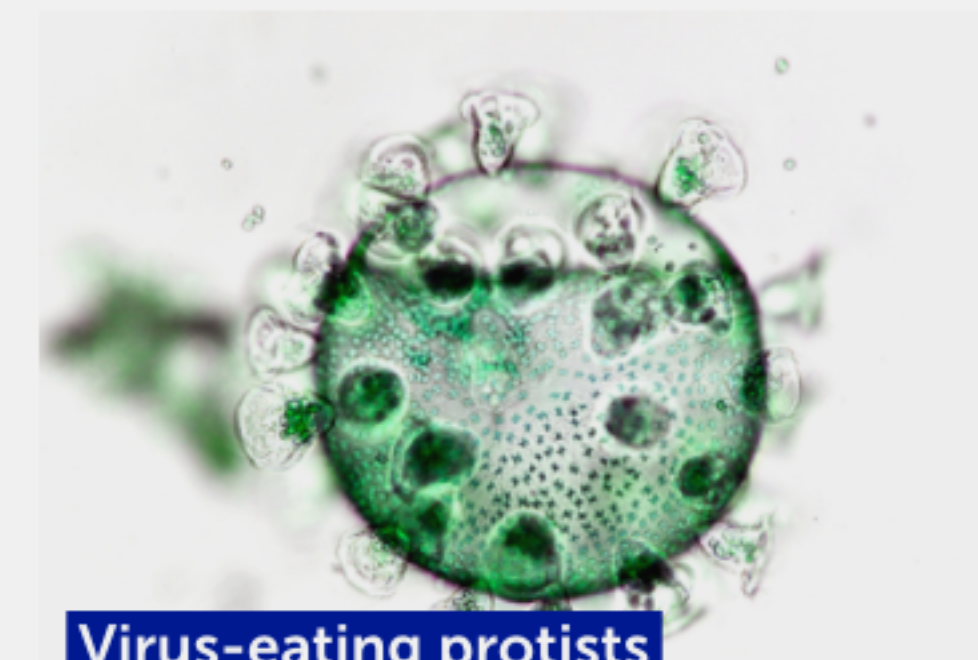


### Robot artwork

What if you could instruct a swarm of robots to paint a picture? New technique published in [Frontiers in Robotics and AI](#) allows artists to do just that.

*New Scientist*, October 14, 2020

— [Read feature](#)



### Virus-eating protists

First compelling evidence published in [Frontiers in Microbiology](#) that some marine protists are virus eaters, catching their "prey" through phagocytosis.

*New York Times*, September 24, 2020

— [Read feature](#)

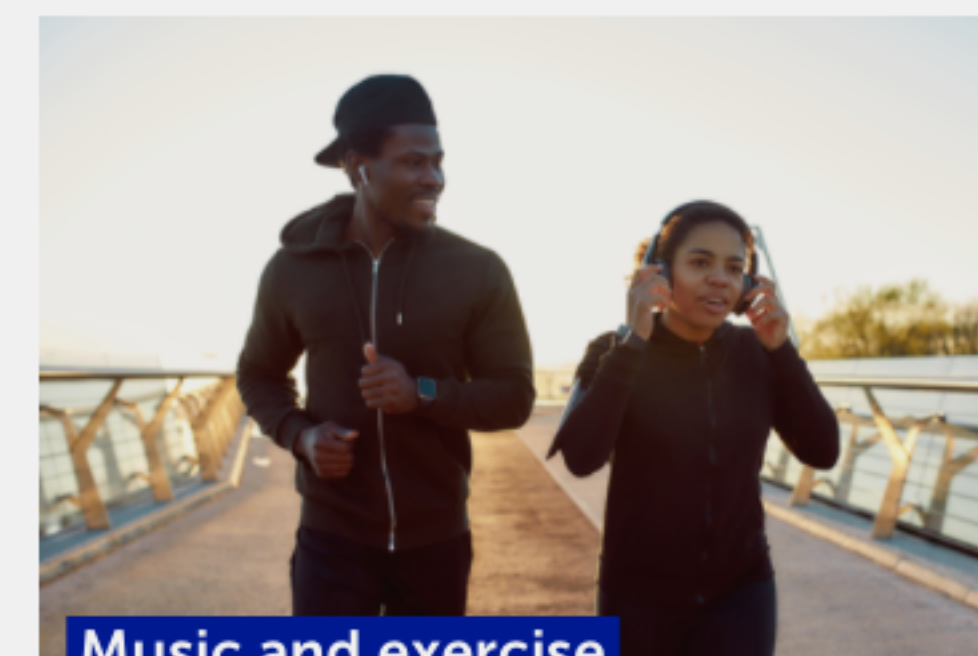


### Pandemic parenting

The Covid-19 pandemic has exacerbated mental health issues in one out of seven new mothers, according to research published in [Frontiers in Global Women's Health](#).

*Forbes*, June 19, 2020

— [Read feature](#)



### Music and exercise

Study published in [Frontiers in Psychology](#) is first to show that listening to high-tempo music reduces the perceived effort involved in exercise and increases its benefits.

*CNN*, February 2, 2020

— [Read feature](#)

# On social media

Frontiers has gained significant visibility within the academic community across all social media channels. In 2020, Frontiers articles were mentioned more than **400,000** times.

# 1,479,715

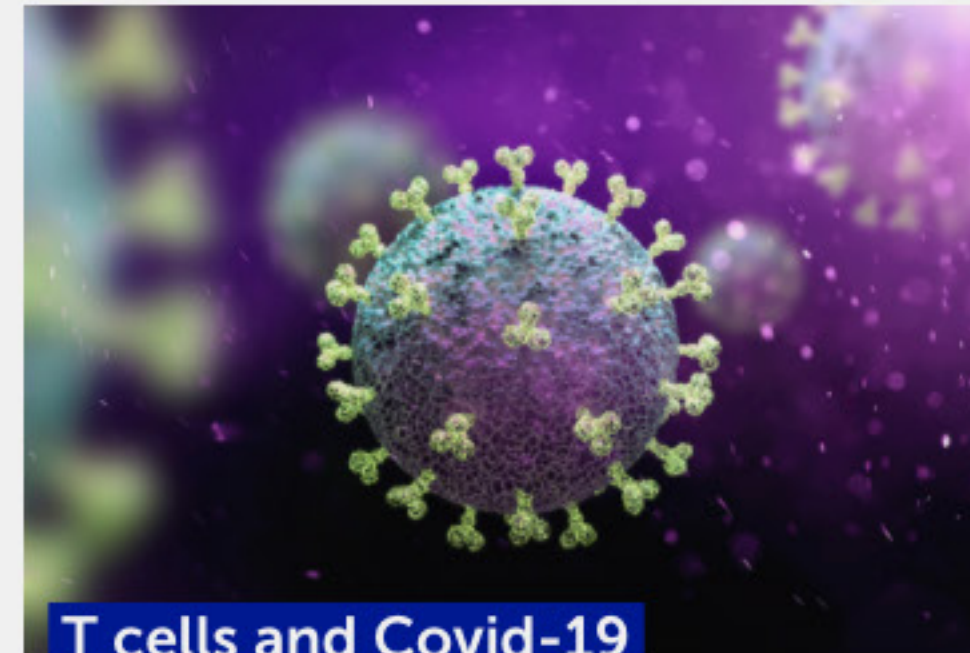
total social media mentions  
(Altmetric)

## Top channels



## 2020 social media highlights

Follow Frontiers

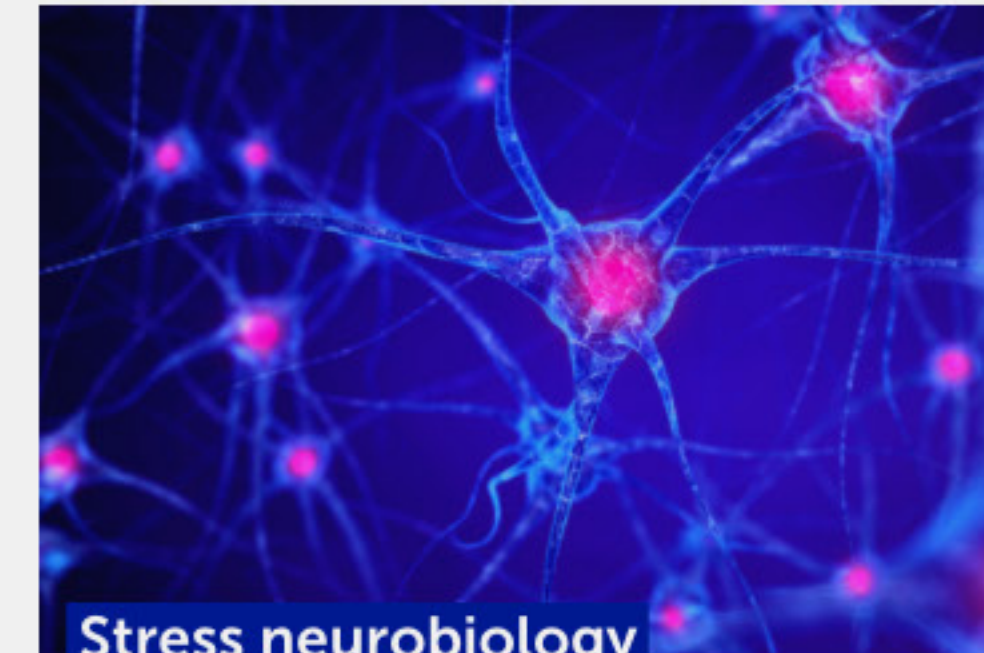


### T cells and Covid-19

A study published in *Frontiers in Immunology* on how Cytokine storms and T cell counts may offer important clues on how to treat Covid-19.

241 likes | 489 retweets

— See tweet



### Stress neurobiology

An overview of stress neurobiology published in *Frontiers in Behavioral Neuroscience*, including timing and duration of stress responses and clinical implications.

1.3K likes | 663 shares

— See Facebook post



### Gut microbiome

Research published in *Frontiers in Microbiology* suggests changes in the gut microbiome could lead to non-intestinal-related autoimmune diseases.

1.3K likes | 638 shares

— See Facebook post



### Paternal mental health

Results published in *Frontiers in Psychiatry* show fathers who are more involved in parenting are less likely to experience depressive symptoms.

724 likes | 157 retweets

— See tweet



# Our peer review

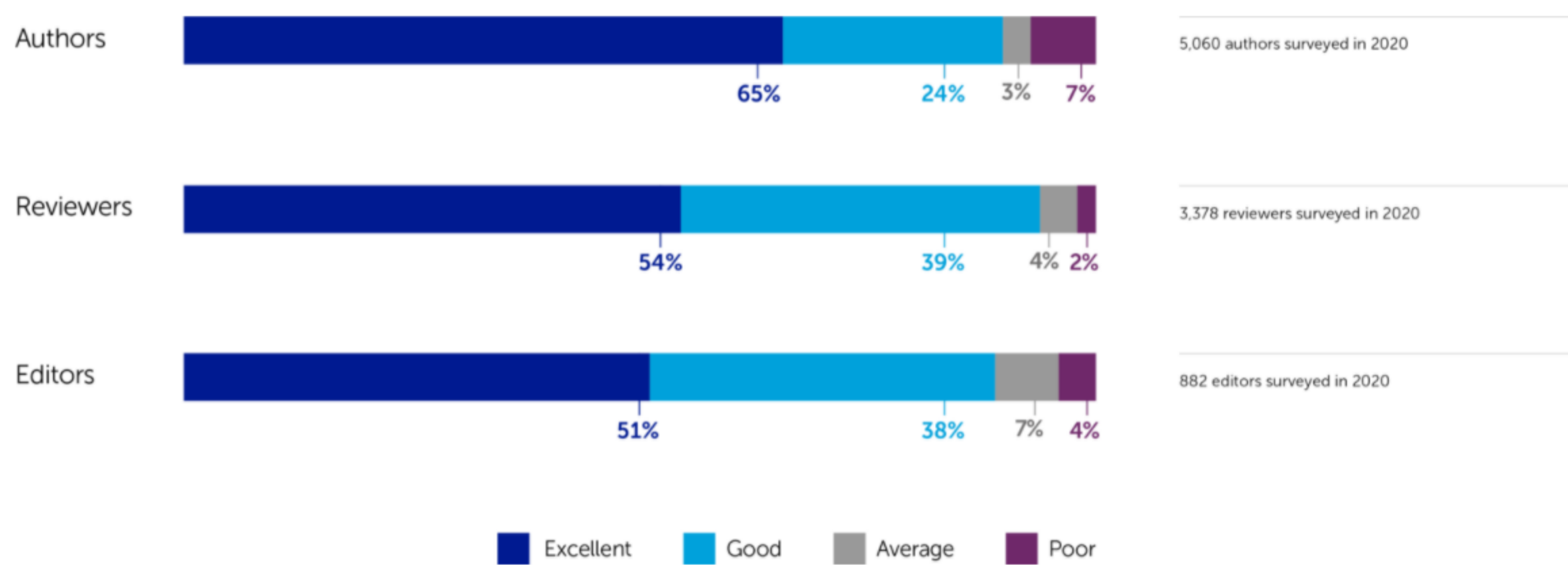
Only the best science can solve the world's biggest challenges. That's why every article we publish goes through our rigorous quality checks and peer review.

## Collaborative review process

Our state-of-the-art collaborative peer review forum allows authors and reviewers to connect online in real time so they can work together to improve the manuscript. In 2020, our average time from submission to decision was **90 days**, with **89%** of authors rating the review process as good or excellent.



**89%** of authors, **93%** of reviewers and **89%** of editors rated our collaborative review process as good or excellent



## Submissions, acceptances, rejections

The Frontiers collaborative review objectively certifies quality, validity and rigor of research. It is performed by an external editorial board of researchers, assisted by our peer review team and powered by our custom-built open science platform, featuring our artificial intelligence review assistant (AIRA). The review mandate does not focus on potential impact, nor are artificial acceptance or rejection rates imposed. Within this framework, the rejection rate for 2020 was on average **37%** across all Frontiers journals, and up to **53%** in some fields.

Year	Submitted	Accepted	Rejected
<b>Total</b>	<b>317,809</b>	<b>193,122</b>	<b>95,680</b>
2020	95,263	52,501	31,300
2019	60,538	34,092	24,268
2018	51,344	29,221	17,651
2017	35,518	21,051	11,023
2016	22,662	14,845	5,245
2015	16,863	12,879	2,861
2014	14,435	11,633	1,701
2013	9,340	7,379	792
2012	5,738	5,106	448
2011	3,557	2,573	203
2010	1,595	1,184	132

[Learn more](#)

# Our partnerships

We work with librarians, institutions, and funders around the world to support researchers who want to publish open access.

## Institutional agreements

Institutional agreements simplify the process for authors wishing to publish in our journals and contribute to the growing number of research articles that are openly available to all.

### Institutional memberships

We work with research institutions, libraries, consortia, and funders to support their researchers publish open access. **77** new institutional members joined us in 2020, including the [University of Oxford](#), [CERN](#) and [Bibliosan](#).



### National agreements

We have **five** fully transparent national open access publishing agreements for research organizations and their researchers in [Austria](#), [Sweden](#), [Qatar](#), [the UK](#), and [Norway](#).



[See all members](#)

# Publishing partnerships

We launched our publishing partnerships program in 2020, offering societies and institutions our open science platform and publishing expertise to help make their transition to open access a reality.

## Partner journals



Public Health Reviews

### Editors-in-Chief

- Raquel Lucas, Public Health Institute, University Porto
- Kasia Czabanowska, Maastricht University
- Sarah Mantwill, University of Lucerne



Pathology and Oncology Research

### Editors-in-Chief

- József Timar, Semmelweis University
- László Kopper, Semmelweis University



Earth Science, Systems and Society

### Chief Editor

- Kathryn Goodenough, British Geological Survey



International Journal of Public Health

### Editors-in-Chief

- Nino Kuenzli, Swiss Tropical and Public Health Institute
- Andrea Madarasova Geckova, University of Pavol Jozef Šafárik Košice
- Olaf Von Dem Knesebeck, University Medical Center Hamburg-Eppendorf

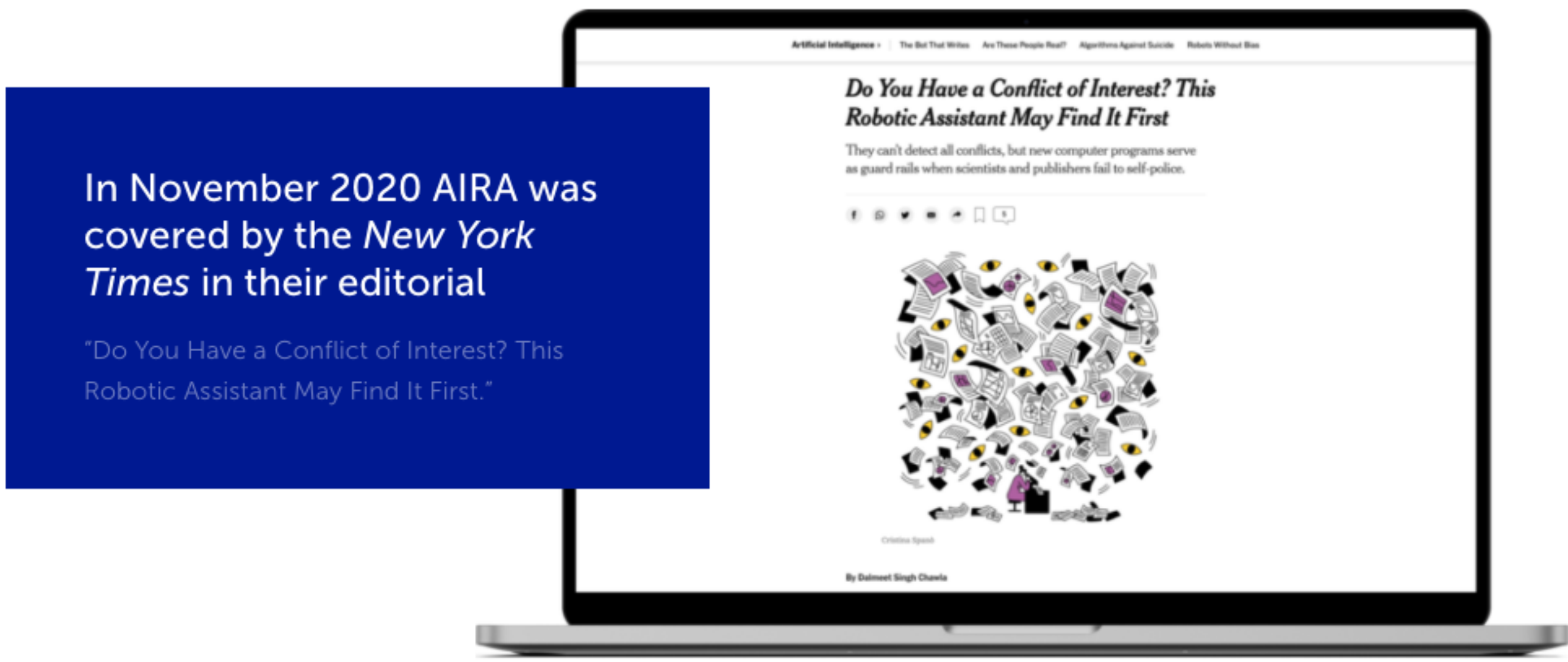
[Learn more](#)

# Our technology

We build all our technology in-house. With the feedback of many scientists, we are continuously developing and evolving. This has resulted in a fast, efficient, powerful and highly scalable open science platform, customized for the needs of our authors, editors, reviewers, and readers.

## Product releases

Our latest innovation, the artificial intelligence review assistant (AIRA), is an industry-first and has the potential to revolutionize how manuscripts are evaluated. AIRA currently makes up to 20 recommendations in seconds, from assessing language quality and the integrity of figures to detecting plagiarism and potential conflicts of interest.



**In November 2020 AIRA was covered by the New York Times in their editorial**  
 'Do You Have a Conflict of Interest? This Robotic Assistant May Find It First'

### 2020

#### Artificial Intelligence Review Assistant (AIRA) updates

New checks added to detect image manipulation and to evaluate if a manuscript has been submitted to the appropriate section and journal

#### Publishing Partnerships Program

Frontiers' publishing platform and expertise made available to societies and institutions, enabling their transition to open access

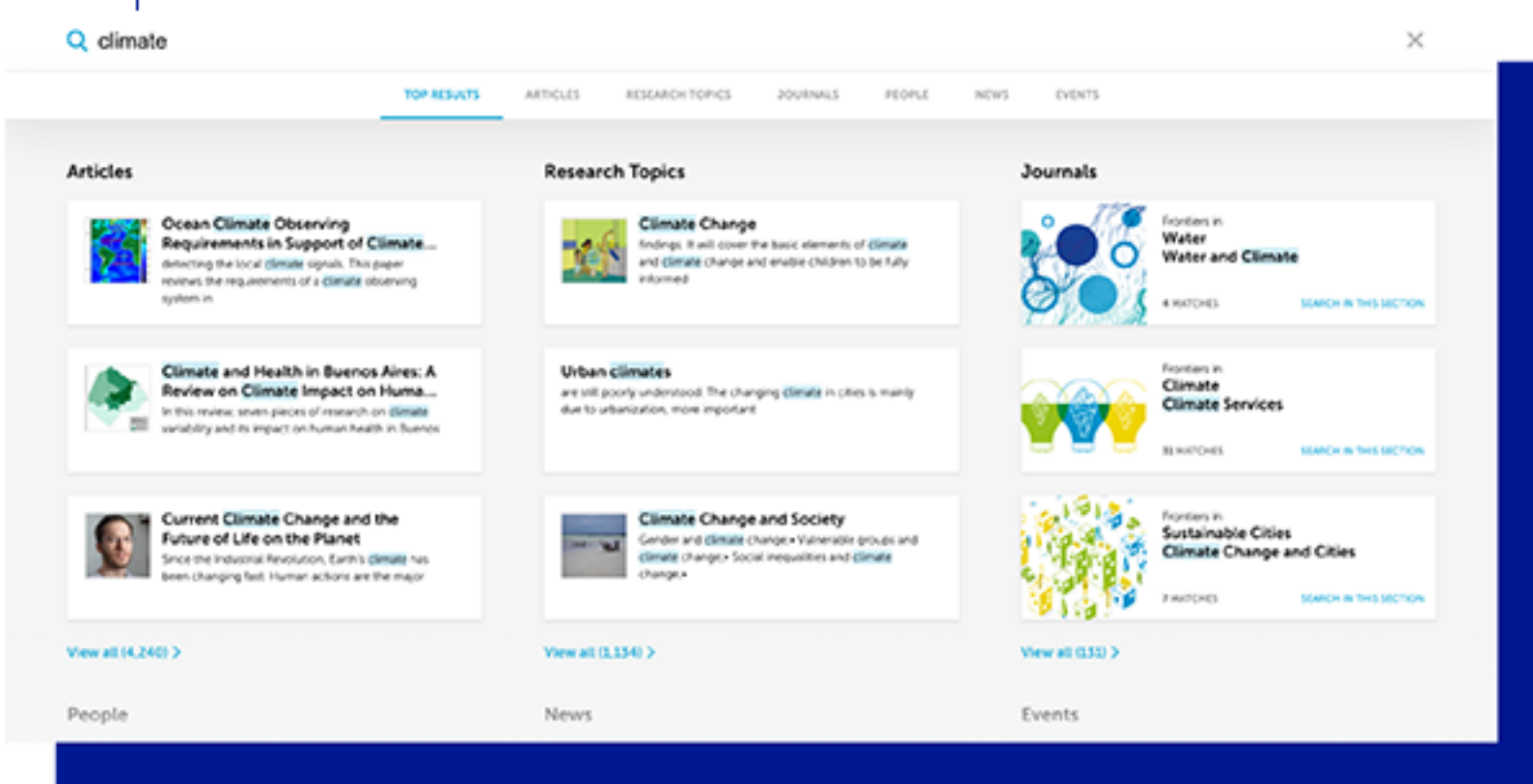
### 2019

#### Artificial Intelligence Review Assistant (AIRA) updates

Improved reviewer suggestions and new automated checks to help assess article quality

#### Website search

Search functionality rebuilt making it easier to find content – articles, collections, journals, and people – and helping to raise the visibility of research



### 2018

#### Artificial Intelligence Review Assistant (AIRA)

The next generation of peer review in which AI and machine learning enable more rigorous quality control and efficiency in the peer review

#### My Frontiers

A new editorial interface helping authors, editors, and reviewers to easily track the status of their manuscripts and assignments

#### New submission system

Streamlined submission system to ensure papers are submitted to the correct journals to prevent delays

### 2017

#### AI-powered reviewer recommendations

Improved suggestions for editors to find relevant experts to review manuscripts

### 2016

#### Editorial contributions

Editorial roles showcased on Loop profiles, providing visibility and accreditation for editorial contributions

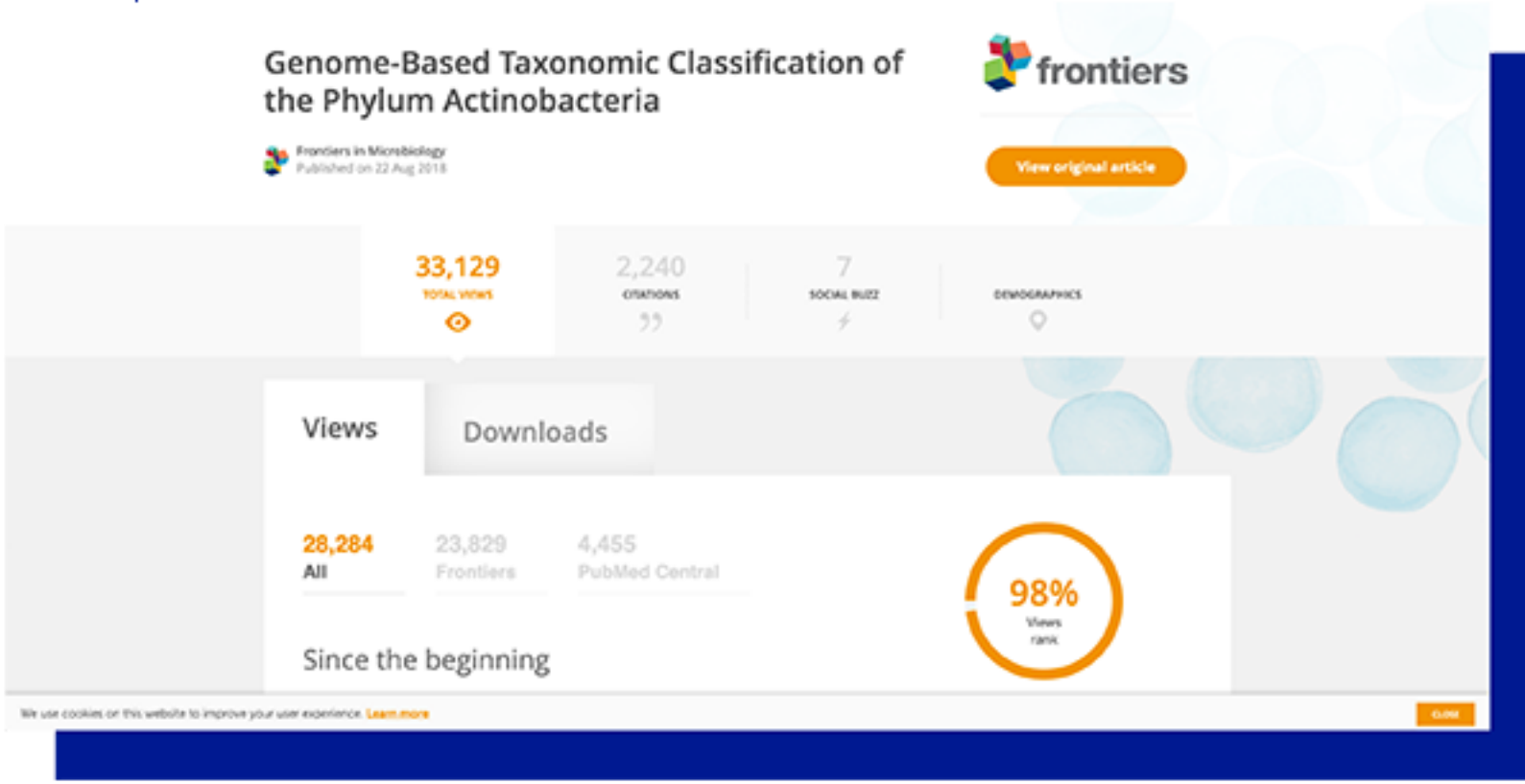
### 2015

#### Loop research network (updates)

Network and profile pages redesigned to maximize author impact and integrated with ORCID and other partners

#### Research Topic metrics

Views and downloads on articles aggregated at a collection level



### 2014

#### Collaborative Review Forum (updates)

Improved online experience for reviewers and editors

#### Article pages

Newly designed pages with improved look and performance

#### Research Topic pages

Newly designed pages placing more focus on the researcher.

### 2013

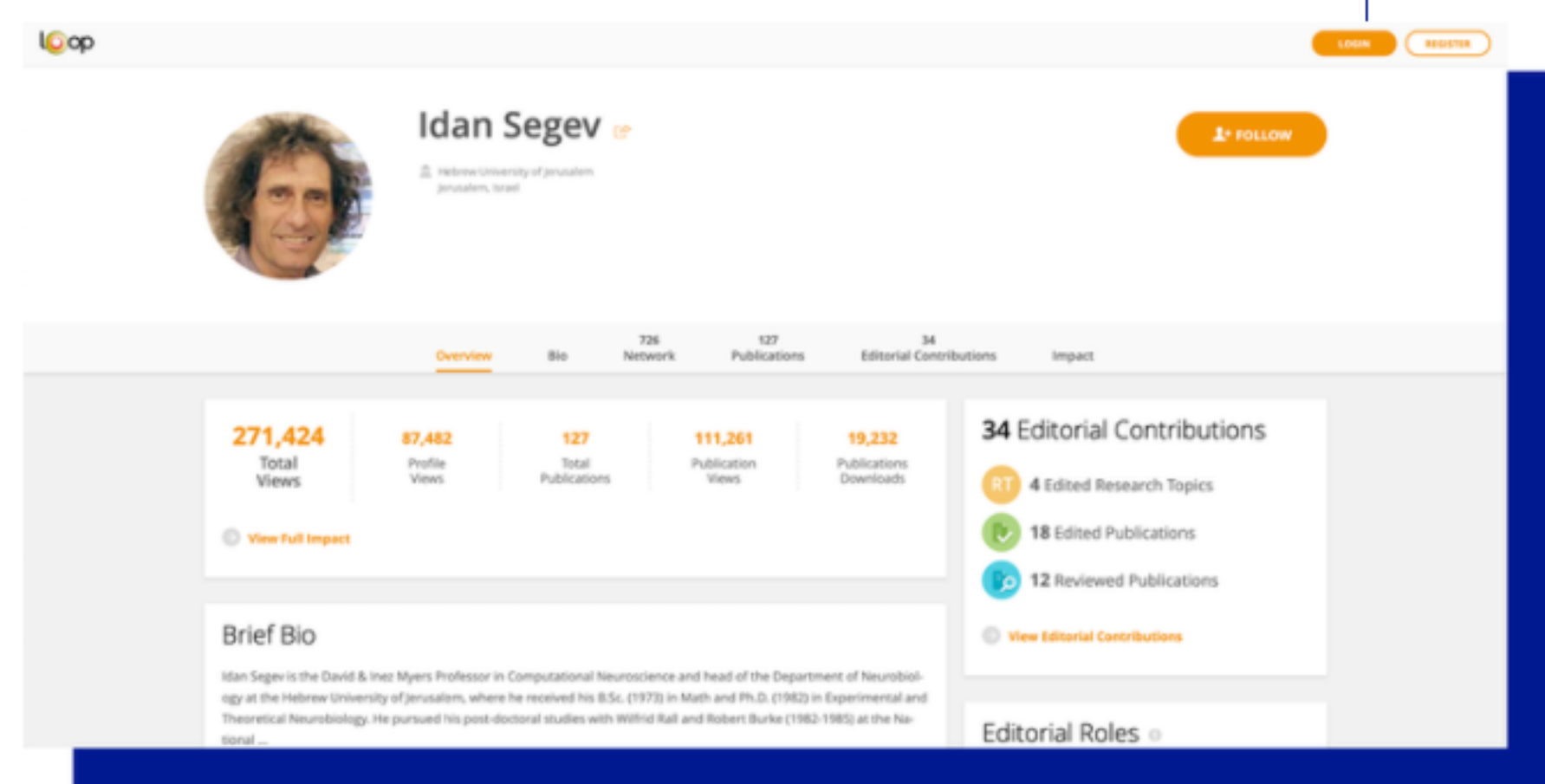
#### Frontiers for Young Minds

Open access journal involving young people in the review process of real scientific papers and bringing the latest cutting-edge research into the classroom

### 2012

#### Loop research network

The 'social network' for researchers with academic profiles showcasing publications, achievements, and impact



### 2011

#### Author-level metrics

Article views and downloads on all articles aggregated at author level.

### 2010

#### Digital Editorial Office

A dedicated online cockpit for editors to manage their journals, enhancing efficiency, oversight, and quality control

#### Profiles

Profiles showcasing published work and career achievements for all authors, editors, and reviewers

#### Community Platform

Profiles enriched with multi-media tools, including events and videos

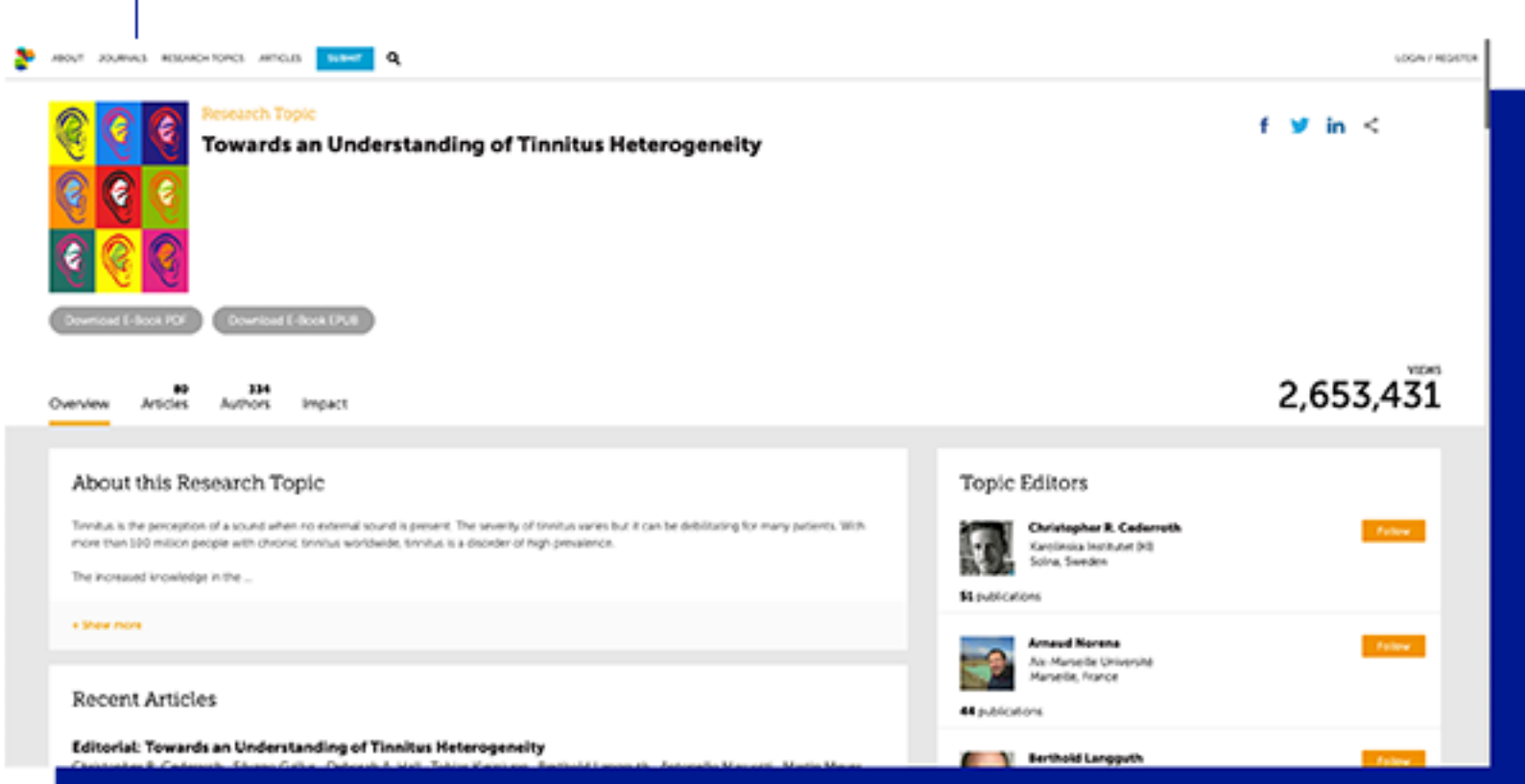
#### Commenting functionality & post-publication review

Available on all published articles allowing other researchers to comment on the findings

### 2009

#### Research Topics

Multidisciplinary article collections around an important or emerging area of research



### 2008

#### Online publishing platform

IT platform to manage author registration, article submissions, review, publication and evaluation

#### Collaborative Review Forum

Discussion forum connecting authors with reviewers in a direct online conversation

#### Article-level and journal-level metrics

Pioneering new quantitative metrics based on article views and downloads

# Our outreach

Our outreach activities provide a more inclusive and collaborative way for scientists, educators, policymakers, and wider society to engage with scientific research.

## Diversity and Inclusion

The global anti-racism protests triggered a demand for action not only in society at large, but also in science and the institutions associated with science. In response, we embarked on several editorial projects in 2020, highlighting research around revealing and reducing racial inequality, and promoting scientists of Black, Asian and ethnic minority groups.

### Journals and sections



#### Frontiers in Sociology

**Race and Ethnicity**  
Specialty Chief Editor: [Sin Yi Cheung](#),  
Cardiff University

Investigating the ways race, ethnicity and religion shape our societies.

[— See journal](#)



#### Frontiers in Education

**Language, Culture, and Diversity**  
Specialty Chief Editor: [Cristina Alfaro](#),  
San Diego State University

Understanding the role of language, culture, and diversity in education.

[— See journal](#)

### 2020 article highlights



#### Gendered racism in education

Research published in *Frontiers in Education* addressing gendered racism in educational leadership and professional development programs.

May 12, 2020 | 21,000 views

[— Read article](#)



#### Social media and prejudice

Research published in *Frontiers in Communication* exploring links between Covid-19, social media use, and prejudice against Asian Americans,

June 12, 2020 | 30,000 views

[— Read article](#)

[Explore the hub](#)

# Policy Labs

Our Policy Labs initiative strengthens the connection between scientific research and informed policymaking. The Covid-19 pandemic and the climate emergency are two challenges among many that we must now address.

## 2020 interview highlights



**Jean Claude Burgelman**

Editor-in-Chief of Frontiers Policy Labs

Jean Claude Burgelman, Professor of Open Science Policy at the *Free University of Brussels* and former Head of Unit for Open Science Policy at the *European Commission*, hosts in-depth conversations and analysis with experts in policy, business, and academia.



**Robert-Jan Smits**, *Eindhoven University of Technology*, explains the radical change Covid-19 has brought to the science-policy nexus.

November 26, 2020

[— Watch](#)



**Jennifer Hansen**, *Microsoft*, talks about the power of open data and the challenge of increasing data literacy.

December 7, 2020

[— Watch](#)



**James Wilsdon**, *Research on Research Institute*, discusses the speed and impact of the scientific response to Covid-19.

January 7, 2021

[— Watch](#)

[Explore Policy Labs](#)

# Science for kids

Frontiers for Young Minds is a philanthropic outreach program involving young people aged 8-15 in the review process of real scientific papers and brings the latest, cutting-edge research into the classroom. The journal is available in English and Hebrew (with Arabic coming soon) and is generously supported by the Jacobs Foundation, the Patrick & Lina Drahi Foundation, and the King Abdullah University of Science Technology.



3,223  
Young Minds

559  
mentors

581  
total articles

7,685,233  
total views and downloads

## 2020 article highlights

[See all articles](#)



### What is Covid-19?

What we know about SARS-CoV-2 so far and how to stay safe from the virus.

May 20, 2020 | 21,000 views

[— Read article](#)



### Do Not Swat the Wasp!

Challenging what people think about wasps and why we should care about them.

January 10, 2020 | 17,000 views

[— Read article](#)

## 2020 collection highlights

[See all collections](#)



### The learning brain

Current insights into the mechanisms of brain development, learning, and memory — and how to distinguish myths from the facts.

24 articles | 145,000 views

[— See collection](#)



### Diversity of the microbial world

Answering the basic questions about microbial adaptation, biodiversity, and their relationships with other living beings.

10 articles | 70,000 views

[— See collection](#)

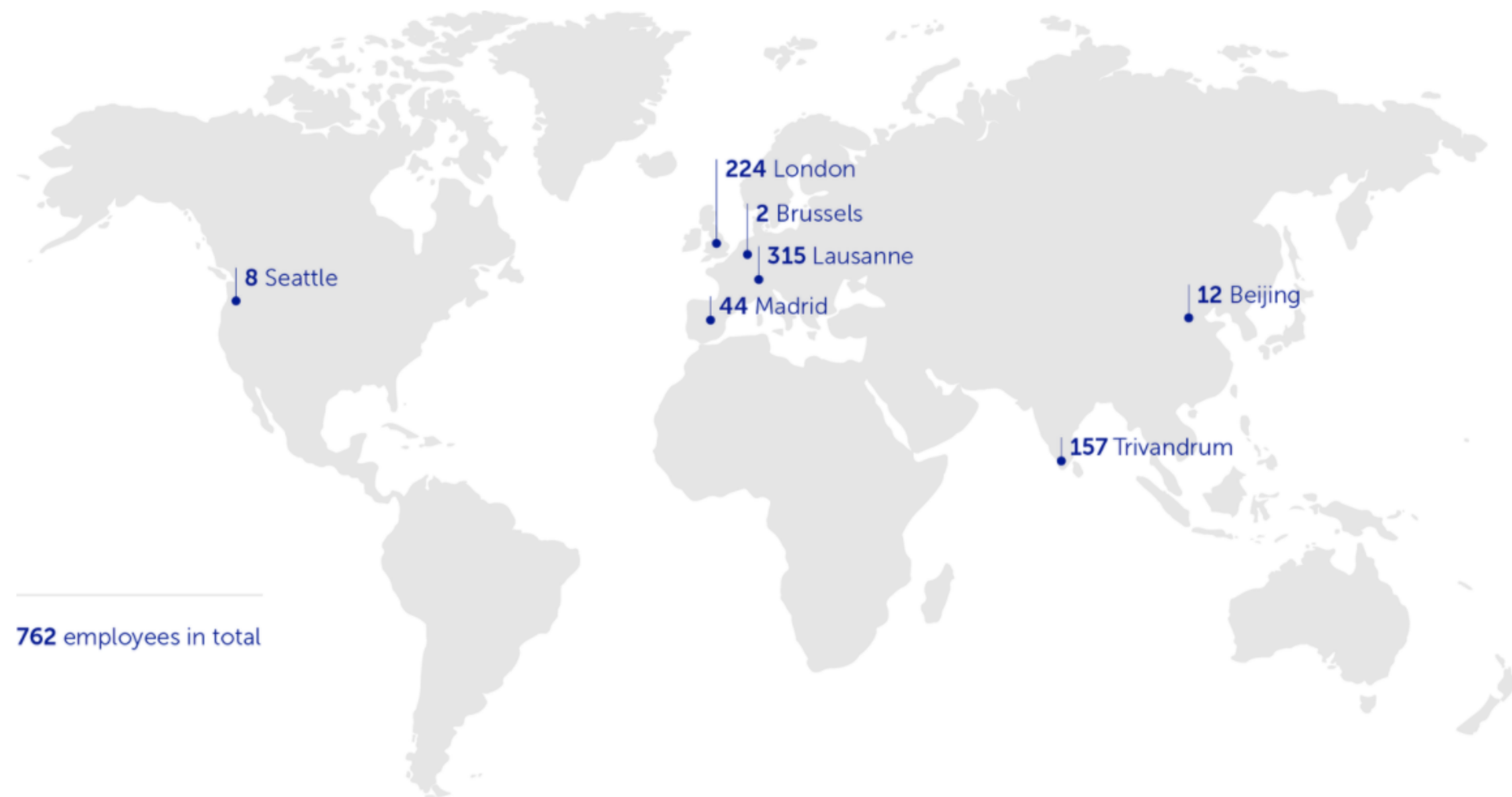
# Our people

Our employees, known as 'Frontons', are all passionate about publishing and contribute to our mission of making science open so everyone can live healthy lives on a healthy planet.

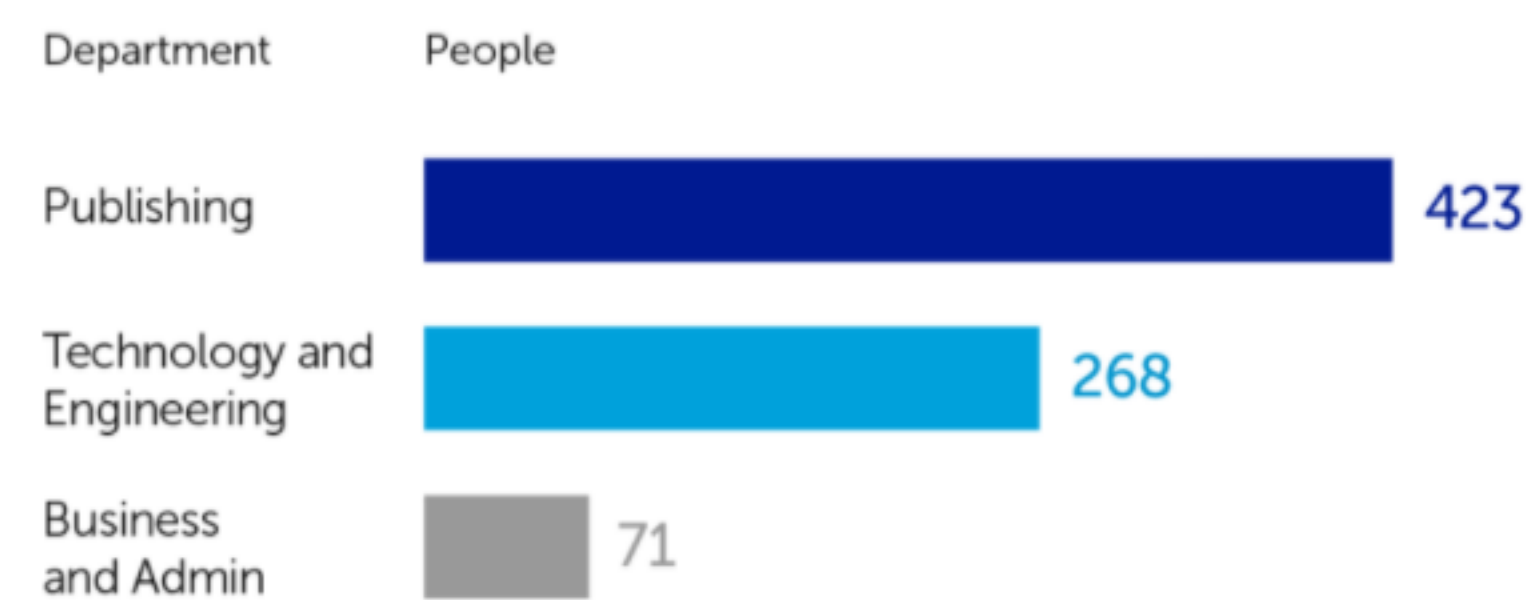
## Who we are

We actively embrace diversity with over **750** employees and more than **50** different nationalities. In 2020, we welcomed **78** new colleagues to the Frontiers family.

## Our people by location



## Our people by department





# How we work

With offices in seven locations around the world, our employees are used to working with each other online – and throughout 2020 we were able to continue to support our editors, authors, and reviewers from our homes.

## 2020 workplace initiatives

In 2020, we introduced several new workplace initiatives to support our people during the pandemic and beyond. This included reimagining our office spaces and introducing more remote working.



### Introducing more remote working

Our people now have the flexibility to choose where they want to work. And for those that live further away from the office, remote working will be available on a part- or full-time basis.



### Prioritizing health and safety

We continue to monitor the pandemic closely and keep our employees informed of any new measures taken by Frontiers to help mitigate the spread of the virus.



### Transforming our office spaces

More remote working offers the opportunity to rethink how we use our offices. When it's safe to return, our workplaces will become "social hubs" with more meeting and event spaces to connect with colleagues.



### Supporting mental health and wellbeing

Our Covid support team provides advice and assistance for employees struggling to cope with the pandemic. This includes flexible working arrangements for parents and resources to help us stay connected.



 [@FrontiersIn](https://twitter.com/FrontiersIn)

 [@Frontiersin](https://www.facebook.com/Frontiersin)

 [@frontiersin\\_](https://www.instagram.com/frontiersin_)

[frontiersin.org](https://frontiersin.org)