

Nature Microbiology at 5

In the past five years *Nature Microbiology* has championed research and commentary across the breadth of the discipline. Going forwards, we will expand our scope to include the biology and applications of microorganisms that can help to address the pressing issues of global change and sustainable living.

This issue marks the fifth anniversary of *Nature Microbiology*. From its inception in 2016, the editorial team for *Nature Microbiology* aimed to provide “a forum for the exchange of ideas and approaches across the entire field, breaking down barriers between sub-disciplines”, and to “consider work focused on all types of microorganisms, whether in isolation or as part of a community, whether in a Petri dish, a host or an environmental niche”. We take the opportunity presented by this anniversary to reflect on the early years of our journal and look forward to expanding our scope to draw attention to the research that microbiologists are carrying out to support changes needed to overcome the pressing challenges to planetary and human health.

Back in the early days, a team of four editors, led by Andrew Jermy, launched a long-awaited title in the *Nature* portfolio — one that focused on microbiology. Their aim for the new journal was a simple one: to highlight the very best research across the entire scope of the field, to foster interactions among microbiologists from different subspecialties and to set out a vision for microbiology supported by timely research content and commentary, the whole of which being from a diverse authorship and for a diverse readership. Since 2016, *Nature Microbiology* has published 806 research papers, with more than 10% being classed as ‘highly cited’ in the field according to the Web of Science. Closer examination of our most cited research articles reveals that we have achieved our goal of being inclusive of excellence in all areas of microbiology. We have featured an incredible variety of articles, including the cultivation of Planctomycetes, rebuilding the tree of life, understanding the global burden of melioidosis, culturing the difficult-to-cultivate (that is, ‘the unculturables’), modes of methanogenesis in Archaea, the discovery of the Bombali virus, microbiomes in inflammatory bowel disease, rhizosphere community assembly and *Cryptosporidium* in lung organoids. We’ve had changes in personnel over time, as every journal does, but all of our editors are united in their passion

for microbiology and their desire to work with the research community. We select articles for publication, provide [transparent decisions](#) to better serve authors, and manage peer review. We have also sought to support values and initiatives relevant to the field, for example data sharing in public health emergencies such as *Zika*, the importance of [standards](#) in microbiome research, the value of [public engagement](#) with microbiology, placing [fungi](#) firmly in our scope, embracing advances in [peer-review models](#) and having some fun with the [Microbial Olympics](#). Our team of editors advocates for microbiology to be highlighted within the *Nature* portfolio, in cross-journal initiatives and in the wider community. We’ve clocked up at least 100 conference visits so far, to ensure we reach as many researchers as we can.

Editors from *Nature Microbiology* have worked with colleagues across the *Nature* portfolio to reach out beyond the walls of our journal into the community. We’ve helped to organize interdisciplinary conferences, participated in the growth of the [microbiology community site](#) and contributed leadership in assembling collections of articles to highlight the many ways in which microbiology research is indisputably key to understanding and solving global problems such as climate change, planetary health and feeding a growing population.

As we begin our sixth year as a journal we do so in the shadow of the SARS-CoV-2 pandemic, which has already claimed more than 1.4 million lives. Vaccines are being approved and rolled out in record time as we go to press, largely owing to the tireless efforts of scientists in academia, public health and industry over the past nine months. The lessons learned from the pandemic are likely to be far-reaching. One such lesson is how a crisis can expedite change for the better.

“Microbiology has never seemed more important and relevant to everyday life than it does now, in the eye of the pandemic storm.”

For example, a recent [Comment](#) from Michael Johnson and colleagues recounts how they created the [National Summer Undergraduate Research Project](#) to ensure that underrepresented minority students didn’t miss out on the summer research programmes that are known to make a career in science a real prospect for those who might not otherwise have such an opportunity. Perhaps such initiatives on a larger scale will enable access and participation in microbiology by a wider set of students. The topic of rapid change is further highlighted in this issue by Beronda Montgomery, Professor at Michigan State University and Fellow of the American Association for the Advancement of Science, who points out that the pandemic has shown us [how swiftly change can come](#), if we want it to. She discusses how universities, which are traditionally slow to change, pivoted to provide remote education swiftly because education was deemed as ‘essential’. If change can come so quickly, she argues, why is progress so incremental towards improving diversity, equity and inclusion at universities? If change is essential, it will happen, and quickly.

COVID-19 has laid bare inequity around the world and highlighted the precarious nature of global health and the world economy. Can the stark realities exposed by the pandemic now be translated into actions to overcome global challenges? First, the pandemic has shown the value that a [One Health approach](#) could bring to mitigate against the emergence and spread of pathogens, to improve food safety and to understand and control antibiotic resistance. One Health encourages collaborative efforts among pathogen researchers, physicians, epidemiologists, social scientists and veterinarians working across human, animal and environmental health to improve the health of people and animals, including pets, livestock and wildlife. We have [published](#) manuscripts seeking to study infections in wild animal populations in detail, and are interested in multidisciplinary studies that aid our understanding of how pathogens emerge and spread. We have previously [highlighted](#) how microbiology research can make an important contribution to achieving the United Nations’ Sustainable

Development Goals. Moving forwards in 2021, we will seek to solicit research and commission commentaries that showcase and amplify the important work that microbiology researchers are doing to help us to understand our planet and all its inhabitants, and to overcome problems caused by global change and human behaviours.

Understanding the biology, physiology and ecology of bacteria, archaea, parasites, fungi and viruses forms the backbone of modern microbiology, and remains central to our scope. In expanding our purview, we will aim to publish research that addresses crop (plant pathogens and plant microbiomes) and animal health; research that examines the roles of microorganisms in water quality, ocean health, biogeochemical cycles and climate; and research that underpins the green economy. We will also seek to highlight studies that provide a better understanding

of the spread of pathogens and antimicrobial resistance in countries where these problems are most pressing.

Microbiology is an old discipline, dating back to the mid-1670s, when Antonie van Leeuwenhoek first observed 'animalcules' using a lens, before being latterly formalized by Pasteur, Koch and others in the late 1800s to early 1900s. Anyone lucky enough to study microbiology at any level will discover the fascinating unseen world of bacteria, archaea, algae, protozoa and viruses, and the myriad biologies to understand. Microbiology has also long been associated with industrial applications in food and drink, biofuels and commodity chemicals. More recently, microbiology has enjoyed increased attention, owing to interest in CRISPR genome editing, which was predated by more than 30 years of work on the exquisitely interesting biology of CRISPR systems in bacteria and archaea. Moreover,

the explosion of interest in microbiomes has generated widespread interest in the microbial communities that exist everywhere, from remote tundras to our guts, and reinforces the idea that intimate partnerships between microorganisms and their environments underpin climate, ocean, human, animal, plant and insect biology, and therefore health.

Microbiology has never seemed more important and relevant to everyday life than it does now, in the eye of the pandemic storm. As editors, we have a unique opportunity to galvanize the unprecedented public awareness of microbiology and to highlight the incredible work being done by microbiologists everywhere. We hope you will join us, whether as authors or readers, in this shared challenge. □

Published online: 21 December 2020
<https://doi.org/10.1038/s41564-020-00847-y>