

## Reflections on the COVID-19 pandemic from a university academic

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The COVID-19 pandemic has affected all of us, and we all have different stories. Here are some of my reflections from academia to forced ‘retirement’.

At the start of the pandemic I was employed 3 days per week as a course coordinator at RMIT University. I was leading a great life with my wife and spending what time we could with our four married children, their spouses and our 12 grandchildren. My other passion was editing *Microbiology Australia* and overseeing its reach to Australian microbiologists as well as the worldwide community of readers. I had an exciting year planned, including a holiday to Iceland. At the start of 2020, little did I know what was coming.

Although we have experienced outbreaks of major infectious diseases around the world in recent history, including Ebola, Hendra, SARS, MERS and others, it has been more than 100 years since the last big one, the Spanish influenza pandemic, which is estimated to have killed 20–100 million people<sup>1</sup>. While we have controlled many pandemic-capable diseases through our knowledge of OneHealth, hygiene and infection control, human-to-human infections caused through airborne transmission remain a major concern.

In the early part of 2020, as the world came to realise that COVID-19 needed to be isolated, we started to see restrictions on international travel, initially from Wuhan, but becoming more general. International students form a large component of the student cohort and we saw many of them not enrolling or re-enrolling in courses for 2020. The impact of this was a huge blow to many universities whose budgets heavily depended on income from international students. RMIT University worked through the projected revenue losses by offering redundancies to staff, ceasing casual employment, stopping all travel and not renewing contracts. I was affected by the latter situation and ceased employment at the end of my contract in 2020. Many other universities reacted in a similar manner. It is sad to think of how the talents and careers of so many young scientists have been affected by these budget cuts: this will impact the next generation of educators and researchers who will be needed to maintain Australia’s high reputation in education, training and research. The situation for sessional staff was particularly tragic since they did not qualify for JobKeeper.

The indefinite shutdown of face-to-face teaching at universities started in late March 2020, soon after the start of semester, leaving a challenge of how to enable the delivery of teaching and learning. Fortunately, at RMIT University, there was a long practice of recording lectures (in some cases tutorials too): indeed, for many students, listening to recordings in their own time was their preferred learning mode, while other students were strong adherents to face-to-face learning. One fall-back position was to use recordings from 2019, which could be re-played (if the curriculum had not changed). This was a good option for the immediate transition and was ideal for replacing expert guest lectures. However, it soon became essential to deliver lectures live from one’s home. This reassured students that lecturers were still present and with them, but it made the engagement more difficult since it was not possible to respond to the reactions of students: to answer questions, to read their faces, to gauge their understanding. I tried to stimulate more interest using a background with a bird feeder, so occasionally students could see galahs or parrots, and sometimes even see kangaroos in the background. I know they remembered those moments!

The biggest challenge with microbiology though is the practicals. How does one manage without practicals? My 3rd year Industrial Microbiology course involved four multi-week practicals that ran, often simultaneously, throughout the semester. They enforced basic microbiology skills but also taught new skills like PCR, DNA sequencing and microbial identification using mass spectrometry. When we went into lockdown students had participated in three practical sessions only and still needed to learn and practice skills. Practical sessions were the favourite parts of the course and there is no substitute for hands-on activity. In addition, the work included a real research component that involved discovery of novel microbes, leading to publishable outcomes (e.g. discovery of *Cedeca colo*<sup>2</sup>). However, with no lab access the options were to delay the courses or to compromise through simulations.

The more widespread problems of remote teaching were discussed at ASM’s EduCon meeting, held using Zoom and reported by ASM’s EdSIG Convenor, Megan Lloyd<sup>3</sup>. Huge challenges are the mental health needs of students, engagement, and arranging

authentic assessment. In addition, some students do not have good internet access, limiting their online learning.

With regard to research outputs, my students and I spent more time reading and writing. In fact, 2020 was one of our most productive years. However, while this may look good on CVs, it may not be a good indicator of impact.

The time of lockdown restrictions provided more time in a day since there was no longer a need to travel and get fully dressed! For me it meant that I could split my time over every day. My wife and I enjoyed the permitted 2-hour exercise break each day with lovely nature walks and riding our e-bikes. However, she had a bad crash on her bike on 21 April, breaking her humerus into four pieces. She was taken by ambulance to hospital; however, with all the COVID-19 restrictions taking place she was sent home the next day to wait a week for surgery. After a difficult 5-hour operation the humerus was re-joined with a plate and 12 pins. Recovery was slow and still continues, but she has returned to the e-bike and had hoped to snow ski this year, but Victoria's 5th lockdown put an end to that. Personally, major fallouts from COVID-19 have been my wife's injury, plus denial of being able to travel to visit half of our family members spread out from Western Australia and Germany. I know others have done it much tougher, including editorial board members who have been separated from family members, and tragically some who have lost parents overseas.

As the year continued, there was some hope for return of face-to-face teaching but ultimately it was restricted to catch-up practicals for a minority of students. Some international students continued their courses and perhaps it suited them better being able to stay in their home countries. However, for many, the chance to physically study in Australia remains a major reason for choosing an Australian university for studies. An additional challenge for many of the international postgraduate students was loss of income and training due to not being able to work as tutors and demonstrators. The impoverished state of many of our international students came to the attention of some charitable organisations who provided some support.

Many Australians do not know anyone who has had COVID-19 and feel somewhat distant from the horrible deaths and morbidity that it causes. However, for many of us working with international students and international colleagues we know there is a huge impact beyond our borders. Our international students have all been affected by COVID-19. Some of our students have had COVID-19 in Australia, and some have had it in their home country. Sadly, many have lost loved ones to COVID-19. One of my students lost both parents in their home country and was unable to return to home to grieve with their families. Another is a front-line worker in a small country with an internal border restriction to limit COVID-19 spread: his work has required him to live in a hotel and to isolate

from his family since March 2020. Many of us know Army Demain, the grandfather of industrial microbiology, who died from COVID-19 complications on 3 April 2020. Army was known and loved by many Australian microbiologists: he was ASM's Rubbo orator in 1979 and was given a tribute in *Microbiology Australia* in 2010<sup>4</sup>.

*Microbiology Australia* has endeavoured to provide updates on COVID-19. The first issue (March 2020) after the start of the outbreak featured one of the first electron micrographs of SARS-CoV-2 on the front cover (Figure 1) and a Hot Topic report from Mackenzie and Smith<sup>5</sup> on the outbreak. Since then, every issue has provided further insights on COVID-19 and the entire first issue of 2021 (<https://www.publish.csiro.au/ma/issue/10435>) was devoted to COVID-19. I thank all of those experts who have contributed peer-reviewed articles to inform our community of the facts. The provision of correct information has been so important during the pandemic, when so many people are accessing misinformation. We can be encouraged that *Microbiology Australia* adheres to the strictest publication standards and is a member of COPE (Committee on Publication Ethics). All articles are peer-reviewed and all articles report conflicts of interest (if any) and disclose funding (if any). Vertical Transmission columns from our President have acknowledged and updated ASM members on the challenges that COVID-19

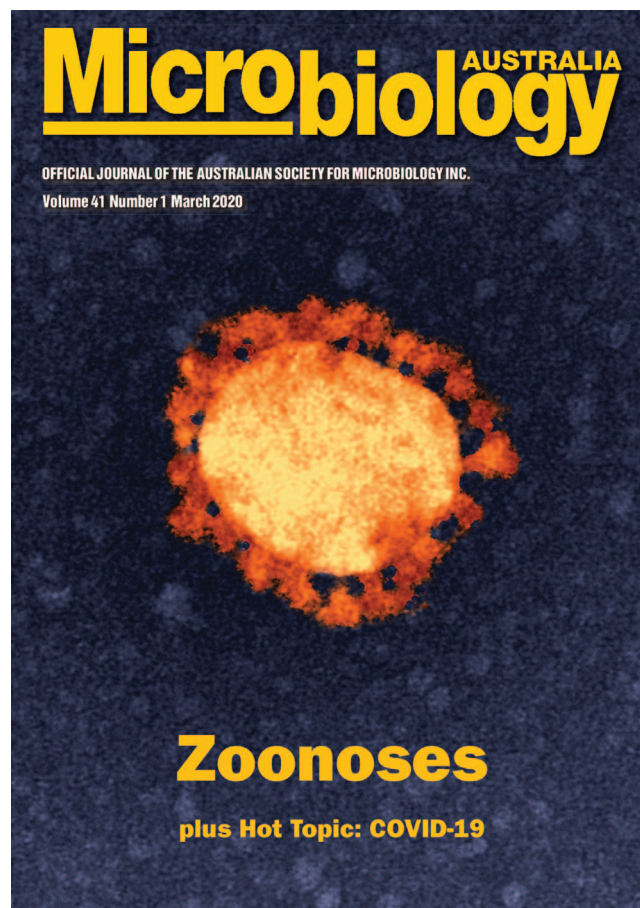


Figure 1. *Microbiology Australia* March 2020 cover.

has inflicted on ASM and its members, who include frontline workers, researchers of COVID-19 and those involved in training and teaching of future microbiologists who are being trained to respond to COVID-19 and future pandemics, whether they come from viruses, bacteria, fungi or parasites.

At the end of 2020 I left my RMIT University employment but have remained involved with RMIT University in an honorary capacity. 2021 has been a mix in Australia and continues to be a difficult year due to the slow vaccine rollout, and sporadic but highly threatening outbreaks. In Australia, our elimination strategy has seen relatively small numbers of people infected, and relatively few deaths. However, repeated lockdowns, especially in Victoria and NSW, have impacted many people in multiple different ways. Our 'zero' strategy is a stop gap strategy: it is unsustainable in the long term due to its toll on the economy and people's well-being. Most of us expect to be able to live life with COVID-19 once we have the vaccine in a large proportion of the population. However, there will be uncertainties due to the mutations of SARS-CoV-2, which could lead to greater evasion of antibody responses. Fortunately, our experts are anticipating the future needs and are poised to respond. Unlike the ongoing challenges that medical researchers face in obtaining funds for other infectious disease, COVID-19 research has received good support.

A further worry will be the unvaccinated portion of our population. As being reported by the media here and elsewhere in the world, as restrictions are lifted, the people filling hospital beds and accounting for the majority of COVID-19 deaths are from the unvaccinated population. This knowledge should spur unvaccinated Australians to seek vaccines as they become available. For some people, there are objections to COVID-19 vaccines due to the involvement of fetal cell lines, produced many decades ago, in some COVID-19 vaccines. There is no complicity of vaccine manufacturers in the production of these cell lines, so we can receive these vaccines with a good conscience: a good discussion on the ethics of these vaccines can be found in an article by Richard Zimmerman<sup>6</sup>. A further question will involve our approaches to vaccinate children, an increasing point of discussion in the scientific community.

The quest of vaccine workers is one of tremendously hard work, dedication and sacrifice to achieve control of deadly infectious diseases. The journeys on Australia's COVID-19 vaccine were reported by Paul Young<sup>7</sup>. Sarah Gilbert and Catherine Green, who led work resulting in the highly successful AstraZeneca vaccine, reported their story in their new book, *Vaxxers: The*

*Inside Story behind the AstraZeneca Oxford Vaccine and the Race against the Virus*. The book is reviewed by Cheryl Power in this issue of *Microbiology Australia* (volume 42, issue 3).

By the end of 2021, it is expected that ~20% of the eligible Australian population will be unvaccinated. This population is of concern. Despite some protection via herd immunity, we need to continue research on efficacious drugs that can be used to treat COVID-19. The progress on COVID-19 drugs was recently reported in two *Microbiology Australia* articles<sup>8,9</sup>.

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## Biography



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