

Building a community for Black microbiologists

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I have always been fascinated by the world of the small things, seemingly invisible until aided by magnification and light. It is almost poetic that the smallest organisms can, under the right circumstances, change the course of human history.

My favourite childhood gift was the microscope that my parents bought for my eighth birthday. It came in a grey plastic case with blank slides and slide covers made of real glass, a tiny scalpel and tweezers, a little bottle of methylene blue, gum media and some prepared slide examples. To both the horror and the amusement of my mother, I spent the next several weeks taking small slices off anything and everything in the house. I inevitably ran out of slides, so we found a local scientific hobby store. It was there that I first discovered petri dishes, agar and streaking loops. I was well on my way to building a household bathroom culture collection when I decided that I was going to be a scientist. After years of science fair projects, on topics ranging from gravitational equilibrium to whether eating breakfast before school impacts memory, I settled on microbiology as my career path. In 2009, during my first year in college, I participated in a year-long research experience for undergraduates focused on bacteriophage diversity. It was there that I first heard of the microbiome — the collection of microorganisms and their genes that populate the ecosystems of our world. I isolated a novel bacteriophage from the soil, and we prepared it for genomic sequencing. I planned to go on a lab trip to visualize our class isolates with electron microscopy at a different facility, but I was sidelined by the H1N1 influenza pandemic. Back at home in a different state, under quarantine orders and recovering from illness, I saw my bacteriophage for the first time via email. My experience with phage research led to a passion for the human microbiome, its relationship to the immune system and its role in health and disease. Interest in the human microbiome was the central driver of my graduate and postgraduate research and training, with particular focus on its potential applications



Credit: Ariangela Kozik

for precision approaches to help treat chronic disease.

I pursued my postdoctoral training at the University of Michigan, studying microbial–immune interactions in adult asthma. In 2020, during the spring of my second year as a postdoc, I attended a departmental meeting. My colleagues were discussing the clinical presentation of a complex new illness that had finally made its way to our state. The atmosphere was tense, the facial expressions strained, the mood — serious. We were hearing from physicians in other parts of the world, as they described what they had been going through in the weeks prior. I knew in that moment that we were on the verge of a world-changing event, but could not have imagined the scale. Now, more than 2 years and 6 million global deaths later, I am not the same person or scientist that I was back then. Within weeks of that meeting, schools closed, non-critical labs were shut down and the world was different.

People were dying, especially those from Black and brown communities across the nation. It seemed that no one was immune from the effects of loss, with many tragic losses within my own sphere.

The weeks and months that followed were a truly amazing time for biomedicine. We learned new information about COVID-19 almost daily, genome sequences spurred vaccine development, and the global scientific community was focused on finding answers at an unprecedented speed. But outside of science, things seemed stuck, shrouded in uncertainty, and the public searched for information. In the vacuum of information about COVID-19, a new threat emerged — disinformation. I started getting phone calls from relatives and friends.

“What do you think about this new virus? Is it real?” they would often start. Through our conversations, I would find out about social media posts, messages and videos with a wide variety of claims and questions that, to someone with a background in science, were easily rebutted and dismissed, but with enough seemingly technical information to sound ‘legitimate’ to the general public. As the pandemic expanded, clear inequities in the affected populations began to emerge. Communities of colour were sicker, hospitalized more and dying at faster rates. Hypotheses began to emerge to explain the disparity, but unfortunately echoed the familiar and flawed determinist views that assume that some unique feature or deficit in bodies of colour put us at higher risk. However, to those within the communities bearing the cascade of tragedy, these dynamics, and the disconnect between our lived experiences and the institutions of science and medicine, were nothing new.

The year 2020 is often referred to as the year of two pandemics, with the second being racism. In addition to the already painful losses wrought by a combination of COVID-19 and structural inequities, the summer of 2020 brought a string of racialized violence and deaths that sent a shockwave around the world. For some, that summer was the first time they began to grapple with the realities of inequity

and violence faced by so many. Personally, I absorbed the news as I often have, in an ever-expanding pit of grief, at the loss but also at the repeated reminder that I am not safe. I struggled to remain focused on my science, trying to navigate a familiar but paralyzing 'freeze' response. The racist verbal assault of Christian Cooper while birding in a park in New York was yet another reminder that even in my work, in which I found joy, I could be seen as out of place, suspicious and a threat. These events were the catalyst of the formalized 'Black In X' social media movement. Though we had never met in person, a fellow postdoc (Dr Kishana Taylor) and I had been supporting each other during this time, as Black women academic scientists. At the time, she was the only other Black microbiologist I knew and a welcome reprieve from the isolation that I had felt in labs, departments and institutions. Through conversations about the systemic challenges we faced, the lack of visible representation in our discipline at such a critical time, shared grief and worry about protecting our families from COVID-19, we decided to launch Black In Microbiology — a week of virtual programming to bring awareness to the presence and contributions of Black microbiologists. A few short months later, we held the very first #BlackInMicroWeek, organized by a team of mostly early career volunteers. Our virtual event highlighted the work and challenges of Black microbiologists across subdisciplines, from microbiology education to mycology.

By discussing participant feedback from #BlackInMicroWeek2020, we identified perhaps the most profound outcome — community. We have written in recent years about the barriers faced by Black microbiologists and the isolation that results from the lack of representation, support and resources. Thanks in part to the virtual format, we had made space for something that many felt they were missing. After the week was over, we knew that the community needed to continue. My own network of Black microbiologists grew from one to several dozen in a few short months. This shared space, where one can access support and resources, talk about science, connect across training levels and disciplines, and be candid about personal challenges and lived experience, is key to navigating training and a career in science. This was the impetus for the formation of the Black Microbiologists Association (BMA). One of our main goals is to increase microbiological knowledge for the general public. During our second #BlackInMicroWeek in 2021, we had in-depth discussions about the connection points between our work in science, community trust and the role of science communication in community health. Our programming was widely shared and requests for both content and additional public engagement came from all directions. The principles that we, along with our peer organizations Black in Immuno and Black in Science Communication, discussed continue to be particularly relevant for me in my own science communication efforts, as new waves of disinformation about

COVID-19 vaccines sweep the internet. Fielding questions and directing people to accurate, evidence-based information about the ways that microorganisms impact their lives remains a key component of my work. The painful lessons from this pandemic have also expanded my scientific interests in new directions — to understand the common threads between the overlapping realms of the biological, the environmental and the social.

Looking ahead, as we face intersecting threats to global health — an evolving SARS-CoV-2 pandemic, monkeypox, emerging infectious diseases, antimicrobial resistance, rapidly changing environments and deepening inequity — microbiology, and therefore microbiologists, will be instrumental in shaping the future.

It is my hope that by continuing its mission to be a community and a launching pad for those historically excluded from the discipline, the BMA will do its part to ensure that future is equitable, just and bright. □

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Competing interests

The author is a co-founder and board member of the Black Microbiologists Association.