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Voices

Navigating COVID-19: Starting a lab during the pandemic

For new principal investigators, the first years are key to getting a laboratory off the ground and running. COVID-19 has changed the world, bringing on unforeseen difficulties and challenges at every level. We asked these investigators to share their experiences in navigating the unique environment since the start of the pandemic—what has changed in their vision for their laboratory, how they have adapted, and what advice they can share with others in a similar situation.



José Ordovás-Montañés
Boston Children's Hospital

Beyond borders

“Are we only doing COVID?” asked our rotation students during summer 2020. When we initially met in winter of 2019, before COVID, we had aligned on what I thought our lab vision would be: to understand how inflammation-induced changes to epithelial stem cells lead to adaptation and memory in barrier tissues. We were all excited to get to work. Then COVID happened. As a computational and experimental lab, focused on understanding human airway and intestinal epithelial cells, we were poised with existing data and experimental frameworks to ask two fundamental questions in COVID: what are the direct target cells? And how do airway epithelial cell states influence disease trajectory? But we were just unpacking our first boxes when SARS-CoV-2 struck. Through the strong support of my postdoc mentor, Alex Shalek, and our existing network of grad students and postdocs as well as new colleagues, we were able to contribute immediately to generating and sharing insights. We believe that this style of research—beyond the traditional lab “borders”—is beneficial to our scientific community. We will continue to employ it, not only for rapidly responding to COVID, but also for our research into chronic inflammatory diseases. We have now grown into a dynamic group; some of us developing COVID-informed hypotheses, while others are charting new directions into building new computational and experimental tools to address challenging questions in barrier tissue ecology. Even as we re-focus some of our efforts toward our initial vision, we will all strive to do research in the style of COVID.



Carmen Gerlach
Karolinska Institutet

Visibility inward and out

The goal of the research program of my laboratory is to unravel basic principles and mechanisms underlying the generation, maintenance, and consequences of the heterogeneity within CD8⁺ T cell responses. Our vision of scientific life is that we exchange ideas and data in an environment where we care about each other. Both visions have remained unchanged in these last 2 years. After setting up a lab from scratch in a new country, we pursued our original research program, albeit with interruptions and inefficiencies. Regarding scientific life, the past 2 years have emphasized that science is more fun and reaches higher levels when we have a balanced life and ample scientific exchange. It is hard to be effective and creative in science if one is worried or stressed. COVID-19 has brought this to the front, but similar origins of worry or stress that influenced many during the past 2 years also affect some of our co-workers during non-pandemic times. We can do better science if we encourage conversations about private issues without dismissing them as weakness. Such openness may create possibilities for mitigation, and thereby enhance scientific productivity and quality. Furthermore, science flourishes through exchange of ideas and early data, which often happens in informal settings such as conference posters sessions, breaks, and seminar visits. The lack of informal exchange in the past 2 years has been more challenging for young labs, when visibility can be so important. If you are curious about the ongoing work of less-established scientists in your field, consider inviting them for a seminar, even if still in a digital setting. It may make a difference.





Pedro Moraes-Vieira
University of Campinas

Resilience and adaptation

The COVID-19 pandemic has forced us to change our approach to science, research, and life. Work restrictions and school closures have greatly impacted early-stage career scientists. Over the past 18 months, we have been living in constant stress as we provide care and education for our kids while managing the laboratory to stay productive. We've had to learn to be resilient and adapt daily. And yet, the pandemic has also revealed many exciting scientific opportunities. Together with other young scientists from the Institute of Biology, we created a COVID-19 task force to put the University's infrastructure, human, and financial resources at the service of society in the fight against COVID-19. The primary focus of my laboratory is to understand the metabolic regulation of macrophages. With diabetic and/or obese people at higher risk for developing severe COVID-19, we applied our expertise in immunometabolism to determine the connections between inflammation, COVID-19, and diabetes. Despite initial concerns surrounding COVID-19 risk and transmission, we forged forward and have emerged with new insights into monocyte metabolic adaptation during COVID-19. These research accomplishments are exciting and encouraging, but we continue to suffer from isolation, stress, childcare burnout, and other challenges to mental and emotional health. In my view, resiliency and being able to adapt has allowed us to move forward and, where possible, benefit from opportunities associated with the COVID-19 pandemic. My one advice is to not resist adaptation and to try to find the joy in trying something new.



Roser Vento-Tormo
Wellcome Sanger Institute

Open communication

I opened my lab in March 2019. From day one, I wanted to establish a democratic culture where all the voices in our interdisciplinary team—immunologists, developmental biologists, computational scientists, and mathematicians—are listened to and intermingle. But the pandemic began when our methods were just getting optimized; we were just getting to know each other. New members joined having never met me or others in the lab in person. While we continued weekly lab and one-to-one meetings virtually, we realized we needed something more to develop and bond as a team. We established regular casual meetings focused on things going wrong in each other's research, where everyone presented and gave feedback. This gave each lab member a voice, got us used to each other's ways of working, and started to establish boundaries. These meetings allowed us to expose vulnerabilities and see failure as an opportunity to learn. Although pandemic restrictions are easing, we have kept up these casual meetings—a positive outcome of lockdown! We've also deployed our expertise to COVID-19, profiling peripheral blood from immunodeficient infected patients to better understand their immune response. It was intense and highly organized work involving wonderful collaborators, the wet lab, the computational lab, and the Sanger's brilliant departmental support teams. The experience of the last 2 years has taught us new ways to organize ourselves and showed the strengths of working together. And it has reinforced how essential teamwork and communication are to scientific advances and scientific life.



Conggang Zhang
Tsinghua University

Persistence

As a new PI, an early challenge I faced was deciding who to recruit to our lab. I believe that the trainees who first join a research group are central to the growth of the lab and to its character. Because of the global pandemic, many students were unable to leave China to continue their graduate or postdoctoral research. Thus, Tsinghua University became the preferential choice for these young people to pursue their training. Furthermore, more people are seriously considering science as their future career. When speaking with an outstanding applicant to our graduate program who had worked in finance, I asked why she wanted to join us; her answer was that COVID-19 made her realize that medical science is very important. I feel very lucky that my lab successfully recruited talented trainees these last two years. These young students and postdoctoral researchers will fundamentally change the pace and direction of our research projects. This has been encouraging in the face of other difficulties brought by the pandemic—delays in receiving key equipment and reagents, cancelled conferences and presentations. The pandemic has also influenced our ongoing research. We read reports of COVID-19 patients with Parkinson's disease-like symptoms, suggesting a connection between viral infection and neurodegeneration. One of our projects now examines the relationship between the neurotropic herpes simplex virus, inflammatory signaling, and neurodegenerative diseases. Overall, I aim to study the innate immune response with my team. This resolve and focus remain unchanged in the shadow of COVID-19.



Kellie Ann Jurado
University of Pennsylvania

Purpose

Many can relate to how the past two years have demanded a disruptive pause and forced adaptation. Whether this be an outright shut down of research activities or the lingering backorders of essential reagents, the COVID-19 pandemic continues to impinge academic science. But, often, disruptions can lead to realignments. The most refreshing reflection of these past two years for me has been a transition from a step-based timeline to a purpose-driven mindset. As a trainee in biomedical sciences, it is so easy to get caught up in the “next-step” protocol mentality, where undergrad is the step to grad school, grad school is the climb to a postdoc, and so on. Following suit, as a new primary investigator, I began my independent research journey with the goal of tenure. I began treating my new position as a means to an end, doing what I was told needed to be done in order to accomplish tenure—focusing on the specifics of how to get there rather than on what this career offers and why I choose it. I had a strict timeline that I set for myself, and the pandemic curtailed this plan after seven months of starting. I was initially devastated. The uncontrollable removal from my self-set expectations felt tragic, until I realized how freeing this is. I was removed from my narrowed view and forced to reflect on “why”. I was given the opportunity to realign my goals to tenure with my core values and my principles, with my research interests and their broader significance. In doing so, I have begun to embrace what is working and to find fulfillment in the process.