



COVID-19 presents financial, research, and project challenges that scientists need to overcome.

## Planning beyond the pandemic: Faculty career development in the age of COVID-19

*Navigating, sustaining, and advancing your career as a faculty member has been a difficult enterprise during the pandemic. While professors are learning many lessons about crisis management as it relates to career development, including strategic planning, resilience, and innovation in the face of adversity, many are using the time to refocus and clarify their dedication to science, students, and humanity.*

By **Alaina G. Levine**

When the pandemic closed down Rochester Institute of Technology (RIT), **Kaitlin Stack Whitney**, assistant professor of science, technology, and society, saw her research programs halted, her students scatter to the wind, and her own career in a tenuous situation, given that she is pre-tenure. But this insect ecologist snapped into action. With the money she had already lined up for her summer support, she “unfunded” herself and transferred the funds to pay two students who couldn’t do the work they were doing before quarantine. “It was so immediately clear this is what I should do,” she says. “I paid students to do a different project so they could still be doing science, even if it’s not the exact science they thought they’d be doing. I have a responsibility to check in with everyone on my team and prioritize their health and safety above any research goals.”

There are many factors that determine how faculty have continued to press on through the pandemic, including the nature of their research, their career level, and whether or not they have tenure, as well as their teaching load and even the type of university where they work. Timing is also a major element of response, as **Anibal J. Valentín Acevedo**, assistant professor in the Department of Microbiology and Immunology at the Universidad Central del Caribe School of Medicine in Bayamón, Puerto Rico, attests. The government declared a total lockdown on March 15, but only announced it a few days before. His research relies on human cells that take time to grow and maintain, and with “no idea of where it was going,” he frantically assembled his students. “We started gathering all of our data that we could analyze from home and freezing all our samples,” he says. “We did this in one

day. Some experiments we were working on had to be thrown away because we had to stop in the middle.” As a result, he saw his timelines for research outputs upended. “We will not be able to reach any of our scientific goals for this year, and possibly not next year. So, this is a huge impact,” he says. Still, his university has been supportive. “In terms of academic activities, they were specific in saying we can identify academic activities so [that] the students’ training will not be halted,” he shares. And such activities will be considered during his progress evaluation and possible future promotion.

Other scientists have been able to shift quickly to pursue more remote work, but what happens if you’re between jobs? In February of this year, **Ulrike Endesfelder**, a biophysicist who was finishing up a stint as research group leader at the Max-Planck-Institute for Terrestrial Microbiology in Marburg, Germany, was excited. She was boarding up her laboratory and preparing to fly across the Atlantic for a new faculty role at Carnegie Mellon University (CMU) in Pittsburgh. With an initial start date of April 1, she packed everything into container ships, but two days after they left, the United States enacted a travel ban. “We couldn’t fly into the U.S., and all of my team was trapped in Germany and our equipment was on the ocean,” she says. Moreover, she could not be employed by CMU until she got there, and she had already resigned from Max Planck. Fortunately, Endesfelder was able to be re-employed by the Institute within a few hours, as were her postdoc and Ph.D. students.

When the Institute partially opened in June, she was able to do some basic experiments with equipment owned by former colleagues. And she got very creative about sourcing additional apparatus. “I approached microscope companies and asked them to put their demo microscopes in my lab so I could test them out for them,” she shares. The beta tests she offered were a strategic quid pro quo: “They got my feedback and I got their system for very affordable rental conditions.” But as the pandemic rages on, Endesfelder is still in limbo. “CMU is doing the best they can to help me, and the moment I can travel, I will join them. They gave me access to my startup funds and **cont.>**

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**“I have a responsibility to check in with everyone on my team and prioritize their health and safety above any research goals.”**

**Kaitlin Stack Whitney**



are continuing to renovate my lab space while I am not there,” she says. In the meantime, she is trying to remain upbeat and serve her proteges and her field by planning future investigations.

**From bench to kitchen table (and back again)**

As the pandemic spread and lockdowns were put into effect, scientists had to grapple with disturbances in their research, teaching, and mentorship plans. Experiments had to cease, sometimes permanently. Samples had to be destroyed, as they would not be viable for future data collection. Work transitioned from lab benches to kitchen counters, as professors contended with rapidly changing research and funding timelines, nonaccess to research infrastructure, full-time parenting duties, and other matters.

And yet, researchers have been able to take some steps while working from home. **Venugopalan Pallayil**, deputy head of the Acoustic Research Lab in the Tropical Marine Science Institute of the National University of Singapore, studies marine acoustics. “As a principal investigator, my role is to see that projects are progressing, support my staff, write proposals to get funding, and write up papers. All of these things I have been doing from home and I don’t need to go to the lab,” he says. He has also participated in virtual conferences. But his work depends on data from the ocean, often collected and analyzed by staff who are confined to small spaces on marine vessels. As COVID-19 hit, all studies were sidelined, and his laboratory- and field-based work has suffered as a result. “As long as social distancing is in place, it will be very difficult to organize those trips,” he says.

**Daniel Abate-Daga**, a junior faculty member at Moffitt Cancer Center and the University of South Florida, works on cancer immunotherapy. Typically, his team’s research involves 70% tissue culture with human cells and 30% animal modeling. As of June, his group was slowly returning to the laboratory after months of hiatus. “As mandated by the institution, my team is working in shifts, to maintain social distancing. All meetings are held via Zoom,” he says. “We have adapted to these unfavorable circumstances by focusing on manuscript and grant writing. Also, we have outsourced as many experiments as we’ve been able to. One of the positive aspects of this crisis is that remote work and virtual meeting have been naturalized, and that is likely to stay.”

Part of the overall response to the pandemic is tempering and changing expectations. “It is OK that we are not as productive at this

time,” says Stack Whitney. “We need to prioritize our loved ones, and coming from this perspective of everyone’s care, we will improve our science.”

**Protocols revisited**

For scientists whose work involves extensive field assignments, multiple challenges arose. **Isabelle M. Côté**, professor of marine ecology at Simon Fraser University in Burnaby, Canada, directs diverse studies that range from invasive species in the ocean to impacts from multiple stressors in shallow water ecosystems, with one commonality. “Almost all work we do is subtidal—sometimes we collect samples and do experiments in labs but almost everything is underwater,” she says. As both department head and dive safety manager for her university (which involves training anyone who uses scuba for their research), she was especially keen on crafting a safe environment to continue with scientific activities during shutdowns. Her examination of exactly how to give guidance to her colleagues birthed a decision tree regarding whether fieldwork should be continued. She tweeted it and received praise for her creation: The Province of British Columbia, where her institution is based, adopted it as part of its own government process.

Indeed, systems engineering has become second nature to many researchers as they work to continue their scientific exploits. Much of Stack Whitney’s research, which involves analyzing insect behavior along highways and in agricultural fields, is supported by federal government contracts, and thus she had to ensure that the contract obligations were being met. First, she turned to her networks and spoke with other ecologists about how they were safely pursuing fieldwork. She also utilized Côté’s decision tree. And then she wrote protocol after protocol, creating written processes for every aspect of the research endeavor, from how to travel to the field site, to how to assess the safety of a data collection action, to who to call in an emergency. “It’s not a bad thing to have a written document for the protocols,” she says. “Some students really like it, and from an accessibility standpoint, it is always great to have multiple modalities for the protocols. It has also helped me to keep everything organized. I love binders and laminated things.”

**cont. >**



**“As mandated by the institution, my team is working in shifts, to maintain social distancing.”**

**Daniel Abate-Daga**

PHOTOS: TOP, COURTESY OF ROCHESTER INSTITUTE OF TECHNOLOGY; BOTTOM, MOFFITT CANCER CENTER

Featured participants

<b>Carnegie Mellon University</b> www.cmu.edu	<b>Purdue University</b> www.purdue.edu
<b>Friends of Europe</b> www.friendsofeurope.org	<b>Rochester Institute of Technology</b> www.rit.edu
<b>Imperial College London</b> www.imperial.ac.uk	<b>Simon Fraser University</b> www.sfu.ca
<b>Moffitt Cancer Center</b> moffitt.org	<b>University of Cambridge</b> www.cam.ac.uk
<b>National University of Singapore</b> www.nus.edu.sg	<b>Universidad Central del Caribe School of Medicine</b> www.uccaribe.edu/medicine
<b>Next Einstein Initiative</b> www.nexteinstein.org/about-us	

Opportunity from adversity

For faculty who have not secured tenure or are not on a tenure track, the pandemic is precarious. Some universities have offered to pause tenure clocks or add a year to the tenure and promotion process, as is the case at RIT. Stack Whitney is still deciding whether she will take advantage of this opportunity. Grants are another area of concern, but some agencies are offering lifelines: the Natural Sciences and Engineering Research Council of Canada is allowing grant extensions of up to 1 year.

“The life of a scientist is to carry on despite all the challenges that life throws at you,” says **Stefano Sandrone**, a neuroscientist and Senior Teaching Fellow at Imperial College London. “I am very keen about taking challenges and turning them into opportunities.” His work utilizes functional magnetic resonance imaging (fMRI) scans of the brain to conduct computational analysis of cognitive aspects in neurological and psychiatry conditions. Although the pandemic has blunted his chances of getting fresh information, “I am not running



PHOTO: COURTESY OF YOUSSEF TRAVALY

out of data. I exploited the moment to write manuscripts on education and neuroscience,” he says.

**Andrew J. Whelton**, associate professor of civil, environmental, and ecological engineering at Purdue University, is using this period to make his lab more efficient while reinforcing his protégés’ critical leadership and crisis management skills. He has developed a plan requiring that every piece of equipment in the laboratory is assigned to two students who know how to operate and troubleshoot it. “If something happens to me, they need to be able to move forward and lessen the blow for themselves,” he says.

“We are teaching how to be resilient in the face of failure,” says Stack Whitney. “We want to show that so much of our work doesn’t end in papers and prizes, and by living through this with them, that we don’t stop, we just adapt. We are going to roll with the punches.” Furthermore, she has been able to emphasize to her students the idea that people come before projects. “When we have a crisis, we show students they are not tools to get me data. They are my collaborators. I want to have that ethos even when we are not in a crisis.”

Creativity has given rise to new solutions. “One thing we have done is try to identify parts of our experimental processes that could be outsourced to outside companies that do this automatically, such as generating reagents,” says Abate-Daga. “We will use this resource in the future. I do think good things can come out of this.”

A Silver Linings Playbook

For many professors, the pandemic has reaffirmed their focus not only on serving society at large, but more immediately, on helping their local community of up-and-coming researchers. “Any available resource I can free up for my students is the right thing,” says Stack Whitney. “This is not the time to compromise how I am going to run a lab. This is the time to say that we are going to live according to our values and that my students’ health and safety is a priority. And it should always be.”

Community building is something that **Youssef Travaly**, a senior fellow with Brussels-based think tank Friends of Europe and former vice president, Sciences, Innovation & Partnerships at the Next Einstein Initiative, sees as a global issue. The materials scientist views the pandemic as an opportunity to rally African scientists, especially in the diaspora (community of African scientists living abroad), toward the goal of public health solutions for the continent and beyond. “Our first reaction was how can we, African scientists, respond to this challenge and come up with solutions,” he says.

**Tolullah Oni**, a public health physician, urban epidemiologist, and clinical senior research associate at the University of Cambridge, recognizes the invaluable opportunity her networks bring. “Through this experience, I’ve really come to understand the true value of the communities of like-minded scientists I belong to, such as the Global Young Academy and the Next Einstein Forum Community of Scientists,” she says. “While these have always been an important nourishing space, in the context of the pandemic, they have now become a priceless source of advice on coping and research adaptation strategies from different parts of the world and a critical source of strength, support, ideas, and inspiration.”

Adds Sandrone: “How lucky we are to be part of this powerful scientific community. We miss the daily contact, so the lesson is to treasure the time we spend with peers. Now is the time to be a mentor even more and to rebuild our scientific communities in the best possible way for the students, who represent the next generations of scientists.”

*Alaina G. Levine is a science writer, science careers consultant, professional speaker, and author of Networking for Nerds (Wiley, 2015).*