

PEOPLE & IDEAS

Starting a lab during the COVID-19 pandemic

 Melina Casadio  and Dan Simon 

JCB asks early career investigators to share their experience launching a lab during the COVID-19 pandemic.

The COVID-19 pandemic severely disrupted research activities in 2020. Research labs have since reopened, partially or fully. Although research continues and scientific discoveries continue to be published, the pandemic has created new challenges for researchers. Here, we discuss these changes with newly independent scientists starting their labs during the pandemic. In this series of People and Ideas (Casadio and Simon. 2020. *J. Cell Biol.* <https://doi.org/10.1083/jcb.202012016>; Casadio and Simon. 2021. *J. Cell Biol.* <https://doi.org/10.1083/jcb.202012131>), we hope to illuminate the realities and challenges associated with starting a research group during the pandemic. We asked early career investigators Amanda Amodeo, Gautam Dey, Moran Dvela-Levitt, Jun-Jie Gogo Liu, Mohsan Saeed, Poonam Thakur, Yan Zhao, and Christian Zierhut to share their experiences. We hope to (re)introduce their work to our readers to compensate for the lack of in-person networking opportunities and interactions in 2020.

1. Tell us about your research and lab.

Amanda Amodeo (AA): We work on cell and organ size control in *Drosophila* with a special focus on how the nuclear-to-cytoplasm ratio controls the onset of the first major developmental transition, the mid-blastula transition. We use a variety of techniques from classical biochemistry and mathematical modeling to quantitative imaging, and of course, being a fly lab, genetics. The lab opened at Dartmouth College, NH in July 2020.

Gautam Dey (GD): My lab investigates the evolution of nuclear organization using comparative genomics, quantitative cell biology,

and experimental evolution. We are embedded within the Cell Biology and Biophysics Unit at the Heidelberg campus of the European Molecular Biology Laboratory (EMBL). The lab officially opened its doors on January 1, 2021!

Moran Dvela-Levitt (MDL): My lab, located in Israel in the Faculty of Life Sciences in Bar-Ilan University, uses high-content imaging techniques to investigate how the cellular trafficking network is regulated to ensure trafficking of intact proteins while eliminating defective and misfolded ones. What are the mechanisms leading to cellular traffic jams, a hallmark of dozens of human diseases, like cancer, diabetes, and Alzheimer's Disease? And how can we combat these malfunctions, outsmart the cellular trafficking machinery, and develop new therapeutic approaches? While the physical space of the lab is being renovated, the lab has opened its virtual doors in October 2020.

Jun-Jie Gogo Liu (JJGL): My lab is located at the School of Life Science, Tsinghua University, Beijing, China, and opened on October 1, 2020. We focus on (1) the co-evolution of RNA and protein in ribonucleoprotein systems across life domains; (2) the identification, evolution, and application of new CRISPR systems; and (3) functional and structural studies of disease-related lncRNAs.

Mohsan Saeed (MS): Our lab has been studying positive-strand RNA viruses at the National Emerging Infectious Diseases Laboratories (NEIDL) of Boston University, MA. When COVID-19 was declared a pandemic in March 2020, my group shifted its focus to SARS-CoV-2, also a positive-strand RNA virus, with the goal of understanding how



Amanda and her flies on their first day at Dartmouth. Photo courtesy of Amanda Amodeo. <https://sites.dartmouth.edu/amodeolab/>. Twitter: @AAAmodeo.

this virus navigates the human body and propagates itself.

Poonam Thakur (PT): My lab at the Indian Institute of Science Education and Research (IISER), Thiruvananthapuram, India, opened its doors in early March 2020. Nestled in the stunningly beautiful and lush green forests of Western Ghats, my lab focuses on Parkinson's disease (PD), a progressive neurodegenerative disorder. Utilizing mouse models and electrophysiological approaches, my lab aims to study the selective loss of dopamine neurons in PD. Insights obtained from these studies can help us find therapeutic targets and develop approaches to mitigate or hinder disease progression.

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Gautam on his first day back in the lab. Photo courtesy of Gautam Dey. <https://embl.org/dey>. Twitter: @Dey_Gautam.

Yan Zhao (YZ): My lab is focusing on the molecular role and physiological function of metazoan-specific autophagy genes in autophagy. We are also interested in the establishment, regulation, and function of ER membrane contacts with autophagosomes and other organelles. My lab opened on November 12, 2020 in the School of Life Sciences, Southern University of Science and Technology (SUSTech) in Shenzhen, China.

Christian Zierhut (CZ): My lab, which opened up in the fall of 2020, is at the Institute of Cancer Research (ICR) in London, UK. We study how innate immune processes are co-opted to respond to the genotoxic stress that is caused by anti-cancer therapy and chromosomal instability, and how innate immunity controls cell fate decisions during genotoxic stress.

2. In March and April of 2020, many countries imposed restrictions, such as school closures, and asked non-essential workers to stay home. Can you tell us about your experience during these shutdowns?

AA: I consider myself lucky. I was on the job market, just finishing up my last interviews when everything went into lockdown in the spring of 2020. I flew back from my last interview and went immediately into lockdown. All my own experiments were already on hold due to the hectic interview

season and I never restarted them. I left for an interview and only came back several months later to pack up my stuff and move. It was surreal. By early summer, when we were starting to come out of lockdown, I was already fully focused on the move, so it wasn't worth it to restart any experiments. I was an independent fellow (super-postdoc) before becoming a faculty member, so I was lucky to have a post-doc of my own who was moving with me. We staggered our moves and he stayed behind for a few months to get a few last experiments in at my old institution as it opened back up before moving up with me to Dartmouth at the end of summer. Those first few weeks in spring, though, were absolutely crazy. I was locked down, not leaving my house and trying to negotiate offers (including ones that were put on ice due to the lockdown) while co-ordinating the lab shutdown and was just generally feeling like the world was ending. Since my second interview at Dartmouth was canceled, my husband agreed to move without ever having set foot in Vermont or New Hampshire. Everything was changing by the hour and what I assume is usually a stressful decision was ratcheted up to an entirely different level.

Another downside of leaving my old institute during the pandemic was that I did not actually get to say goodbye to many people. At one point, I got an email from a colleague who expressed surprise that I was already gone. I feel like I sort of snuck out the back door. The positive side is that, since everything is virtual at the moment, in some ways I haven't totally left yet. I can still attend lab meetings and events and stay in contact with everyone in this socially distanced setting just like I was still there. I've even gone to a few events with my old PhD labs! I feel simultaneously more connected and more isolated than I have ever felt before in my scientific career.

On that same note, I was invited to participate in a large center grant that involved weekly meetings starting shortly after I accepted the offer at Dartmouth. The new Zoom lifestyle meant that I could (and was expected to) join in those meetings months before I arrived on campus. That was wonderful in that it gave me an instant connection and community, but also exhausting as I felt like I had the full commitments of being in two places at once. Twice the seminars, twice the Zoom happy hours,

twice everything. All while trying to submit multiple manuscripts, planning the logistics of the move, and navigating two different sets of reopening protocols and bureaucracies.

Fortunately, my home life is relatively uncomplicated right now. My husband was able to get a job at the same university and we do not have children or eldercare responsibilities. We worry a lot about our families, who are scattered around the country and some of whom are in high-risk groups, but again, I've been very lucky not to have to juggle child/elder care with all of the other moving parts involved in moving and setting up a lab during a pandemic.

GD: It was difficult (and still is) to be physically cut off from our families in India and most of our friends. On the other hand, my spouse and I don't have children or caring responsibilities, and we were fortunate to be living in a comfortable flat in a leafy, residential north London neighborhood with high-speed internet and close friends living down the street. My spouse works for a multilateral policy organization already well-adapted to remote work, and my postdoc lab was only a 15-minute bike ride away. By most measures, we've had an easier pandemic than most!

On the research front, COVID-related restrictions halted my grand plans of generating preliminary data for future projects. Instead, I found myself racing to finish existing projects and papers, in constant nervous anticipation of the next abrupt change in rules or restrictions. I generated the last key piece of data for a paper revision literally hours before UCL shut at the onset of the UK's first lockdown in March!

Once those urgent revisions were done, I was able to shift my attention to setting up the lab remotely (more about that below) and to start integrating myself into EMBL academic life. My advisor and I were able to finish work on a long-planned review, and I've also been able to put some time into pet projects close to my heart.

MDL: Before I formally started my position, Israel entered a nationwide lockdown that lasted for more than a month. Staying home with two daughters, the younger one being eight months old, was challenging aside from establishing a new lab and beginning my role as a novice PI. However, as time does not stand still, I had previously agreed to write a review article and was also

planning on submitting two grant proposals to support my new lab. Although my husband is very supportive, he also started a new position. With both of us needing to produce and have our work done, the boundaries between work and family life completely faded while needing to constantly juggle both work and kids. Our approach was to work in shifts; thus, while one of us was working, the other one was focused on the children with their needs and activities. While I did manage to complete all projects on time, it had a huge toll on my family life.

JJGL: Before starting my lab, I was training at UC Berkeley as a joint postdoc with Jennifer Doudna and Eva Nogales. At the end of February 2020, Bay Area residents were required to shelter in place and labs closed until May 1st. It was an unexpectedly long time, but I did use this time to draft a new manuscript, virtually connect with a lot of old friends, and tried many new cooking recipes (from Thailand, India, Mexico, Spain, Korea, etc). Starting May 1st, 2020, the Berkeley campus allowed 25% capacity for each lab, so I was able to go back to the lab with very limited time to finish some follow-up experiments for the manuscript. It was a really tough time for the whole world. A silver lining is that it also pushed me to slow down and enjoy simpler aspects of life that are usually not a priority, to spend 24 hours a day with my partner, and to think deeply about life goals.

MS: Since Boston University exempted the SARS-CoV-2 research from stoppage, we did not have to turn off the engine. Instead, our access to the BSL3 containment facility put us in high demand, and several investigators from across Boston and elsewhere began to reach out to us for collaborations. This influx of requests, combined with our own interest in SARS-CoV-2 research and the limited bandwidth of my lab, meant that we have been working almost 24/7 since March 2020. We have had an interesting experience with SARS-CoV-2. On the one hand, it warms the heart that scientists with diverse expertise have come together to tackle this unprecedented menace. But at the same time, it feels as if we are in a sprint where thousands of scientists across the globe are competing against each other to become the first to get over the finish line. Sadly, the finish line is often ill-defined.

Outside of the SARS-CoV-2 research, the pandemic and the ensuing lockdown have created several challenges for me. I was aiming to submit my first National Institutes of Health funding application in 2020, and we were working hard to generate the preliminary data when COVID-19 struck, forcing us to stop that work. We have not yet resumed our pre-COVID research, and as a result the grant application has been significantly delayed.

The circumstances have been even more challenging for me at the personal level. I lost my father in December 2019, leaving a huge hole in my life. Following this tragedy, I resolved to make more frequent visits to Pakistan, my home country, so that I could spend more time with my family and friends. However, the pandemic has made traveling complicated, leaving me with no option but to wait until the situation improves.

PT: As one can imagine, it was a dream come true for me when I landed my first independent position. I was very excited and began planning how I will initiate and expand my research program, completely oblivious to the tribulation the whole world would soon be thrown into. Just a fortnight after I started as a PI, the Indian government announced a nationwide lockdown. Students in my institute were sent to their homes, and many offices and labs started to shut down or began to run at a much-reduced capacity. It was surreal to walk in the empty halls and corridors of the campus that were buzzing with life only a few days before that. Being locked down in completely new surroundings was very difficult for me. Add to it the lack of any emotional support as all my friends and family were in different cities. Like everyone, I was getting increasingly anxious reading about all the hardships people were facing in pandemic.

Many labs quickly adapted to work on SARS-CoV-2. However, I did not have the requisite background or the resources to do that, and this feeling of helplessness as a scientist began to exasperate me. Gradually, I overcame this feeling of inadequacy and assisted in this fight in my own little way through dissemination of accurate information and busting myths by leveraging the power of social media and webinars.

Workwise, the progress stalled immediately. Due to travel restrictions, I could not travel to my collaborator's lab in Germany to



Moran with her lab members. Photo courtesy of Moran Dvela-Levitt. <https://life-sciences.biu.ac.il/en/node/8049>. Twitter: @DvelaMoran.

complete several crucial experiments. I started working on a book chapter and a couple of reviews to utilize my time judiciously. I also started preparing my lectures for the upcoming semester.

There is a fear of squandering the precious time from my recently secured five-year grant from DBT/Wellcome Trust India Alliance. Fortunately, there has been an understanding from my institute that a new lab cannot be productive from day one. However, there is also an apprehension that without mechanisms being put in place to account for the loss of time and productivity during this pandemic, many young labs like mine stand to face the consequences in the long run once this pandemic is over.

YZ: When the lockdown began, I was working as a joint postdoc in the labs of Hong Zhang and Eric Baehrecke. UMass Medical School imposed very strict regulations such as wearing masks and social distancing. Fortunately, I had just finished the experiments for my project, and the lockdown made me more focused on preparing the manuscript. This part of the work went pretty well as I only needed to perform a few experiments for the revision, which I managed to finish.

Meanwhile, I started my job search. As my family decided to move back to China, I sent out applications for faculty positions in several Chinese universities and institutes. Due to the pandemic, all the interviews were done virtually. Out of the offers I received, I finally chose SUSTech, which is a young university in a young city. The school aims to become an internationally leading life science research institute and will undergo a major expansion in the following years. I would love to grow up with this

young institute, which brings more challenges, but also more opportunities.

CZ: Apart from the reduced human interactions, my lockdown experience generally was one of privilege—being able to work in a safe environment at home while essential workers had to endanger themselves, and others yet lost their livelihoods or homes. I tried my best to help, and I would encourage everyone who is in a similar situation of safety to remain aware of this and to support those who are in need. I managed to write a review and to co-write a collaborative manuscript, both of which were published toward the end of the lockdown. I also wrote a couple of grant applications, although I do not yet know if they will be funded. Finally, I did what many other researchers did and dove into bioinformatics. However, although overall it was a fairly productive time, I did experience lockdown fatigue and felt like I lost a lot of time during this period.

3. How did setting up the lab go?

AA: Due to pandemic-related funding issues, I had time constraints on how long I could stay in my old position, so I moved in July 2020. This turned out to be excellent timing because things were relatively open at that point. Nonetheless, due to travel restrictions, we had to rent a home sight unseen and I had to quarantine for 14 days when I arrived in state with several hundred precious fly lines. So my first two weeks at my new faculty job were spent quarantined alone, hundreds of miles from my husband and my home for the past six years, working on grants in my non-airconditioned kitchen surrounded by my flies, hoping that the temperatures wouldn't get too high and kill them all. I have no idea what I would have done had I worked on mice. I think that my cohort of “pandemic PIs” will all have piles of outlandish stories to tell about the absurd things that we ended up doing to get our labs up and running in the middle of a once-in-a-generation global catastrophe. I often feel a little silly worrying about the details of fly food and incubators while the world is in chaos, but what else can I do? I find the tenuousness of the situation almost reassuring. Like, who really expects me to get anything useful done in the midst of all of this? But of course, I have students and lab members who depend on me, not to mention the high expectations



Liu group photo in front of a historical building where the biology department originated in Tsinghua, Beijing. Photo courtesy of Jun-Jie Gogo Liu. <https://www.liulab-biology.org>. Twitter: @GogoLiu.

that I put on myself, so that feeling doesn't last long. I do look forward to some distant future day when a young grad student joins my lab and greets my old-timer stories of setting up a lab in the days of COVID-19 with the incredulity that this situation deserves (“You didn't really do that, did you?”) rather than sympathy or horror.

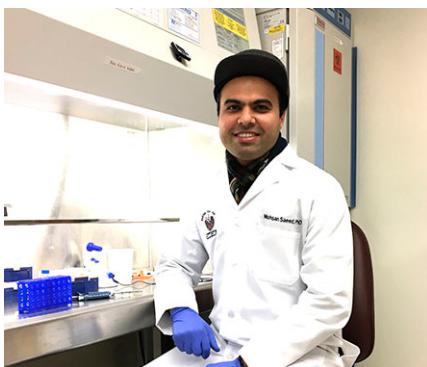
I expected things to be slow getting started during a pandemic, and they have been. Lab renovations were repeatedly delayed by supply chain disruptions and I still have not gotten a refrigerator that I ordered months ago. However, the building staff have been phenomenal at making things happen despite the circumstances, and my post-doc continues to push the projects along. I'm trying to view anything that I get done during this year as a bonus. Everything is slow, even mundane things rapidly become logistical nightmares, everyone is exhausted and lonely and struggling. I try to keep that in mind when I think about how much I have or have not accomplished this year.

GD: EMBL has really tried their best to make the start-up process for new group leaders as painless as possible. Since we're all recruited for the same fixed term (a maximum of nine years), frequent turnover

is a fact of life on campus. We've had our fair share of missing orders and bizarre delays, but in some key ways it feels like the pandemic has barely obstructed the finely tuned EMBL machine. My lab space was ready and waiting for me, much of the key equipment I had requested had already been ordered and stored on my behalf, and I was able to recruit the first members of my team before I arrived. I find this truly remarkable given the context, and credit is due entirely to the lab support and departmental support, HR, finance, and logistics teams working tirelessly behind the scenes in very difficult conditions.

MDL: Being recruited prior to the pandemic era, I had some concerns regarding the ability of the university to fulfill the conditions, financial support, and start package I was originally promised. I have to say that my absorbance was not affected at all by the pandemic situation, and the university fulfilled its promises entirely. This is thanks to the Bar-Ilan President and Vice President for research and development who highly acknowledge and recognize the importance of supporting the early research and establishment of young PIs. Regarding the physical space of the lab, it is currently being renovated and hopefully will be operational by February 2021. The set-up process is proceeding relatively well, and thus far, there are no COVID-related delays; I hope this will continue! During this renovation period, my graduate students and I are being hosted in the lab of a colleague who is generously sharing space. Currently, we are establishing policies, major protocols, and methodologies that will provide the framework for the lab to become operational.

JJGL: Tsinghua allows new PIs to pre-access the starting fund and lab space before their official starting day, so I was able to hire a lab manager based in Tsinghua, Beijing, in April 2020 to help me set up the lab by virtual coordination (e.g., place equipment, reagent, and supply orders). While I was under shelter-in-place orders in the Bay Area, Tsinghua Campus was fully operated, and my lab manager was working on site full time. With help from my Berkeley mentors and lab members, I finalized the equipment, reagents, and supplies list by mid-April 2020. Around August, we almost completed the lab setup. I flew back to Beijing, China, in late September and joined



Mohsan Saeed. Photo courtesy of Mohsan Saeed. <https://www.bu.edu/neidl/profile/mohsan-saeed/>. Twitter: @drmohsan.

Tsinghua in October after three weeks of quarantine. The first day I stepped into my lab, almost everything was ready. I got my cell culture equipment in November. Despite the shutdown where I lived, the lab setup was not really delayed; everything was quite on schedule.

MS: I started my lab at Boston University before the pandemic hit. As our projects got under way, the pandemic came along, and we had to change our direction. The lab is currently up and running, but SARS-CoV-2 remains the exclusive focus of our research.

PT: While I was aware that setting up a lab from scratch requires patience, my initial plan was to get started with preliminary experiments in five or six months. Fortunately, even during the lockdown, vendors were picking up calls and replying to emails. However, with multiple restrictions on transport of goods and availability of support staff, even small equipment and consumables faced long delays in delivery and orders moved at a snail pace. In addition, most of the research equipment needed for my work is imported and the payments need to be made in Euros or US dollars. However, with the recent depreciation of Indian currency, the overall cost increased, which affected my research budget. Simply put, all the plans and timelines I had in my mind went for a toss.

Despite the initial frustration, I am slowly but steadily furnishing my lab with essentials. My animal ethical permits are in place. My first students have finally set foot in the lab and have initiated some standardization experiments in mid-December 2020, nearly nine months after I started

the lab. However, we still have a long way to go before we attain normalcy in lab work.

YZ: I started to build up my lab in late 2020. The school has excellent core facilities with large-scale instruments, including confocal microscopy, super-resolution microscopy, flow cytometry, cryo-EM, etc. I need to purchase routine equipment, reagents, and supplies for my own lab, which will take approximately two to three months.

CZ: As expected, there were delays. The ICR, like all other institutions, had its plans set back by the pandemic, but everyone at the institute was incredibly helpful with facilitating my start. This included arranging online trainings, access to VPN, and help with grant writing by scientific, finance, and administration staff. The institute also made it possible for me to recruit a PhD student despite the lab opening after the recruitment deadline.

4. How is your lab and institute approaching training and recruitment?

AA: Dartmouth is relatively open. 50% of the undergraduate students and all domestic graduate students are on campus. I have decided not to allow undergraduates into my lab for the time being to reduce exposure risk. However, we have had one intrepid freshman join already. For the moment, he is just participating in virtual lab meetings and journal clubs. I've also had one in-person rotation student so far and am hoping for more. Dartmouth decided to do more numerous, shorter rotations this year to maximize the number of labs that students will be able to try in-person if we got shutdown again in the winter of 2020/2021. Most international students have not been able to make it to campus and are therefore doing virtual rotations. We've had to come up with some creative ideas for virtual rotation work. One student learned the fundamentals of our image analysis and another is helping me write a review article.

Postdoc recruitment has been hard. Instead of having people interview in person, I've had them give a Zoom seminar and then meet with the different lab members by Zoom or phone over the subsequent week. This works better than trying to do a "normal" one-day interview since we are all in different time zones and have different responsibilities. One benefit of this unusual postdoc interview setup is that I can utilize a

much wider range of expertise in my evaluation process. I've asked former lab members and former lab mates to join in the interview process; their involvement would have been impossible in a traditional in-person interview. Getting that additional feedback has been immensely helpful. Despite the difficulties, I have hired one postdoc so far.

GD: Since we're just starting up, my lab won't host undergraduate or placement students until the summer of 2021 at the very earliest, and I can only hope that restrictions will be eased somewhat by then. Graduate students are recruited through the EMBL International PhD program twice a year, and I was fortunate to recruit a fantastic student in the summer who started with month-long virtual "predoc course" that helps ease all new PhD students into EMBL life. I also hired a research technician, and all three of us started working in the lab in January 2021.

Recruiting talented postdocs is always a challenge for new groups; here, too, EMBL shines through the multitude of interdisciplinary funding opportunities that ambitious candidates can use to bridge multiple labs. Our first postdoc will join us in March 2021, funded by an EMBL-Stanford Life Science Alliance Bridging Fellowship that will enable her to spend up to a year in Gavin Sherlock's lab at Stanford University.

MDL: Bar-Ilan University is continuing their normal recruitment process despite the pandemic. I am very grateful to have two talented undergraduate students joining my lab in addition to an excellent lab manager. Setting up the lab during a global pandemic presented quite an interesting dynamic! During the first month, we held virtual meetings only, like many people around the world. Introductions of lab members, presenting the lab values and agenda, and learning new protocols and methodologies have all been accomplished via the screen. I am very grateful to finally be able to physically go to the university, but due to university regulations and the need for social distancing, we remain unable to have the usual level of in-person interactions between lab members and remain somewhat dependent upon virtual meetings.

JJGL: Currently, I have three undergraduates doing their graduation thesis in my lab, three graduate rotation students,

and a third-year PhD student who transferred to my lab. Also, particularly for 2020, due to the political tensions between the US and China and the closure of US borders during the pandemic, many Chinese PhDs could not obtain US visas and stayed in China for their postdocs. Thus, I got a lot more postdoc applications than expected. Usually, it's hard to hire a postdoc in China, but this year, I hired three, with a variety of backgrounds: bioinformatics, biophysics, and cell biology. With the new Biden administration and a potential change in policy, I suspect that it will be hard again for us to hire postdocs here in China.

MS: We stopped hosting undergraduates; however, we have recruited PhD rotation students in my lab. The unprecedented global spread of SARS-CoV-2 has certainly ignited the interest of the would-be PhD students in virology. However, constrained by the completely justified social distancing policy on campus, many virology labs can only recruit so many students. My lab is no exception to this.

The pandemic has also put a damper on postdoc hiring. Prior approval of each hiring by the university administration has been made compulsory, requiring PIs to justify the reason for hiring and to explain how the new position would be financially supported. The search for postdocs has also become difficult. After recruiting two talented and experienced foreign postdocs early in 2020, I was looking to hire another scientist. However, the pandemic-associated travel restrictions and the uncertainties around getting a visa have encumbered the postdoc recruitment from overseas. Finding a local postdoc has been arduous, which probably is the case with many new/young PIs, even in normal circumstances.

PT: My institute is among the selected research institutes in India where science education is imparted in complete sync with research training. Due to a range of degree programs and multiple research streams such as biology, chemistry, physics, and mathematics, the number of students in our campus is quite large. With the sudden lockdown in March 2020, all teaching and research training were immediately suspended. At that time, nobody knew if or when these activities would resume for undergraduate and graduate students.

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Amidst looming uncertainties, our institute switched to online teaching, which is still ongoing in 2021. In order to keep undergraduates engaged with research activities, we began offering them reading projects and virtual internships. In stages, PhD and master students engaged in full-time research are being allowed back on campus following all the COVID-19 safety protocols in place. I had to wait several months before my first student could enter the lab. Thankfully, our institute did not freeze hiring. The entire recruitment process has shifted online, from application to screening and interviews. These arrangements have their own limitations, but they have ensured that expansion of our team is not halted and the career progression of students is not adversely affected.

YZ: PIs in the school will have one PhD and one Masters student each year. These students are financially supported by the university. I have recruited a PhD student for the upcoming academic year, and she is working as a research assistant in my lab until then. A postdoc who has trained in Japan will join us in early 2021.

CZ: Recruitment is obviously somewhat slow, given the general uncertainty about the situation. I do not currently host students, but I have begun to informally look into potential postdoctoral fellows. A positive experience was having many discussions with colleagues both within the institute and outside the institute about complementary research interests and potential collaborations.

5. Can you tell us about interdepartmental interactions and mentoring from senior PIs?

AA: I think everyone is doing the best that they can. Some people have recognized how intensely isolating it is to move to a new location and university in the age of social distancing and have gone out of their way to check in on me. Others are clearly struggling to keep their own heads above water, which I understand and respect. I'm grateful that anyone has time to think about mentoring junior PIs at all right now with all that is going on. Again, because everyone is on Zoom now all the time anyway, I've also been able to tap more into my geographically dispersed network of old mentors than I would have in other circumstances. I'm trying to make lemonade where I can.



Poonam Thakur. Photo courtesy of Poonam Thakur. <https://sites.google.com/view/thakurlab/home>. Twitter: @poonam_thakur6.

GD: EMBL thrives on its strong community; as must be the case at most workplaces around the globe, I imagine it has been challenging to maintain cohesion and morale through extended periods of relative isolation. Everyone is trying their best, but under such conditions, it can be especially difficult for new people to integrate.

Paradoxically, though, the shift to Zoom—of unit seminars, social events, and faculty meetings—has meant that I have been able to participate fully in events a way that wouldn't have been possible until my actual move to Heidelberg. This has helped me ease into the rhythm of academic life at EMBL from the comfort of my London living room!

I have received frequent, unambiguous communication and unstinting support from senior PIs in my own unit as well as the broader EMBL leadership, a key ingredient in making my transition so smooth. My peers deserve an equally vocal shoutout—my colleagues and friends around the world, and especially the cohort of new EMBL group leaders. It has been a great source of comfort and joy to share every detail of the experience of starting a lab with the five others starting their groups on the Heidelberg campus this year!

MDL: One of the main sources of support for me during this very challenging time has been the mentor who was assigned to me upon my arrival by the Dean of the Faculty of Life Sciences. The opportunity to meet regularly with a senior PI and benefit from his insights and advice has helped to surmount obstacles and has been invaluable. I miss the normal hallway and coffee break interactions with colleagues and students which, from past experience, can be the beginning of many fruitful collaborations. Additionally, the lack of on-site department

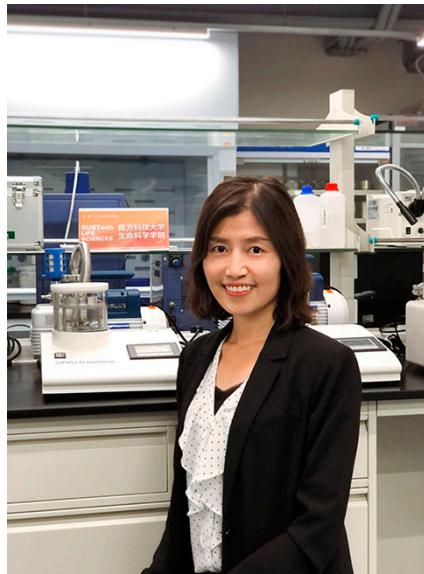
meetings and faculty gatherings make it more challenging to become closely acquainted with colleagues, develop those social ties, and initiate joint projects.

JJGL: We have very extensive interactions among the life science school, medical school, and pharmacy school; many events are co-organized. Senior PIs are willing to share whatever information junior PIs want to know. I really like the academic culture here; it is friendly, open, and creative.

MS: It seems we are living in the era of Zoom. All interactions, including faculty meetings, classes, and seminars, have shifted to Zoom. I feel nostalgic for the days when I could discuss scientific ideas with my colleagues over lunch or a cup of coffee. Virtual meetings do not create the sense of relationship that emanates from in-person interactions.

PT: As mentioned earlier, our institute has multiple departments dealing with different streams of science. Coming from a background of working in a super-specialized neuroscience research center throughout my postdoctoral research, interdepartmental interactions presented a great opportunity for me to look at my research in a broader perspective. With a sudden lockdown, my interactions were cut off even before I had a chance to network here. However, once everyone realized that things are not going to settle down soon and life started limping back, I found immense support from my colleagues. Not only did they help me to navigate the administrative responsibilities, they also offered their consumables, equipment, and facilities to kickstart my work. They shared their experiences of running a lab and provided guidance. Institute leadership has been extremely supportive of my research program. I feel lucky to have found mentorship both inside as well as outside my institute even during this time.

YZ: Interdepartmental and intra-departmental collaborations are highly encouraged in SUSTech. The school holds the Global Interdisciplinary Scientific Forum to provide a platform for academic communication among scholars in China and abroad and promote interdisciplinary and academic innovation. In terms of mentoring, junior PIs can choose one or more senior PIs inside and/or outside the university, depending on their own research background and future



Yan Zhao in the lab. Photo courtesy of Yan Zhao. <https://faculty.sustech.edu.cn/zhaoyan/en/>.

interests, as their guides before their tenure track evaluation.

CZ: Another very positive experience. We have had many useful meetings online, and much helpful discussion, particularly about grant writing and planning the lab setup.

6. What has been the biggest challenge thus far in running your research program?

AA: I think the biggest challenge for new PIs is the same as it is for established folks: uncertainty. It's difficult to make intelligent decisions about what projects and experiments to prioritize, what people to hire, and when they should start when you don't know if/when equipment will arrive, whether another shutdown might go into effect, or travel restrictions might change. Setting up a lab is always making a lot of hopeful gambles about the future. Right now, the odds are just even harder to predict than usual.

One thing that you didn't ask about that has been important to me in starting my lab in 2020 is the ongoing discussions surrounding systemic racism in the US and around the world sparked by the police murders of George Floyd, Breonna Taylor, and so many other innocent Black people. The resulting discussions have really challenged me to think about my place in a larger system of systematic oppression and

how I am obligated to use my newfound position to help dismantle it. I feel like anyone with a conscience who is starting a lab, at least in the US, right now is thinking about if and how the lab that they are building is contributing inequality and inequity. My voice is not the one to center here, but I do feel that it is important to include the social and political reality of this moment in any discussion of how the pandemic has affected starting a lab right now. I've been fortunate that none of my loved ones have been directly affected by the pandemic or police violence. I am acutely aware that this is a privilege that many, especially many Black and Indigenous scientists, do not enjoy. These issues are not separable.

GD: By far the biggest challenge so far has been trying to build relationships—with my future colleagues, with service providers, with potential recruits—entirely through the now too-familiar Zoom interface.

It cuts both ways, of course; I'm incredibly grateful to the brave souls who have taken a leap of faith to choose to work with me without having ever met me in person!

MDL: Research is done best while working together. The random interaction with colleagues and trainees is an invaluable part of exploring new ideas. Networking in conferences, establishment of professional connections, brainstorming, and the processes of running a lab cannot be fully replaced by the virtual world. The main challenge I am currently facing in running my research program is the lack of in-person interaction.

JJGL: My own lab in China hasn't been affected that much. Especially with the help from my three postdocs, everything runs better than my expectation. This reminds me how important it is to have some experienced people in your lab from the beginning. I just happened to be lucky. In my view, due to the universal economic depression, funding may be the biggest challenge once I have used up all my start-up fund.

MS: Ensuring the availability of lab supplies, particularly of the personal protective equipment for BSL3 work, has been one of our biggest challenges. Most of the consumables routinely used in the lab are in short supply. Finding suitable substitutes is at times challenging and often requires re-optimization of existing protocols, slowing down the pace of research.



Christian Zierhut. Photo courtesy of Christian Zierhut. <http://www.icr.ac.uk/our-research/researchers-and-teams/dr-christian-zierhut>. Twitter: @ZierLab.

PT: I don't think I could have started my first independent position at a worse time than this. Setting up the lab was not a smooth ride. Delays in ordering, deliveries, and installations became the norm. Additionally, to have a lab on paper but not to have anyone inside the lab to start my research program was demotivating. A significant challenge for me has been the lack of in-person communication. Selecting the founding students of your lab online and then continuing to mentor them online without ever meeting them was not how I envisioned my lab starting.

Further, it was very challenging to deliver lectures in a recording studio in the absence of any face-to-face interaction with students, which provides a teacher with instant feedback as to whether students are following and if they are comfortable with the pace and depth of a topic. It was difficult to keep them engaged and motivated throughout the semester, as students had their own difficulties adapting to online courses.

The most difficult part of this time has been the reconciliation of my own expectations of work and productivity. I struggled with self-doubt. Was I doing justice to my students and lab members who put their faith in a new PI and a new lab during such times? Despite my own disappointment and frustration with the ongoing situation, I had to keep my students motivated. For new PIs, the COVID-19 pandemic feels like a "trial-by-fire" moment.

YZ: The biggest challenge for me now is that key laboratory equipment and reagents

are largely dependent on import from the US and Europe. Due to the pandemic, global shipping, ordering, and custom clearance of these materials are delayed.

CZ: As expected, the greatest negative impacts were due to lack of access to the laboratory and the delays in lab setup and recruitment. I feel very lucky and empathize with many of my peers at other institutions, who've had their faculty job offers rescinded due to the pandemic-related recession. This lack of funding needs to be addressed in a proactive manner. In the UK, major charity funders had to dramatically cut their budget due to the general recession. Here, as in all other countries, we need governments to step in to bridge the funding gap, or risk irreparable loss to research, researchers, and public health.

7. Any advice for cell biologists at a similar stage of their career or looking for a position?

AA: Have patience. This will pass, and the only way forward is through. Everything looks bleak right now, but decisions made from a point of panic or despair are rarely good ones. I know that's easy for me to say since I just got a job and have a bit of time before the next big hurdle (tenure), but to the degree possible, try to make your decisions strategically and from a position of strength, even if you don't feel it. Think hard about what it is that you truly want and make deliberate moves to get yourself there. Consult with people you trust who will give you an honest assessment of where you stand and hold on fiercely to the people who lift you up. Remember that none of these decisions are final and you can always change your mind later. And cut yourself some slack if you're feeling like you're not your best self right now. We're all struggling.

GD: We can't do any of this alone, especially not in times of crisis. Try to find an institution that is genuinely interested in supporting you and your career, and don't be afraid to lean on your peers and senior colleagues. You will be able to pay it back—and pay it forward—one day!

MDL: While we are able to do a lot of work from home, I highly recommend that young PIs who are setting up their lab in the background of the pandemic physically go into the lab as often as possible (while keeping social distancing and following the institute guidelines). The advice, input, and

insights received during informal meetings and hallway conversations are priceless; they enable more effective coping, collaborations, and provide strength to face new challenges. Wishing everyone a good health and success along this challenging but very rewarding road.

JJGL: For junior PIs: (1) Do pre-plan everything. (2) If something unexpected happens, don't get depressed, because nothing happens as expected. (3) Try your best to hire good postdocs.

For a postdoc on the job market: Outside of US and Europe, there are big job markets. Be open minded and flexible.

MS: This is undoubtedly a demanding time for new investigators. Research could be moving extremely slowly. It might feel as if everything has come to a halt. But please know that you are not alone in this situation. Most of your peers are facing similar problems. One way to make good use of this time is to build connections with your peers and seniors in the field and lay a foundation for future collaborations.

In the midst of the hiring freeze in place at many academic institutes, the number of available faculty positions might be fewer than usual this year. I would suggest that job seekers cast a wider net to improve their chances of success.

PT: These are very unique and difficult times that most of us have not experienced before. Economic effects of this pandemic are feared to last long. Funding in institutes may become an easy casualty, leading to fewer independent position openings. It is likely that researchers looking for a position will face stiffer competition. Having your own funding will provide you an edge at this time.

Despite fewer opportunities during this pandemic, effective networking and establishing new collaborations (preferably interdisciplinary) that expand one's research horizons play a significant role in hiring and making a smooth transition to an independent PI role. COVID-19, with stricter and longer lockdowns, has forced many of us into isolation. I cannot emphasize enough the role of effective mentorship during this time. If you are looking for a faculty position or just obtained one, please do not hesitate to reach out to your peers and senior faculty for help and guidance. For me, the best pieces of advice came from peers who are a few years ahead of me in their career stage.

Last but not least, take failures in stride. Learn from your mistakes and strengthen your profile by overcoming the shortcomings.

YZ: According to my own experience, even with excellent research accomplishments and publication records, an applicant should spend a lot of time and effort thinking about his/her future research plan. This

is an opportunity to not only demonstrate your creativity and independent thinking, but also your scientific vision to the search committee. The research plan should include an important goal and a valuable and practical agenda that combine well with the institute's long-term development.

CZ: An upside of the pandemic has been the socialization of lectures with many

online lecture series. Given that travelling is currently not required to speak at an institute, this is a great opportunity to raise awareness of your work. Perhaps your adviser can help and ask their friends to invite you for departmental or informal seminars. With faculty recruitment obviously slowed down, this may help you to hit the ground running when it starts up again.