Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

CellPress

Cell Stem Cell

Voices

Introductions to the Community: Early-Career Researchers in the Time of COVID-19

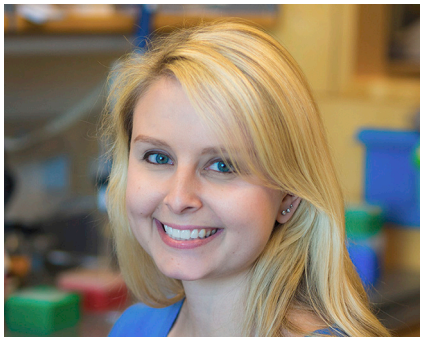
COVID-19 has unfortunately halted lab work, conferences, and in-person networking, which is especially detrimental to researchers just starting their labs. Through social media and our reviewer networks, we met some early-career stem cell investigators impacted by the closures. Here, they introduce themselves and their research to our readers.

Quinton Smith
University of California, Irvine

Making Miniaturized Human Tissues

I am fascinated by approaches that harness techniques from the electronics industry as a means to assemble miniaturized human tissues. With the emergence of advanced processes to pattern micron-size geometries, the frameworks that we use to study biology have transformed such that we can investigate stem cells in dynamic ecosystems that take on features of our body's microenvironments. My lab at the University of California, Irvine will launch as a partnership between the Department of Chemical and Biomolecular Engineering and the Bill and Sue Gross Stem Cell Institute. With support from the Howard Hughes Medical Institute, I will study how human induced pluripotent stem cells (iPSCs) self-organize in ways that mirror early embryonic development.

With the advent of organoid technology, miniature "avatars" of organs can be created from iPSCs. My group will also work toward building iPSC-derived organoids that can be cultured in microfluidic model systems that enable the study of patient-specific tissues. We aim to further our understanding of forces that coax differentiation and how multicellular communication informs homeostasis, disease, and regeneration. COVID-19 has presented our society with unprecedented challenges, but I hope we can emerge from the pandemic recognizing the vital roles scientists have in contributing to scientific literacy, public health advocacy, and disease eradication. I acknowledge the immense responsibility I have in training the next generation of scientists and remain thankful for the opportunity to start an independent scientific career.



Kara L. McKinley
Harvard University

Resilience in Tissues and Communities

I think one of the most incredible things about our bodies is their resilience: our tissues have a remarkable ability to heal and recover after injuries. Tissue repair and renewal are highly dynamic processes involving intricate cellular behaviors and decisions, and my lab will use organoid and animal models to understand these mechanisms in the most dynamic systems we can get our hands on: the intestine and the endometrium. I am looking forward to opening my lab in January 2021 in Harvard's Department of Stem Cell and Regenerative Biology.

While completing my postdoc studies of tissue resilience after damage, I also watched a beloved project beyond the bench recover after disruption by the pandemic. For the last few years, I have been building an initiative to promote gender diversity among biology faculty (https://www.leadingedgesymposium.org/), centering around an annual symposium of women and non-binary postdocs at HHMI's Janelia Research Campus. The inaugural event was scheduled for May and moved to virtual in March. This transition has had many silver linings. Our first cohort of Leading Edge Fellows presented their fantastic work to a larger audience than we could have accommodated in person. We expanded our career development programming. Most importantly, the Fellows formed a vibrant community despite being spread from Los Angeles to Basel. I am in awe of the work they are doing to elevate one another and others in their communities. I am more excited than ever about the innovative and generous scientists who will be joining the junior faculty adventure in the near future.

Chii Jou Chan
Mechanobiology Institute, National University of Singapore

Squeezing Eggs to Grow: Mechanics of Oogenesis

Following my graduate training in soft matter physics and cell mechanics, I became interested in understanding how physical forces shape early animal development. As a postdoc at EMBL Heidelberg, I delved into the role of fluid pressure in regulating the size and cell fate of early mouse embryos. Now, I am eager to start my new lab in MBI, with a joint appointment in the Department of Biological Sciences at National University of Singapore.

My upcoming laboratory focuses on the mechanics of mammalian oogenesis, the formation of oocytes whose size and numbers are tightly regulated at every stage. We will develop biomechanical tools to quantify mechanical interactions between the oocyte and its microenvironment, and we will combine these insights with biophysical/genetic perturbations and theoretical modeling to dissect the molecular mechanisms regulating oogenesis. We will also explore the role of tissue hydraulics during oogenesis, which can manifest during the formation of fluid-filled antral follicles, prior to ovulation. These findings will deepen our understanding of reproductive biology and aging, with important implications for regenerative medicine and tissue engineering.

Even though my job-hunting phase coincided with the COVID-19 pandemic, which no doubt created some inconvenience, I am grateful for the tremendous support from my peer mentors and MBI community. Thanks to social media and virtual conferences, I am able to stay in touch with the latest science and networks. I believe this experience has shaped us to become more creative in sharing and discussing science.

Shaheen Sikandar
University of California, Santa Cruz

Living in a Community

Normal tissues and tumors are heterogenous communities of cells that come together to form the whole and perform different functions. My group is interested in understanding the functional consequences of this heterogeneity with a particular focus on normal mammary stem cells and tumor-initiating cells in breast cancer. By leveraging single-cell technologies, computational tools, and *in vitro*/*in vivo* functional validation, we want to map sub-populations of stem/progenitor cells to specific functions and understand the molecular signaling underlying different cell states. Such precise functional mapping will lead to the design of novel therapeutic and preventive strategies for breast cancer.

As cells live in communities, so do we and the sub-structure of our community has come into sharp focus in the past year. The excitement of accepting a new position was immediately shadowed by a global pandemic, a halt on experiments, and figuring out online schooling and working options. As I postponed my start date, busy times in the lab evolved into planning and contemplation while finding creative ways to entertain the kids. During my transition to UCSC, I have received tremendous support from my colleagues at Stanford and a warm welcome at UCSC. Just like the cells in a tissue, I am fortunate to be part of an inspiring community of scientists and friends that are critical to my success. As I start my lab this fall, I look forward to building my group as an inclusive community that performs transformative science together.

Yangfei Xiang
ShanghaiTech University

Brain Organoids and Disease

My enthusiasm for applying stem cell technology to brain research sprouted over the course of my graduate study and was boosted by the discovery of somatic cell reprogramming. After finishing my Ph.D. in 2013, I joined Yale University for postdoc training, where I pursued brain modeling with human pluripotent stem cells. I opened my lab at ShanghaiTech University in early 2020, right amid the global COVID-19 pandemic.

Our group constructs multi-dimensional models of the human brain and asks how these platforms can be harnessed to address questions of brain function and disease. In particular, we focus on region-specific brain organoids, which can be applied to reconstruct the inter-regional crosstalk inside the brain. These systems provide an alternative, non-invasive method to understanding our brains. Yet, as a new technology, brain organoids present various challenges requiring in-depth and inter-disciplinary studies and collaborations in the field.

A global pandemic was the last thing I expected during my career transition. However, administrative teams, colleagues, and friends have helped me make quite

a smooth transition. I was also lucky to have passionate members who joined even when the lab was empty. Planned conferences are affected, but virtual meetings have opened an efficient avenue for networking at an unprecedented scale. The first step is always hard, especially during this unexpected time. I believe what we've learned from this test in life—courage, care, appreciation, and collaboration—is priceless wealth that enables the lab to grow as our new journey begins.

Diana Passaro
Université de Paris, Institut Cochin

Imag(in)ing the "Niche"

My passion for imaging started very early during my scientific career, when at university I was totally captivated by a movie of a white blood cell "chasing and eating" a pathogen. Since then, the technology has made great strides, allowing observation of biological processes in real time not only in a dish, but also in living organisms. During my training I closely followed this path of innovation, and I built a scientific vision driven by the principle that "seeing is believing." In my lab "Imaginiche" at the Cochin Institute in Paris, we are using advanced imaging and bioengineering tools to study interactions within complex tissues, with the aim of better understanding how leukemia functions and how we can cure it.

The transition toward independence has been an exciting learning process. This PI-to-be phase took me out of my comfort zone and developed novel aspects of my professional personality, patience among all. Funnily enough, this overlapped with a Mum-to-be phase, which came with extra stress, fatigue, and further surprises. In the end, I was more than ready to start the new chapter of my academic life, and I couldn't hide my frustration of seeing another "slow down" sign on my path. My lab had just enough time to meet in person before COVID-19 lockdown, and then we had to reinvent the way we do work. But the progress we have made in only few months made me realize we are a strong, positive, and stubborn team in an extremely supportive environment, which proved to me I had found the best niche I could imagine.