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.

Cell Stem Cell

CellPress

Voices

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

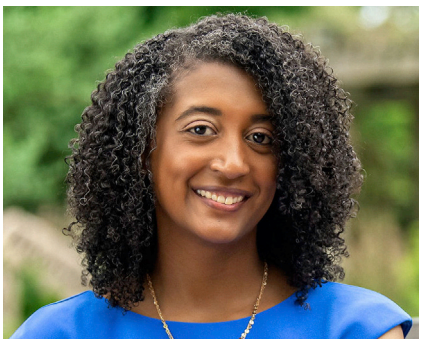
COVID-19 has unfortunately halted lab work, conferences, and in-person networking, which is especially detrimental to researchers just starting their labs. Through social media and our reviewer networks, we met some early-career stem cell investigators impacted by the closures. Here, they introduce themselves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

Kazuo Takayama
CiRA, Kyoto University

COVID-19 Research using Stem Cells

There is a global effort for finding drugs that can treat COVID-19. In my lab, we are trying to develop COVID-19 drugs using stem cells and organ-on-a-chip technologies and have developed airway organoids and airway chips for drug screening. In these models, key aspects of COVID-19 pathophysiology in the human airway can be faithfully reproduced, enabling efficient development of compounds with a high therapeutic effect. We are developing COVID-19 drugs that can control inflammation as well as drugs that have antiviral effects.

I started my lab at Kyoto University in March 2020. That same month, the WHO declared COVID-19 to be a pandemic. My previous experience was in pharmaceutical research using iPSC-derived hepatocytes and intestinal cells, but I decided to refocus my lab and collect many materials and technologies to start developing airway organoids and airway chips for COVID-19 research. COVID-19 has hit my research directly, as our institute had temporarily reduced our working hours to 20%. My many collaborators have been critical to helping me overcome this roadblock. In May 2020, my group published a review article and a preprint paper on COVID-19, which was covered in *Nature News* in June 2020. My new lab is still growing and I am especially trying to recruit postdocs to perform COVID-19 research in our BSL-3 facility. COVID-19 has had a strong negative impact on people's lives, but it has also created new opportunities. I believe that a bright future awaits us if we stay positive.

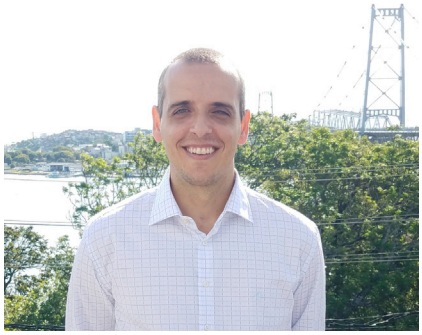


Lesley N. Weaver
Indiana University

Independence during a Pandemic

Successful reproduction is essential for species survival and is influenced by many physiological and environmental factors. My lab uses the adult *Drosophila* ovary (a stem cell-based tissue) to understand how nuclear-receptor-mediated signaling between organs influences oogenesis. The mechanisms by which nuclear receptors directly regulate reproduction have been heavily studied; however, we are only beginning to uncover how somatic tissue signaling influences oogenesis. My budding lab's major objective is to understand the physiological, cellular, and molecular mechanisms by which nuclear receptors in somatic tissues influence the germline stem cell lineage.

I did not expect 2020 to proceed as it has. I had planned the last 5 months of my postdoc to complete bench experiments for publications I was intending to write and submit prior to my July 2020 start date at Indiana University (IU). However, Johns Hopkins University shut down research in early March and I was unable to perform experiments until my IU lab was up and running in August. While sequestered at home, I analyzed data acquired before the shutdown and drafted my remaining publications. While I cannot compare this to what it would have been like without COVID-19, IU has been extremely helpful in getting my lab set up. My new colleagues have provided moral support, reagents, bench space, and equipment to complete my remaining manuscripts. I am optimistic about the future of my independent lab, the trainees that will join, and the exciting contributions we will make to the reproductive and stem cell biology fields.

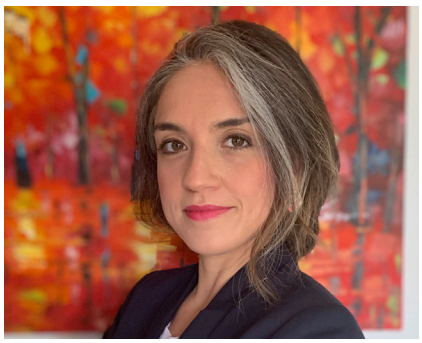


Edroaldo Lummertz da Rocha
Federal University of Santa Catarina, Brazil

Systems Biology and Stem Cell Niches

Hematopoietic stem cells (HSCs) give rise to all blood cell types and are highly responsive to local and systemic stimuli. HSCs reside in specialized microenvironments within the bone marrow—the hematopoietic stem cell niche—which dynamically regulate HSC responses. Our laboratory aims to understand how the HSC niche responds to external stimuli by rewiring intercellular communication networks and lineage differentiation. As a dry and wet lab, our approach is based on the development of new algorithms to investigate the dynamics of complex tissue ecosystems by single-cell genomics and functional studies using biomaterials, pluripotent stem cells, and animal models. We are also interested in how the immune system develops from HSCs to guide pluripotent stem cell differentiation to clinically relevant cell types.

I started my lab in Brazil in October 2019. In March, the university shut down and we had to work from home, which was particularly challenging as I have a 4-year-old daughter. We were lucky to be able to keep working on algorithm development and generated some hypotheses. The pandemic delayed our transition to a new research building and our wet lab capabilities still need to be established. The pandemic has taught us the importance of adaptation, kindness, and hope. Despite the many challenges ahead I hope we find better ways to support early-career researchers, especially in Brazil, who were dramatically affected by the pandemic and limited funding opportunities. I am very excited to begin my lab and I look forward enthusiastically to what the future holds.



Valentina Lo Sardo
University of Wisconsin-Madison SMPH

Taking the Risk

The human genome keeps millions of *Single Nucleotide Secrets* (polymorphisms). Many of them are linked to susceptibility to human diseases, yet they are functionally obscure. Most of these variants reside in the non-coding genome, hindering efforts to elucidate their role. My lab's research aims to understand non-coding genetic variants causing risk for cardiovascular disease and cancer. We study how small changes in the human genome influence cell state, identity, and function and how they trigger disease mechanisms. We use stem cells, genome editing and gene expression regulOMICs.

While studying risk-linked disease mechanisms is a fascinating journey, I did not expect "risk" to be the leitmotif of my last 10 months. This past September, I started as an assistant professor at the University of Wisconsin-Madison. In a year where "virtual" became the most used word, I could not imagine that virtual would also describe my goodbye from Scripps Research and San Diego. I moved over a long journey in an unbearable silence, surrounded by the uncertainty of starting a new life in the middle of a pandemic. Two months into my lab now, and still several unexpected challenges are ahead, from basic shortage of lab supplies to socially distant training, to mention a few. The bright side? I am fueled by enthusiasm for my new lab. In extremely difficult times for us all, in my new home at UW-Madison, I found many humans (with masks) more than welcoming, more than helpful, and genuinely kind. Not everything is virtual. Gratitude, collegiality, and support are not at risk and are very much real.

Helmuth Gehart
Institute of Molecular Health Sciences, ETH Zurich

Understanding Tissue Plasticity—with Some Delay

I was all set to start my own lab at ETH Zurich. I had recruited Ph.D. students, ordered equipment, and organized a temporary apartment for my family and me. Only an 8 hour car drive separated my old life in the Netherlands and my new life in the shadow of the Alps. Then came COVID-19 and I was stuck in the Netherlands for almost 4 months. A stressful time, but not without its bright sides. Thanks to the support from my old and new host institutions, I could equip and organize my lab remotely, I could establish new collaborations via Zoom, and I had time to refine my ideas for future projects. My preschool-aged children emerged from the lockdown drawing viruses and cells (with T and B cells as clear favorites) and my home-barista skills have made a significant jump forward.

Now that we are (while properly masked and socially distanced) back at work, my research group is finally taking shape. I have recruited an excellent team to join me

on my journey toward a deeper understanding of stem- and tumor-cell behavior. More and more we realize that stemness and differentiation are not hard-coded features of specific cells but rather attributes that are dynamically gained and lost when cells interact with their environment. We want to understand this fundamental process and explore how it controls not only tissue regeneration but also malignant disease. Organoid technology, mouse genetics, and single-cell techniques enable us to uncover these guiding principles of plasticity and bring us closer to the ultimate goal of reshaping regenerative responses and preventing cancer progression.

Ly P. Vu
BC Cancer/Simon Fraser University

Post-transcriptional Control of Stem Cell Fate

I am a trained cancer biologist and hematologist. During my Ph.D. training, I fell in love with the blood system and the elegant regulation of precise gene expression programs that drive cell fate determination. In mid-2019, I established my group at BC Cancer and Simon Fraser University. Here, we study the control of stem cells with a focus on novel mechanisms of post-transcriptional and translational regulation during normal and malignant hematopoiesis. Our goal is to develop effective therapy for leukemia patients whose disease is refractory or in relapse. As cancer stem cells have been recognized as one the main drivers for therapy resistance, a major effort in our research is to uncover foundational features of leukemia stem cells to specifically target them to eradicate these diseases.

The COVID-19 pandemic hit when our lab had just started to grow. With the lab shutdown in March, I was very concerned about the potential disconnection and lack of scientific growth of my young group. But, as we settled into the "new normal," we worked through a number of seminal papers in the field and extensively reviewed key techniques. We started a routine where we all send a "Good morning" to our Slack channel every day as a way to say, "I am okay!" Going back to the bench with limited capacity, we found ourselves a stronger and closer team. We came to appreciate the productive time in the lab and strived to work collaboratively toward a common goal. We do not know when we will get back to the pre-COVID time. For now, getting the "Good morning" from the lab makes me smile every day.