JEM Journal of Experimental Medicine

VIEWPOINT

Women in STEM becoming independent: Great mentors make all the difference

Lucie Van Emmenis

This year at *JEM*, we are highlighting women in science by sharing their stories and amplifying their voices. In this Viewpoint, we hear from a cross section of women, across multiple research fields, discussing their science and the process of setting up a lab as an independent researcher. As well as being able to celebrate the positives of becoming an independent researcher, we would also like to use this platform to discuss the unique challenges they face as women scientists in their respective scientific environments. This Viewpoint is part of an ongoing series at *JEM*, and follow-up articles will be published in the coming months.

Carmen Gerlach
Principal Researcher, Research Group Leader, Division of Rheumatology, Department of Medicine Solna, Karolinska Institutet, Stockholm, Sweden; Center for Molecular Medicine, Karolinska University Hospital, Stockholm, Sweden
My lab aims to unravel the mechanisms that contribute to the diversity within CD8 T cell responses to acute infections and cancer. After a PhD in the Netherlands and a postdoc in the USA, starting a lab in Sweden came with many unknowns for me. I was surprised by how helpful fellow young principal investigators (PIs) were in advising me already before my move about what grants to apply for, and in familiarizing me with the Swedish system. This is something I am trying to pay forward now. It was surprisingly challenging to get permission to work with a BSL2 pathogen at BSL2 and not BSL3 level, to figure out a PI's responsibilities, and to find childcare for the period until our Sweden-born child was allowed to go to daycare at age 1. But the puzzle came together, and I am excited to see our lab's first study recently published and grateful to have two happy children and a supportive partner.

Ruth Franklin
Assistant Professor, Department of Stem Cell and Regenerative Biology, Harvard University, Cambridge, MA, USA; Department of Immunology, Harvard Medical School, Boston, MA, USA
I'm an Assistant Professor in the Department of Stem Cell and Regenerative Biology at Harvard University and Department of Immunology at Harvard Medical School. I started my position in July 2020, and my lab is interested in understanding the role of immune cells in tissue repair. Becoming a faculty member during the pandemic has emphasized the importance of social connections in science. I am energized by interactions with other scientists in a way I had not previously appreciated. Discussing new ideas, especially with trainees in my lab, is one of the best parts of my day. The significance of these connections also extends to peer and mentor networks. As a woman in science, I've learned that seeking advice, support, and advocacy from other women scientists is invaluable (and inspiring!). Despite the many challenges of running an academic research program, I feel extremely fortunate for this opportunity to engage in scientific discovery and mentor the next generation of scientists.

Charlotte (Charlie) Scott
Lab of Myeloid Cell Heterogeneity in Inflammation and Tissue Damage, VIB-UGent Center for Inflammation Research, Ghent, Belgium; Department of Biomedical Molecular Biology, Faculty of Sciences, Ghent University, Ghent, Belgium
I started my independent lab at the end of 2019, thanks to a European Research Council Starting Grant. My lab is based at the VIB-UGent Center for Inflammation Research in Belgium, where we focus on unravelling the functional heterogeneity of myeloid cells, particularly those in the liver, in health and disease.

Setting up my own lab has been one of the most exciting but also challenging periods of my life. Like many new PIs, one of the biggest challenges for me was to become a people manager. There are so many things that can come up that I hadn't considered before. Luckily, there are many useful courses you can follow, including the one from the European Molecular Biology Organization, which helped me a lot in this regard. Asking for advice from my more senior colleagues has also taught me a lot (including, sometimes, what not to do!). While people management is a challenge, having a fantastic team of scientists working with me is also one of the best parts of the job. The best advice I got before starting my lab was to make sure that the first people I hired were the right people for my vision of the lab. I, like many others, thought I would stay in the lab for at least a few years, but that quickly disappeared with all the other commitments I had to meet; therefore, working with great people, who are willing to send me WhatsApp messages from behind the flow cytometer or confocal, was crucial. Watching the different people in my team develop as scientists is one of the best perks of the job and is certainly something that will keep me excited and motivated for years to come.

Lucie Van Emmenis: lvanemmenis@rockefeller.edu.

Bianca Jones Marlin
Herbert and Florence Irving Assistant Professor of Cell Research, Departments of Psychology and Neuroscience at the Zuckerman Institute, Columbia University, New York, NY, USA; Howard Hughes Medical Institute Freeman Hrabowski Scholar, Chevy Chase, MD, USA

The Marlin Lab at Columbia University studies how organisms unlock innate behaviors at appropriate times, and how learned information is passed to subsequent generations via transgenerational epigenetic inheritance. Opening my lab in early 2021 meant that pandemic challenges were set against the backdrop of hurdles I've encountered throughout my career. Navigating this uncharted territory of my own lab meant that my identity could be honored in a space it has historically been excluded from. And not just facets of my being, but also of those who I've seen excluded and who I passionately want to include and make feel welcome. It has been exciting to set that powerful mindset in action and to elevate science by elevating the people doing the science. A core mission in the lab is to create a scientific program that addresses inequality head on, not only for myself, but for the future—to create a scientific environment that is more reflective of the brilliance found within our society. When I give talks, I prioritize events that share my mission. When I receive funding, I work to support my brilliant lab and honor their hard work and science. As I grow my lab, I impart upon my students the best wisdom I've received over the years—establish protected time for scholarship: reading, writing, and learning. With it, I watch them grow their passions, running quickly with their ideas. These are aspects of my scientific path that I am incredibly proud of and excited to continue to build upon as my students grow their networks and blossom into leaders of their own.

Yulei Zhao
School of Basic Medical Sciences, Fudan University, Shanghai, China

I am a PI at the School of Basic Medical Sciences, Fudan University. My research interests focus on cell-autonomous and non-cell–autonomous mechanisms of cancer development and drug resistance. By studying these mechanisms, we are trying to find novel targets for efficient cancer treatments as well as providing strategies for clinical treatment of certain drug resistances. I started my lab when my second kid was just over 3 months old, and it was a very big challenge for me to keep a balance between work and family. This may be the most difficult part specifically for a mother scientist. As a new PI, most of time I still need to do experiments by myself, during which I also train the new lab members. In addition, a PI also needs to teach students courses at the university, attend meetings, write grants, and do other services. Therefore, a PI needs to have a very good ability of time management. On the other hand, it is very exciting to face the challenge and start a lab to figure out specific scientific questions that you are interested in and that may help with clinical cancer treatment.

Ai Ing Lim
Assistant Professor, Department of Molecular Biology, Princeton University, Princeton, NJ, USA

I grew up in Malaysia and embarked on a scientific journey from Hong Kong to France and the United States. On January 1, 2023, I launched LIMmunity (Lab of Infant and Maternal Immunity) to unravel how maternal infections impact offspring immunity, and how maternal immunity adapts to pregnancy and lactation. Just 4 days after the launch, our baby joined us as the lab's first "honorary member"!

Building a lab while raising a newborn is undoubtedly challenging, but I am deeply grateful for the support I received from my family, mentors, department, and the wider immunology community. I have enormous fun working at the bench with lab members, constantly bouncing ideas, and am excited about the potential of our research for women's and children's health. These experiences have been transformative and fulfilling in ways I could never have imagined. I also understand that there's no "best" time to pursue your dream; any time is a good time to take that leap of faith!

Anna Coussens
Laboratory Head, Infectious Diseases and Immune Defence Division, The Walter and Eliza Hall Institute of Medical Research (WEHI), Victoria, Australia; Senior Research Fellow, Department of Medical Biology (WEHI), University of Melbourne, Victoria, Australia; Honorary Associate Professor, Centre for Infectious Diseases Research in Africa, Institute of Infectious Disease and Molecular Medicine, Department of Pathology, University of Cape Town, Cape Town, South Africa

I am an infectious disease immunologist specializing in human immunity to tuberculosis (TB) and HIV-1. I work in close collaboration with clinicians, epidemiologists, microbiologists, and anthropologists developing a contextualized understanding of the biosocial and comorbid causations of TB risk to develop better diagnostic biomarkers of early disease and therapeutic strategies to resolve disease. Completing my PhD in Australia in 2007, I spent the next 10 years as a postdoctoral fellow and then senior lecturer in the UK and South Africa working on TB clinical trials and establishing longitudinal TB cohorts before returning to Australia in 2018 to start my lab at WEHI. I received two pearls of wisdom at that time that continue to reassure me during challenging periods. The first was a personal account shared with me of the challenges a now senior female director had faced in their first 5 years, that it can be the most difficult career transition, that you'll make mistakes, but you will get through it and grow into your leadership style. The second was that the person with the greatest expectation of me is me, so don't compare yourself to others or try to fit their mold; just focus on executing the vison for your research. The other great learning that I've had is that a successful lab is built with an excellent team, so hire thoughtfully and quickly deal with any personality clashes, especially if misogynistic behaviors appear. Lead by example; if men cut you off and talk over you in meetings, you have to call them out: "*I wasn't finished speaking.*" Training undergrads and postgrad students is rewarding, and at times challenging; having the first PhD students graduate from my lab will remain one of my proudest moments as a new lab head. The first 5 years go fast, particularly during a pandemic, so don't overcommit to admin/committee requests; choose wisely. As a female lab head, finding great mentors who are in your corner cheering for you can make all the difference.

Judith Agudo
Assistant Professor, Department of Cancer Immunology and Virology, Dana-Farber Cancer Institute, Boston, MA, USA; Department of Immunology, Harvard Medical School, Boston, MA, USA

My lab is focused on uncovering how tissue stem cells and cancer stem cells evade immune attack. This work has implications in both the field of regenerative medicine and in cancer immunotherapy. Beyond the COVID-19 pandemic, one major difficulty that I faced when starting my lab was recruiting people and building a team. Initially, I tried to mirror what I thought a leader was supposed to do, but then I realized I had to find my own way of being a mentor and supervisor. Another challenge was navigating collaborations. There is a huge learning curve when starting a lab, and the best advice I received was that a career in academia is a marathon, and it all takes time—and resilience. I think enthusiasm is the other essential ingredient. I get easily excited about any new finding in the lab, and that has been important for the morale in the lab; there is a lot of coaching as a PI, something that surprised me initially.

Sònia Tugues Solsona
Assistant Professor, Innate Lymphoid Cells and Cancer Lab, Institute of Experimental Immunology, University of Zurich, Zurich, Switzerland

I am an assistant professor at the Institute of Experimental Immunology in Zurich, where I study immune regulation of metastasis. Starting my laboratory a couple of years ago was very exciting; finally I got the chance I had been longing for after years of investment. And what a challenge that was: assembling a team, the never-ending grant writing, and let's not underestimate the continuous learning process of leadership and management skills. It took me a while to figure out how to balance these multiples roles and to accept that science during this time happens at a slow pace. Thinking back, I was very fortunate with the group of researchers I managed to assemble. While it is a huge responsibility to supervise their academic growth, it is so rewarding to feel they belong to a team and to cherish their accomplishments! My goal is to pass on to them some valuable advice I got from peers and mentors over the years: "Be strategic about research projects and try to estimate wins and losses beforehand. And embrace feedback and criticism; there is no better motivation than engaging discussions." Right now, being at the end of my starting career grant, I find it really hard to keep the lab in high spirits while fighting the bottleneck of academic tenure. When it gets too stressful, I ask myself if this job is still rewarding. So far, the answer is yes.

Isabella Rauch
Assistant Professor, Department of Molecular Microbiology and Immunology, Oregon Health & Science University, Portland, OR, USA

I am originally from Austria and head a research lab in Portland, Oregon. We study how epithelial cells, which are the first cells to encounter pathogens, recognize infection via sensors called inflammasomes, and what the consequences of this recognition are. The best advice I got for starting my lab was to not rush hiring and to be selective about my team. I think this has paid off, as we have a great crew and everyone is doing fantastic work and enjoying it. Despite having been told about it, I was surprised how individual trainees' mentoring needs differ, and I definitely still have a lot to learn about mentoring. Starting a lab working on complex mouse infection and organoid imaging models during COVID was definitely a challenge, as it required a lot of hands-on demonstration, which was not possible for a while. However, I am excited about our recent progress and about expanding our epithelial research from the intestine to understudied organs such as the female reproductive tract in the coming years!