

Women in Stem Cell Science: Part I

Female scientists play important leadership roles in the field and with the International Society for Stem Cell Research. We asked a number of these top researchers to share their personal stories and reflect on their career paths. Part II of this series will run in the October 2018 issue of *Stem Cell Reports*.

**Christine Mummery, PhD**

Professor and Chair, Leiden University Medical Centre, Netherlands

I have a somewhat unusual background for a stem cell biologist perhaps, but my undergraduate degree was in physics. As it turned out, it was an excellent basis for studying heart cells and vessels we make from stem cells, because their behavior is very much determined by things like flow, stretch, and electrical signals.

In the Netherlands, 70% of medical students and 60% of PhD students in life sciences are female, yet less than 15% are professors. When I first became a professor in 2002, only 8% of professors were female and very few of us had kids. I didn't share much about my three children, and in public I didn't speak about my full-time job. In general, I kept my personal life to myself. Since then, when female PhD students and postdocs in my lab have families and become professors, I'm exceptionally proud of them, knowing the challenges they face.

My advice to female scientists is to be selective and only accept doing things on which you know you can deliver. Better to disappoint up front than have folks be unhappy when you don't meet a deadline or deliver a fabulous lecture. In science, men can often survive as "generalists," but the most successful women are specialists in something.

A work/life balance is important for both men and women, and especially for couples who both have science

careers. Much of my grant funding I now use to give junior female PIs a chance to build their own groups and position them to be competitive without undue stress. I look forward to the day when more women are in a position to be asked to take leadership roles in societies such as the ISSCR, and when we have a more equitable division of the workload with men!

[Dr. Mummery reflects on her experiences as a woman leader in the stem cell field in this video interview.](#)

**Fiona M. Watt, FRS, FMedSci**

Executive Chair, Medical Research Council, and Director, Centre for Stem Cells and Regenerative Medicine, King's College London, UK

As head of the Medical Research Council, one of my unexpected pleasures is coming in contact with colleagues I haven't seen in many years. Recently, I encountered two of the field's early pioneers and was reminded of my early days as a young female researcher.

Martin Raff, whose ground-breaking *in vitro* studies of glial and retinal cell biology mark him as one of the founders of stem cell research, and Graham Warren, who is well known for his research into the Golgi apparatus, were instrumental in helping me get started. I discovered that both are well into retirement and share an office at University College London with my former colleague, David Ish-Horowicz, a *Drosophila* geneticist.

These scientists have played key roles throughout my career.

I asked myself why, exactly, I was so pleased to see Martin and Graham again. Part of the answer is that they were each incredibly kind to me when I was a young scientist. I met Graham at an EMBL course he was teaching when I was a PhD student. When I sat down next to him one breakfast I didn't expect him to notice me and was absolutely amazed that he took time to talk and was genuinely interested in my research. He made me feel like a grown-up scientist and gave me confidence to approach senior colleagues at subsequent conferences. With Martin my first interaction was also fleeting: we were on a train returning from a conference and I, a junior PI, asked for his advice on a project. Like Graham, Martin was happy to talk and test out my ideas. I realized then that scientists, no matter how eminent, cannot resist the opportunity to explore new data and exchange ideas.

These "micro-mentoring" interactions helped me get started and have been just as important as mentorships; they've brought pleasure and enlightenment throughout my career.

**Janet Rossant, PhD**

Senior Scientist, Hospital for Sick Children, Toronto, Canada

As a stem cell and developmental biologist, I am privileged to work in





fields where women have been well represented for many years. When I began in the 1970s, female mentors were not hard to find. Today, we still need to reach out more to all those underrepresented in science; a diversity of approaches to science brings new insights and new directions.

In my experience with teaching, research, and administrative roles, I have seen remnants of conscious or unconscious gender bias. Existing male executive groups are not always comfortable including women. Depending on the situation, I have both declined opportunities because I did not want to belong to a group that is backward in its thinking, and accepted positions where there was a willingness to consider new ways.

I turn down invitations to speak, write, and sit on boards if I don't have the time to make a meaningful contribution. My experience is that men less frequently say no, even if they are overcommitted, making it difficult to find women to fill these important roles. In general, women tend to value work/life balance, usually more than men.

In selecting trainees, I do not consciously seek a gender balance; I recruit the best person who seems to fit well with the group. At times the lab has been mostly male, and sometimes mostly female, but overall it's a balance.

It is an amazing time to be doing science; if this is your passion, just go ahead and do it. Find support from your peer group and senior mentors and supporters, female and male. Today, if you still experience inappropriate bias or harassment, you can report it to your organization with much more confidence that action will be taken to address your concerns.

[Learn more in this video about Dr. Rossant's experience as a woman leader in stem cell science.](#)



Kathrin Plath, PhD
Professor, UCLA David Geffen School of Medicine, USA

Throughout my high school, college, graduate school, and postdoc career, I always felt I was judged by my performance, and never experienced unfair treatment based on my gender.

When I became a principal investigator and then applied to become a faculty member, however, I had a very different experience. At times, senior faculty members shouted at me, or threatened me by saying I would not get tenure if I didn't agree with their requests in research-related issues. While I didn't agree and submit to their requests, these situations were very difficult and upsetting for me. I was also disillusioned when hiring managers and organizational leaders let me know that one of the biggest advantages for me in getting hired was that I was a woman.

Thankfully, I had unconditional support from colleagues with whom I could freely discuss science and raise these challenges, which helped me recover and move forward. I avoid close interaction with colleagues whose professional attitude I do not appreciate. I strive to be fair and realistic to trainees in my lab in answering both their scientific questions and their concerns about balancing career and family. Overall, negative interactions such as those I mentioned have been the exception, and I have been surrounded by many scientists, women and men, who were and still are incredibly supportive and invaluable sources of inspiration, many at UCLA.

Early in my independent career, I'm grateful to have had colleagues who advocated for me and wrote letters of recommendation and went out of their way to invite me to give talks and provide scientific feedback. Some of these people have become good friends, and I recognize in hindsight that my faculty job search was a great opportunity for me to build a lasting network of scientific colleagues and friends.



Valentina Greco, PhD
Professor, Yale University, USA

In science, where we speak a common language, I often feel muffled or muted, as if speaking a different language than men. Also, my behavior doesn't always fit in a man's world. Women are frequently socialized to be soft, kind, self-deprecating, and deferential; qualities I appreciate and that contribute to long-term productivity in organizations. Yet displaying these behaviors is often considered weak and not appreciated by a profession and society designed by men.

Regardless of how strong a scientist I am, people sometimes miss much of what I say because of these differences. I have felt pressure to change behaviors perceived as weak and to adopt those traditionally associated with men, such as aggressiveness and assertiveness, in order to be heard, accepted, and to belong.

For me to succeed as a woman, in a world where success is defined by a top leadership that is predominantly white and male, I am required to have all the scientific talents plus the ability to morph into the language,



the behaviors, and even the appearance that men recognize and value. *Asking women, explicitly or tacitly, to conform to male norms robs the field of its diversity and women of their identity.*

We need immediate and sustained action for women to truly become equal partners with men in the world of science. We need a transparent dialog between men and women, to explore how they experience the professional world. Without that, it's unlikely we can make meaningful changes toward equal access.

What keeps me still anchored is the hope that one day our diverse backgrounds (gender, race, social extraction, country of origin, sexual orientation, physical characteristics) will be welcomed in any field we choose to enter, a day when none of us must surrender or deny a part of ourselves in order to feel like we belong.



Malin Parmar, PhD
Professor, Lund University, Sweden

In my early research career, I was fortunate to train with excellent scientists. My first supervisor was Cheryl Helgason at the Terry Fox Research Institute, headed by Connie Eaves. I conducted my PhD studies under the supervision of Kenneth Campbell, my postdoc under the supervision of Meng Li, and I entered my independent research career supported by Anders Björklund. I was introduced to the European research community by Elena Cattaneo. I was a young scientist until something happened: I became a young *female scientist*.

How did this happen? And why? There are a number of factors involved

in the transformation I think—some of them from inside myself and some of them from the outside. As I grew older, I observed how young women around me were treated differently because they were women, and I recognized how similar things had happened to me, although I had not noticed at the time—or I had noticed, but found it embarrassing to acknowledge.

So why am I now proud to be a female scientist and not a scientist? Well, I came to realize that I had been lucky. Because I was raised with the spirit that I am the only person who limits what I can do, and because I was trained by excellent scientists of both genders, I am fairly refractive to the differential treatment I often get as a woman. But I do realize that this “Teflon coating” is rare and that many of my colleagues do not have the same ability to prevail in a male-dominated field. This is why I am happy to be a female scientist. I am happy to show what women can do, what we can achieve, and that we can succeed. As an established research scientist, I can now engage in the mission to make our field a gender-neutral environment so that women and men can rely on their abilities and skills to advance, without the need for “Teflon coating” or affirmative actions.

[In this video, Dr. Parmar reflects on her career as a female leader in the stem cell field.](#)



Amander Clark, PhD
Professor and Chair, UCLA, USA

I grew up on a small sheep farm in Victoria, Australia. Neither of my grandparents, and only my mother,

had completed secondary school, yet both of my parents recognized the importance of attending university.

My love of science, particularly life sciences, began on the farm, as I learned about the cycle of life through each of the seasons. In secondary school, my biology and chemistry teachers recognized my enthusiasm for science, and it was then that I choose to pursue it as a career. I discovered my passion for cell and developmental biology while studying at the University of Melbourne.

Throughout those years I was fortunate not to experience overt gender bias. My PhD mentor championed women in science, and my female colleagues and I were encouraged to think big.

During my postdoctoral years, as I looked to next steps in my career, I began to notice differences between the progression of men and women in the field. Many female colleagues were starting families and struggled to balance those responsibilities with the intense competition for the limited number of academic jobs. Many women left the field.

My career as a female scientist with a family has been incredibly rewarding. Balancing family and the intense effort it takes to be a successful scientist is not easy, and I am grateful to have a supportive partner who equally shares the challenges of parenting. For a time, it was difficult to travel to meetings, and I struggled through the exhaustion of sleepless nights while balancing my laboratory duties and ensuring students graduated on time.

I want to pass along the most important piece of advice I received. All you can do is your best. While you are on campus, make every second count toward your career; while you are at home, make every second count toward your family.

[Dr. Clark provides insights about her career path in this video.](#)



Masayo Takahashi, MD, PhD

Laboratory for Retinal Regeneration, Center for Biosystems Dynamics Research, RIKEN, Japan

on gender, but to devote your time and energies to your work, both at home and in your professional career, and to do your best. Barriers to success as a woman can exist both in society and in the ways that women may view themselves as inferior to men.

I was lucky to have generous mentors both at Kyoto University Hospital, where I worked as a clinician for nearly 20 years, and in Kobe RIKEN, where I've worked since 2006. I think my experience was rare for a woman scientist in Japan. I raised a family and managed a full workload, giving equal attention and value to both. In fact, at times I felt my status as a working woman with children made life easier, as many colleagues, friends, and family helped me along the way.

The current deputy team leaders in our laboratory are a man and a woman and, while I have no bias with regard to gender, most of the technical staff is female, and most researchers are male. I do believe that a good gender mix and balance is important to a well-functioning laboratory. The recent practice for many research institutes in Japan is to seek and recruit women to lead laboratories; however, they find that very few females apply for those roles. That is a recurring problem; not many female researchers want to head up a lab, especially in my generation, in part due to the difficulty of balancing work and family life.

Like others, I was not interested in becoming a leader as a young adult. I found it easy to become involved with a number of projects where I could devote my time and efforts to help patients, however, and those efforts have led me to my current position.

My advice to other women is not to distinguish yourself particularly based