

Kate Schroder: Gender equality in STEM

 Lucie Van Emmenis 

Kate Schroder is a professor and director of the Centre for Inflammation and Disease Research at the Institute for Molecular Bioscience (IMB), University of Queensland, Australia. Her lab, the IMB Inflammasome Laboratory, is interested in the mechanisms that underlie inflammasome activity and inhibition, regulators of inflammasome-dependent inflammation, and caspase activation. We recently got the opportunity to speak with Kate about gender equality in science, technology, engineering, and mathematics (STEM). We covered steps her institute is taking to improve gender equality in the workplace, advice for female early career researchers (ECRs), and how something as simple as a robot vacuum cleaner can make a huge difference to a person's life.

First of all, please tell us a little bit about yourself.

I'm Kate Schroder. I'm a professor here at the Institute for Molecular Bioscience at the University of Queensland, and I lead the Inflammasome Lab. We're interested in inflammasome signaling and how that drives inflammation infection control and disease.

Now, let's jump straight into the main topic of gender equality in STEM. In your opinion, how does gender inequality affect women in STEM, and how do you think this influences the field as a whole?

That is a great question. Obviously we're not at parity at the moment. I'm an Australian, and in Australia, we only have about 25% of women who are professors, so clearly we don't have parity or equality, and I think this can affect women in many different ways. There are many women who find it difficult to get funding because of the inequities in the funding schemes or inequities in promotions or appointments, but then there's a snowball effect where younger women coming up through the ranks see this and are discouraged from a career in science. It really has a pervasive effect throughout the field on women, and of course it also affects the science. If we're only harnessing the talent of half, or just over half of the population, then we're not getting the best outcomes we need to

harvest the full talents of the full population in order to tackle some of the big questions that we have in science and technology about pandemics and climate change, and all of these big, wicked problems that we face as a society. We really need the biggest and best brains on these questions and I would very much suggest that that includes women.

What was the situation like at the start of your career? Have you seen big changes happening within the field since you started?

It's a funny one, isn't it; we've come simultaneously very far and not very far at all, although that sounds like a complete contradiction! I'm 43 now, and when I started my career more than 20 years ago, there weren't very many women at senior levels. During my training I worked in eight different labs, and they were all run by men. I also collaborated with tens of labs during that time, and I can only think of one female-led lab that I worked with, so obviously women were not commonly leaders in science at that time in academia. We have definitely come a long way since then, and there are a lot more female lab heads, which is great, but we're still not at parity. The other thing that has changed I think is the awareness of the problem. When I started my career, and maybe this is just me being clueless or having my head in the sand or something, but I wasn't even thinking about



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things like gender equity. I was thinking that we've already done the '60s and the '70s, that is when the revolution happened. I was the generation that grew up listening to Madonna and that sort of thing, and I thought all of these problems of gender had been solved. I think it's only later in my career that I started realizing that it was not an equal playing field. When I started my studies, during my PhD for example, we had more PhD students in the lab that were women than men, likewise with postdocs, and then what was extraordinary is that, as I got promoted to principal investigator (PI),

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suddenly all the women disappeared from my cohort. The statistics tell us that women are very much present during training and postdoctoral years and then they tend to disappear or leak out of the pipeline at the independent/PI level. Whilst we've made progress in representation of women at the senior levels, we're still not there. But I think it's true to say that the students and postdocs coming through the system now have a greater awareness of the problem, which is both good and bad actually. I think in a way it was good that I wasn't aware of the problem because it didn't discourage me, but you know it does mean that you can't work really strategically if you're not aware of the problems. I think the generation of scientists of all genders that are coming through the system now have a much greater awareness about the roadblocks to women in science, and that is good because it means they can be more strategic about their careers. So although we have made progress, it's awfully slow.

It's so disheartening to see this drop-off rate from the PhD level, especially in life sciences. So many women start graduate studies and don't go on to become PIs, and it's not through lack of talent.

Absolutely. I think the knowledge that it's going to be a tougher road as a woman tends to put a lot of women off, because it's already very hard juggling a career and a family. I think it can be really discouraging for women who do want to have a family to take on a career that they feel is really family-unfriendly, so we've really got a lot of work to do to make this a profession that everybody can participate in and that everybody can feel is a family-friendly profession. And I'm talking about women and men here, because we won't get gender parity until men have the opportunity to step up in the role of parenting. We need better outcomes for everybody.

Can you think of any specific examples of programs that have been designed to address this issue, and how they worked? How can we kind of address this issue of inequality of women in STEM in your opinion?

There's lots of things we can do, and I think they range from the small to the enormous. There are a whole lot of things we can do at a

whole lot of levels, and I can draw from some examples from my institution in Australia because that is the situation I'm most familiar with. I was chair of Gender Equity, also the Diversity and Inclusion Committee here at the Institute for Molecular Biosciences for many years, and we've implemented many policies to try to make our institute more equal and also more family-friendly for both women and men. For example, recognizing that hiring women is something that is really important for gender equity. We need to be able to hire and promote women into senior roles, and so we had a complete overhaul of our hiring policies to make sure that they were fairer and that they really had gender equity as a major goal of hiring. We've done lots of things to make sure that we make our organization more family-friendly in terms of meeting hours and flexible working and that type of thing. We set up a philanthropic fund to fund women in science with small grants that can be used for almost anything. This is a very trivial example from my own career, but even just something silly like being able to buy a robot vacuum cleaner so that you don't have to spend your time vacuuming your house, and instead you can have that time to do work or to actually relax on the weekends. I should qualify that and say my partner is also an academic and he's a wonderful man and he does share the housework! However, we found that when we were first appointed as PIs, we just spent all of our time (including weekends) working, and when we weren't working we were cleaning the house, so it was a really big win for us during a very important time in our careers that we bought a robot vacuum cleaner. It meant that every weekend we'd put on the robot vacuum cleaner and then we'd go out and have a coffee and have breakfast together. Even silly things like that can make a real difference.

On the opposite end of the spectrum, what can make a huge difference, and what I'm very excited about, is that the Snow Foundation, a major philanthropic funding body in Australia, recently disallowed the University of Melbourne, one of Australia's biggest universities, from applying for their grants for a year until they fix their gender equity situation. That sends a really clear message from the funding bodies to the universities that they have to stick to their gender equity policies and that they have to

really make sure that they're promoting and supporting a diverse community of people. Things like this make huge waves and can have a real difference.

So there's a whole range of things that can be done, big and small, and I don't have all the answers. I'm always keen to hear what other people's suggestions are because we can then implement them in my institution, but I think we need to be quite flexible in our thinking. What might help one woman may not help another, so we need women to tell us what would be helpful for them, and I think that is where a grant scheme like the one that we set up is really useful because we've got no rules about what they can apply for. They can apply for anything as long as it will help them in their career—it can be a leadership course, it can be a robot vacuum cleaner, it can be a professional writer to help them with a document or something like that. I think this is a really wonderful initiative.

As scientific publishers, is there anything you think that we should be doing differently or that we could improve on? Gender equality is obviously something that we have to take into account.

Absolutely. I think the scientific publishing sector has really stepped up in recent years. It's clear that many publishers are seeking equal representation of genders in their reviewers, which is a big step forward because that wasn't the case before and some would say it was a bit of a boys' club. We still don't have parity in first and senior authors; we still know that most authors in those sorts of prominent positions on papers are men, so we obviously need to be able to publish more women's work—that would be a big step forward. Maybe a small practical thing which I might suggest is that whilst I'm asked to review a lot of papers, and I totally agree that women need to be well-represented amongst reviewers, because we've got so many other commitments it would be helpful to give us a bit of extra time to review sometimes. Most women I know in academia are juggling a million roles, because whilst women are underrepresented at senior levels, people still want them to be fully represented in committees and with reviewing, and so as women we're reviewing lots of papers, and we're also on lots of committees. Every senior woman is

doing double duty at the moment until we reach parity. Therefore being flexible about due dates of reviews and things like that would be one way to help.

And just coming to a close now, do you have any suggestions or recommendations for early career researchers, particularly women, thinking about embarking on a career in academia?

That is a great question; I have a few suggestions. One is don't be put off by the inequities that currently exist, because they won't exist for long (at least I hope that is the case). There is always room for talented women, and being able to persevere and be a

bit stubborn can really be a virtue here. Secondly, make sure you surround yourself with excellent mentors, and mentors that understand the particular barriers that women face. They don't have to be female mentors, but as long as they understand the particular challenges that women face in science, it's useful to have those mentors. Three, while we don't have parity, women are going to have to be more strategic than men to get to those senior roles, so really plan out your career and be as strategic as you can in what you choose to do and what you don't choose to do. Four, many women, myself included, feel a sort of societal pressure to do whatever is asked of them, and we really can't afford to say yes to

everything. We can't afford to say yes to every committee, yes to all the everyday "grunt work" that won't get you papers or won't get you the accolades and all the rest. Women have to be a bit selfish and strategic about our time, and not buckle to peer pressure and be expected to run the committees or do all of these sorts of things that society has traditionally expected women to do. And lastly, if I can add a fifth, don't lose the passion and excitement you have about science. This is the best attribute of any scientist, regardless of gender, and what you should most fiercely protect, because without that love of doing science there's no point in any of this, and you won't do the best science.