A conversation with the winner of the 2015 Colworth Medal

Helen Walden

The Colworth Medal, one of the most distinguished awards that an independent, early career biochemical researcher can receive in the UK, will be awarded in 2015 to Dr Helen Walden, a principal investigator at the University of Dundee MRC Protein Phosphorylation and Ubiquitylation Unit.

Helen's research focuses on the understanding of a critical biological process called protein ubiquitylation which plays a fundamental role in controlling virtually all aspects of biology. Helen has made a series of important discoveries in this research area that are of enormous relevance to better understanding of diseases such as cancer and Parkinson's disease. She has been able to establish a growing international reputation as a leader in the ubiquitylation field and has published numerous highly cited research papers. In 2012, Helen also received a highly sought after young investigator award from the European Molecular Biology Organization (EMBO).

Helen completed her undergraduate studies at the University of Bath before moving to the University of St Andrews to undertake her doctoral studies. She then completed a postdoc in the laboratory of Brenda Schulman at St Jude Children's hospital in Memphis before establishing her own research group at the Cancer Research UK London Research Institute at Lincoln's Inn Fields in 2005. In 2013, Helen moved her laboratory to its current location at the University of Dundee.

Congratulations on being awarded the 2015 Colworth Medal. What was your reaction upon hearing the news?

Thank you very much! My first thought was wow, I wasn’t expecting that! I was thrilled; it’s a real honour.

What led you to become a research scientist?

I had a key moment as an undergraduate on a research placement at the Weizmann Institute in Israel, having just turned 21. I was doing an experiment to test a prediction, and if the prediction was correct, the tubes should turn yellow. The crucial readout was at 1 a.m., and nobody else was around. The tubes turned yellow, and I felt such a rush of excitement that I now knew something before anyone else did. I came back from that placement transformed, completely sure that I wanted to be a research scientist.

Which part of your research are you most proud of?

What was your ‘eureka’ moment?

The work I am most proud of to date is the research we have done on the E3 ligase parkin, a very important protein that is mutated in heritable forms of Parkinson’s disease. Parkin was thought to be constitutively active for over a decade and many drug companies had programmes designed to find inhibitors of activity. We found, through some pretty challenging work, that parkin was autoinhibited by its N-terminal domain, and that pathogenic mutations in that domain made it active. These findings met with considerable resistance – one early reviewer simply said it couldn’t be true – and were extremely difficult to publish because they challenged the prevailing dogma. I have to confess that I almost gave up. Three years elapsed between our first submission and the final publication of our results in 2011. It turns out that the entire family of E3s, to which parkin belongs, is autoinhibited, and no one knew this before our (now widely accepted) study. It paved the way for efforts to understand how it is activated, and of course the pharmaceutical industry now searches for activators rather than inhibitors!

Did you ever contemplate an ‘alternative’ scientific career?

Honestly, no. I realized that I wanted to do research as soon as I fell in love with it and I haven’t fallen out of love with it yet! There are times when it is very trying and frustrating, but I think I personally would find non-research science too different.
Did you feel that your gender put you in a position of disadvantage at any point during your career?

It's important not to be a victim, and also to remember that there are times when your gender is an advantage, but the answer is unequivocally yes. There are several examples that come to mind: the job you don't get offered and subsequently discover the successful candidate is in possession of fewer significant papers, but more Y chromosomes. Or the unsuccessful grant applications with negative comments about productivity a year after the birth of your second child. Going back to the days before I had my own lab, I remember being at conferences when I would do the all-important networking, talk to established professors about my ambitions, career path, seek advice on gaining an independent position, the sort of conversation that takes place hundreds of times at conferences. Then having to reject the unwanted advances of the same professor after the conference dinner; it's a tough situation to be put in where you have to rebuff someone in a position of power.

Why do you think it is that female scientists are still poorly represented in senior roles within the academic bioscience community in the UK?

I think about this a lot as it becomes so acute as you move up the scale. My honest conclusion is that most of the lack of women in more senior positions has to do with implicit (and hopefully unconscious) bias, negative stereotyping and the unfortunate tendency of men to hire/promote in their own image. Implicit bias explains why in hiring committees, grant panels and promotion panels, men tend to give other men the benefit of the doubt, but they don't for women. The negative stereotyping affects men's and women's abilities to see women in positions of power. When this is coupled with the very powerful self-identity we scientists have as being 'rational' and 'objective', and therefore incapable of sexism or racism, the perfect conditions are created to produce the current model.

What advice would you give a young researcher starting out today: both at the PhD and early career researcher level?

Happily I am often in the position of being able to offer advice, one of the true privileges of being a PI. If there is one thing I wish I had understood about science when I was younger, it is that ultimately you have to do what interests YOU. Science is about criticism and evaluation, and these things are subjective. One day you fail to get a grant, the next day you win a lovely medal! But the only thing that really keeps you going through the dark days is the desire to know, to find out. Doing what someone else wants you to do or what you think others want you to do is sometimes necessary, but shouldn't be the driving force. That, and work hard! Beyond the philosophical, networking is very important. Go to meetings, and introduce yourself to PIs, ask about opportunities at their institutions. And always ask the people in the place or position you want to be what the best and worst things are about their current role. The answers can be very revealing.

Would your advice be different depending on the gender of the researcher?

The fundamentals would remain the same, but I also would advise female researchers to try to develop a supportive network. It doesn't have to be large, but having people you can turn to when something blatantly unfair or discriminatory happens, and be reminded that you ARE a good scientist, and your ideas DO matter, and your work DOES have value.

What is your ultimate goal in your career? What is your ambition?

I want to understand how proteins carry out the development and essential maintenance of biology. In my mind, I imagine the cell as a huge factory full of machines making or disassembling different pieces, responding to different cues depending on what the organism is facing at the time. I want to understand the nuts and bolts of the factory, how the proteins are regulated, how signals are generated and acted upon, and what breaks down in the context of disease. Of course, I don't have the resources to study every single process, so my current favourite system is ubiquitin signaling and the protein-driven processes therein.

Besides science, what are your other interests?

My children, Pedro and Sofia (aged 6 and 4) are endlessly fascinating, of course, and are both beyond excited that I'm going to get a medal! I am also interested in politics, both historical and contemporary, particularly politics of equality. I'm a fan of good food and good beer and wine, and for that I also have to force myself to enjoy exercise!

Can you reflect on any changes that you think the science community has undergone since you started your career?

I think the biggest change since I started my PhD in 1998 has been the dissemination of research findings; I think as a community we are still trying to manage the transition from print to immediate clickable access. Publication has changed beyond recognition with the Internet, proliferation of journals and the onslaught of supplementary information, making it challenging to even define a publishable unit. The other major change as I see it has been the 'Impact Factor' pressure. Whereas once you could be a good scientist as evidenced by the science in your publications, now you are deemed a good scientist by virtue of which journal deigned to publish your work. It seems very unscientific to me. On the plus side, it takes a lot less time to render an image of a protein structure!

How would your students describe you?

I think my students would describe me as someone who talks too much, but who cares passionately about the science and the scientists. With students in particular, I would like to think that they recognize how I try to provide an environment in which they can learn to be rigorous, creative and independent scientists. Much like my supervisors did for me.

Nominations are now open for all the 2016 Awards including the Colworth Medal. If you are aware of a candidate you would like to nominate, please visit the nomination page at https://www.biochemistry.org/Awards/Nominations.aspx. The deadline for nominations is 31 January 2015.

Helen Walden will present the 2015 Colworth Medal at Signalling 2015:
Cellular Functions of Phosphoinositides and Inositol Phosphates, 1–4 September 2015, Robinson College, Cambridge, UK.