

WISE WOMEN

HELEN WOLLASTON, DIRECTOR
WISE CAMPAIGN





ACTIVE WOMEN'S CAMPAIGNER AND DIRECTOR OF WISE, HELEN WOLLASTON MARKS THE ORGANISATION'S 30TH ANNIVERSARY IN THIS ENLIGHTENING INTERVIEW WITH *INTERNATIONAL INNOVATION*. HERE, SHE DISCUSSES THE PAST, PRESENT AND FUTURE OF THE CAMPAIGN, INCLUDING ITS CONTINUED DEDICATION TO SUPPORTING WOMEN AND GIRLS IN STEM



Firstly, *International Innovation* would like to congratulate the WISE Campaign on reaching its 30th birthday in 2014! How did you celebrate this momentous occasion?

The Campaign invited women who are now involved in STEM, and who have been influenced by WISE over the last 30 years, to tell us their stories. Each month we feature a blog on our website of the women who had contact with us when they were at school. We also held the WISE Awards in mid-November. These take place every year, but for the 30th anniversary there was an additional conference programme during the day as well – in particular, we featured a panel debate which asked people to think about what the STEM workforce will look like in another three decades from now and what actions need to be taken. People from leading companies and education shared their thoughts on this, and it was chaired by Anna Edwards, a journalist from Bloomberg TV. Bloomberg was a headline sponsor of the Awards this year. The debate was about exploring ways we can scale up the Campaign.

How has the Campaign grown over the past three decades?

Today, instead of trying to manage and operate all aspects individually at WISE, we are a membership organisation that facilitates other people to campaign by joining them together and providing them with the appropriate tools and resources. WISE launched a membership scheme at the beginning of 2013 for individuals – male and female – who support the cause as well as companies, professional institutions such as the Institute of Civil Engineering and the Chartered Institute for IT, trade unions, universities and colleges. It has changed greatly since the early days when people booked a WISE bus to come to their school. Now, we are supporting others to take action, which massively increases our reach and impact.

WOLLASTON OUTLINES THE CURRENT STATUS OF WOMEN IN STEM

Within the UK, females in the STEM workforce equate to 13 per cent. Within that, figures vary depending on the sector. If you look at engineering professionals, for example, the number of women is increasing rapidly, and growing faster than the number of men entering this field. In the last two years, the number of women who became professional engineers in the UK has doubled

– that’s about a 13,000 person increase. It’s still a small percentage – 6 per cent of the total – but it’s growing, which is very positive. On the other hand, in technology the gender gap is widening. It’s important to drill down and look at the individual issues for each sector. WISE will monitor the overall percentage (with a goal of increasing 13 per cent to 30 per cent), but we will also examine what is happening in the different parts of STEM and the areas we need to target.

WISE services are designed to build and sustain the pipeline of female talent in STEM – from classroom to boardroom. Could you highlight these services and explain how they address the gender imbalance?

There are two activities. First, we encourage girls to want to study and work in STEM. The main way we achieve this is to give them access to inspirational role models, particularly young women and women from different backgrounds, who are passionate about what they do.

Second, we work with member organisations to create the right environments so girls have an equal chance of entering STEM employment, and have the same opportunities to thrive as their male counterparts. Here, we look at the recruitment and retention of women in STEM, as well as the policies and practices within the learning environment or workplace.

What educational opportunities does WISE provide?

We have training opportunities for women on career development and leadership. There are many leadership programmes for women, but the difference with WISE training is that the focus is on STEM, with effective peer support and relevant material for women who are likely to be working in a male-dominated environment. Women are able to talk in a safe space about different strategies for dealing with such issues.

WISE also provides training that is aimed at employers and focused on unconscious bias. We work with recruiters, managers and supervisors to make sure they are aware of this issue and have a strategy for dealing with it, so that it doesn’t put women at a disadvantage.

Do you also supply media training?

We work with LeFevre media to provide training to WISE members. WISE has just appointed a young women’s board – another step we took to commemorate our 30th anniversary – comprising 10 young women working in STEM who are WISE members. These young women have all been through the training to prepare them for the role. The aim of the board will be to ensure WISE is relevant to that generation, by giving their input to the campaign strategy. They will also serve as ambassadors, hence the media training. Some of them have already represented WISE at meetings with, for example, the Department for Education.

In late 2012 WISE incorporated the UK Resource Centre (UKRC). In what ways has this proved beneficial?

When the WISE Campaign was initiated, its focus was on the classroom. Today, we have the whole remit – from classroom to boardroom. That was the major advantage of UKRC; we are not only about inspiring girls to study and work in STEM, but we also aim to change the culture in the workplace and support organisations to make it more likely that women who are attracted to STEM will stay. That is where UKRC’s expertise



STEM FOR PEOPLE LIKE ME

Network Rail and author Professor Averil Macdonald, Diversity Lead for the South East Physics Network, have produced a report entitled *Not for people like me?* which aims to encourage women into STEM by identifying best approaches and practices to get this important message across. Macdonald explores the reasons why STEM outreach and engagement activities have made limited impact on girls and young people who are underrepresented in STEM. It suggests that a fresh approach is required, that focuses on the person rather than the position itself. Macdonald is also on the WISE board.

To find out more about the report, visit <http://bit.ly/Notforpeoplelikeme>

Professor Averil Macdonald, in an exciting guest blog for *International Innovation*, discusses the *Not for people like me?* report in more detail bit.ly/IIAverilMacdonaldBlog

WOLLASTON HAS A TAKE HOME MESSAGE FOR THOSE LOOKING TO BECOME INVOLVED WITH WISE AND SUPPORT ITS SERVICES

My message is one of encouragement, and one that certainly extends to men and women, because we want champions of both genders to spread the word about the value of women and girls in STEM and the opportunities that are available for them to have a great career. We are harnessing that energy, enthusiasm and passion in two

ways – the retention and promotion of women in the workplace and universities. We've now got the expertise at all fronts, and can work with organisations to support women and girls at all levels of their journey in STEM.

Secondly, UKRC was funded publicly by the government. WISE doesn't have any government grants, we are entirely funded through our membership and industry partners and sponsorship. This has given us more of a commercial focus and changed the character and nature of the organisation. WISE has to make sure it is delivering something of value to industry, because they would not continue to pay us and therefore it has to be very in tune with the needs of the employers. It makes us aware of where the opportunities are in the marketplace.

Ten Steps is an industry led programme that ensures women in STEM are provided with the same opportunities to progress in their career as their male counterparts. Could you discuss the latest successes to come out of the project?

Ten Steps is a good example of where WISE has become more commercially focused and industry led. Initially, we invited our corporate members to explain what has made the most difference in their organisations with regard to the retention and progression of women, and we facilitated a workshop that brought together those examples; that's how Ten Steps was born. One major success of that was our work with the Royal Academy of Engineering, who has a diversity leadership programme of about 40 companies. We now have 22 major employers signed up to implement Ten Steps, not just within their own organisation, but within their supply chain. This was only launched in September, and already some other companies have been contacting us to ask how they can become involved. I've been approached by the Confederation of British Industry (CBI) and have provided a blog for them.

During the WISE Awards, a woman working for an SME said she's pledged to take Ten Steps to her company and share it – that would be our first SME to adopt the programme. And we will be gathering examples of how it has made an impact, uploading them onto the WISE website and bringing those people together to share, learn and roll it out further. It's credibility lies in the seniority and influence of the industry leaders who have signed up.

You joined WISE as Director in June 2012. What was your vision for the Campaign? What skills and experience do you bring to this role?

My vision when I started was to mainstream the issues the Campaign addresses so that we weren't preaching to the converted. Increasing diversity in the workforce cannot be conducted single-handedly by someone with equality or diversity in their title, or an HR person in an organisation; it must be led from the top. And in order for that to happen, we need to put the issue onto a mainstream business platform and take the message to the public – to parents, teachers and girls.

What I bring to WISE, and the reason I joined, is my campaigning and communications experience. I've worked on these issues in other sectors. I also bring management expertise and contacts with relevant organisations across the UK.

ways: our sectoral campaigns – one of these is led by energy sector leader Nina Skorupska on our board. And our regional campaigns, where we aim to bring together everybody in a particular town or region so that we can connect with girls in the area. The more members we have, the more sectoral and regional hubs we can develop.



WISE HERO AWARD

WINNER OF THIS YEAR'S WISE HERO AWARD, TARA MOORE, SPEAKS CANDIDLY ABOUT HER VIEWS ON

WOMEN IN STEM, HER AMBITION TO BE A ROLE MODEL FOR GIRLS INTERESTED IN EMBARKING ON A CAREER IN SCIENCE, AND HER AIMS TO STRIVE FOR A WORK-LIFE BALANCE



WISE YOUNG WOMEN'S BOARD

FOLLOWING THE RECENT INAUGURATION OF THE UK WISE YOUNG WOMEN'S BOARD, *INTERNATIONAL INNOVATION* ASKS MEMBERS KEELEY BURKE (SYSTEM ENGINEER, HALLIBURTON), SIÂN CLEAVER (MISSIONS SYSTEMS ENGINEER, AIRBUS DEFENCE AND SPACE) AND SALLY WOOD (PLANT ENGINEERING MANAGER, ROYAL MAIL) TWO IMPORTANT QUESTIONS...

Congratulations on being appointed to the first WISE Young Women's Board. What attracted you to a career in STEM?

KB: I was always interested in STEM subjects at school, so I studied maths and science at A level and completed a degree in maths and statistics. After spending my industrial placement working as a statistician in pharmaceutical manufacture I decided to branch into engineering because I enjoy applying statistics to industrial issues, such as problem solving and process improvements. I like working in STEM because it gives me the chance to use my analytical skills and to work in a job that I find both interesting and challenging.

SC: I have always wanted a career in STEM; I decided I wanted to be an astronaut when I was six-years-old! This strong ambition has influenced most of my decisions to date, and has ultimately led me to where I am today – a Mission Systems Engineer for Airbus Defence and Space, Europe's leader in space. If I hadn't had this aspiration then I think that my choices throughout life (eg. A Level and degree choices) would have been quite different. I think it's so important for young people to have ambitions and to hold on to them and I want to try and get this message across to others through my work with WISE.

SW: I was interested in how things work and enjoyed using my hands to make things. I was good at maths and physics at school, and engineering seemed like a natural choice at university – especially after I attended some engineering taster sessions and work experience whilst at school. I really enjoyed my degree – I studied Manufacturing Engineering at Cambridge University – as there were so many different aspects to learn. One day we would be programming a robot and the next we were working in a jam factory. I now work for Royal Mail as the Plant Engineering Manager ensuring our machines deliver the mail

in walk sequenced order to our postmen and women and to your door every day.

How are you working with WISE to encourage other women to enter these fields?

KB: I volunteer as a STEM ambassador, which gives me the opportunity to speak to secondary school girls about my career to date. STEM subjects offer a wealth of career opportunities but students often lack confidence or do not see benefits in pursuing STEM when they make subject choices. Seeing real examples of STEM careers can help to make these subjects seem more interesting and relevant to future career choices, and may inspire students to consider STEM careers.

SC: I'm working with WISE to try and inspire other young people – particularly girls – to consider STEM careers. I want to share my experiences with others, and show them it's possible to hold on to the dreams they had during childhood, even if they seem a little far-fetched and crazy to others! I want young people to see that they can take these ideas and dreams and turn them into a successful and fulfilling career. Sometimes it's the path towards your goal that is the most interesting part, rather than the end goal itself – I want young people to see that you shouldn't give up on something just because you perceive it to be 'challenging'.

SW: I am working with WISE and Royal Mail to drive female applications to engineering apprenticeships within the engineering side of our business. I see the importance of encouraging the next generation to learn and study STEM subjects at school to enable the future of women in STEM careers and will work with WISE on our strategy to address this.

By means of an introduction, could you outline your professional and academic background?

I undertook a degree in Microbiology and was fascinated by the study of viruses and the immune system. I then completed a PhD in Immunology and Virology, followed quickly by a number of postdoctoral research positions spanning across the world from Belfast to New York, including an amazing opportunity as a research fellow in Harvard Medical School and Brigham and Women's Hospital in Boston. I returned home to Northern Ireland to take up an independent academic position at Ulster University and since then I have built a great team of researchers, been promoted to Professor and taken up roles as Vision Science Group Leader and Associate Director of the Biomedical Science Research Institute.

What have been some of your proudest achievements?

I love teaching and influencing young minds to ignite a life-long interest and enthusiasm for science and its potential to change our lives. Being awarded a National Teaching Fellowship Rising Star Award by the Higher Education Academy UK for my innovative teaching was fantastic, as it was based, in part, on student opinion of their learning experience under my tutelage. I was also privileged to receive Honorary Fellow from the Faculty of Forensic Medicine, Royal College of Physicians, an accolade for persons who rendered exceptional services to science and practice of forensic and legal medicine. In addition, I had the opportunity to be interviewed by an elite panel of scientists for a European Research Council Starter grant – a frightening but rewarding life experience. Recently receiving an award for advancing diversity in the workplace from Women in Business NI also ranks highly, and of course I have hardly recovered from the surprise of winning the WISE Hero Award in London, just a few weeks ago. All these moments make me feel so proud to be a woman in science.

If I absolutely have to pick one achievement, I would honestly say that out of all these academic-related prizes the most amazing and unbelievable prize is to have been able to do all this and raise my seven beautiful children simultaneously.

International Innovation was excited to learn about you becoming the winner of this year's WISE Hero Award. Can you explain the criteria for the award and what the win has meant to you?

WISE nominated women are those who could be role models for young girls considering science as a career. Professor Hugh McKenna – Pro Vice Chancellor for Research and Innovation at Ulster University – nominated me. I was delighted to receive a phone call from WISE to say I was shortlisted and was to attend the awards ceremony in London, where the winner would be announced and presented with the award by HRH The Princess Royal – 'The Oscars of Science'.

During my career I have strived to improve health, wellbeing and safety of people through the use of technology to develop various eLearning training courses and an MSc in Forensic and Legal Medicine. In partnership with the Faculty of Forensic Legal Medicine, Royal College of Physicians and Department of Health, London, I have driven developments in eLearning courses at Ulster to enable doctors and allied health professionals to recognise, treat and prevent rape, child abuse and domestic violence.

Through my research I aim to discover the genes involved in causing genetic eye diseases, carried by parents and passed on to at least half of their children. These devastating diseases can strike at a very young age and it is heart breaking to hear a parent describe how the disease is stealing their child's vision. I now have a team of researchers working hard to discover the genetic reason for blindness and we are making great progress in developing new therapies.

In your current role as Professor at Ulster University, what do your responsibilities entail?

The reason I enjoy my job is because it is dynamic and every day is different. It is stimulating and challenging, but also rewarding when

a day ends with success. As a research team, students and staff all contribute to writing papers and grants, and become familiar with the perils and pitfalls associated with this type of career. I think the biggest responsibility I have as an academic and a researcher is to ensure that all scientists that train in my laboratory leave with great potential to move on to anywhere in the world. The skills and training they obtain should open doors and allow them to explore the world as they explore science. As a group, we travel a lot either to carry out experiments in a collaborating laboratory or to present our findings at international conferences. I have travelled to the Middle East, China, many areas in the US and across all of Europe.

Where are you currently focusing your research efforts?

My main research focuses on the eye, and in particular, developing new therapies for blinding diseases caused by faulty genes. My team and I have gathered extensive evidence indicating that we can specifically target and silence or edit the bad gene causing the disease. We are achieving this through the use of siRNA gene silencing or CRISPR CAS9 gene editing. I find this approach and the success we are seeing in the laboratory truly remarkable. The power it gives us as scientists has no limits. I have colleagues who are using it to eliminate DNA viruses such as HIV, hepatitis and herpes. I can only imagine how this technology is going to spiral over the next year.

Have you personally witnessed any gender bias in your own line of work? Are you working to tackle such discrimination?

One gender bias we found, which is an action point as part of our University Athena SWAN Bronze award, is the decreased number of females at professorial level and the higher level of females staying in lower grade academic positions, such as Researcher or Lecturer. While this can certainly be attributed to personal choice or a work-life balance effort, we did find evidence of female members of staff being hesitant or not feeling as confident about applying for promotion. By way of addressing this, and in my attempt to be energetic in championing the promotion of women in STEM, I have developed and lead the University-wide female mentoring programme, which includes training sessions for mentor volunteers and establishing formal mentor-mentee relationships.

How do you see the STEM landscape developing, particularly for women in the next five to 10 years?

In terms of how females can be involved, evidence shows that while a growing number of women are enrolling in university, many opt out at the highest levels required for a research career. In Sweden, women form the majority (60 per cent) of students enrolled in a Bachelor's programme, but their numbers decline as they move up the education ladder, accounting for 49 per cent of doctoral students and only 36 per cent of researchers. The data trends across every region.

Some suggest this 'drop out' is due to the conflict that many women face as they try to reconcile career ambitions with family caring responsibilities. While I acknowledge this may be a concern and I know I have been incredibly lucky in my career, I hope I can serve as a role model for females pursuing a career in science and technology. I would definitely oppose the idea that to be a successful scientist females have to choose between having a family and enjoying other dimensions of your life.

I have progressed as a female in science and moved from lecturer to Professor within a 10-year period and during that time I had seven beautiful children. Yes there have been sacrifices and the odd school play missed but in that my six girls have learnt that 'mum works' and I hope that influences them in their life-choices in the future.

www.wisecampaign.org.uk