

Committee Member Spotlight

I have been involved in numerous BMSS activities since 2013, including co-organisation of the Ion Mobility Special interest group, and was elected as a member of the BMSS committee in 2015. Soon after becoming a fully-fledged committee member, I realised that I wanted to do more than just contribute to general committee discussions and was elected as young Person's representative, something of great importance to me. With a rearrangement of the committee at the end of 2016, I was deemed a prudent choice for BMSS Treasurer (or at least in a role that could be re-assigned!), and was given responsibility for overseeing the financial stability of the Charity. This is a challenging role, but an important and exciting one; I get to write the cheques that help to fund new students so that they can attend their first conference, and to provide pump-priming funds for fledgling projects (reports of which are published in MassMatters). My scientific background is in Biochemistry, specifically cell signalling and protein phosphorylation. I graduated with a Biochemistry degree from the University of Bristol, having done a year in Industry at Rhône-Poulenc Rorer in Dagenham, Essex. Although living in the YMCA during this time left something to be desired (I still shudder whenever I hear the song), the year I spent working at the bench made me realise that scientific research was what I wanted as a career. As a PhD student in the MRC Protein Phosphorylation Unit (MRC-PPU) at the University of Dundee (1998-2002), I started to use MALDI-ToF mass spectrometry towards the end of my studies, exploiting this 'up-and coming' technology to define sites of phosphorylation on purified proteins. While struggling at the time to understand what all the data meant (I mean, how many black lines do you really need to look at in one go?), I did appreciate that mass spectrometry was a powerful technique that could go a long way to helping understand complex biology. With that in mind, I did postdoctoral work in the area of MS-based proteomics and phosphorylation analysis of complex protein mixtures, working as a Howard Hughes Postdoctoral Fellow, and latterly as an independent American Heart Association Postdoctoral Fellow, in the group of Professor Natalie Ahn at the University of Colorado, Boulder.

I loved my time in America. Colorado, and Boulder in particular, is a great place to live and I would wholeheartedly recommend getting international experience as a young scientist if possible. Working with Natalie Ahn (and Kathryn Resing), training on the QSTAR, which I loved and hated

in almost equal measure, I learnt a lot about 'winnowing' MS data (thanks Kathryn!) and the need to understand the nitty gritty of every step of the analytical pipeline in order to interpret the data properly, so that, crucially, the data can be used to infer biological meaning.

For personal reasons I moved back to the UK late 2004, moving country, getting married and starting a new job in the space of about 3 weeks. It was quite a hectic time. When considering the move back to the UK, I realised that having caught the proteomics 'bug', I really wanted to understand more about fundamental gas-phase peptide ion chemistry to allow me to better apply MS for proteomics analysis. Consequently, I did a postdoc with Prof. Simon Gaskell, a guru in the field, at the Michael Barber Centre for Mass Spectrometry (MBCMS), at the newly minted University of Manchester (2004), formerly UMIST. While I brought some knowledge in the area of phosphoproteomics and signalling, Simon (and the great crowd of people working in the MBCMS) helped train me in understanding the need to really look at, and understand, how all those black lines were generated (chemical mechanisms, not how the printer worked). My project at this time was to understand the physico-chemical properties that governed the ability of tryptic peptides to be used as surrogates for protein quantification. This knowledge, integrated with my love of phosphorylation-based biology was what triggered my Royal Society Dorothy Hodgkin Fellowship application, which was actually submitted about 2 weeks after my first child was born (on Christmas Day 2005!). Over the course of the next few years I had two more children (2007, 2009), graduated a couple of PhD students, published a few papers, took over as Acting Director of the MBCMS (Simon having moved onto the exalted status of Principal of Queen Mary, University of London), got made a Lecturer, then promoted to Senior Lecturer – to be honest, it all passed in a bit of a blur. Sleepless nights juggling three young children and starting a research group will do that to anybody! In 2013 I moved across the M62 to the University of Liverpool, where I joined the Institute of Integrative Biology, joining an outstanding team as Co-Director of the Centre for Proteome Research. The move was advantageous in that it not only provided me with state-of-the-art MS instrumentation, but it allowed me to take stock of the spider's web of research projects that I was pursuing at the time, and refocus my scientific efforts. I now firmly integrate my original background in phosphorylation-

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mediated signalling with the experience that I have gained in fundamental MS analysis. The drive and focus in the group now is about further developing MS-based methods (top-down and bottom-up proteomics), in combination with ion mobility and capillary electrophoresis, to explore novel phosphorylation chemistry and biology to help understand the interplay between protein post-translational modifications, protein conformational dynamics and ligand binding. Aside from my own research and my role as BMSS treasurer, as a Director of the Centre for Proteome Research I assist other basic, applied and clinical scientists to explore the protein content and changes in a variety of complex biological systems, be that in plants, caterpillars or human tumour samples. Since last year, I have also been Research & Impact lead for the Institute for Integrative Biology in Liverpool, which is taking up far more time than I ever envisaged! Undoubtedly, the choices I have made throughout my career, which have been influenced by both scientific and personal considerations, has fundamentally shaped where I am today and the science that I do. As the children are getting older and work pressures increasing, I have found that it is even more important now to try and make time for other things. I enjoy photography, although am not very good and remembering my camera (!) and over the last year or so I have started swimming – even taking a few swimming lessons to learn proper front crawl! I participated in the 2017 Swimathon, raising money for MarieCurie UK. This year I will be doing the 2018 Swimathon in April for MarieCurie UK and CRUK. Sponsorship for this great cause is always welcome!