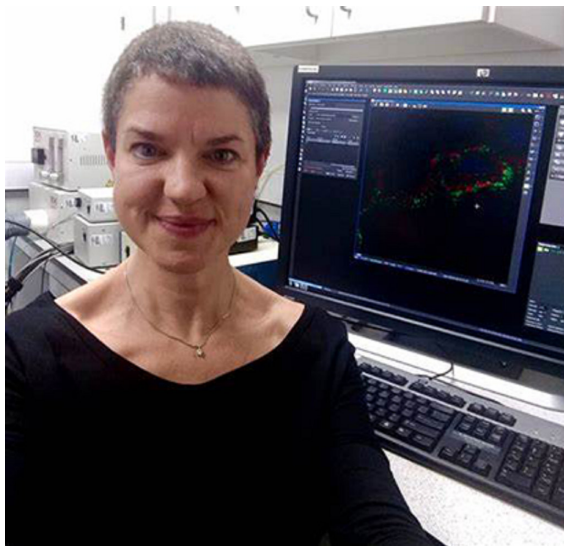


Cultivating collaboration: innovation leaders from industry and academia

Collaboration between industry and academics is essential for technological advancement and innovation and can be the key for developing a qualified workforce. Benefitting both parties, these collaborations ensure that industry obtains skilled workers with practical training and specialised expertise, while universities have the chance to work on emerging technologies and problems. We caught up with our 2019 winner Professor Maddy Parsons and 2020 winner Professor Matthew Dalby of the Industry and Academic Collaboration Award, to hear more about how their industry collaborations are leading to cutting-edge biological discoveries.

Professor Maddy Parsons



Maddy's research is focused on using a range of live-cell advanced imaging approaches to enable precise spatio-temporal dissection of receptor and cytoskeletal signalling, with a key focus on the development and implementation of novel microscopy. Maddy has developed strong working partnerships with a broad range of industrial collaborators, including Nikon, which led to the establishment of the state-of-the-art, world-class Nikon Imaging Centre at King's College London of which she is the director.

Professor Matthew Dalby



Matthew's research focuses on the interactions between mesenchymal stem cells (MSCs) and biomaterials, particularly the role of nanotopography in influencing stem cell behaviour. This involves studying how the physical characteristics of materials at the nanoscale can affect cellular processes such as differentiation and mechanotransduction. His work recently resulted in a first veterinary trial in a dog where

a large bone defect in the front leg was fully regenerated and is now functional and load-bearing. With collaborators, Matthew has developed a nanovibrational bioreactor, the Nanokick, that can be used to drive 3D bone formation with no need for material or chemical inducement.

Thank you for taking the time to speak with us about some of the exciting initiatives that you have been part of since winning the Industry and Academic Collaboration Award! Let us start with an overview of how your research has developed. Are you still working in the same area or have your research interests broadened?

Maddy: It was a huge honour to receive the award in 2019, and I think it really raised the profile of our cross-disciplinary approaches to research. We have broadened out to encompass exciting orthogonal approaches that push the boundaries of 'spatial biology' and allow us to better understand the full molecular picture at single-cell resolution.

Matthew: I started my career interested in how materials control mesenchymal stromal (or stem) cells (MSCs) to become bone, with orthopaedic implants in mind. Now, we are looking at the stromal, haematopoietic stem cell support properties of the MSCs. Using advanced materials and human cells, we are creating bone marrow mimics that will facilitate enhanced drug screening and cell safety testing for chemotherapies and cell therapies for leukaemia.

Can you tell us more about your current roles and whether this granted you greater freedom to forge new collaborations with industry?

Maddy: Being Associate Dean for Impact and Innovation is predominantly aimed at developing strategic directions for our Faculty and providing tools and frameworks to enable our scientists to deliver real-world impact from their research. I work closely with our senior leadership and Research Management teams to establish new university-wide agreements with key strategic industry partners. The training and networking events we initiated have opened new opportunities to engage with industry with a focus on mutually beneficial collaborations to build long-lasting relationships.

Matthew: I am currently Director of Innovation, Engagement and Enterprise which is really about taking opportunities; to collaborate with different people, to see where really following your research can take you and learn about new parts of the research environment as you push along the technology readiness levels, to learn new skills in communication and engagement. It is a choice between saying "no, I do not want any new experience," and saying "yes, I would like to try something new and challenge myself." As someone who at the start of their

career was fairly closed to new opportunity, I now believe you should always take new opportunity, it makes your job better and your life more interesting.

Can you tell us about any specific collaborations with academia and/or industry that have influenced your work?

Maddy: As an imaging scientist, I think our extensive collaborations with physicists and bioengineers have influenced how we undertake our experiments and provided transformative solutions to allow us to address complex emerging questions. I also really value our relationships with clinical scientists as they provide a critical link between our fundamental cell biology research and patients.

Matthew: Collaboration with clinicians has also been important in my career. I started working with Professor Dominic Meek, an orthopaedic consultant in 2009. Through forming the Glasgow Orthopaedic Research Initiative, we have helped enhance training by helping early-stage medics achieve MD and PhD qualifications. More recently, I have started to work with Professor Mhairi Copland, a consultant haematologist and Director of the Paul O'Gorman Leukaemia Research Centre to steer our research towards developing bone marrow models.

Can you tell us about any career highlights or standout opportunities that have arisen since winning this award?

Maddy: It has been a very busy 4 years! I was appointed Chair of the Molecular and Cellular Medicine Board at the Medical Research Council in 2021, which is a part-time secondment to UKRI. I also lead the BioimagingUK community network and, through this, have helped establish the first UK Node for EuroBioImaging, which provides open access to advanced imaging equipment across Europe. I consider it a huge privilege to be in these positions that allow me to support and advocate for the UK biomedical research community.

Matthew: Bringing the Centre for Doctoral Training (CDT) through Covid was a lot of work – but in some ways it was a highlight because I did it with amazing help from Michelle Carmichael and Aimee Soare who coordinate and administrate for the CDT. Thinking of professional services, I am also brilliantly supported by Claire Carberry who project-manages the new Centre for the Cellular Microenvironment that I direct with Professor Manuel Salmeron-Sanchez – bringing biology and engineering together in the same lab. We have grown the academic team, moved into a wonderful new building and invested in new equipment – this has helped us achieve the major funding from EPSRC on bone marrow models and I

feel I have the long-term funding to pursue my MSC vision.

How did receiving this award impact your career?

Maddy: It was a great honour to be recognised and it certainly raised general awareness of our research. There is no way we could do our research without the fantastic support and input from our extensive collaborators, and I view this award as very much a shared achievement with all of them. I think this particular award also really helps to highlight the importance and benefits of multidisciplinary and industry collaboration, which is terrific – and I hope will encourage others to get involved!

Matthew: It amazes me how helpful people will be if you both listen and ask and then you do your best to honour commitments you make. Essentially, people want to help and get involved. My Head of School saw that I was achieving success in driving collaboration that enabled technology development, new funding, Centres for Doctoral Training, etc. That it led to me winning the award was an unexpected pleasure. Recognition through prizes definitely helps careers!

What advice would you give regarding the benefits of fostering collaborations with academia or industry?

Maddy: It is important to approach these as mutually beneficial partnerships and ensure an open and honest dialogue is initiated from the start. Academic research is evolving, and I think we need to work harder to break down barriers and siloes to create a culture where we can seamlessly operate synergistically across sectors. I think universities need to consider opportunities to embrace this so we can ensure we retain talent and nurture the next generation of scientists.

Matthew: Good collaborations improve your life. You need to develop an open mindset, be open to working with others without worrying overly about yourself and you can have a much-enhanced career and cover more ground more quickly. Without being the kind of person who essentially needs to collaborate, I would not be where I am now. I would say that accepting mentorship from outside academia can also be hugely rewarding and open new doors.

Nominations for the Biochemical Society's 2026 Awards are now open! Find out more information about how to nominate on our website. ■