

Investing in the people pipeline

*and nurturing early-career
researcher talent*



Two key initiatives of the EPSRC Additional Funding Programme for Mathematical Sciences have been additional investments in PhD studentships and the initiation of the novel Maths Research Associates (MRA) scheme, in nearly 40 Higher Education Institutions from across the country.

A direct recommendation of the 2018 **Bond Review of Knowledge Exchange** in the Mathematical Sciences, the increase in mathematical sciences PhD scholarships will “*strengthen the supply of the skilled graduates UK industry requires to address 21st century challenges.*” EPSRC typically funds approximately 190 PhD students within mathematical sciences annually, the additional funding supported a doubling of PhD projects up to the October 2021 intake, which will be completed towards the end of 2025.



"The doctoral projects funded span the mathematical sciences, from mathematics (algebra and geometry) through to mathematical physics and medical statistics. One of the key gains of the additional Maths studentships was that we could fund additional strong students, including international students, and support our EDI [equality, diversity, and inclusivity] goals."

Professor Marika Taylor, University of Southampton

"The Additional Funding has given one of our PhD students a unique opportunity to work in collaboration with the Met Office on the development of new mathematics techniques required for ExCALIBUR - a UK research programme that aims to deliver the next generation of high-performance simulation software for the highest priority fields in UK research."

Professor Peter Ashwin, University of Exeter

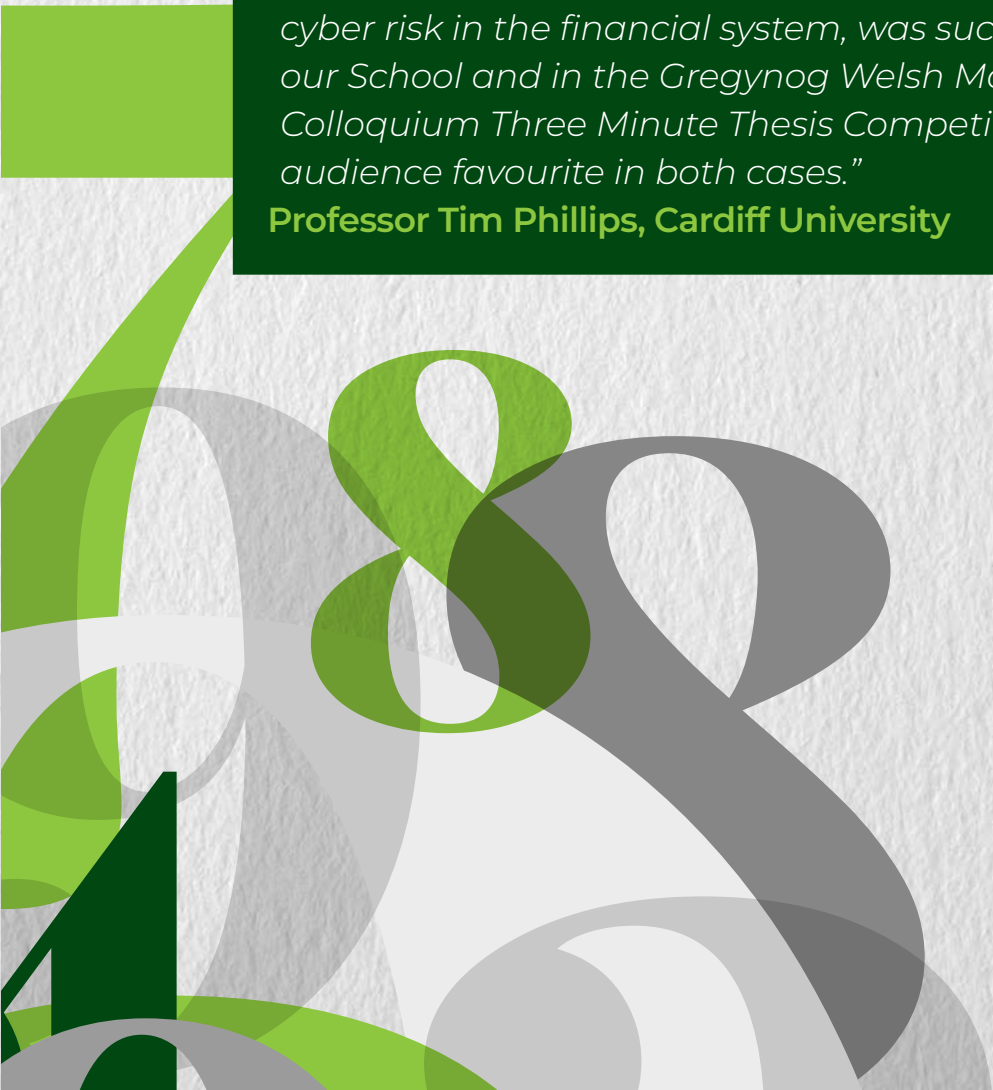


"We attracted more than 150 applications and awarded 23 studentships. Overall, there was a great deal of diversity, and we saw a much broader pool of applicants for the DTP studentships than we usually do for our postgraduate recruitment. The funding allowed us to recruit internationally top-quality students from 9 different countries: Canada, China, Colombia, Greece, India, Iran, Spain, Switzerland and the UK, who are working in areas across Mathematics, Statistics, and Management Science/Operational Research."

**Professor Alexander Belton, (formerly)
Lancaster University**

"The Additional Funding allowed the School to double the number of EPSRC funded students that commenced their studies in 2021. This has created an enhanced cohort experience which has strengthened our SIAM-IMA Student Chapter. One of the students in this cohort, who researches cyber risk in the financial system, was successful in our School and in the Gregynog Welsh Mathematics Colloquium Three Minute Thesis Competition as the audience favourite in both cases."

Professor Tim Phillips, Cardiff University



Developing independent researchers and promoting diversity

The MRA scheme offers researchers the unique opportunity to invest in their research and career development in the vital 6-12 months following their PhD. Many departments have been able to leverage further funds from their institutions to support an even greater number of able individuals. It has been a particularly valuable mechanism for retaining talent during the pandemic.

“The block-funding from EPSRC allowed us to attract additional funding from the University, and its flexibility has allowed us to promote diversity (in EDI [equality, diversity, and inclusion] as well as subject areas).”

Professor Nigel Mottram, University of Glasgow



Several departments have specifically cited the benefits for individuals who took maternity leave, and who could continue working in the same institution without uprooting their family.

“Having a systematic next step for early-career researchers to combine their research with either teaching experience or impact-related activity in the department has been really valuable for career development. We hope to continue the scheme internally in the future.”

Professor Iain Gordon, University of Edinburgh

Researchers have used the time to develop independence from their supervisor, publish papers, and secure prestigious longer-term positions in the UK and further afield.

“The Research Associate positions have clearly provided a springboard to promising academic careers.”

Professor James Sparks, University of Oxford

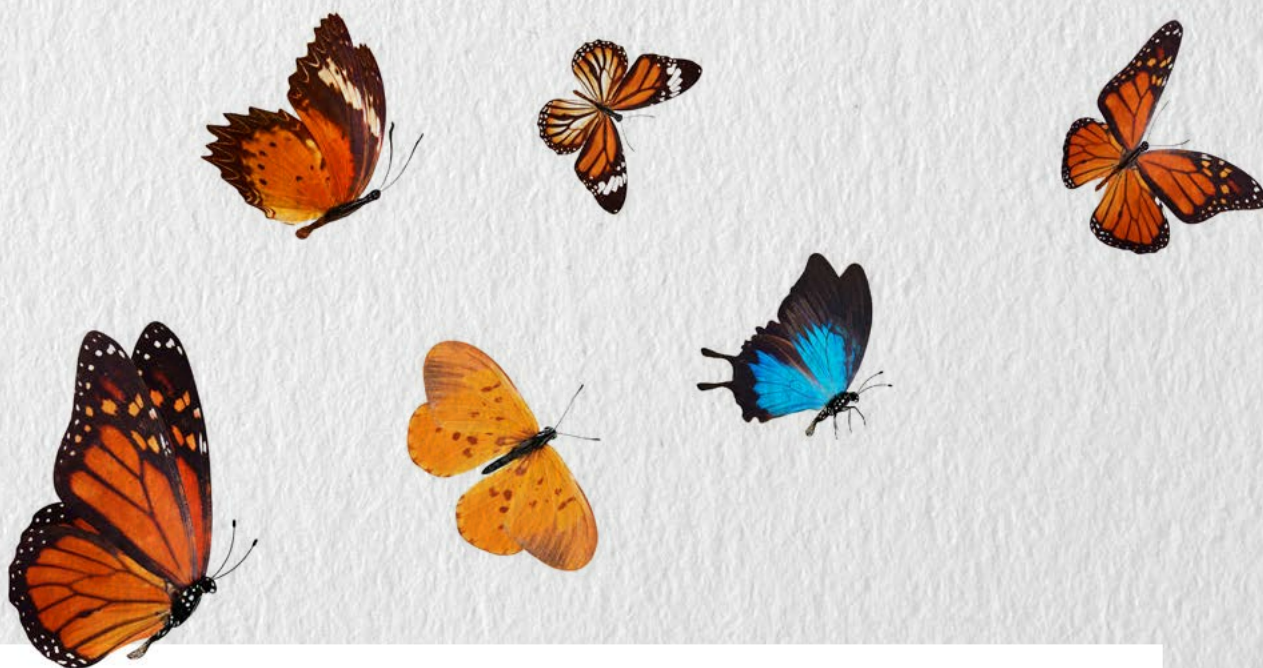
The destination data of researchers who have already completed the MRA scheme continues to be collected by EPSRC, although many projects are underway until Autumn 2024. Some illustrative examples of individuals who have benefitted from the scheme follow next.



Case study

Dr Jafet Belmont

Dr Jafet Belmont began his career with a degree in biology, before moving into the area of statistical modelling. During his PhD he applied Bayesian methods to study ecological systems in changing environments. He used the EPSRC funding to develop independent research links and collaborations with organisations including the Natural History Museum and the Centre for Hydrology and Ecology. An interesting aspect to his work is the incorporation of biodiversity data from citizen science projects, such as developing a flexible hierarchical Bayesian hidden Markov model using data from the British Dragonfly Society recording scheme and implementing data fusion approaches for the UK Butterfly Monitoring Scheme. In 2022, Dr Belmont was appointed as a Statistics lecturer at the University of Glasgow.



"The EPSRC funding helped me to establish collaborations with other researchers at the University of Glasgow and from international institutions such as the Norwegian University of Science and Technology and the King Abdullah University of Science and Technology. Additionally, the research and teaching activities I was involved in gave me the experience necessary to obtain a permanent position."

Case study

Dr Peter Mortensen

Dr Peter Mortensen holds an MSci in Mathematics and a PhD in Cardiovascular Sciences, both from the University of Glasgow. Through the EPSRC MRA funding, Dr Mortensen worked in a software development role in the School of Engineering, in collaboration with the University of Pennsylvania. In this position he designed and created software to be used by both clinicians and researchers to give new insight into the function and strain of organ tissue by transforming scan data into quantitative, visual, and usable analysis. On completion of his fellowship, Dr Mortensen secured a job at Airfinity – a predictive health intelligence and data analytics company – in the role of Life Science Quantitative Analyst.

“The fellowship gave me the opportunity to be entirely self motivated, enabling me to work on developing a product that is accessible for a range of interests and expertise. My role as a research associate has also involved an element of teaching undergraduates, which has allowed me to hone my communication skills. During the fellowship I worked with a range of collaborators with a commercial product in mind, which was vital experience that helped me secure my new job.”

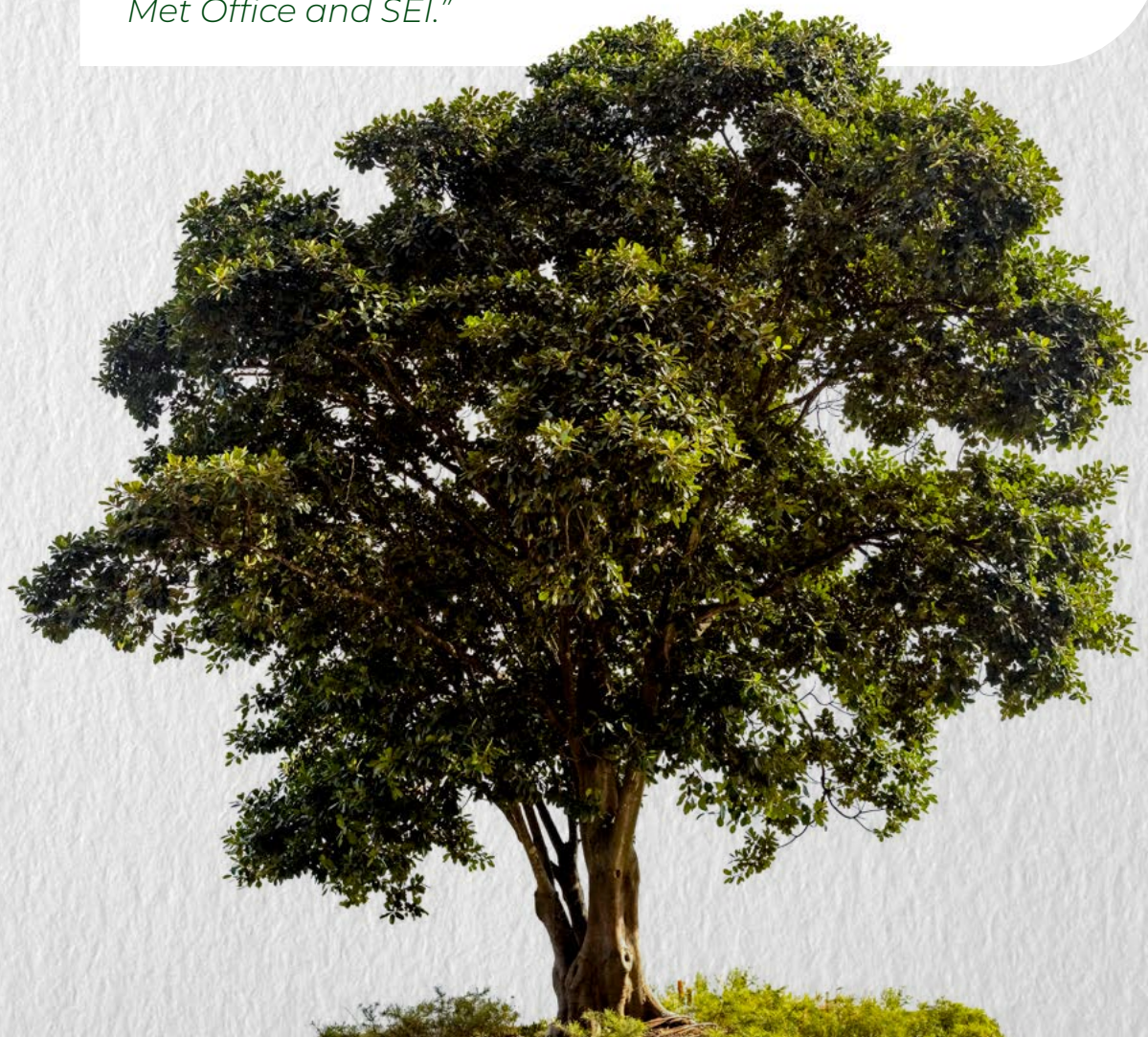


Case study

Dr Charlie Egan

Following an MSci in Mathematics at UCL, Dr Charlie Egan completed a PhD in at Heriot Watt University. He was subsequently awarded an MRA position in optimal transport and geophysical fluids. On the back of his research experience and expertise, he secured a position in the Sustainable Consumption and Production group at the Stockholm Environment Institute (SEI), an international non-profit research and policy organisation that tackles environment and development challenges. He currently splits his time between research at Heriot Watt (40%), and mathematical modelling work at SEI (60%).

“Thanks to this grant, I have been able to establish and explore new research directions with existing collaborators while forging new links with industrial partners at both the Met Office and SEI.”



Case study

Dr Aleksandra Ziolkowska

Theoretical Physicist Dr Aleksandra Ziolkowska used the one year position to interact with Profs Fernando Alday and Lionel Mason in the Mathematical Institute, Oxford, where she initiated new projects and collaborations taking her beyond the research programme of her thesis and allowing her to become independent. She was awarded a Humboldt Fellowship during which she will pursue these new lines of work.

