

Supporting Female Scientists in the UK & Ireland: L'ORÉAL-UNESCO 2014 For Women In Science Fellowships Announced



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The winners of the highly contested 2014 L'Oréal-UNESCO UK & Ireland For Women In Science Fellowships (FWIS) were announced on 19th June 2014 at a ceremony at the Royal Society.

Front cover photos:

1. Dr Eva-Maria Graefe
2. Dr Sneha Malde
3. Dr Clémence Blouet
4. Dr Tracy Briggs
5. 2014 winners together
6. 2014 Jury: from left: Dr Beth Taylor, Prof Pratibha Gai, Prof John O'Halloran, Prof Dame Janet Thornton, Prof John Pethica, Katriona Methven, Prof Anne Glover

With women currently making up just 13% of employees involved in STEM careers¹ and just 17% of professorial level academic researchers in the UK, the fellowships – now in their eighth year in the UK & Ireland – promote the importance of ensuring greater participation of women in science.

Although most agree there is no single explanation for this lack of diversity, starting a family and the absence of long-term contracts in early STEM careers are clearly significant barriers. Indeed, the House of Commons Science and Technology Committee report highlights that while efforts are often made to encourage young women into STEM careers or to study science, little focus is given to enabling them to stay and progress.

This is why the FWIS UK & Ireland fellowships have been designed to provide flexible financial help to women at the early stage of their research careers. Four fellowships of £15,000 were awarded to outstanding female postdoctoral scientists to continue research in their chosen fields. The four winners stated that they will use their fellowship money to purchase equipment, pay for travel to attend conferences, for field trips or international collaborations, and childcare.

Staggeringly, of the 289 women who applied for the



Left to right: Dr Clémence Blouet, Dr Eva-Maria Graefe, Dr Tracy Briggs and Dr Sneha Malde

fellowships this year, one in four said that they would use the fellowship money to fund childcare, highlighting the unique value of the programme in providing flexible funding to support women in science.

I was delighted to be part of the jury which had the difficult job of selecting the four fellows. Expertly led by Professor Pratibha Gai who was awarded L'Oréal's prestigious International Laureate in 2013, my fellow judges included Royal Society Vice President Professor Sir John Pethica; Professor Anne Glover, Chief Scientific Adviser to the President of the European Commission; Dr Beth Taylor, Director of Natural Sciences for the UK National Commission for UNESCO; Dame Janet Thornton,

Director of the European Bioinformatics Institute and Professor John O'Halloran, Head of School of Biological, Earth & Environmental Sciences at University College Cork.

Choosing between the eight women who were shortlisted

... outstanding female postdoctoral scientists ...

was an exceedingly difficult task, as all of the candidates were hugely impressive in their individual fields. However, it was inspiring to see the extraordinary work that is being carried out in diverse scientific disciplines all across the UK.

THE 2014 WINNERS ARE:

Dr Clémence Blouet, University of Cambridge, 'The consequences of high-fat intake on the hypothalamus and the mechanism behind obesity.'

Obesity and its associated conditions, such as type 2 diabetes and cardiovascular disease, are major health threats worldwide. Research has failed to develop safe therapeutics to treat obesity as we have been unable to characterise the mechanisms underlying eating and weight gain. The brain plays a huge role in the regulation of energy balance. Specialised brain cells in the hypothalamus process information about ingested food and fat stores and directly regulate food intake, energy expenditure or storage. Recent research indicates that a diet high in fat can cause these brain cells to change in type and number, through a process called adult neurogenesis. Clémence's research will improve our understanding of the consequences of a high-fat diet on the plasticity of these cells in the hypothalamus and how, this in turn, affects the body's energy balance. She hopes that this understanding will lead to the discovery of novel therapeutic targets to treat obesity.

Dr Tracy Briggs, University of Manchester, 'Understanding single-gene disorders that lead to systemic lupus'

Lupus is a potentially life-threatening disease that causes the body to attack its own tissue. In many people, it is likely to be the result of a combination of both environmental and genetic factors. However, in some cases, a change in a single gene can cause the condition. Studies of such single-gene causes of disease are helpful to pinpoint which genes play a role in systemic lupus and help to

further our understanding of how the disease occurs. Tracy's research will determine the genetic basis of a familial form of lupus, which starts in childhood and predominantly affects the skin. By determining the chemical and genetic changes causing disease, Tracy hopes to determine the origins of lupus.

Dr Eva-Maria Graefe, Imperial College London, 'Engineering holes in quantum systems'

Progress in technology is often triggered by paradigm shifts in science that open up new and unexpected possibilities. Traditionally, loss, leakage, friction, and dissipation of energy from a quantum system were regarded as undesirable and to be avoided. Recent research however, focuses on the possibility of modifying systems via engineering these losses or holes and using them to our advantage. Eva-Maria's research concerns these leaky quantum systems, using a formalism known as non-Hermitian quantum mechanics. The systematic application of these ideas relies crucially on a detailed theoretical understanding of the mechanisms and effects of loss, on all scales. There is currently a lot of research interest in this field and many new experimental areas are opening up as a result. Eva-Maria hopes to provide new theoretical tools for the description and prediction of novel experimental applications, building on her own recent conceptual breakthroughs.

Dr Sneha Malde, University of Oxford, 'Searching for New Physics through measuring the differences between matter and anti-matter'

The universe began with a bang and energy came together to form equal quantities of matter and antimatter, but as

the universe cooled and expanded, its composition changed and antimatter disappeared, leaving matter to form everything around us. The LHCb experiment at CERN's Large Hadron Collider was set up to explore what happened after the big bang that allowed matter to survive. Sneha's research at LHCb investigates why the universe is matter dominated. The Standard Model of the universe cannot be the full picture as it fails to answer this and Sneha hopes that New Physics – the term coined to describe the fundamental theories that go beyond the Standard model – will be discovered in the data collected by the LHC experiments. By fully understanding the differences between matter and anti-matter (commonly referred to as CP-violation) that are allowed within the Standard Model, Sneha anticipates the breakdown of the standard model and the manifestation of New Physics. For the first time, the data from the LHCb experiment allows a precise measurement of this difference, the CP-violation parameter "gamma". Sneha aims to expand a powerful method of measurement she has developed, to exploit data which have not yet been analysed. She anticipates a significant step forward in the search for New Physics.

Pratibha Gai, Professor of Chemistry and Physics, Founding Professor of Electron Microscopy and co-director of the York Nanocentre at the University of York commented on the winners: *"We had an absolutely outstanding shortlist this year, and these four women – Dr Clémence Blouet, Dr Tracy Briggs, Dr Eva-Maria Graefe and Dr Sneha Malde exemplify perfectly what the For Women In Science Fellowships stand for. They are deeply talented,*

committed and hard-working scientists, who have huge passion for their research areas. I am excited to see what they all achieve in the coming year, and am confident that the influence and dedication of the female scientific community in the UK is well represented by these remarkable women."

This year L'Oréal joined the Government's 'Your Life' campaign, which encourages greater participation at all levels and particularly of young people in science, technology, maths and engineering. With women accounting for only 6% of the UK engineering workforce², from 2015 the For Women In Science programme will encourage applications from the engineering, mathematics and computer science fields and increase the number of fellowships to five worth £15,000 each. In addition, L'Oréal will dedicate a separate annual fund of £20,000 for the UK & Ireland Fellows community to support their work as STEM ambassadors, engaging the wider population – and particularly young people – in science.

These fellowships are designed to encourage, but also showcase, the amazing contribution female scientists are making. Considering this shortlist, I think we have achieved that.

The awards are run in partnership with the UK National Commission for UNESCO, the Irish National Commission for UNESCO, with the support of the Royal Society.

References

1 Research from WISE, based on a 2012 labour force survey analysis on women in 'STEM occupations' http://www.wisecampaign.org.uk/files/useruploads/files/wise_stats_document_final.pdf

2 Research from the Royal Academy of Engineering analysis of the Labour Force Survey, 2004-10 <http://www.wes.org.uk/statistics>