



# 2014 Winter Science Meeting for Starter Grant Holders

Monday 17 November 2014  
Academy of Medical Sciences, 41 Portland Place, London

*"I really enjoyed meeting other people at similar stages of their career and hearing about other people's research – it was very inspiring."*

# 2014 Winter Science Meeting for Starter Grant Holders

---

The Academy of Medical Sciences held its annual Winter Science Meeting for Starter Grant Holders in November 2014. It brought together our awardees to celebrate their scientific achievements; encourage them to network and help them to plan the next steps of their careers. Supporting our grant holders is an important part of the Academy's work in nurturing the next generation of medical researchers and developing the Fellowship of the future.

## Who attended

- More than 60 Starter Grants for Clinical Lecturers holders.
- Fellows of the Academy of Medical Sciences.
- Representatives of the scheme's funding consortium, including the Wellcome Trust, Medical Research Council, the British Heart Foundation, Arthritis Research UK and Prostate Cancer UK.
- Science communicators and patient representatives

"The chance to meet and chat with representatives from the funding bodies was fantastic."

## Agenda

The first part of the meeting was dedicated to communicating research excellence. Starter Grant awardees shared their research through 15 minute plenary talks, 3 minute 'soapbox' style presentations and poster displays. All presenters had the opportunity to present their work to a non-scientific audience, which included representatives from research charities and patient organisations. To facilitate meetings amongst our Starter Grant Holders, we also held a structured networking session before lunch.

The afternoon focussed on career 'next steps' with activities on funding, grantsmanship and career development. Professor Moira Whyte OBE FMedSci and Mr Alex Shortt, a former Starter Grant holder and current Wellcome Trust Clinician Scientist, offered their tips for successful applications. Dr Helen Petersen and Dr Katherine Sleeman shared their experience of setting up peer mentoring support groups. This was followed by a World Café Q&A that allowed Starter Grant awardees to discuss funding opportunities, grant writing and mentoring with the speakers and representatives from the Wellcome Trust, Medical Research Council, British Heart Foundation and Arthritis Research UK.

The meeting concluded with a keynote talk from Dr Jeremy Farrar OBE FMedSci, Director of the Wellcome Trust, who reflected on his career journey in academic medicine.

*A full agenda is included in Annex 1.*

"It's a great chance to network and think about planning your future in clinical science."



# Prizes awarded

---

## Oral and poster presentations prizes

Prizes were awarded to recognise the best presentations amongst the 15 minute oral plenary and 'Research in 3' talks, and the poster presentations. For the 'Research in 3' talks, presenters were asked to deliver a condensed research-focused talk in 3 minutes aided by only one PowerPoint slide. This was a new feature that was introduced to give more Starter Grants holders a chance to present their work orally during the Winter Science Meeting.

Presenters were judged on the significance and innovation of their research; the quality of their presentation; and whether the content was accessible to an audience comprising a wide range of clinical specialties and scientific disciplines. Presentations were judged by Academy Fellows from the Starter Grants Panel and cash prizes of £250 were awarded to the winner in each category.

## Communications prize

The communications prize sought to recognise excellence in conveying the context and importance of research to non-scientific audiences. This prize was judged by a panel comprised of Academy Fellows involved in science communications and patient groups. The winner received a day-long communications masterclass and will be supported by the Academy in the nomination process for several high-profile public speaking opportunities.

“A good opportunity to meet Fellows and discuss my research.”

## Oral plenary prize:

**Dr David Thomas, University of Cambridge**

*A Novel Gene Essential for Host Defence and Generation of Reactive Oxygen Species*

## 'Research in 3' prize:

**Dr Catriona Waitt, University of Liverpool**

*Pharmacokinetics of Antiretroviral Drugs in Breastfeeding Mother-Infant Pairs*

## Poster prize:

**Dr Rachel Clough, King's College London**

*A new method for quantification of aortic stiffness in vivo using magnetic resonance elastography (MRE): a translational study from sequence design to implementation in patients*

## Communications prize:

**Dr Kate Baker, University of Cambridge**

*From genes to brains and behaviour in X-linked intellectual disability*

*A list of prize judges is included in Annex 2.*

“Being judged for the communication prize was challenging and fun – as we get more senior, there will be more need to communicate at all levels.”



# Science focus

**Starter Grant holders from a diverse array of disciplines presented their research, below are brief insights into our prize winners' projects.**

## A Novel Gene Essential for Host Defence and Generation of Reactive Oxygen Species

**Dr David Thomas, University of Cambridge**

One way that the immune system deals with bacteria that infect us is to make molecules called reactive oxygen species. These molecules include hydrogen peroxide, the active component of bleach. It is known that such species are very anti-bacterial because people that cannot make them suffer from severe chronic infections, an illness called chronic granulomatous disease. However, not all of the genes that help our immune system make hydrogen peroxide have been discovered. We show that a gene that has never been described before, bc017643, is essential for this process. The gene is present in both humans and mice. Mice that lack this gene are very susceptible to the common infections salmonella and listeria, which can cause both food poisoning and more severe infections like meningitis.

We show that this gene makes a protein that interacts with proteins that are known to be important components of the reactive oxygen burst machinery.

Mice that lack bc017643 also lack other anti-bacterial defences that require reactive oxygen species to "switch them on". Being deficient in the bc017643 gene is not all bad, however. bc017643 deficient mice that are injected with cancer cells seem better at clearing them from their lungs than normal mice. Clearly this is an important new gene and understanding its function better will help us understand both how our immune system combats infection and how it tries to deal with cancer cells.

## Pharmacokinetics of Antiretroviral Drugs in Breastfeeding Mother-Infant Pairs

**Dr Catriona Waitt, University of Liverpool**

1.5 million HIV-positive women become pregnant every year, mostly in low-resource countries where exclusive breastfeeding is the only safe option for the child. WHO guidelines for the Prevention of Mother to Child Transmission of HIV (PMTCT) increasingly recommend that all HIV-positive pregnant women are started on life-long combination antiretroviral therapy (cART). Consequently the numbers of infants exposed to cART throughout pregnancy and breastfeeding will increase dramatically. Whilst this may reduce the rates of infant HIV infection to about 5%, emerging data show that children who become HIV infected despite maternal therapy have high rates of drug resistant HIV, and few treatment options. The amount of each drug which enters the breast milk and which is

transferred to the infant through feeding has not been clearly established. This is important as understanding how the drugs work in this population may lead to better use of existing drugs, or consideration of new combinations. In this Starter Grant, I have developed 1) Novel methods to accurately measure the drugs in breast milk and blood 2) Clinical infrastructure to sample the mother's blood and breast milk, and the infant's blood at intervals following directly observed dosing through a pilot study in Kampala, Uganda and 3) Have begun to develop the mathematical models necessary to fully explore this data and to be able to project the potential effects of changes in dose or frequency of drug administration.

## A new method for quantification of aortic stiffness in vivo using magnetic resonance elastography (MRE): a translational study from sequence design to implementation in patients

**Dr Rachel Clough, King's College London**

Aortic stiffness is an important risk factor in the development of cardiovascular disease. Applanation tonometry is the current measurement standard but this only provides spatially-averaged measurements. Assessment of specific aortic locations may be more important, particularly of the ascending aorta due the direct interaction this has with the heart. Magnetic resonance elastography (MRE) is a non-invasive imaging technique that measures material properties by studying the way shear waves, usually generated by a surface transducer, travel through biological tissues. The transducers are however expensive, uncomfortable and not available in all centres. The aim of this study was to develop a new transducer-free MRE sequence to measure aortic stiffness in patients, using aortic

valve closure, an intrinsic source for elastography, to generate shear waves in the aortic wall. This translational study was designed in 4 parts, from sequence design to implementation in patients. We showed for the first time that shear waves are generated in the aortic wall by aortic valve closure, and these can be measured accurately using our novel MRE technique. This methodology, which includes important local measurements in the ascending aorta, can be easily used in other centres because a transducer is not required. MRE has the potential to become an important screening test for early detection of cardiovascular disease and to risk stratify and optimise treatment for individual patients.

## From genes to brains and behaviour in X-linked intellectual disability

**Dr Kate Baker, University of Cambridge**

When a child is identified to have a neurodevelopmental disorder, such as epilepsy or learning difficulties, parents usually have a number of questions: what has caused these problems? will our child grow out of these problems, or will new difficulties arise in the future? what can we do to help our child overcome these problems? With rapid improvements in genetic technology, it is increasingly possible to answer the first question by identifying a specific cause. However, information about each different rare genetic disorder is

extremely limited, and we are just at the start of understanding how different genes regulate aspects of brain development and behaviour. This project aims to start putting these pieces of the puzzle together for rare inherited disorders of neurodevelopment. By studying individuals who share mutations in the same gene, striking similarities can be identified. In future, this research may lead to new ways of helping children and families affected by neurodevelopmental disorders, by understanding individual pathways from cause to outcomes.

# Feedback

---

90%

said they had opportunities to share their research.

68%

said they had appropriate opportunities to meet Fellows of the Academy.

100%

said they had appropriate opportunities to meet other Starter Grant holders.

100%

felt welcome to participate in the event.

100%

found the event useful.

97%

were able to network with others outside their own discipline.

"I enjoyed meeting other starter grant holders. The "speed dating" session (structured networking) was very successful."

"There was a friendly yet formal environment and a fantastic mix of people. Everyone was very approachable."

"I enjoyed hearing about diverse research in diverse disciplines and meeting a respectful and supportive peer group with great skills and insight."

"Whenever I get the opportunity to visit the Academy of Medical Sciences I am made to feel like a valued family member. There is a great atmosphere."

# The day in pictures

---



# Annex 1: Meeting agenda

---

9:00 Registration and poster setup

9:30 Welcome

**Professor Marina Botto FMedSci**, Professor of Rheumatology, Imperial College London;  
Chair of the Starter Grants for Clinical Lecturers Panel

9:35 Introduction to the Academy

**Dr Helen Munn**, Executive Director, Academy of Medical Sciences

9:45 Session 1: Oral plenary

**Chaired by Professor Marina Botto FMedSci**

**Dr David Thomas**, Clinical Lecturer in Nephrology, University of Cambridge

'A Novel Gene Essential for Host Defence and Generation of Reactive Oxygen Species.'

**Dr Timothy Hinks**, Clinical Lecturer in Respiratory Medicine, University of Southampton

'Innate and adaptive T cells in asthma: relationship to severity and therapy.'

**Mr Alan Karthikesalingam**, NIHR Academic Clinical Lecturer in Vascular Surgery, St George's Vascular Institute

'A Non-Invasive, Point-of-Care Diagnostic Tool for Ambulance Identification and Triage of Ruptured Abdominal Aortic Aneurysm.'

**Mr Greg Shaw**, Senior Fellow in Robotic Surgery, The Lister Hospital

The early effects of rapid androgen deprivation on human prostate cancer.'

11:05 Refreshments

11:30 Session 2: 'Research in 3'

**Chaired by Professor David Edwards FMedSci**

**Dr Sarah Atkinson**, Clinical Research Fellow, University of Oxford

'Anaemia, iron and infection in Kenyan children.'

**Dr James Ware**, Academic Clinical Lecturer, Imperial College London

'Interpreting the cardiac effects of titin truncations in health and disease.'

**Dr Debra Josephs**, Academic Clinical Lecturer in Medical Oncology, King's College London

'Monocyte activation and recruitment by IgE therapy against cancer.'

**Dr Patricia Roxburgh**, Clinical Lecturer in Medical Oncology, University of Glasgow

'Exploring the p53 pathway in prostate cancer.'

**Mr Angus McNair**, NIHR Academic Clinical Lecturer in General Surgery, University of Bristol

'Development of an evidence driven "core disclosure" set for patients undergoing colorectal cancer surgery.'

**Dr Catriona Waitt**, NIHR Clinical Lecturer in Clinical Pharmacology, University of Liverpool

'Pharmacokinetics of Antiretroviral Drugs in Breastfeeding Mother-Infant Pairs.'

**Mr Alistair Lamb**, Clinical Lecturer & Hon Urology SpR, University of Cambridge

'Hes6 drives a critical androgen receptor (AR) transcriptional program to induce castration resistant prostate cancer (CRPC) through activation of an E2F1-mediated cell cycle network.'

**Dr Roger Thompson**, NIHR Clinical Lecturer in Respiratory Medicine, University of Sheffield

'Modulation of host responses to infection by hypoxia.'

12:00 Structured networking

# Annex 1: Meeting agenda

---

12:50 Lunch break and poster session

13:10-14:00 Poster session 1 (odd numbers)

14:00-14:50 Poster session 2 (even numbers)

15:00 Session 3: Funding, grantsmanship and career development

**Chaired by Professor Wiebke Arlt FMedSci**

**Professor Moira Whyte OBE FMedSci**, University of Edinburgh

'Application process: tips from a reviewer and panel chair'

**Mr Alex Shortt**, University College London

'Application process: tips from a successful applicant'

**Dr Helen Petersen**, University College London

**Dr Katherine Sleeman**, King's College London

'Career support: Peer mentoring groups'

World Café Q&A – Laurie Landau and Fellows rooms

- Table 1: Funding opportunities - Medical Research Council and British Heart Foundation
- Table 2: Funding opportunities – Wellcome Trust and Arthritis Research UK
- Table 3: Grantsmanship – Professor Moira Whyte OBE FMedSci and Dr Alex Shortt
- Table 4: Mentoring – Dr Helen Petersen, Dr Katherine Sleeman (peer mentoring groups) and Ms Catriona Hands (AMS mentoring scheme)

Refreshments will be available during the World Café.

16:30 Session 4: Keynote lecture

**Chaired by Sir John Tooke PMedSci**

**Dr Jeremy Farrar OBE FMedSci**, Director, The Wellcome Trust

'A career in academic medicine'

17:00 Prize-giving and Closing remarks

**Sir John Tooke PMedSci, President, Academy of Medical Sciences**

- **Oral presentation prize**
- **'Research in 3' prize**
- **Poster presentation prize**
- **Communications prize**

17:15 Drinks reception

**Laurie Landau and Fellows rooms**

18:00 Close

“The meeting managed extremely well to cram a lot of different things into a single day.”

# Annex 2: Judges

---

## Oral plenary

- Professor Marina Botto FMedSci, Imperial College London (lead judge)
- Professor David Edwards FMedSci, King's College London
- Professor Freddie Hamdy FMedSci, University of Oxford
- Professor Ros Smyth CBE FMedSci, University College London

## 'Research in 3'

- Professor Marina Botto FMedSci, Imperial College London (lead judge)
- Professor Wiebke Arlt FMedSci, University of Birmingham
- Professor Hilary Critchley FRSE FMedsci, University of Edinburgh
- Professor John Iredale FRSE FMedSci, University of Edinburgh

## Poster presentation

- Professor Marina Botto FMedSci, Imperial College London (lead judge)
- Professor Wiebke Arlt FMedSci, University of Birmingham
- Professor Hilary Critchley FRSE FMedsci, University of Edinburgh
- Professor David Edwards FMedSci, King's College London
- Professor Freddie Hamdy FMedSci, University of Oxford
- Professor John Iredale FRSE FMedSci, University of Edinburgh
- Professor Ros Smyth CBE FMedSci, University College London
- Professor Moira Whyte OBE FMedSci, University of Edinburgh

## Communications prize

- Jackie Barron, patient representative
- Dr Sara Ellis, Association of Medical Research Charities
- Professor Sir Charles George FMedSci, Academy Fellow
- Professor Trish Greenhalgh OBE FMedSci, Queen Mary's University of London
- Professor David Gunnell FMedSci, University of Bristol
- Dr Sophie Lutter, Prostate Cancer Research UK
- Robin Porter, patient representative

“Another brilliant day – always a meeting to look forward to.”

“I expected to be inspired and I certainly was.”

# Starter Grants for Clinical Lecturers

Starter Grants for Clinical Lecturers offer funding of up to £30,000 to cover the cost of research consumables. The grants allow research-active Clinical Lecturers to gather data to strengthen their bids for longer-term fellowships and funding. So far we have supported 272 Clinical Lecturers through twelve rounds of funding, with grants totalling over £7.5 million.

We are grateful for funding for this scheme from the Wellcome Trust, the Medical Research Council, the British Heart Foundation, Arthritis Research UK, Prostate Cancer UK and the Royal College of Physicians.

**wellcome**trust



**Arthritis  
Research UK**



Academy of Medical Sciences  
41 Portland Place  
London W1B 1QH

+44 (0)20 3176 2161  
grants@acmedsci.ac.uk  
www.acmedsci.ac.uk/careers/funding-schemes



@AMS\_Careers