Registered Charity
No 274839

Wessex Medical Research

Funding research to fight disease

The newsletter of WESSEX MEDICAL TRUST

Autumn **2025**

Changing of the Guard

Peter Dawes will be retiring as Trust Director at the end of the year on completion of 20 years in the post. Previously Company Secretary of warshipbuilder Vosper Thornycroft, he was persuaded to take the part-time position in 2005 'for a couple of years' at a time when Wessex Medical Trust was experiencing a lean period. He clearly liked it and over his time at the charity has overseen the award of grants totalling nearly £5.7 million to early career researchers in Southampton.

One major development during his time was the annual presence at the New Forest Show, which first happened in 2015 and has continued (apart from a two year break during the Covid-19 crisis) ever since. The charity has twice won the prize for 'Best Trade Stand', in 2016 and again in 2025.

Peter will be succeeded as Trust Director by Jo Trueman who has worked for many years in the Faculty of Medicine and is well acquainted with the needs of medical researchers.

Chair of Trustees, Professor Sir Charles George, commented: *"The charity aims to support early career researchers. As its Director, Peter has managed the award of 32 PhD studentships,25 of which were joint-funded, plus 114 Innovation Grants. All were handled with his usual panache. He has also marshalled numerous teams of researchers to educate and fascinate visitors to the New Forest Show. This year we had over 1500 visits to our stand. Thank you Peter".*

Intercalated medical degrees

For the first time, in 2025 we offered two intercalated degree grants of £14,250 each to students currently undertaking their undergraduate medical studies.

Using this grant, a student who has completed their third year of undergraduate studies is permitted to take a year out (funded by ourselves) to pursue and complete an intercalated degree in Southampton related to their overall studies. Typically this may result in them being awarded an MSc or a Masters in Medical Science. Once the year has been completed and the degree hopefully awarded, the student returns to the mainstream undergraduate medical course. The particular relevance is that historically, this has been the route followed by clinicians who are also aspiring medical researchers and previous outcomes have been very successful. However pressures, particularly financial, have seen a severe drop off in applicants in recent years. Our grants are intended to help address this decline and help add to the number of clinicians who, in the years to come, will conduct the medical research needed by future generations.

The impact of a WMR Innovation Grant:

Dr Adnan Khan reflects on his journey from Wessex to Iowa via the Fulbright Commission

The COVID-19 pandemic caused a significant decline in the number of grants awarded by UK medical research charities. It became increasingly difficult to secure funding for early career clinician-scientists who had to balance their clinical duties with primary research. Thankfully, I was one of few researchers to be awarded a WMR Innovation Grant (of £20,0000) towards the end of the pandemic. At the time, I was nearing the end of training as an academic ophthalmologist (NIHR Clinical Lecturer) at the University of Southampton, specialising in retinal diseases with a research interest in age-related macular degeneration (AMD). AMD is a progressive disease of the central retina (macula) that results in the loss of central vision, predicted to affect 288 million people worldwide by 2040.

Dr Adnan Khan (second from right) with colleagues at Iowa

AMD has a complex association with a range of risk factors, including diet, smoking and genetics. There has been increasing evidence that ageing is associated with elevated levels of systemic inflammation and that the age-related decline of immune system regulation (immunosenescence) contributes to AMD progression. Together with Professor Andrew Lotery at Southampton, I designed a clinical study to investigate whether markers of immune system ageing are associated with the progression of AMD to its advanced stages (e.g. 'wet' AMD that requires regular eye injections to treat). The WMR Grant facilitated, within 18 months, the recruitment to this study of 60 patients with different stages of AMD (including control participants). Immune system profiling was undertaken on every patient based on provided blood samples in addition to high-sensitivity proteomic analysis. This pilot study (known as the 'Immuno AMD Study') allowed collaboration with Dr Andrew Shapanis and Prof Paul Skipp at the nearby Centre for Proteomic Research. Interestingly, Dr Shapanis was later awarded a WMR Innovation Grant to develop an early cancer blood diagnostic system, having previously been funded by them through his PhD studentship. The Immuno AMD Study found proteomic markers of immunosenescence in the immune cells of AMD patients compared to control participants. In addition, a specific high-risk imaging marker of AMD progression (known as reticular pseudodrusen) was associated with proteomic markers of immune senescence and heightened inflammation.

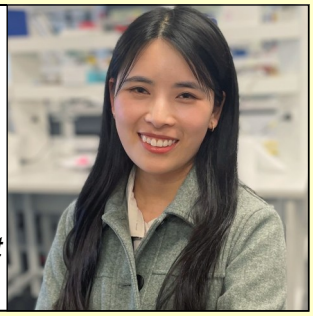
This study allowed me to secure a one-year Visiting Scholar Award from the US-UK Fulbright Commission. I collaborated with Prof Robert Mullins at the Institute for Vision Research, University of Iowa. His partnership with the Iowa Lions Eye Bank has created a programme that has provided more than 1600 donor eyes since 2004 to undertake cutting-edge eye research, including into AMD. The preliminary results from the Immuno AMD Study at Southampton allowed me to unite, combine and strengthen my research into immune system ageing with donor eye tissue research at Iowa using the opportunity provided by the Fulbright Commission. The increased impact of this research will allow for further development into translational studies and greater dissemination.

On returning to the UK, I rejoined Moorfields Eye Hospital (where I had worked previously during my sub-specialty training), as a clinical research fellow. I am now carrying out clinical trials in AMD with the Chair of Retinal Studies at University College London, Prof Sobha Sivaprasad, who is a long-time collaborator of Professor Lotery. Wessex Medical Research provided me with an Innovation Grant at a quite desperate time towards the end of the pandemic and I will be forever grateful for that opportunity. Interestingly, on hearing the news at the time my former PhD supervisor at Imperial College London, Professor Andrew George, revealed that he had also received funding from WMR during his work with Freda Stevenson at Southampton in the late 1980s! I am now aiming to proceed with my research work with funding from the large UK research councils.

Innovation Grants

This year, we have been able to make five Innovation Grants, each of up to £20,000, to early career researchers. Details of the recipients and their particular research projects are set out below.

Dr Chengchen Zhang



Faculty of Engineering and Physical Sciences

"Artificial Swarm Intelligence of Microbeads for Revolutionising Biomarker Detection."

This project seeks to develop a speedy, low-cost lateral flow test for the detection of TB biomarkers. It is based on magnetic microbeads coated with antibodies that self-assemble into specific patterns when exposed to a magnetic field.

Dr Kif Liakath-Ali

Faculty of Environmental and Life Sciences

"Investigating the Role of FUS Splice Isoforms in Human Neurons and their Implications in Neurodegeneration."

This project will map the gene activity of different FUS (Fusion in Sarcoma) isoforms in the human brain and test their functional significance on cultured neurons.

Dr Josh Bilson

Faculty of Medicine

"Establishing a Novel Panel of Biological Ageing Biomarkers for Retrospective and Prospective Analysis – Southampton Ageing Biomarker Research (SABRE)."

Ageing affects everyone differently, and many older adults in the UK are living with obesity. This project will develop a local panel to measure biological age using stored samples, new lab methods and data analysis.

Dr Alison Hill

Faculty of Medicine

"Developing a novel multi-parameter flow cytometric assay for immunophenotyping T-cells in controlled human infection models."

Controlled human infection models are important for the study of how the immune system protects against disease. This study will use these to investigate for T cells responsible for protecting against whooping cough and meningitis.

Dr Luis Guerra

Faculty of Environmental and Life Sciences

"Evolutionary-Driven Discovery of Novel Agonists for the Treatment of Alzheimer's and Parkinson's disease."

This project aims to discover new dual-acting compounds by looking at how they evolved in certain animals, with the long-term goal of developing treatments for neurodegenerative diseases such as Alzheimer's and Parkinson's diseases.

PhD Studentships

We are pleased to report that in the Spring of 2025 we were able to award four PhD studentships. The students have now been recruited and began their studies on October 2025. Details of the projects are as follows:

"Identifying regulators of the GUT-muScle axis to improve muscle resilience across the lifecourse: GUTS."

Proper muscle growth in babies and muscle maintenance in adults are essential for good health. The reasons for improper muscle growth/maintenance are unknown. We have evidence that the microbes (micro-organisms) in our guts contribute to muscle decline. This project will assess links between gut-derived chemicals (metabolites) and muscle health. The researchers will identify microbial metabolites in over 4,000 urine samples obtained from babies and older people. Metabolites with growth promoting/inhibiting properties will then be studied in a muscle cell culture model.

Principal supervisor **Dr Colleeen Deane**

Lecturer in Muscle Cell Biology

"Investigating epithelial MHC-Class II expression and anti-tumour immunity in lung cancer."

The introduction of treatments such as immune checkpoint blockade (ICB) has greatly improved the survival of patients with lung cancer. However, these treatments fail in many people because the cancer cells evade the immune system. This project will investigate how cancer cells hijack neighbouring normal cells to "hide" from specific immune cells. We anticipate that overcoming the "hiding" tactics will enhance the effect of ICB and increase patient survival rates.

Principal supervisor **Dr Christopher Hanley**

Associate Professor in the Centre for Cancer Immunology

Jointly funded with the Centre for Cancer Immunology.

"Application of human pluripotent stem cell-derived chondrocytes to enhance articular cartilage repair"

Articular Cartilage (AC) is a shock absorber that facilitates movement of joints. AC is susceptible to damage from trauma and daily wear and tear. If left untreated, this can lead to osteoarthritis and the need for joint replacement. Early-stage damage can be treated by implanting the patient's own AC cells which have been grown in the laboratory. This requires two surgical procedures and has variable results. This novel project seeks to generate more robust cartilage by using flexible stem cells.

Principal supervisor **Dr Franchesca Houghton**

Associate Professor in the Faculty of Medicine

Jointly funded with Rosetrees Trust.

"Next Generation Ophthalmic Testing: "Continuous Psychophysics" for Rapid and User-Friendly Assessment of Visual, Movement, and Cognitive Disorders."

Neuro-ophthalmology (nerve-eye) disorders include Age-related Macular Degeneration (AMD), Glaucoma and Cranial Nerve Palsies. These conditions are common and demand substantial NHS resources. There is a need for a time-efficient and reliable method to distinguish and quantify the deficits in such patients. We have evidence that tracking a moving target on screen may provide a solution that takes minutes to perform. The study will assess whether that technique can differentiate the deficits and predict disease progression.

Principal supervisor **Dr Guido Maiello**

Lecturer in the Faculty of Environmental and Life Sciences

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ASSOCIATION OF MEDICAL RESEARCH CHARITIES

We are proud to be a member of the Association of Medical Research Charities and our last regular Peer Review Audit took place in 2020.

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PEER REVIEW AUDIT
2020

Hope
FUNDING RESEARCH FIGHTING DISEASE for Guernsey

Mailpoint 420
Level B
South Academic Block
Southampton General Hospital
Southampton
SO16 6YD

E-mail:
enquiries@wesmed.org.uk

www.wesmed.org.uk