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Wessex Medical Research

Funding research to fight disease



The newsletter of WESSEX MEDICAL TRUST

Autumn 2021

Research Excellence Framework



Dr Nick Evans is Associate Professor in Bioengineering with a joint appointment between the Faculty of Medicine and the Faculty of Engineering and Physical Sciences at the University of Southampton, having been first appointed in 2011. He is a previous recipient of both an Innovation Grant and a PhD studentship (as supervisor) from Wessex Medical Research and has recently been appointed Chair of its Scientific Advisory Committee which evaluates and ranks all applications for grants. Here he reflects on his involvement in the recent REF submission by the University of Southampton.

March 31st this year marked one of those milestones in the life of universities up and down the country—the submission of the REF. The REF—or the Research Excellence Framework—is an exercise that takes place every seven years or so in the UK to work out how good the research is that each university is doing, and to allocate funding based on the quality of this research. Think of it as a kind of governmental accounting exercise to find out whether tax-payers money has been invested well in research done at UK universities. Or a big exam to test how well the university is doing at research.

As academics, we all like to be sceptical about the REF, sometimes to the point of cynicism. After all, who likes exams or audits? But it does have some very important outcomes. It gives a picture of the quality and amount of research that each university is doing at a given point in time, and it forces academics like me to explain how their research is having a real impact on the world around them.

The first part is done by collecting and submitting a range of scientific articles (we call them ‘papers’) as an example of the research academics at the university have done. It’s really difficult to measure how good research is, and there is no easy way to do it objectively (another reason why scientists hate it!). So in the end it comes down to peer-review. In short, collections of experts—often bigwigs—sit in a room, look at the papers in their particular area of research (unit of assessment), and decide what score they get out of 4. Simple as that. At the end, the scores are totted up and the university as a whole gets a grade.

But papers are only part of the story. Many people joke about the Ivory Tower, and the mysterious and trivial occupations of scientists or researchers. In fact, the very word ‘academic’ has developed a pejorative meaning over the years—think of Darwin with his decades-long obsessions with barnacles and earthworms! As a society we need to justify spending our hard-earned taxpayers’ cash. So the REF brings in the concept of ‘Impact’. In this part of the REF, we researchers have to tell stories about how the research we are doing is *impacting* society. We’re lucky at Southampton, and in the Faculty of Medicine, that we have lots of impactful stories to tell. From developing new drugs to fight coronavirus, developing an evidence-base to show that air pollution does kill, to continuing to develop cures for cancer and making our bones heal faster—we are ahead of the curve. Although some stories are a little bit harder to tell (who would have thought the beaks of Darwin’s finches would have led to the theory of evolution?) telling these stories periodically gives you—the public and our donors—the confidence that we’re doing a good job. We want you to know this. So, here, in this newsletter we hope you can find out a bit more about how modest investment in research can lead to tangible results in medical science at the University of Southampton and beyond.

Former Grant Recipients

Following the success of our introduction last year, we have again asked a number of former grant recipients to tell us how they viewed the importance of a WMR grant in the light of their subsequent careers.



Professor Tom Fleming

Tom Fleming is Emeritus Professor of Developmental Biology within the School of Biological Sciences at Southampton. Together with his colleague Dr Arthur Wild, in 1998 he received a small grant of £16,000 from Wessex Medical Research for a project entitled “The influence of maternal diet on early development and fetal programming”. He writes:

“I’m very grateful to have received this grant from Wessex Medical Research, it was just the support we needed to probe a new direction in our research on the importance of maternal nutrition at the time of conception on long-term health of offspring. With rodents, we were able to show a poor diet just when a new embryo is formed causes increased risk of adult chronic cardiovascular and metabolic disease when that embryo becomes an adult. This start-up support allowed us to get major funding in subsequent years on the need to protect the early embryo from adverse conditions such as deficient nutrients. The subject has since progressed and the time around conception is now recognised in both humans and mammals as one susceptible to environment, linking developmental experience with disease risk. Thank you WMR!”

Professor Tom Wilkinson

Tom Wilkinson is Professor of Respiratory Medicine at the University of Southampton and leads the Respiratory Theme of the National Institute of Health Research Southampton Biomedical Research Centre. He leads a number of programmes developing drugs and vaccines to reduce the impact of respiratory viral infection including global studies in COVID-19. In 2020 he set up the national COVID -19 drug development platform ACCORD. He leads a group of over 30 clinicians and researchers at Southampton and internationally.



In 2008 he moved from London to set up his research programme in Southampton. His first grant here was from Wessex Medical Research helped establish a new programme of research into infection in the lung- “Ex-vivo modelling of infection and therapeutics in COPD and asthma”. The new models that grant helped develop have formed a key aspect of the ongoing work to develop new drugs for asthma, COPD and COVID-19.

“Moving to Wessex from London was a big step in 2008. Getting my first grant from WMR was such a key step in helping me establish my work here and to getting those vital first results which have seeded so many exciting opportunities. That initial boost was the platform for 10 years of successful research in such a vital area for global health.”

PhD Studentship

We are pleased to report that in the Spring of 2021 we were able to award a further PhD studentship. The award was for some £90,000 and will be spread over three years. The student has now been recruited and they began their studies in October 2021. Details of the project which has been formally peer reviewed in accordance with the requirements of the AMRC) are as follows:



Dr Zoë Walters is a Lecturer in Translational Epigenomics and Children with Cancer UK Research Fellow at Southampton. She has been awarded a three year PhD studentship (as supervisor) jointly funded with Rosetrees Trust for a project entitled:

“Investigating the therapeutic efficacy of EZH2 inhibitors for the treatment of diseases with pathogenic histone modifying enzyme mutations.”

This study aims to identify how changes in a particular enzyme gene during childhood, which can lead to disease, may be targeted by readily-available drugs.

Selected current PhD Students

Ayse Ertay

is a postgraduate research student in Biological Sciences at the University of Southampton. Her PhD project, which was funded by Wessex Medical Research in 2017 over four years, is entitled “Functional Analysis of Potential Therapeutic Target(s) in PTEN-inactive Triple Negative Breast Cancer” and she has been supervised by Dr Yihua Wang. Ayse explains:

“Triple negative breast cancer (TNBC) is the most aggressive type of breast cancer and is difficult to treat. Phosphatase and tensin homolog (PTEN), a

gene which is known to suppress the growth/survival of the tumour is frequently lost in TNBC. Analysis was performed to identify a potential biomarker or a targeted therapy for PTEN-inactive TNBC. A gene known as WDHD1 was one of the identified candidate genes that was essential for the survival of PTEN-inactive TNBC cells and this was scientifically evaluated.”

“The funding from Wessex Medical Research helped us to publish a paper of my PhD project that demonstrated the mechanism of WDHD1 in PTEN-inactive TNBC. Thus, as an essential gene for the survival of PTEN-inactive TNBC cells, WDHD1 could be a potential biomarker or a therapeutic target for TNBC.”



Dr Yihua Wang



James Parkin

In 2019, Wessex Medical Research awarded a PhD studentship to Dr Matthew Loxham (as supervisor) for a study entitled: “Toxicity of Particulate Emissions from Braking Systems – A Potential Role in Idiopathic Pulmonary Fibrosis”. His student, James Parkin, has now completed two years of his four year course.

James’ studies to date have compared the effects of brake particulates (dust) with those from other sources (eg road, tyre and exhaust systems) and initial findings show clear differences in the cellular effects of each particulate type, especially how they impact on the respiratory system. James will be extending and consolidating his work over the next two years. He comments:

“I am grateful to Wessex Medical Research for funding my PhD studies. I have already had the chance to present my work at a major conference, the British Association for Lung Research’s annual meeting, where I was awarded second prize in the competition for best oral presentation”.



Dr Matthew Loxham



In Memoriam

Since our last newsletter, we have received donations in memory of

Dave Clark and Dorothy O’Connell

We extend our sympathy to their families and friends for their loss and our gratitude for the donations received.

For some time now, we have been promoting the idea of recycling used printer cartridges for the benefit of WMR. This is an ongoing appeal so please dig around and see what you can find.

You can send them direct to recycle4charity (go to their website at www.recycle4charity.co.uk for freepost instructions) but remember to tell them it's for the benefit of Wessex Medical Research and give our reference number (C16805).



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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Innovation Grants

We are pleased that we have been able to reinstate our Innovation Grants (of up to £20,000 each) for early career researchers. Three grants were awarded this year, each dedicated to the memory of Joyce and Sydney Wilkins, and details are as follows:

Dr Nicole Prior

Faculty of Environmental and Life Sciences

“Chemically defined biomimetic hydrogels to support human liver and pancreas organoids for the development of clinical therapies”

Organoids are human tissue cell clusters grown in 3D conditions in the laboratory which can overcome the inaccessibility of live human samples in various organs of the body. A key component of organoid systems is the extracellular matrix (ECM) which acts as a structure to support the 3D culture. However, the ECMs for pancreas and liver organoids are not chemically defined and this study will aim to overcome that limitation and provide a more reliable arena in which to undertake this specific type of research.



Dr Adnan Khan

Faculty of Medicine

“A clinical study evaluating biomarkers of immunosenescence in the progression of Age Related Macular Degeneration (The Immuno AMD Study)”



AMD is the most common cause of blindness in the developed world and affects the central retina, a part of the central nervous system. This study will aim to help diagnose with a simple blood test which AMD patients are likely to progress before patients develop the sight-threatening form of the disease.

Dr Franklin de Nobrega

Faculty of Environmental and Life Sciences

“Using phages to give new life to old antibiotics against superbugs”

Human health can change dramatically due to the emergence of untreatable, antibiotic-resistant bacterial infections. If left unaddressed, this problem has the potential to make even minor bacterial infections and routine surgery life-threatening. This study will aim to exploit the ability of viruses to attack bacteria to increase the susceptibility of bacterial cells to antibiotics.



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