

Tenovus Tayside versus COVID-19

With generous support from the Northwood Charitable Trust and in response to the epidemic, Tenovus Scotland Tayside embarked on an expedited process to fund COVID research projects. On 30 April 2020, the call went out for researchers in the region to submit proposals, for funding of up to £20,000, to support individual COVID-related projects.

The Tayside Local Scientific Advisory Committee received many outstanding funding applications, from which five were shortlisted. These were rapidly approved by the National Scientific Advisory Committee and received almost £100,000 in total funding starting in June 2020. The projects led by Dr John Foerster, Dr Yogesh Kulathu, Dr Daniel Morales, Dr Amelia Shoemark and Professor Divya Jindal-Snape are now well under way, having been prioritised by the host institution

(University of Dundee), as essential research activity during lockdown.

These projects range from investigations of the fundamental biological process of infection by COVID, through health informatics analysis, to the impact of the pandemic on training healthcare professionals. Dr Foerster's project is learning lessons from bats, which when infected lack the debilitating consequences seen in many people following COVID infection. The goal is to develop a vaccination that could be used in combination with preventative vaccines, to reduce excessive and potentially harmful COVID immune responses. Dr Kalutha is leading a project that might enable the development of alternatives to COVID vaccines, medications that will target a specific protein in the virus blocking its ability to replicate. Dr Shoemark's project examines the initial

binding event of the virus in the nose, to better inform who is at greatest risk of infection and provide a potential therapeutic target for COVID-19 and any future diseases caused by coronaviruses. Dr Morales is using primary care data to study the spread of the COVID virus in the community, allowing more effective public health approaches. Finally, Professor Jindal-Snape's team is establishing the needs of trainee healthcare professionals (studying Medicine, Nursing or Dentistry) to optimise their transition into the sector at a time of unprecedented requirement.

We are excited to learn about the outcomes of these COVID research projects, anticipating that they will have an internationally important impact. I would like to pass on our thanks to all those who support Tenovus Scotland, in particular the Northwood Trust.

Professor Tim Hales

Mark Williams describes how funding from Tenovus Scotland has considerably enhanced the research capabilities of his developing research group and other research groups in the department of Biological & Biomedical Sciences, at Glasgow Caledonian University (GCU).

My research group focusses on Acute Myeloid Leukaemia (AML), a genetically diverse and common blood cancer in older adults. AML is currently incurable, with only 1 in 5 AML patients surviving 5 years or more following diagnosis. Our research is decoding the mechanisms driving therapy resistance, a major contributing factor towards poor clinical outcomes in AML patients. Specifically, we are determining how cells residing within the bone marrow, including stromal/supportive and immune cells, shield leukaemic cells from the killing effects of therapy,

thereby promoting therapy resistance. Through links with AstraZeneca and Genentech, we are evaluating the ability of new targeted drug combinations to overcome therapy resistance in AML.

Due to Tenovus Scotland's generous funding, we have been able to purchase an advanced technological platform – a flow cytometer. Having access to this piece of equipment is allowing us to identify potentially targetable pro-survival pathways, responsible for driving therapy resistance in leukaemic cells. Furthermore, this platform is allowing us to quantify the level of leukaemic cell killing induced by novel drug combinations accurately, enabling us to ascertain the effectiveness of these drug combinations.

Miss Katie Miari, a PhD student in my research group, is developing a 3D system to accurately model and target



Mark Williams and Katie Miari with their new flow cytometer

AML–bone marrow interactions, and has been using this instrument for her studies. Katie had this to say about it: *"The flow cytometer is a great tool to have access to for my PhD studies. This platform is allowing me to undertake advanced analysis of leukaemia cell function, including cell viability/health, cell proliferation, and the expression of proteins and survival pathways, involved in therapy resistance. This is enabling me to generate high-quality research data, which in the long-term could have clinical applicability to improve outcomes in AML patients".*

Face to Face

with Professor Sue Pyne, from the Institute of Pharmacy & Biomedical Sciences, University of Strathclyde

You recently became Chair of Tenovus Scotland's National Scientific Advisory Committee, how long have you been actively involved in the charity's activities?

I joined the Strathclyde regional Scientific Advisory Committee (SAC) in March 2012. As a regular SAC member, my role has been to review grant applications (twice a year) and, with my SAC colleagues, make recommendations for funding decisions. I also shortlisted and interviewed Tenovus-funded PhD applicants.

As a very active researcher yourself, have you any thoughts about changes – if any – you might want to make to Tenovus' research funding direction.

My experience of Tenovus is that it attracts high quality applications that are very diverse. I fully endorse the principles that awards should support primary data generation (to underpin more significant applications), novel collaborations or 'blue sky' ideas applied to medical challenges and, especially, new and junior academics.

You are a Professor in the Institute of Pharmacy & Biomedical Sciences – are you, at base, a Chemist?

Although my first degree was in Biochemistry & Chemistry, I'm essentially a biochemist/cell biologist with particular expertise in the role of lipids in cell communication in health and disease. My research focus since the mid-1990s has been on sphingolipids, particularly sphingosine 1-phosphate (S1P). It's really intriguing, being essential for many normal body functions but also being involved in several diseases.

How did you get started in research? What or who fired you up? Was it a teacher, or someone else?

I've always enjoyed sciences – and that must have come originally from my biology and chemistry teachers, at school, who were great. My first degree at the University of Nottingham fuelled my interest in membranes and lipids. I wanted to follow my curiosity and know more, so I specialised in lipids and cell communication (signalling) in my second degree at the University of Birmingham. I didn't have a grand plan of going into research but an opportunity arose for a research job at the University of Glasgow and I took it. As new ideas arose in the research field, I sought to establish an independent research programme, which developed further into sphingolipids and signalling. It's been a rewarding but challenging career path. Also, it's been somewhat unusual in that I've collaborated extensively with my husband, Nigel, to build this research area. We've trained many PhD and Masters students in our shared laboratory at the University of Strathclyde and been fortunate to travel the world together for conferences and other work-related experiences.

In addition to having a fairly typical academic working life, teaching undergraduates, supervising research students and maintaining your own research projects, you were also the Institute's Director of Equality & Diversity. Is this an area of research opportunity in which you have a special interest?

I got involved with Equality and Diversity matters around 2010/11 when I was invited to contribute to the University's first Athena SWAN award application. This scheme was developed by the UK Equality Challenge Unit (now part of Advance HE) to address the barriers that women face in succeeding in academia – far fewer women



than men attain senior positions. I'd experienced gender-related discrimination and unconscious bias at various stages in my own career and I empathised with other women who were having similar experiences to mine. I wanted to contribute to change 'on the ground'. So I introduced and led a group of colleagues in this project at departmental level (2012-17), changing some working practices that inadvertently negatively affected women and developing new initiatives to support women's progression in science/academia, starting at undergraduate level. More recently, I've contributed to a University-wide research and change initiative, STEM Equals, which extends to other minority groups, including LGBT+, while remaining engaged with the challenges women face through the University's Women in Science and Engineering (WISE) group. There's still a lot that needs to change – and not just in academia.

Finally, what do you do in your 'leisure' time?

I love to travel and experience other cultures and countries. Sometimes, this is combined with an international sporting event as I'm a sports fan. At home, I enjoy gardening, DIY, crafts and reading. In good weather, I also go cycling or walking.

PILOT STUDIES EXPLAINED

Medical research is generally quite costly, requiring funding for staff, materials and equipment. Major funding bodies will not commit funds without some basic groundwork to suggest that further study is justified. Pilot studies undertake this groundwork, establishing the feasibility of a proposed research programme and informing its design and execution.

Pilot-funding success stories

1 Body repairs

Dawn Thompson was first awarded Tenovus funding in January 2015 to research the molecular processes controlling inflammation, specifically investigating those that facilitate tissue healing. At that point she was a postdoctoral scientist trying to make the transition to an independent researcher but with limited funding resources available. Here she tells us what has happened since.

“Obtaining a small project award from Tenovus allowed me to generate essential pilot data, uncovering important information about how the body repairs itself after injury or infection.

“These findings were subsequently used to apply for more substantial grant funding to the British Heart Foundation to investigate how these inflammatory processes can be targeted as a treatment for



Dawn Thompson

cardiovascular disease. My application was successful and has allowed me to continue in this field and develop as an independent scientist and,

five years on, become a Lecturer in Medical Sciences at the University of Aberdeen.

“None of this would have been possible if it were not for the small project grant initially awarded to me by Tenovus. These small pots of money are essential for the development of new ideas and are an important resource for early-career researchers to find their niche in an extremely competitive market. As a newly appointed Lecturer (from January 2020), I have been lucky to be the recipient of a second small project award to investigate new avenues for therapeutic intervention in the treatment of Type 2 diabetes. This will allow me to broaden my research portfolio and generate new data that can be used to apply for larger grants to employ a postdoctoral scientist, both to continue the research and train the next generation of scientists.”

2 Improving treatment for liver cancer

The number of people in Scotland diagnosed with liver cancer has tripled since the early 1990s and unfortunately, the treatments offered to most of these patients have not changed substantially during this time. In 2014, Dr Luke Boulter set up his laboratory at the University of Edinburgh to try to change this and discover new ways to stop liver cancer growing.

“Starting a lab is particularly challenging and when I applied to Tenovus Scotland for a pilot grant that I could use to start my research, my lab was in its infancy.

“Thanks to Tenovus Scotland, I was able to investigate new medicines that, in the future, could be useful in treating liver cancer and we are now combining these medicines with chemotherapy to see whether they are effective in different types of liver cancer.

“Our work to date looks promising and in our laboratory we can reduce



Dr Luke Boulter (3rd from left) and his team

how quickly liver cancers grow – the next step will be to see whether these approaches could be applicable to people.

“I cannot exaggerate how important the Tenovus Scotland funding was. It allowed me to start my scientific research that has ultimately led to me receiving £2.5M from other larger charities like Cancer Research UK and the Wellcome Trust and acted as a springboard to move my new research forward. In 2020, I was awarded the Royal Society of Edinburgh’s Patrick Neill medal for our work on liver cancer and I now lead a thriving liver cancer research group. These things would not have been possible without the initial generosity of Tenovus Scotland.”

Coronavirus and Tenovus Fundraising

Covid-19 has affected us all to a greater or lesser extent. We now wear masks to go to the shops, disinfectant hand gel has become the latest handbag necessity and social distancing has made us realise that pavements are never quite wide enough! The National Fundraising and Marketing Committee has continued to meet via Zoom, which brings its own challenges!

This committee was set up to coordinate activities among all the regions and to maximize our fundraising and marketing potential throughout Scotland.

Due to the pandemic, each region has had to postpone events they had planned eg Lawyers' Evenings in Grampian and Tayside and a Supporters' Evening in Strathclyde.

During lockdown at home, we were able to clean out our cupboards or practise our putting in the lounge, but at Tenovus Scotland we have been working on developing a National Action Plan aimed at building on our communication with all the Tenovus Family – supporters, regional committees, researchers and scientific advisors.

In addition, the Tenovus Scotland website (www.tenovus-scotland.org.uk) has been updated and a Twitter account (@TenovusScotland) is now up and running.

All regions are in the process of updating the database and we would encourage you all to keep us advised of changes of address (including email). We very much look forward to welcoming you to some of the future planned events and thank you for your continuing support for this unique, worthwhile cause.

It should be noted that some of the Tenovus projects are targeting Covid-19, supported by your generosity, leading us with some reassurance, to a future without masks! [See page 1 for information from Tayside on this.]

*Caitriona Donald and Susan Tolmie
Members, National Marketing & Fundraising Committee*



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Tenovus Scotland National Awards

In addition to providing funding to support research, Tenovus Scotland offers a small number of National Awards in recognition of research excellence. Two awards were made in 2020.

Lady Margaret MacLellan Award – a biennial award for 'outstanding contributions to medical science in Scotland'. The chosen topic area for 2020 was 'Communicable Diseases' and the award has gone to **Professor John Dillon** from the University of Dundee in recognition of his work in the field of hepatitis, particularly Hepatitis C. His early work characterised the epidemiology of Hepatitis C and led to the development of new models of care

provision such that, by the end of 2019, NHS Tayside had diagnosed 90% of cases and treated 80% of eligible patients meeting, 11 years early, the WHO target for reducing Hepatitis C. The new models of care are being widely copied across Europe and beyond.

Lady Illingworth Trust Award – a 5-yearly award for an outstanding contribution to the understanding of the disabilities which affect elderly people within the British Isles. The award has gone to **Professor Gillian Mead** from the University of Edinburgh for her work on post-stroke rehabilitation. In particular, she pioneered physical fitness training for stroke survivors, working with exercise

professionals to develop pathways into community exercise. She has also undertaken considerable research into post-stroke fatigue, showing definitively that anti-depressant therapy is not helpful for this symptom. More recently she has developed interests in palliative care following stroke and has a world-wide reputation in this field.

Congratulations to both award recipients – the awards will be presented once current restrictions are lifted. Several other nominations were received for each award, any of which would have been worthy winners. The judges had a hard task indeed!