

Your Impact: Medical Innovation

WINTER/SPRING 2024

Dear friend,

We're so proud of our innovative Aberdeen family. Our trailblazing researchers are at the forefront of cutting-edge research, but it's only thanks to people like you and your generous donations that this research can continue.

We're excited to share an update on how your donations to medical research and our Innovation Fund have been put to great use! Your kindness means the world to us, and we can't thank you enough.

With best wishes,

Katrina Allan,

Head of Alumni Relations & Regular Giving

“Mini Brains” Help to Advance Dementia Research

Generous donations to Alzheimer's and Dementia Research Funds have been supporting new PhD projects under the supervision of our neuroscientists Dr Daniel Berg and Dr Eunchai Kang.

There are two key areas that their research focuses on – the understanding of how neural stem cells are involved in Alzheimer's disease; and determining the role of the brain's immune system in Alzheimer's disease. One state-of-the-art technique that they are using is the culturing of brain organoids.

This technique allows for the generation of small human brain-like structures, “*mini brains*”, that can be cultured in a dish for a long period of time. Using this method, they can study both the behaviour of the neural stem cells and examine how the immune cells affect the neurons in the diseased brain.

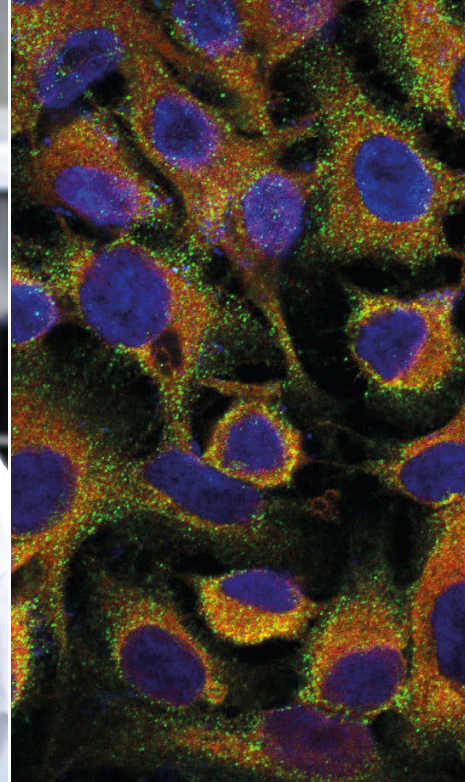


Read more from PhD students Olivia Soper and Mario Yanakiev inside.



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YOUR GIFT MATTERS



Research Reveals Orkney Cancer Gene Link

One in 100 people who have grandparents from Orkney have a gene variant that causes a higher risk of developing breast and ovarian cancer, a study by leading geneticists from the Universities of Aberdeen and Edinburgh has found.

Professor Zosia Miedzybrodzka, Professor of Medical Genetics at the University of Aberdeen, runs the Orkney genetic clinic and has begun testing for a variant in the BRCA1 gene.

Welcoming the launch of the pilot trial, Professor Miedzybrodzka said: *“The NHS Grampian genetics clinic and lab teams are delighted to offer this pioneering new service to Westray residents which will improve care and save lives. I am grateful to every single person that has made this pilot*

happen. We are setting up a system that will hopefully extend to the rest of Orkney and Scotland as soon as funding allows.

“Developing cancer is not solely down to carrying the BRCA1 variant alone. There are many complex factors, and some people with gene alterations will not get cancer. However, we know that testing and the right follow-up can save lives.”



NHS at 75: Alumni Round table

As part of the celebration of the 75th Anniversary of the NHS, we sat down with graduates from the School of Medicine, Medical Sciences and Nutrition for a round table discussion about their careers and how they have worked with the NHS over the years.

Dr Murdoch Shirreffs, Professor Rona Patey, Professor Alex Johnstone and Dr Obinna Ubah all took part and their conversation was fascinating!

Visit www.youtube.com/uniofaberdeen to watch.



Olivia Soper – PhD in Neuroscience

“ I always wanted to be involved in expanding our knowledge of Alzheimer’s disease, to ultimately improve patients’ lives. We know that there are individuals who completely avoid Alzheimer’s disease, even into late life, and those who display the pathology but avoid further deterioration. This creates the possibility of resistance and resilience to Alzheimer’s disease.

“ We believe that a shift in focus from Alzheimer’s risk to resilience could reveal new understandings of biological processes of Alzheimer’s disease, and identify new, promising therapeutic targets for the disease. We are focused on one protective mutation, and are trying to understand how this mutation protects people from Alzheimer’s disease.

“ It is thanks to your support, that we may be able to develop a new system for studying Alzheimer’s disease, and other neurodegenerative disorders.”



Mario Yanakiev – PhD in Medical Sciences

“ Alzheimer’s disease research not only captured my scientific interest and curiosity, but also inspired me to want to make a difference in the hopes that it would one day benefit the millions of people living with this disease. I believe that these “mini brains” represent the future of neurodegenerative disease and dementia research, as we are mimicking the vast complexity of the human brain on a small lab-based scale.

“ I have successfully grown and developed microglia, the immune cells of the nervous system, from stem cells in our lab, which is a big step in my project that aims to explore how microgliamediated inflammation in the brain can determine the progression of Alzheimer’s.”



Eat-Me: Fighting Cancer with Immune Cells

There are certain cells called tumour associated macrophages (TAMs) that help tumours grow and make it harder for the immune system to fight them. When there are a lot of TAMs, the cancer tends to be more aggressive and less responsive to certain treatments.

Thanks to gifts to the Cancer Research Fund, our PhD scientists are looking at ways to target these TAMs in order to treat cancer.

PhD student Raquel Barro Ferroso is working to add an “Eat Me” signal to these TAMs, that will tell them to recognise and then destroy the cancer. This signal is being created in a lab, and will be attached to a molecule that recognises a specific target on the cancer cells.

This will then be tested on a 3D model of ovarian cancer, using lab grown cells, to see how effective this modified molecule is at signaling the TAMs to ‘eat up’ the cancer cells.



Aberdeen Centre for Women's Health Research



A Life Course Approach | University of Aberdeen

When complete our team of researchers will be based alongside NHS colleagues in the new Baird Family Hospital, allowing them to work together to advance research that will ensure less women and their children are put at risk.

Building on the legacy of Sir Dugald Baird they hope to vastly enhance their research capabilities in maternal health to help people live healthier, happier and longer lives.

Your support is helping the team continue its research in areas including helping people plan for giving birth, ensuring they receive all the information they need to make informed decisions, therefore reducing unmet expectations that can lead to physical and mental health problems.

Researchers are also looking at understanding pregnancy loss and how best to care for women after late miscarriage, as well as pre-conception health including how couples prepare for pregnancy and how health might impact preterm birth or pregnancy loss.

These are just a few of the areas that the team specialises in so if you'd like to read more about their vital research, please visit the ACWHR website www.abdn.ac.uk/acwhr

Immune Cell Influence on Prostate Cancer Growth

PhD Student Jodi Stewart is looking at a specific molecule called the androgen receptor (AR), which plays a role in how prostate cancer grows and spreads.

Evidence suggests that androgens and the androgen receptor might affect certain immune cells called macrophages that are associated with tumours.

Her research focuses on how the AR in macrophages impacts the progression of prostate cancer by:

- *Finding patterns in the genes linked to the behaviour of macrophages when they're treated with hormones or anti-androgen therapies*
- *Assessing how the interaction between immune cells and cancer cells affects how prostate cancer responds to new treatments.*

Thank you to our generous Aberdeen family for enabling research like this to continue through the cancer research fund.



If you would like to speak to someone about a gift to the University of Aberdeen please contact Claire Henderson, Regular Giving Officer on **+44 (0)1224 275354** or email claire.henderson@abdn.ac.uk.

All donations to the University of Aberdeen are administered through the University of Aberdeen Development Trust SCIO which is a charity registered in Scotland No. SC050996.

The University of Aberdeen is a charity registered in Scotland, No. SC013683.