Welcome to your winter newsletter!

Happy New Year from the Viking Genes team!

As we welcome the new year and think about new beginnings, here at Viking Genes we also reflect on what we have achieved together and what we still need to do.

In 2023 we consented all willing volunteers from ORCADES and VIKING I to return of actionable variants, confirmed the individual results using a second method of reading DNA, agreed returnability with our clinical genetic colleagues in Aberdeen and we have sent out the majority of the return of results letters. During 2024, we will continue to validate gene variants and implement the complex process of returning actionable genetic results to our volunteers from VIKING II and III (Hebrides). However, to do so fully, and to continue to return results to all as new discoveries are made in the future, we are actively seeking new funding to continue our work seamlessly, after the Wellcome Trust Institutional Translational Partnership Award (iTPA) Impact Fund and our MRC funding end in the summer.

2023 also saw the publication of our important findings on an unusually common hereditary breast and ovarian cancer variant from Westray in Orkney, which led directly to an NHS screening programme there. In 2024 we plan to publish further research papers highlighting important differences in the gene pools of the people of the Scottish Isles.

In this edition, we have an important study update regarding return of results, an exciting interview with a researcher using your data and the latest research we have been involved in. We also have a report from Jim's talk at the Orkney International Science Festival.

Read on to find out more.

Study Update: Return of Results to Next of Kin

New permissions from the Research Ethics Committee have allowed us to provide the next of kin of participants in our Viking Genes studies with the chance to have any actionable genetic results returned for deceased volunteers.

We'll only inform you about these results if we find any that might have been relevant to the health of your next of kin and therefore potentially their family, during our research.

We have permission to do this, if the next of kin completes a consent form.

We can provide this if you make a request to viking@ed.ac.uk or **0131 651 8557**.

What should you do if you receive a letter from us?

Results letters are only sent to people who gave consent for this. However, you are free to change your mind at any time, just get in touch to let us know, or ask for more information.

If you are one of the 1-2% of people who receives a letter from us, informing you of an 'actionable' result, what should you do?

Once you have an 'actionable' result returned, the letter from Viking Genes will include contact details for the NHS clinical genetics team. If you get in touch with them, they'll support, advise and answer any questions you may have. You'll be asked to provide a sample to confirm the research result. An NHS genetics expert will then provide a clinical report and they'll discuss what it means for you.

When the time feels right, by telling your story of the impact the news had on you and your health, you could inspire others to get help from the NHS. Although, we understand this might be difficult for you, so it's up to you.

This could benefit family members and others in the community, whilst supporting the Viking Genes team to show their research is important.

If you are willing to tell your story, the Chief Investigator of Viking Genes, Professor Jim Flett Wilson, would love to hear from you. Contact him on jim.wilson@ed.ac.uk / viking@ed.ac.uk

You can learn more about our policy on returning actionable results by clicking on the link here.

Researcher Spotlight - Lucija Klaric

What's your research focus?

My research focus is in trying to understand the biological processes behind disease, to find new drugs or suggest new targets for already available drugs, also known as drug repurposing. Drug development is a very long and expensive process and I work in the area that is using the data measured in thousands of volunteers across the world to try to “shortlist” the candidates for a new drug for a specific disease. These candidates may be completely new or are already being used for a different disease, in which case the process becomes shorter and cheaper as we already know that the drug is safe for use in humans. My current focus is in ageing, where we are trying to learn “what goes wrong” during the ageing process, learn which processes go awry, to try to develop drugs that would slow them down and extend our disease-free years, also known as healthspan. We are not aiming to develop drugs that will make us live forever, but hope to extend the number of years we spend in good health.

What made you interested in pursuing a career in health research?

Hm, a difficult one! I didn’t really know what I wanted to do, I wanted to be a zoologist or play guitar when I was little! I always had a curiosity to know how things work, on a micro-scale, so I studied molecular biology and ended-up doing health research by chance. During my studies, we had a course called bioinformatics, which I was very interested in, as I also liked programming. I enjoyed asking questions and, little by little, finding answers using the data, almost like a private investigator who is creating a story from little pieces of a jigsaw. So by the end of my studies, I knew that I enjoy using the data to answer biological problems and I was lucky enough to find a job that enabled me to do this, but also had a health-related aspect to it. At first, I thought I’d be happy analysing just any data, but with time I realised that I feel much more rewarded when there’s more meaning to my work, when the problems I’m trying to solve are not only contributing to our general knowledge, but also have a chance to help some people one day.

How has Viking Genes volunteer data supported your research?

Viking Genes volunteer data has been crucial for almost all parts of my career so far! My professional career started in a small private research-based company in Zagreb, Croatia. This company measured glycans – a type of sugars attached to the surface of proteins, in samples from volunteers from the ORCADES study. Specifically, these sugars were attached to the surface of immunoglobulin G (IgG), a protein that plays the role of bodyguard in our immune system. One of the first projects I ever worked on was trying to see whether these IgG-bound sugars are related to our biological age, a measure of how old our body is compared to our calendar age. This project turned out to be the stepping stone for the rest of my career – I soon moved to Edinburgh to start a PhD on understanding the genetics of these glycans and their role in disease, now using both the ORCADES and VIKING I cohort data. Later on, I “graduated” away from glycans, back to the proteins themselves, and expanded my work to try to find drug targets for diseases, using some external data too, but basing the majority of my research on VIKING I data. So, it’s difficult for me to think how my life would look without Viking Genes!

Tell us about the most interesting Viking Genes research you've worked on.

My favourite research I've done so far started as a small side-project, where I was invited by Professor Wilson to help with the analysis of the DNA from a volunteer we found has a genetic variant that causes Long QT syndrome, a condition that can result in fatal heart arrhythmia if untreated. At the time we didn't have as rich data as we have now, from the perspective of DNA sequences, so we had to be a bit creative and develop ways to find other people in the VIKING I cohort that could be carrying the same variant, but without actually having the variant measured. It was really rewarding, as for the first time something I worked on might have actually affected someone's life. And that was very inspiring and motivational for me, putting my skills into use for the betterment of others' health. As we acquired more DNA sequencing data, this project helped to motivate Prof Wilson and Dr Kerr to start looking into actionable variants more widely – potentially harmful DNA variation, which we can do something about, either by taking a medicine or having a preventative operation or just being screened more often. This is another Viking Genes project that I am very happy and excited to be involved in, as it's one of the first in the UK to give such information back to the volunteers. Even if the news might not be as good for some, it's very important information to know and I am glad that we can give something back to the people that have so kindly shared their time and data with us through all these years.

Take a look at Lucija's work here.

Which proteins influence autoimmune diseases such as MS?

Recent research has revealed which proteins influence autoimmune diseases such as Multiple Sclerosis (MS)!

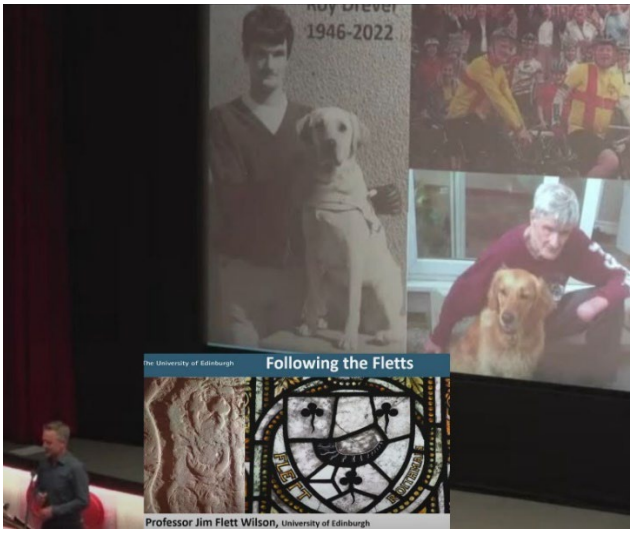
A collaborative consortium, led by Dr Jimmy Peters of Imperial College, London, found genetic factors influenced the levels of inflammatory proteins in the blood of cohort volunteers.

They linked these results from the populations studied, which include Viking Genes (ORCADES), to the risk of developing autoimmune diseases.

They found that a protein called lymphotoxin-alpha may play a role in Multiple Sclerosis. The team also found that some proteins have opposite effects on different autoimmune diseases and appear protective.

Thank you to our volunteers who helped to contribute to this important research. **Read more about the story in our link here.**

Jim's memorable talk at the OISF



Jim returned to Orkney in September 2023 to deliver a memorable lecture to a capacity audience at the Orkney International Science Festival (OISF).

'Following The Fletts' combined genetics with family history, genetic genealogy, to trace the story of the Fletts, the Drevers, the Sinclairs, the Gunns, the Swansons, and the Linklaters.

The lecture was dedicated to another member of the Flett family, Roy Drever (1946-2022). Roy and Jim are first cousins once removed, with their mothers from the Fletts of Kingshouse in Harray.

Roy was a regular visitor to the Festival and sowed a science festival seed back in the 1960s by encouraging two other longstanding members of the Festival team to take part in the Fancy Dress parade on the Saturday night of Stromness Shopping Week with the theme of 'Modern Science and the Atom', involving considerable quantities of water and smoke!

The good news is that Jim's talk was recorded and you can watch it online by clicking here.

Contact us

Our research team is based at the University of Edinburgh, in the MRC Human Genetics Unit and the Usher Institute. If you ever have any questions, you can email us at viking@ed.ac.uk or call us on **0131 651 8557**

Your Data Privacy

We want to make sure you're aware of how we protect your data when conducting our research. For more information about how we use your data and keep it safe, please see our Privacy Policy at www.ed.ac.uk/viking/privacy-notice, or let us know if you'd like to have a copy posted to you.

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