

Moredun



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magazine



Louping Ill vaccine fundraising campaign

Awards galore for Moredun

HRH joins Moredun for food security debate

www.moredun.org.uk

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Director's comment



Welcome to the latest edition of the Moredun Magazine, where we celebrate the dedication, innovation, and impact of our work in animal health and welfare. This issue is packed with fascinating stories that highlight both our scientific achievements and the people who make them possible.

In our 'Out and About' section, we reflect on recent events where Moredun has been engaging with farmers, vets, students, and industry leaders across the UK. From industry events like NSA Welsh Sheep to local school careers events, our team has been sharing knowledge, exchanging ideas, and inspiring the next generation of researchers.

We take a look into our research on St Kilda's Soay sheep, uncovering insights from this unique population that help us better understand disease resistance in livestock. Meanwhile, we celebrate the incredible journey of a long-serving Moredun staff member who started as a 16-year-old and is now in charge of the proteomics facility at Moredun — an inspiring testament to lifelong learning and dedication.

A highlight of this issue is the visit last year from HRH The Princess Royal, who joined us for an event focused on food security, reinforcing the importance of collaboration in tackling global agricultural challenges.

We also bring you an update on our pioneering Louping Ill vaccine, detailing the progress of our research and ongoing fundraising efforts to bring this much-needed solution to farmers. And, of course, we take a moment to celebrate excellence within our own team, showcasing the achievements of Moredun staff who have been recognised with prestigious awards.

With so much happening across Moredun, we hope you enjoy this edition and feel as inspired as we do by the dedication and passion driving our work forward.

Happy reading!

Prof Tom McNeilly
Scientific Director and Chief Executive

Moredun Magazine

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Cover image: *Soay tup on St Kilda*
Photo: *Martin Stoffel*

A New Vaccine Against Louping Ill in Sheep

Moredun Research Institute (MRI) have partnered with Kernfarm, a veterinary pharmaceutical supplier based in The Netherlands, to bring a new vaccine against Louping Ill in sheep to market. Louping Ill is a tick-borne viral disease that affects many wildlife and livestock species, particularly sheep and red grouse. A previous vaccine, marketed by MSD Animal Health, was discontinued in 2017 and since then there have been no other vaccines available against Louping Ill. Given the recent trend of longer tick seasons and the subsequent increasing spread of the disease, this new vaccine has been welcomed by livestock farmers, vets and the moorland industry.

The vaccine has been shown to work well in laboratory tests and the next steps are to scale up for commercial production and to obtain regulatory approval from the Veterinary Medicines Directorate. This will involve a great deal of work to ensure that a scaled up version of the vaccine has the same safety and efficacy as that of the lab based



Moredun's previous vaccine was discontinued in 2017 and there are no other vaccines available.

vaccine, but once this work is complete we hope to have a robust vaccine available for 20 years or more. We are still some time off the vaccine being available for use but all going

well we hope to have a vaccine on the market by 2028.

The usual route to market through pharmaceutical companies was not possible due to the niche UK market for this vaccine, so it is going to require industry funding. Fundraising is currently underway and if you would like to contribute you can donate here <https://bit.ly/4hCCJ25> or contact Beth Wells beth.wells@moredun.ac.uk or 0131 445 6157



We hope to have a vaccine on the market by 2028.

Scan the QR code to donate



Regional advisors' workshop

MoreDun is a unique research organisation largely due to its very close relationship with its main stakeholder groups, comprising farmers, veterinarians and those involved in associated agricultural industries. Scottish farmers established the Animal Disease Research Association (now known as the MoreDun Foundation) in 1920 and this critical link with the farming community has been maintained and strengthened to the present day. Farmers and veterinarians sit on MoreDun's governing boards to help ensure that the research outputs from the organisation are relevant and useful to the livestock industry in UK and across the world.

There are a number of ways by which we engage with the farming community - you may be a member, have a chat with us at a national livestock event, read about our research in the farming press, attend our animal health talks or kindly participate in our surveys - but did you know that MoreDun has a network of regional advisors?

MoreDun's regional advisors are a very talented and enthusiastic group of volunteers who help us communicate our science and



MoreDun's Regional Advisors enjoyed a farm tour.

to advise on animal health topics and issues within different regional areas. The MoreDun Foundation has six regional boards covering: South of England, North of England, Wales, Northern Ireland, South of Scotland and North of Scotland, with each regional board being comprised of farmers, veterinarians, SQPs, industry representatives, young farmers and students collectively representing a wide cross section of stakeholders within the livestock industry. The chairs from each of the regional boards represent their region on the main MoreDun Foundation Board.

In December last year, we held a Regional Advisors Workshop here at MoreDun to look at how we might improve our collaborative working and try out some new engagement

and outreach activities over the coming year. The workshop was a great success with the scientists hearing more about the work of the regional advisors and the advisors getting a much better understanding of life at the coal face for the scientists, and some of the challenges and opportunities currently facing MoreDun.

New ideas were discussed to help improve communication and engagement activities, and perhaps most importantly volunteers emerged to champion and drive some of these ideas forward. The participants also greatly enjoyed the opportunity to meet each other and do some cross-regional networking. There is no doubt that one of MoreDun's greatest assets are the volunteers on the regional boards who are our ambassadors out in the field and help MoreDun retain its roots and strength within the livestock industry.



The tour of the lab facilities at MoreDun where our research happens was a highlight of the workshop.

If you would like more information about our regional advisors and to find out who represents your area please visit our website-

www.moredun.org.uk/staff/moredun-regional-advisors

We are looking for advisors in the South of England region. If you are a farmer, vet, SQP, vet/agric student, or work in the livestock industry and are interested, please contact Andrew Kelloe at Andrew.Kelloe@moredun.ac.uk for more information.

HRH The Princess Royal visits Moredun

With the increasing crises of climate change and food insecurity, the role of livestock in shaping a sustainable future took centre stage at a landmark event hosted by Moredun. Held in November last year, the discussion brought together over 100 leaders and experts from the agricultural and food sectors to tackle the theme:

The Role of Livestock Production in Future Food Security

The event's significance was emphasised by the presence of HRH The Princess Royal, who attended to highlight the critical importance of fostering dialogue on the future of food systems and sustainable agriculture.

Moderated by veteran broadcaster Simon Cousins, the event followed an engaging "Question Time" format, allowing attendees to directly interact with an esteemed panel of experts. From global challenges to local solutions, the discussion explored the intricate relationship between food security, environmental targets, and economic sustainability.

Scotland's Chief Scientific Adviser (Professor Julie Fitzpatrick) opened the conversation by framing food security as a global issue intertwined with climate change and renewable agriculture. She emphasised the essential role of research institutions in driving the innovations necessary for sustainable farming, adding that Scotland's agricultural sector is pivotal to the nation's economy and climate goals.

David Thomson, CEO of Food and Drink Federation Scotland, advocated for long-term



Dr Mara Rocci shared Moredun's surveillance work.

strategies to future-proof the food supply chain. Highlighting the Net Zero Food & Drink Partnership, he stressed the delicate balance required between sustainability and ensuring a just transition for farmers and food producers.

The importance of food safety as a cornerstone of food security was raised by Geoff Ogle, CEO of Food Standards Scotland. He emphasised the potential of technologies like Whole Genome Sequencing and One Health surveillance to enhance Scotland's competitiveness in the global meat industry while improving pathogen detection and control.

Adding a practical perspective, Nigel Miller, a livestock farmer and former veterinarian, explored the challenges farmers face in meeting Net Zero policies. He stressed the importance of supportive policies that enable farmers to adapt to sustainability goals without compromising food production.

Voices Shaping the Future

The presence of HRH The Princess Royal provided a unique opportunity for additional experts to share their insights into the future of livestock production:

- Kate Rowell, Chair of Quality Meat Scotland, highlighted the success of Scotland's Quality Assurance schemes in elevating the reputation of Scotch Beef, Scotch Lamb, and Specially Selected Pork.
- Clare Hamilton of the Moredun Research Institute shared research on foodborne pathogens like *Toxoplasma gondii* and *Cryptosporidium* spp., showcasing their impact on food safety.

- Jo Moore, Head of Disease Control at Moredun, emphasised the importance of disease surveillance in protecting livestock health and ensuring food security.

Key Themes and Takeaways

The event underscored the interconnectedness of food security, sustainability, and biodiversity, presenting actionable insights for the future:

- **Livestock's Role in Biodiversity:** Livestock farming can contribute to biodiversity regeneration, provided there is credible research and funding to guide sustainable practices.
- **Support for Farmers:** Holistic policymaking is critical to equip farmers with the resources needed to balance sustainability with productivity.
- **Consumer Behaviour:** Shifting consumer habits—especially around reducing food waste—requires collective efforts across industries, governments, and households.
- **Health Plans for Sustainability:** Incentives, rather than mandates, should encourage farmers to adopt livestock health plans aligned with sustainability goals.

Looking Ahead

As climate pressures intensify and global populations grow, the challenges of ensuring food security will require innovative solutions and unwavering collaboration. Events like this one, bringing together diverse voices from science, agriculture, and policy, provide the blueprint for a more sustainable and secure future.



HRH The Princess Royal met several of Moredun's PhD students during her visit.

Moredun's Triple Triumph: Celebrating Innovation, Collaboration, and Scientific Excellence

Moredun prize-winner at the ALBAS

Moredun's own Dr Eilidh Geddes fought off stiff competition and was crowned the winner of the Research Project category at the Lantra Scotland awards ceremony held in March.

Lantra's annual award programme the ALBAS (Awards for Land-based and Aquaculture Skills) recognises the huge contribution made by rising stars, spotting those who have the potential to become the next leaders and inspiring figures in the industry.

Eilidh was awarded the prize for her PhD research titled "A practical approach to the sustainable management of gastrointestinal nematodes on extensive sheep farms".

Industry awards were made for agriculture, aquaculture, equine, game and wildlife, horticulture, land-based engineering, trees and timber, and veterinary nursing. Over 200 finalists, event supporters, employers, training providers and industry leaders attended the awards ceremony.

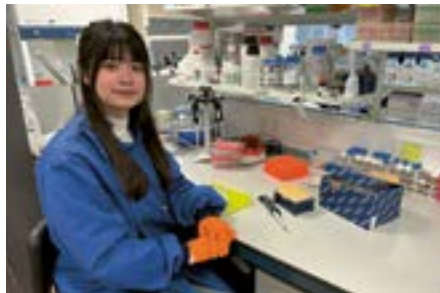


Dr Eilidh Geddes.

Prestigious Steve Bishop Award won by Moredun Scientist

The award in honour of Professor Steve Bishop is aimed at those in the early part of their career as an animal scientist and is worth up to £5000 to be used for specific short research programmes and/or training opportunities in the UK, or overseas, with a new academic or industrial partner.

This year the winner of the award was



Dr Xinyi Huang.

Moredun's Dr Xinyi Huang for her research on 'Rapid detection of mastitis pathogens in milk via integrated microfluidic-Raman microspectroscopy'. This project focuses on developing an advanced diagnostic tool to enhance the management of mastitis, a common and economically significant disease in dairy cattle.

Xinyi was delighted to win the award and said: "I am honoured to receive the Steve Bishop Award for my research. This award will enable me to build a valuable interdisciplinary collaboration between the University of Glasgow and the Moredun Research Institute whilst undertaking an independent research project that addresses a key issue in the dairy industry which could really benefit dairy farmers".

Highly Commended

Dr Stew Burgess and the sheep scab team involved in the Lewis and Harris project were highly commended in the category of Place Based Impact at the 10th Scottish Knowledge Exchange Awards. This prestigious award recognises the project's outstanding success in disease control through coordinated community collaboration.

Beyond its impact on livestock health, the programme has been widely praised for its positive social impact—helping to bring together different generations of crofters. The collaborative effort reignited a sense of camaraderie and shared purpose, rebuilding working relationships within villages and crofting townships.

The Lewis and Harris Sheep Scab Control Project is a pioneering effort led by Moredun scientists in partnership with: Lewis and Harris Sheep Producers Association, The Old Mill Veterinary Practice (Hector Low, Stornoway), Scottish Government, The Crofters of Lewis & Harris, Lewis Crofters, Neil Fell Mobile Dipping Ltd, Zoetis Animal Health Ltd and Bimeda Ltd

Moredun's team worked closely with local coordinators to recruit crofters for a plunge dipping campaign, incentivising participation through assistance with animal gathering and subsidised treatment using organophosphate dip.



L to R: Jamie Fowler Business Gateway and Dr Stewart Burgess Moredun Research Institute.

Dr Stew Burgess, Moredun, commented: "Being highly commended is a tremendous recognition of the hard work and dedication of everyone involved—from our project partners to the crofters of Lewis and Harris, who came together to make this initiative a success. This project wasn't just about tackling sheep scab; it was about rekindling a sense of community, strengthening bonds, and proving that collaboration can lead to real, lasting change. Seeing the crofting community unite around this effort, even for a short time, was truly awesome."

The awards ceremony took place on the 19th March at the Edinburgh Futures Institute.

This initiative has revitalised traditional collaborative working practices that had waned due to changes in crofting and more recently with Covid. By fostering a community-led approach, the project not only achieved high disease control coverage but also enhanced social well-being within the crofting community.

More dun Aquaculture Day

At the end of 2024 More dun Scientific organised a very successful Aquaculture Day to promote the aquaculture capabilities across More dun Scientific and the More dun Research Institute. Co chaired by our Deputy Director, Prof. Alastair Nisbet, and More dun Scientific Board Member, Dr Jonathan Shepherd, the day involved presentations from representatives of industry, including Salmon Scotland, Scottish Sea Farms and Patogen, and academia, including The Roslin institute and Stirling University, as well as our own staff and researchers. Attendees came from all areas of industry and academia.

Topics around fish disease and the problems that they cause to industry were covered, along with solutions that research can provide, which generated lively discussion and networking opportunities.



MSL's Aquaculture Day was well attended.

The More dun Aquaculture team presented variously on fish welfare and its importance in research projects, our proteomics facility and its use in supporting aquaculture projects, as well as gill health and the disease models that More dun Scientific can provide to companies researching solutions to this serious problem in fish health. We also heard about the exciting current research being carried out on fish vaccines at More dun Research Institute, particularly against sea lice, a major problem in salmon farming.

All in all it was a great day and we can't wait to host something similar in the coming year!

To learn more please contact us:

info@more-dun-scientific.com or visit our website: www.more-dun-scientific.com

SEFARI Knowledge Exchange Workshop on Tackling Ticks

Ticks are external blood-sucking parasites that affect livestock, wildlife, and humans. In the UK, the most common species, the sheep tick (*Ixodes ricinus*), can transmit diseases such as: Louping Ill, tick-borne fever, babesiosis, Lyme disease, tick pyaemia and tick-borne encephalitis. These diseases can cause significant economic losses to farmers but may also impact on human health. In addition, heavy tick infestations themselves may cause irritation, anaemia, and production losses even if no diseases are transmitted.

The increased risk from ticks and the associated tick-borne diseases (TBDs) is a growing concern in the UK. Factors influencing the increase in ticks and TBDs include climate change, wildlife distribution, shifts in land use and agricultural practices.



The tick workshop brought together experts from academia, industry, public health, wildlife and game management, and more.

Current tick control relies heavily on the use of acaricides, which have environmental consequences and are not fully effective. A collaborative approach involving farmers, industry, public health bodies, and conservationists is essential for sustainable management.

In response to this pressing issue a SEFARI-Innovative Knowledge Exchange-funded workshop brought together stakeholders from farming, government, public health, wildlife, veterinary, and research sectors to identify best practice and produce industry guidelines for ticks and TBD control. The workshop was held at More dun and included expert presentations, firsthand accounts of TBD in animals and humans, open discussions, and breakout sessions on tick control strategies.

The breakout groups consisted of a diverse mix of experts in the field and professionals from other industries and covered: Landscape, Moor, and Wildlife Management, TBD Diagnosis and Surveillance, Ectoparasitocides, Traditional and Innovative Tick Control Methods, Effective Communication Strategies and Practices, and Public Health and the Human/Animal Interface.

Key findings were compiled into best practice recommendations, to be shared with participants and eventually the public.

Research

Take a walk on the wild side (of science)



Photo: © Yolanda Cortijo-Miyar

Village Bay – St Kilda.

The Islands

St Kilda is a remote archipelago off the North West coast of Scotland, comprised of four islands: Hirta, Dun, Soay and Boreray. They are the westernmost islands of the Outer Hebrides, around 60km west of North Uist. The islands were inhabited up until 1930, when the remaining inhabitants were evacuated, and are now owned by the National Trust for Scotland (NTS). St Kilda is the first place in Scotland to be named a UNESCO World Heritage Site, and the only one in the UK with dual status due to its unique natural and cultural heritage. The islands are now inhabited only by transitory human site personnel, conservation and field workers, alongside a variety of seabirds, the unique St Kilda wrens and field mice (both are subspecies from their mainland counterparts which are larger in size) and some very interesting sheep.



Photo: © Ian Stevenson

Some of the inhabitants of the island.

Soay Sheep

The Soay sheep have lived unpredated and unmanaged in the archipelago for at least 2000 years. Until the human evacuation of the largest island (Hirta), the Soay sheep lived on the island of Soay. Then, shortly after the human (and livestock) evacuation, a small population was introduced in Hirta which has grown to cover the island. Sheep living in the Village Bay area of Hirta have been individually marked and closely monitored by researchers since 1985, making this study one of the most detailed long-term studies of wild animals in the world. The flock provides an excellent opportunity to study genetics and evolution as well as population ecology, aging, parasites and immunology. By combining the life history, pedigree and genetic data of the sheep with egg counts from faeces, and immunological assays from blood samples, the project has been able to provide new insights into the links between parasites, immunity, host fitness and population dynamics.

The catch

Each year in summer a team of around 15 sheep fieldworkers go out to St Kilda to catch and monitor the Soay sheep of Village Bay. This is carefully planned operation that scientists from Moredun have been part of for the last six years. In order to capture the sheep, temporary corral style traps are set around the village bay, making good use of the landscape. Soay sheep do not flock like commercial sheep so any attempt to round them up results in the sheep scattering. Instead, a line of human 'sheepdogs' attempts to guide the sheep towards the traps. One scientist from Moredun undertook rigorous training (i.e. trained using Couch to 5K) after discovering that her fitness was not up to the standard required to run up hills after wild Soays! Once caught, the sheep are weighed, teeth checked, several measurements (horns, limbs, testes size) taken, checked for keds (wingless insects that feed on sheep blood), their wool and horn quality checked and samples of blood and faeces taken. If the sheep is not already tagged, it will be tagged, and any females will have their udders examined to see if they are lactating. During these two weeks, scientists can capture around 60% of the island population - a number of around 250-300 sheep.

Lambing and rutting

During the lambing season, the scientists observe the pregnant ewes and catch any lambs that are born. Newborn lambs are



Photo: © Yolanda Compañó-Miyar

An inhabitant of the island.

weighed, tagged and samples collected for genetic analysis. In November, during the mating season, rams in the Village Bay area are sometimes darted and blood samples taken for genetic analysis that allows identification of who fathered the lambs born the next spring.

Life on the island

The accommodation where the scientists live during fieldwork is pretty comfortable for such a remote place, using some of the original cottages restored and maintained by the NTS. These are used as sleeping and cooking/dining areas as well as storage and laboratory facilities and office space. There are shower and toilet blocks but no fancy ensembles here! The team live, cook and eat communally

during the field trip. They pull names out of a hat at the start of the trip to set up a rota for daily cooking as pairs. Having enough food for fieldwork in such a remote spot means they must plan carefully and bring supplies required for most of the year with them on the boat they charter to bring them to the island for the August trip. As with most fieldwork involving wild animals, the hours can be long and irregular, but the unpredictable and sometimes extreme weather usually means there can be plenty of quieter days. Although not commonly, after a very successful day of catching sheep, the lab team has worked from 0700 until 2300 processing samples for immunology collected the day before - but the camaraderie and the amazing data collected always makes it all worth it.

Sample analysis

The samples which are collected are tested by a variety of methods. The faeces are examined for parasite eggs and the number and species of parasites present recorded. The blood samples are used to assay a range of physiological markers, including markers of immune responses. Analysis of antibody levels from these blood samples has been shown to predict parasite burden and survival in individual animals. This knowledge can be applied to farmed sheep to develop new ways of controlling parasites and other diseases which are not reliant on drug treatments.



Photo: © Yolanda Compañó-Miyar

The island is beautiful and remote.

Beyond the Lab

Quick Chat with Kevin McLean

Join me as I sit down with Kevin McLean, a long-serving member of the Moredun team, to reflect on his remarkable 36-year journey.

From starting out as a fresh-faced lab tech to leading the Proteomics facility, Kevin has witnessed the institute's growth, navigated technological shifts, and mentored countless colleagues along the way. With a passion for science and a love for proteomics, Kevin shares his career highlights, the challenges he's overcome, and the legacy he hopes to leave behind at Moredun. Let's dive into his inspiring story.

When you were at school, what did you want to be when you "grew up"?

Funnily enough, nothing to do with science. I wanted to be a policeman but I've got terrible eyesight. I did like science at school though.

Why is your job important?

We underpin a lot of the research at Moredun and contribute to many different projects, we also offer support and training. What proteomics can offer isn't always that well understood at Moredun so we also do a lot of education to share with the researchers what proteomics can do for them and their projects.

You recently visited your old school, what was that like?

Weird! I've not been there for nearly 36 years. It was good though, there's been lots of change but equally I could still see the same "characters" that were there in my day. The kids that wanted to engage and those that weren't quite so interested! I just hope that I managed to encourage some of them, who maybe hadn't considered science as an option, to think about it.

What do you like / dislike about your job?

I really enjoy playing with the mass specs (the machines we use) and developing analyses, there's lots of learning and physics and since I'm a big nerd I enjoy that! I also like the impact we can have on the research done here as well as the variety of projects and researchers we work with.

I don't like having to give bad news, whether that's telling someone that the experiment they want to run is really expensive or their protein isn't what they think it is!

Career Beginnings and Growth

Can you tell us about how you first joined Moredun?

I started at Moredun in 1989, when I had just turned 16, on the YTS (Youth Training Scheme) mostly because a friend of mine, Cameron Imrie, had started here and told me that there was a job available. I was also drawn to the fact it wasn't too far away and I could walk to work.

What was your first day or early experience like? Any memorable moments?

I enjoyed it right from my first day. I had thought I'd just be a dogsbody but even on my first day I got to DO some science.

In the first few months I had an instrument blow up on me and I got electrocuted once both of which were memorable, and which I have thankfully managed to avoid since!

How did your role evolve over the years from starting here as lab tech in clinical biotechnology to running a service facility?

I started in 1989 then moved to research for a while until 2000 when I moved to what was then the functional genomics unit as technical support. I really loved it so stayed there and eventually after 20 years, when my then boss retired, I was offered the chance to take on the facility. I jumped at the chance and never looked back.

Did you have any mentors or role models at Moredun who helped guide your career?

I was very lucky to have some great bosses and mentors. My first boss, John Small, gave me my love of working in service units rather than straight research science. Neil Inglis taught me everything about proteomics. Having two great bosses has inspired me to (try to) be a great boss too.

Challenges and Lessons Learned

What were some of the biggest challenges you faced in your early career, and how did you overcome them?

Getting to grips with all of the technology and machines that I had to use. Having good mentors really helped with this early in my career and I'll always be grateful to them.

Can you share a particularly difficult project or situation you worked on and how you handled it?

Every single day!!

Joking aside, as we work across different departments and projects every sample or organism can be new. The work we do means that I'm not working on the same species or pathogen – I frequently find myself saying "we've not worked on that before but I will find out how to do it." I'll always try and rise to the challenge! This is also one of the reasons why I love my job – there is always something new on the horizon.

What are some key lessons you've learned in your 36 years here?

Everything works better as a team. In my opinion one of the best things about Moredun is being able to get a team of experts round the table to discuss things. Experts are not always the senior staff and I try to involve junior and technical staff in these discussions as they are just as, if not more, important to the running of the institute.

What skills or qualities do you think were most important in advancing your career?

I think my resilience and perseverance have really helped – hang around for long enough and you're bound to get the job. Haha! Having a sense of humour helps too!

For my role, having a different mindset and interest in the technical side of things rather than the research, along with adaptability to change and willingness to take on new challenges was an advantage.



From YTS to facility manager, Kevin is passionate about inspiring the next generation of scientists, showing them that with determination, anything is possible.

Changes and Evolution

How has Moredun changed over the past 36 years, from your perspective?

While there have been many changes over the years, for me, the ethos of Moredun has never changed. It's the people that make Moredun the place it is.

How has your department evolved since you started, and how do you feel about these changes?

The department started off pretty small but has grown a lot! We used to do some DNA sequencing as well but moved to only proteomics, we have a lot more equipment and also greater influence on the Moredun projects.

I'm definitely happy with the changes in the department and I hope that we can continue to grow.

What technological or cultural shifts have you seen within Moredun?

I've definitely seen a shift away from people doing everything (from making buffers etc) in-house to a more kit-based approach. There are positives and negatives to this but I think Moredun has still retained the expertise. We've also made huge advances technologically since I started in 1989 which is brilliant, but expensive!

How has your leadership style developed over time?

A lot of my leadership style has come from the leaders I had in my early career – I learnt from the best. I try to be fair and give everyone a chance to have their say and actually listen to what they want. I try to encourage people to follow their ambitions but also keep them at Moredun if I can.

Personal Reflections and Advice

What has been the most rewarding aspect of your career here?

There's been loads, hopefully everything I've done has increased knowledge and improved research. I like helping people and projects to achieve their aims.

Is there a particular achievement or milestone that stands out for you?

I am not sure there is. I have been involved in lots of successful projects, produced many papers and helped lots of Ph.D. projects, all of which I have enjoyed. I think with the technology we have now and the projects that are planned proteomics can have an even greater impact over the next few years.

Looking back, is there anything you wish you had known earlier in your career?

I probably wish I knew to not be so intimidated. Moredun can be daunting with so many knowledgeable experts when you are only 16. You don't need to be an expert when you are just starting out and most people are keen to help build your own expertise.

Oh, and I wish I knew about the dangers of attending week long Molecular Biology courses. I went on one 28 years ago with someone from the Microbiology department who I didn't know. We have now been married for 20 years and have two teenage children. Got a lot more than I bargained for from that course!

What advice would you give to someone starting out in an apprenticeship or an entry-level role today?

Give it your all and keep an open mind. See it as a challenge and rise to it. Don't be daunted,

you can achieve anything you want with the right training and support.

How do you maintain passion and motivation after so many years here?

The truth is, I just really enjoy what I do. I love running analyses that can have a huge impact on so many projects – people are counting on me to help them find the answers.

Looking to the Future

Are there any goals you still have for your career or your department?

I would love the facility to continue to grow, I hope to secure more funding for new equipment that would allow us to increase our output and offer a greater range of services.

What do you hope your legacy at Moredun will be?

When Neil retired he left the department with a new mass spec, I hope to do the same. A little-known fact is that the mass spec is always named after the person who led the grant. The current one is Big Nellie and the previous one was Big Hark. I'd love a Big Kev or two to be my legacy!

Any final words?

I'm really pleased to see the apprenticeship program back up and running, I think it's a great opportunity for people to access a career in science without going down the traditional route of university. It's great to have an alternative option and there's still the chance to get a qualification while you work, the apprenticeship program is one way that the institute can help maintain the core technical staff. It's important to make sure that they are valued though.

Out and About

Moredun's Recent Events and Engagements

Over the past few months, Moredun has been actively engaging with the farming and veterinary communities through various events across the UK.

Our scientists were delighted to attend NSA Welsh Sheep, engaging with farmers and stakeholders to discuss our latest research and disease prevention strategies. Topics covered included; control of sheep scab, liver and rumen fluke, Cryptosporidium, and roundworms including Haemonchus.

Moredun scientists were involved in various webinars and spoke at the Ruminant Health and Welfare webinar on Biosecurity at Borders and on Farm as well as the Norvite Equine Nutrition evening covering Equine Grass Sickness.

Moredun has been supporting young people exploring careers in science and agriculture by attending multiple local careers



Moredun staff at Penicuik High careers fair.

fairs. At Dynamic Earth's Careers Showcase, we provided hands-on activities such as making proteins, viewing fixed parasites, and engaging with VR simulations and pipetting

challenges—giving students a glimpse into the world of research.

For science week some of our staff visited their own children's schools and groups (Girl Guides) and taught them about parasites, vaccines and how keeping sheep happy also keeps them healthy!

Additionally, Moredun contributed to key industry discussions by presenting at:

- Game & Wildlife Conservation Trust (GWCT) Upland Conference
- AHDB Tick and Tick-borne Disease Control Meeting
- The Northumberland National Park Farmers Group Meeting

These events provided fantastic opportunities to share our research and expertise while strengthening our connections within the industry. We look forward to continuing our work to support livestock health and welfare in the months ahead!



The kids loved examining the parasites!



Upcoming Events

- Wednesday 4th June**
NSA North Sheep - Penrith
- Sunday 8th June**
Open Farm Sunday - Pathhead
- Wednesday 11th June**
NSA Highland Sheep - Ardgay
- Thursday 19th - Sunday 22nd June**
Royal Highland Show - Edinburgh
- Tuesday 1st July**
NSA Northern Ireland Sheep - County Londonderry



The Moredun team at Dynamic Earth.

Lab-grown equine guts: Organoids for research of Equine Grass Sickness

Equine Grass Sickness is a deadly disease of equids that kills the neurons within the gut and peripheral nervous system, resulting in the death of 80% of cases.

To date, the cause remains unidentified despite extensive research over the past century. One of the major issues with modern research is the lack of available models to use in experiments. Equids are classified as companion animals by the Home Office, and so experiments using these animals are highly restricted and expensive.

Enter, organoids!

Equine “mini-guts”

Equine gastrointestinal organoids are tiny “mini-guts” that we are able to grow in the lab. These mini-guts show the same cell-types you’d find in the horse gut epithelium, and act in much the same way. They are the next best thing to using an actual horse! The reason we are able to grow these mini-guts, is the incredibly high number of stem-cells found in

the GI-tract of animals.

The gut replenishes its cells every 7-10 days, so the stem-cells in the gut are highly active. By extracting these stem-cells from the guts of horses, we are able to grow sections of equine gut in the lab for extended periods of time. The fascinating thing about the mini-guts we grow in the lab is that they retain the “host imprint” of the animal they were derived from, meaning any infections or exposures the animal faced while alive are “remembered” by the cells. This makes them a highly valuable model for researching any equine disease- including Equine Grass Sickness.

Where we stand

Funded by the Equine Grass Sickness Fund, we are currently developing equine organoids from the entire GI-tract of the horse – the stomach (both the “non-glandular” and “glandular” (acid producing section)), all three sections of the small intestine (duodenum, jejunum and ileum), the caecum and the large colon. Each section of the gut provides us with organoids that show distinct shape

and cell-type expression dependent on which region they were collected from. While these organoids only express the epithelia (the part that is in contact with food), we intend to expand the model to include other tissues from the GI-tract; including the neurons that control gut secretion and the muscle layers that provide motility.

So far, we have developed organoids from healthy gut tissue as well as from EGS cases, in partnership with Rosssdales Equine Veterinary Practice in Newmarket. The goal for these organoids is to use them so we can test suspected causes of EGS without using any healthy animals.

The development of organoids have provided breakthroughs in human medicine, and therefore, it is our belief that they will do the same for equine veterinary medicine. The equine organoids, combined with our extensive and ongoing collection of saliva, faeces, urine and blood samples from EGS cases and controls to form a Biobank, allowing all researchers access to the samples, means that the future of EGS research is promising.



A young sports horse showing the typical stance of a horse with grass sickness.

Spotlight

Meet Moredun's newest recruits

Livia Thompson

Veterinary Research Pathologist



What is your job role?

I am a veterinary research pathologist and my main responsibilities in the Moredun Research Institute (MRI) are to perform diagnostic reporting of post mortem cases, of domestic ruminants farmed in Scotland including SRUC cases and to participate in novel morphological research of diseases of livestock being undertaken within MRI. I look forward to being part of a big network of people and learning more about the interesting cases that come my way.

Have you met a celebrity?

Not face to face but I used to do a lot of travelling for university and spent a lot of time in the airports. I have seen a few celebrities walking the airports and once saw Queen Camilla at Edinburgh Airport, and in another airport, Jeremy Clarkson and his Top gear sidekicks. I once also sat in an aeroplane with the South African rugby team at the time and these guys are absolutely huge, just the sheer amount of muscle on display was impressive.

Dario Sciancalepore

IT Support Technician



What is your job role?

I provide first-line IT support, assisting users with their tech-related issues. My job is to listen to their requests, guide them in the right direction, and find the best solution. And if I can't resolve a problem myself, I escalate it to my more experienced colleagues. It's a job I find both exciting and fun! If you've called since November, you've probably heard my enthusiastic (if slightly clumsy) English greeting: "Hello IT service, Dario speaking, how can I help you?"

Do you have any secret skills or talents?

Ever since I got this job, I've become a "secret" veterinarian (though I would have much preferred to be a billionaire secretly moonlighting as a superhero—copyright issues aside). My life has always been driven (perhaps too much) by numerous passions: I play drums and keyboards, take photos, create graphics, and once upon a time, I even competed in judo. From my perspective, I'm terrible at all of these hobbies, but I keep at them with passion whenever I have the time and opportunity.

Susanna Ó Raghallaigh

Post-doctoral researcher



What is your job role?

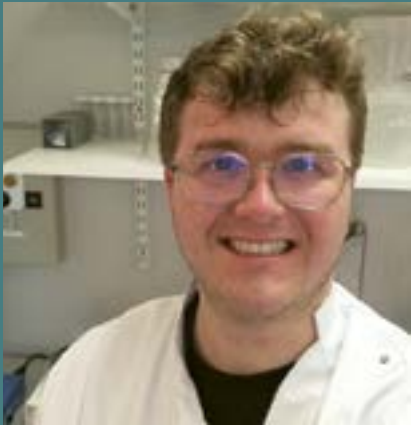
I am researching the genetics behind resistance to Maedi Visna virus in sheep in collaboration with the University of Nottingham. Maedi Visna can cause pneumonia, mastitis, lameness, and neurological symptoms in sheep, eventually resulting in death. Some sheep have reduced susceptibility to this virus due to changes in a protein. However, we don't know why this change alters virus infection. Over the next three years I hope to answer these questions.

What are you passionate about?

I have been doing martial arts for almost 20 years. I started with Tae Kwon-do as a child, taking part in national competitions and getting my black belt as a teen. A back injury stopped me from being able to train, but after a few years break I was able to start a lower impact martial art. I love learning about the culture and history of these martial arts, and appreciate the discipline and social connection that you don't often get in individual sports. I'm going to South Korea (birthplace of Tae Kwon-do) and Japan (Karate) for my honeymoon this year and hope to incorporate some martial arts into the trip, much to the despair of my husband!

Cameron Cunnea

Technical Assistant



What is Your Job Role?

I originally started at Moredun as a scientific apprentice in September 2022. As an apprentice I spent two years training in practical laboratory work, rotating through various departments including bacteriology, immunology, and parasitology to build my essential technical skills. Alongside this, I attended college one day a week through a day-release program to gain an HNC and SVQ in Laboratory Skills for Life Sciences.

Moredun's continued support of alternative routes to careers in science

From apprentices to seasoned experts, Moredun has long been a place of growth and opportunity. We have several long-serving staff members, including Kevin (read about his career journey on pages 8 & 9), demonstrating Moredun's dedication and passion to helping our staff build a lasting career. Building on this strong legacy Moredun has supported several young apprentices with many of them still working at Moredun. One of our science apprentices, Cameron, has recently secured a permanent role, marking the start of his own exciting journey.

From an early age, I knew I wanted to be a scientist. I had previously attended university but couldn't complete my degree due to personal circumstances. When I discovered modern apprenticeships offered alternative routes into science, I jumped at the opportunity. In October 2024, at the end of my apprenticeship, I successfully interviewed for a technical assistant role in the Chlamydiology research group and have been working there full-time since.

The Chlamydia research group primarily focuses on understanding the pathogenesis and rapid detection of Chlamydia abortus, the bacteria responsible for Ovine Enzootic Abortion, and developing novel vaccines to protect against the disease. In my role, I am gaining expertise in key technical skills and supporting various research grants. Every

day, I learn something new, and I couldn't be happier about it!

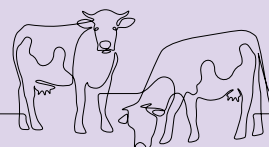
Do you have any secret skills or talents?

I have a few unusual skills and talents. One of the strangest is that I can move my hair like a wig just by flexing my scalp muscles—it's a weird trick, but it always gets a reaction! On a more traditional note, I play the cello, which has been a passion of mine for years. I'm also trained in Brazilian Jiu-Jitsu, which has taught me both discipline and self-defence. And, for a fun bit of trivia, I once won Radio Forth's 'Wrong to be Right' competition as a child, which was a memorable experience. So, whether it's music, martial arts, or bizarre party tricks, I like to think I have a few hidden talents up my sleeve!

When you make or update your will, it's only right that you think of your loved ones first. After making provisions for your family and friends, please consider helping us. A gift in your will (often called a legacy) is a simple and enduring way to support our work.

No gift is too small to make a difference and to help us promote the highest possible standards for animal health and welfare through research and education.

It's easy to include a charity in your will, but you should always consult a professional such as a solicitor to ensure your will reflects your intentions. Including The Moredun Foundation in your will is a big decision to make and we thank you for your generosity and for thinking of us.





MoreDun

www.moredun.org.uk