

## Science in Shetland: A Week of Hands-On Learning about Disease Control



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In the remote Shetland Islands, finding educational opportunities involving hands-on lab science can be challenging. However, thanks to SEFARI funding, teams from the Moredun and James Hutton Institutes previously brought an exciting week of animal health science to Shetland's Junior High Schools and local communities. A full programme was organised in collaboration with the Shetland Developing the Young Workforce and Shetland Animal Health Scheme including workshops, diagnostic demos and community engagement events. The scientists shared vital skills and knowledge about livestock disease management that resonated with both students and farmers.

### Bringing Science to the Classroom

Giving Shetland students real-world STEM experience in diagnostics and parasite control was central to the vision of this event. The scientists tailored their workshops for S2-S4 students (ages 13-16), many of whom have roots in crofting and farming. Using a real-life scenario of "a farmer who had informed the vet that some of their sheep looked unwell. Samples were collected to get to the bottom of the problem but the test centre was too busy to look at them immediately, so the samples were being sent to the schools so that the students themselves could carry out tests to provide the data the vet needed to advise on treatments for the sheep." This role play created an experience in which the results from these "mock" tests, would mirror the procedures used to diagnose symptoms in the real world. Situations that may have

occurred on local crofts that they could relate to. The students examined parasite samples by microscopy, learned how to detect antibodies with an ELISA, and even explored DNA analysis to identify parasite resistance to treatments.

These practical tasks gave students a chance to experience using STEM skills and see how diagnostics directly impact livestock health. It also provided insight into exciting potential careers in veterinary and biological sciences, showing them that science can make a real difference in their daily lives and communities.



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### **Engaging the Farming Community**

Each school visit was followed by a community event on the mobile science lab, the “Biobus.” Here, local farmers, and crofters were able to meet the researchers and learn about practical tools like faecal egg counting. Farmers were encouraged to bring faecal samples from their sheep to watch demonstrations of this diagnostic method in real time whilst learning firsthand how targeted parasite treatments can prevent the development of drug resistance.

The sessions on the Biobus highlighted the value of diagnostics to rural farms, allowing livestock keepers to see how science-backed approaches to animal health could improve both productivity and sustainability in their flocks.

### **Equine Health: A Special Session for Horse Owners**

An evening event organized with the British Horse Society Shetland focussed on equine health issues, including updates on Equine Grass Sickness (EGS) and best practices for roundworm control. This session not only introduced local horse owners to the latest research on these issues but also encouraged their participation in ongoing studies to advance understanding of

EGS. The scientists also shared advice on responsible use of dewormers to slow drug resistance, initiating valuable conversations on best practices in horse care.

### **A Vision for Future Collaboration**

The week's outreach laid the groundwork for further educational and collaborative efforts. Plans are underway to expand STEM activities across the islands. The farmers' interest extended beyond their own fields: many were eager to explore the possibility of a collaborative disease management network with other Scottish islands, enabling them to share insights and strategies across island communities.

Teachers, students, farmers, and vets alike expressed enthusiasm, with many hoping these events become a regular part of Shetland's educational landscape. Feedback from participants was overwhelmingly positive. One teacher noted, *"Having the Moredun Institute delivering workshops across our schools was a great experience for both the pupils and staff. It brought science to life in a way that resonates with our rural community."*

With continued funding and a collaborative commitment from institutes and communities alike, the Shetland visit has set a precedent for how science outreach can bring practical experiences to remote communities. By empowering locals with knowledge and practical skills, SEFARI researchers at the Moredun and James Hutton Institutes have fostered enthusiasm and understanding to pave the way to improve health of livestock, more sustainable farming, and inspired future scientists. The project highlighted that no community is too remote to benefit from the impact of scientific discovery.

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