



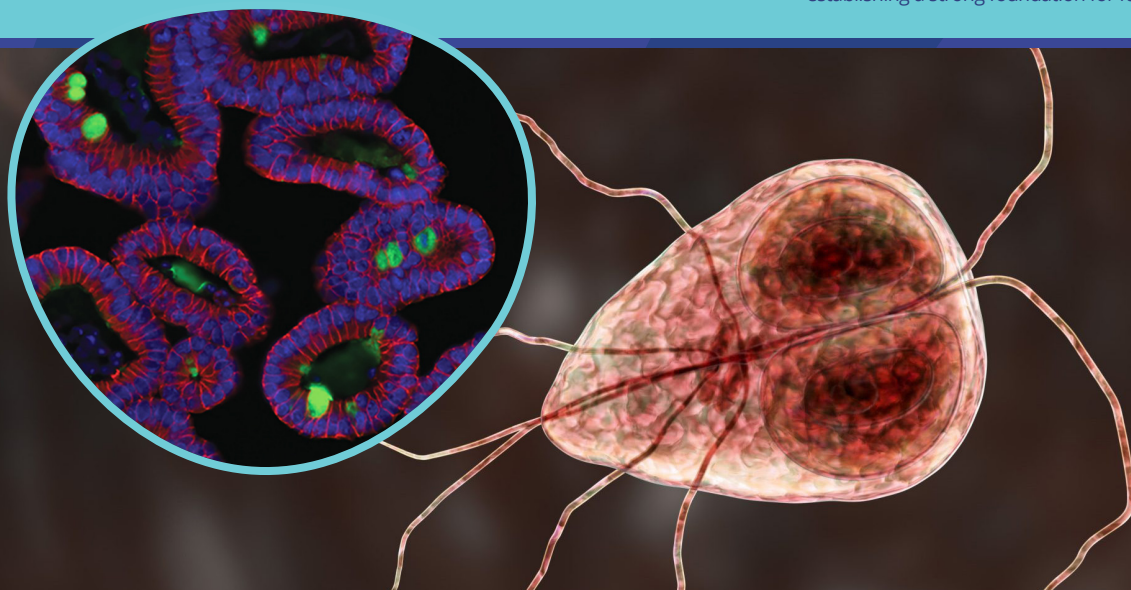
European Partnership on
Animal Health and Welfare

STMs

Short-Term Missions

Case Study

The EUP AH&W provides small grants for Short-Term Missions (STMs) with the aim of sharing scientific expertise, methodologies, equipment, and facilities to harmonise the existing approaches and methodologies within the large EUP AH&W. They aim to drive research forward in a collaborative and non-duplicative fashion to strengthen both the scientific capacity within the EUP AH&W and promote Animal Health and Welfare across Europe. Additionally, STMs serve as a platform for creating and consolidating professional networks, fostering mutual trust among researchers and institutions, and establishing a strong foundation for future collaborative efforts.



Title: **Implementation of an advanced in vitro Giardia duodenalis pig intestinal organoid co-culture system to evaluate anti-giardial drug efficacy and safety**

EUP AH&W Thematic area: Vaccines and treatments for animal health.

Home Institute: Istituto Superiore di Sanità (ISS), Italy.

Mission hosting institute: French Agency for Food, Environmental and Occupational Health & Safety (ANSES), Ploufragan-Plouzané Laboratory, France.

Duration of mission: 6 weeks - 25th September to 10th November 2025.

Summary

Giardiasis is a parasitic disease of animals and humans and is most commonly associated with *Giardia duodenalis*. In young farm animals, it can lead to diarrhoea, poor growth, and economic losses for farmers. Current veterinary treatments mostly use the same drugs as in humans, and this raises concerns about drug resistance and limited future treatment options.

During this Short-Term Mission (STM), the team developed and validated a pig intestinal organoid (lab-grown versions of pig gut tissue), that behaves like a real intestinal barrier. The model allowed researchers to infect pig gut tissue with a type G. *duodenalis* that is livestock-specific, monitor gut barrier health, and evaluate the efficacy of two ingotential treatments. One boron-based compound showed strong anti-G. *duodenalis* effects, whilst remaining safe for intestinal cells. The team also observed that exposure to different isolates of G. *duodenalis* causes variable levels of damage to the gut barrier, opening up new ways of testing potentially more selective anti-Giardia treatments. In addition, the model will support further molecular and imaging studies, candidate drug testing, and research on longer-term gut responses in livestock-relevant Giardia infections.

The work carried out during this Short-Term Mission is expected to contribute to scientific communications scheduled for 2026, including presentations at the National Congress of the Italian Society of Parasitology (SolPa) and at the International Congress of Parasitology (ICOPA).

This mission directly supports the EUP AH&W priority area on vaccines and treatments, and advances animal-free testing approaches aligned with the 3Rs (Replace, Reduce, Refine animal use). By creating a pig-specific lab model, the work helps with the rapid screening of new veterinary treatments, whilst reducing reliance on animal experiments.

“Participating in this Short-Term Mission was a precious opportunity to enhance both my practical skills and my understanding of advanced in vitro models for studying parasitic infections by working with experts from ANSES. Beyond the technical aspects, the STM offered a unique opportunity to meet and exchange ideas with researchers from different backgrounds and countries, encouraging interdisciplinary thinking and international collaboration. Overall, this experience significantly broadened my scientific perspective, strengthened my research capabilities, and reinforced the importance of collaborative networks in advancing research. I am grateful for the opportunity to participate in this STM, which will undoubtedly have a lasting impact on my PhD project and my future scientific endeavours.”

Giovanna Nunziata, PhD student at the Istituto Superiore di Sanità, Italy.

