# ERASMUS+ Traineeship Programme 2023/2024

# Final Report

João Miguel Pestana Lozano

PhD Student in Veterinary Sciences

Faculty of Veterinary Medicine, University of Lisbon, Portugal

## Acknowledgements

The success of this ERASMUS+ programme was only possible due to crucial contributes from inside and outside the Academy.

Firstly, I would like to deliver a huge thank you to my PhD Supervisor, Prof. Doctor Luís Madeira de Carvalho (Faculty of Veterinary Medicine, University of Lisbon; FMV-ULisboa), and my Co-Supervisors, Profs. Doctors Manuela Oliveira (FMV-ULisboa) and Adolfo Paz-Silva (Faculty of Veterinary, University of Santiago de Compostela), for always being on my side and supporting my decisions, for their expert guidance, and for giving me "green light" to embrace this ambitious adventure.

Also, a special thank you to the ERASMUS Coordinator of FMV-ULisboa, Prof. Doctor Ana Mafalda Lourenço, and to Dr. Alexandra Matos, from the Secretariate, for promoting this ERASMUS+ programme call for PhD students within the FMV's community, and for all the documental support provided before, during and after this process.

To the ULisboa Rector, Prof. Doctor Luís Ferreira, and to the European Commission, I would like also to deliver an enormous thank you for accepting my proposal, funding my programme, and supporting the scientific community.

A special acknowledgement to my ERASMUS+ Supervisor, Prof. Doctor Laura Rinaldi (University of Naples Federico II; UNINA), for the prompt acceptance of my Traineeship proposal, for all the support and fantastic experiences promoted to me during my stay at the facilities of the Unity of Parasitology and Parasitic Diseases (UNINA), and for the historical collaboration between our institutions. It was a real pleasure to meet you in-person, and we are looking forward to strengthening even more our cooperations.

Also, I would like to address my compliments to the Director of the Department of Veterinary Medicine and Animal Production (UNINA), Prof. Doctor Aniello Anastasio, for accepting me at your institution, and to Giovanni Palermo for all the support regarding my ERASMUS+ application.

To the CREMOPAR Team, Prof. Doctor Giuseppe Cringoli, Prof. Doctor Laura Rinaldi, Doctor Antonio Bosco, Dr. Mirella Santaniello, Dr. Luigia Di Donatto, Doctor Paola Pepe, and all my fellow "colleagues in arms", Giuseppe, Elena, Ines, Paola, Ruggero, Anita, and Annachiara, I would like to give an enormous thank you for the friendly welcoming and for everything that you promoted to me during my stay. It was a pleasure to meet you all, exchange knowledge and build friendships. Thanks also for showing me the beautiful region of Campania and its rich culture and heritage. Experiences of this kind stay in our hearts forever. Grazie mille per tutto!

Also, I would like to acknowledge the buffaloes Veterinarians, Dr. Emanuele Bambacaro and Dr. Ruggero Amato, and cattle Veterinarian, Dr. Paola Vitiello, for allowing me to meet alive the beautiful animal heritage that Italy, and Campania in particular, have to offer regarding animal production. The experiences with water-buffaloes and the autochthonous bovine breed "Podolica" were unique and absolutely fantastic.

To my parents, Jorge and Helena, grandmother Ondina, and brother Pedro, thank you for everything. Despite the physical distance, your love, emotional support, and inspiration were crucial for my performance and mental health during this journey.

## 1) Programme details

- **Trainee:** João Miguel Pestana Lozano
- **Current position:** PhD Student, with Fellowship
- **Affiliations:** CIISA – Centre for Interdisciplinary Research in Animal Health, Faculty of Veterinary Medicine, University of Lisbon, Portugal; Associate Laboratory for Animal and Veterinary Sciences (AL4AnimalS), Lisbon, Portugal.
- **ERASMUS+ modality:** Traineeship
- **Programme title:** Traineeship at Parasitology Laboratory
- **Host Institution:** Unità di Parassitologia e Malattie Parasitarie, Dipartimento di Medicina Veterinaria e Produzioni Animali, Università degli Studi di Napoli Federico II, Italy.
- **ERASMUS+ Supervisor:** Professor Doctor Laura Rinaldi
- **Timeframe:** 01/09/2023 – 30/09/2023
- **Working load:** 40h per week

## 2) Programme objectives

The current ERASMUS+ programme had the following objectives:

i) to learn fundamental knowledge regarding the aetiology, epidemiology, pathogenesis, symptoms, diagnosis, therapy and prophylaxis regarding the main protozoa, helminths and arthropods of livestock and conventional pets, with special reference to zoonotic organisms.

ii) to improve the necessary knowledge regarding the economic losses caused by the most common parasites of farm animals, as well as the main control strategies to be adopted.

iii) to acquire skills for a rational approach to the management of parasites in livestock and pet animals, through practical activities (diagnosis ante and post-mortem) and clinical visits to kennels and livestock farms.

## 3) Activities

| Days | Activities |
|---|---|
| 1 | . Welcoming.<br>. Training received for the parasitological diagnosis technique “FLOTAC”.<br>. Parasitological diagnosis performed in human fecal and urine samples, sent by migrants’ reception centres, using the FLOTAC technique.<br>. Parasitological diagnosis performed in dogs’ fecal samples, using the FLOTAC technique. |
| 2-3 | Weekend |
| 4 | . Parasitological diagnosis performed in cattle fecal samples, using the Mini-FLOTAC technique.<br>. Training received for the identification of abnormal *Fasciola hepatica* and *Paramphistomum* sp. eggs. |
| 5 | . Visit to a buffalo farm specialized in milk production, used in the manufacturing of “Mozzarella di Bufala Campana” cheese, a Protected Designation of Origin product (PDO).<br>. Parasitological diagnosis performed in goats and horses’ fecal samples, using the FLOTAC technique.<br>. Training received for the Kubic FLOTAC Microscope (KFM). |
| 6 | . Parasitological diagnosis performed in goats’ fecal samples, using the FLOTAC technique.<br>. Training received for the FLUKEFINDER equipment, using goats’ fecal samples. |
| 7 | . Parasitological diagnosis performed in cattle and sheep fecal samples, using the FLOTAC technique. |
| 8 | . Parasitological diagnosis performed in cattle and sheep fecal samples, using the FLOTAC technique. |
| 9-10 | Weekend |
| 11 | . Parasitological diagnosis performed in cattle and sheep fecal samples, using the FLOTAC technique. |
| 12 | . Parasitological diagnosis performed in cattle, sheep, and goats’ fecal samples, using the FLOTAC technique. |
| 13 | . Parasitological diagnosis performed in cattle, sheep, and goats’ fecal samples, using the FLOTAC technique. |
| 14 | . Parasitological diagnosis performed in cattle, sheep, and goats’ fecal samples, using the FLOTAC technique.<br>. Visit to a buffalo farm, in which transrectal fecal samplings were performed in juveniles. |

| Days | Activities |
|---|---|
| 15 | . Parasitological diagnosis performed in cattle, sheep, and goats' fecal samples, using the FLOTAC technique. |
| 16-17 | Weekend |
| 18 | . Parasitological diagnosis performed in cattle fecal samples, using the FLOTAC technique.<br>. Identification and labelling of gastrointestinal parasitic forms (eggs and oocysts), using KFM. |
| 19 | Day-off (municipal holiday) |
| 20 | . Visit to a cattle farm harbouring the Italian bovine breed "Podolica", where animal feces, water, snails (intermediate hosts for *Fasciola hepatica* and *Paramphistomum* spp.), and ticks (ectoparasites) were collected. |
| 21 | . Taxonomical identification of strongyles' infective larvae (L3), extracted from bovine feces.<br>. Parasitological diagnosis performed in cattle and sheep fecal samples, using the FLOTAC technique. |
| 22 | . Parasitological diagnosis performed in cattle and goats' fecal samples, using the FLOTAC technique. |
| 23-24 | Weekend |
| 25 | . Parasitological diagnosis performed in cattle, sheep, and goats' fecal samples, using the FLOTAC technique. |
| 26 | . Parasitological diagnosis performed in cattle, sheep, and goats' fecal samples, using the FLOTAC technique. |
| 27 | . Visit to the Department of Veterinary Medicine and Animal Production, at the University of Naples Federico II.<br>. Parasitological diagnosis performed in dogs' fecal samples, using the FLOTAC technique. |
| 28 | . Parasitological diagnosis performed in cattle fecal samples, using the FLOTAC technique.<br>. Observation of *Echinococcus granulosus* cysts (Cestoda) in liver and lungs from sheep. |
| 29 | . Visit to the Agricultural-Livestock Experimental Farm "IMPROSTA".<br>. Parasitological diagnosis performed in cattle and sheep fecal samples, using the FLOTAC technique. |
| 30 | Weekend (End of Traineeship) |

## 4) Photos of the activities


Figure 1 – Photo taken at the entrance of CREMOPAR facilities (original).

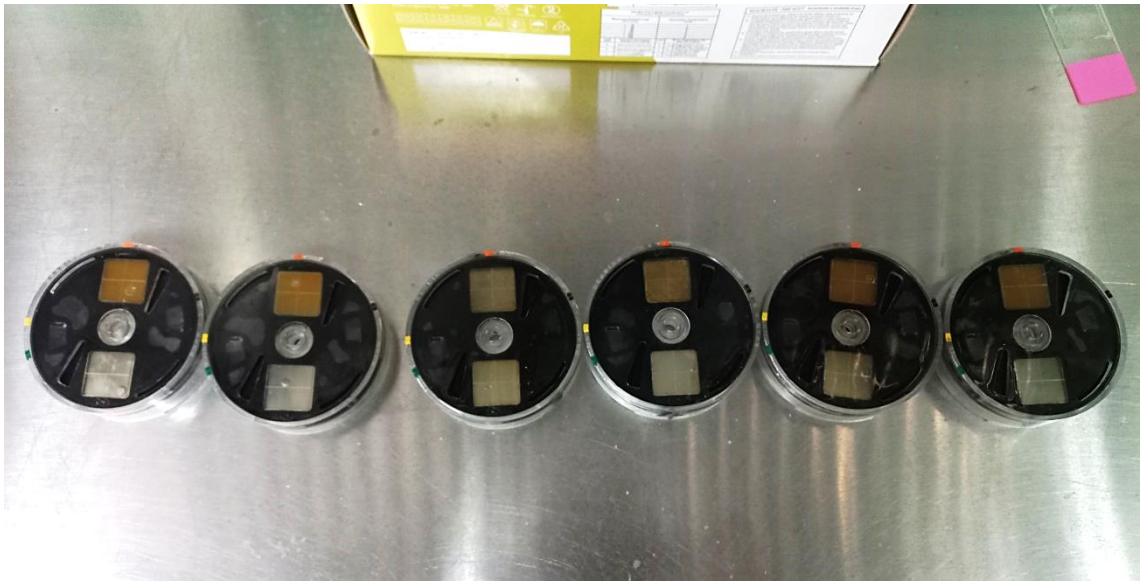

Figure 2 – FLOTAC devices used for the qualitative-quantitative diagnosis of gastrointestinal parasitic infections in humans and animals (original).


Figure 3 – The homogenization of fecal samples with tap water is the first step in the FLOTAC diagnosis technique (original).

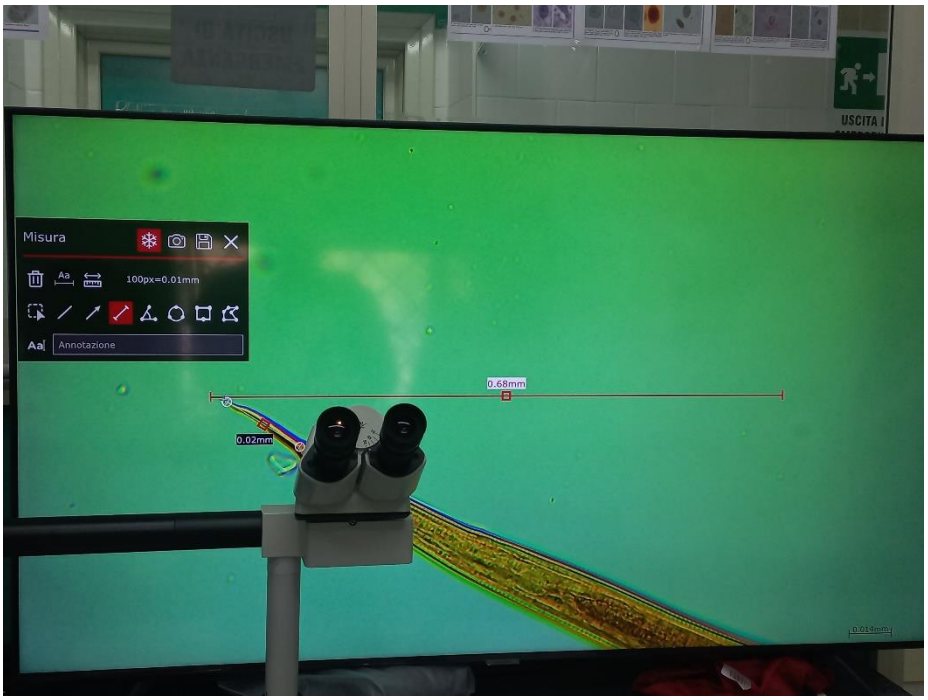


Figure 4 – Measurement and identification of nematodes infective larvae (L3), extracted from bovine fecal samples (original).

Figure 5 – Photo taken in a water-buffalo farm, in which transrectal fecal samplings were performed in juveniles (original).

Figure 6 – Visit to a cattle farm, harbouring the autochthonous bovine breed “Podolica”. In this farm, transrectal fecal samplings were performed in adult females (original).