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The prevalence of the rat lungworm, *Angiostrongylus cantonensis*, among gastropod populations from agricultural lands in Mallorca, Balearic Islands, Spain. Universitat de les Illes Balears, Mallorca, Spain. 22nd May – 12th June 2023.

Angiostrongylus cantonensis, or the rat lungworm, is the causative agent of eosinophilic meningitis in humans, and is thought to be an emerging zoonosis in Mallorca, having been previously identified in hedgehogs, rats, and gastropods on the island. Gastropods are a key component in the life cycle of the parasite and are referred to as intermediate hosts. Within the snail or slug, the parasite larvae mature into their infective stage, and the life cycle is complete following consumption of the infected gastropod by rats or other mammalian hosts. Humans are accidental hosts of the rat lungworm and are usually infected through consumption of raw or undercooked infected gastropods. In humans, the most common clinical finding is eosinophilic meningitis, leading to headaches, stiffness, nausea, and in rare cases, coma and death.

Given the recent geographic expansion of the parasite, there is an urgent need for quality surveillance and monitoring to aid with control efforts. While the parasite has been identified in rats and hedgehogs in Mallorca, there are no data available on the prevalence of the parasite in gastropods from agricultural lands on the island, which may serve as an important source of infection, particularly for ready to eat vegetables (through snail slime or accidental consumption of snails). Thanks to the generous support of the RSB Travel Grant, I was able to spend 3 weeks on the island of Mallorca, working on a project led by Dr. Claudia Paredes Esquivel, Lecturer (Profesora Contratada Doctora) at the Laboratory of Zoology in University of the Balearic Islands, Mallorca. Our



Me collecting gastropods from tomato crops in Selva, Mallorca, Spain



Gastropod collected from Selva, Mallorca, Spain

aim with this project was to contribute to understanding the epidemiology of *A. cantonensis* by identifying its intermediate gastropod hosts and determining the prevalence of the parasite among these hosts in agricultural lands.

Our gastropod collections were focussed in areas with ready to eat vegetables, e.g., lettuce and tomato crops around the island. As Claudia and the team at the university had previously collected gastropods from other regions, I started the first day of my project collecting snails from a local resident's tomato crops in Selva. We collected over 100 snails transported them back to the university in small zip lock bags. Back at the

university, we speciated the snails and performed necropsies to identify parasites morphologically. Over the following 3 weeks and with the help of the wonderful team at the University: Sebastià Jaume Ramis, Sofia Delgado Serra, and Micaela Ariadna Arango Colonna,

I performed DNA extractions on 166 gastropod samples, and ran several PCRs to determine the presence of the parasite in our samples. We decided to use a nested PCR approach, which involves using two different primers in two separate PCRs. Our results confirm the parasite is present in gastropods from agricultural zones at the university, and we also found a variety of gastropods may act as intermediate hosts.

The results from our study confirm that the rat lungworm is established in Mallorca, and that targeted control interventions are required to slow the spread of the parasite and to prevent human disease. This study forms a key component in the understanding of the epidemiology of the rat lungworm in Mallorca and encourages more similar studies addressing the topic.

My experience working on this project has been invaluable and rewarding, and I am beyond grateful for the RSB Travel Grant for enabling me to carry out this work. I have gained huge confidence in a variety of lab skills and have developed new skills both in the lab and out in the field. I am also a confident speaker of the Spanish language, and being able to combine my love of language and my passion for science has been an immensely rewarding experience which will be invaluable for my future career.



Me and the *Angiostrongylus* team from the Universitat de les Illes Balears, Mallorca, Spain.