

## The molecular basis of host manipulation by a parasitic worm

### Supervisory team:

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### Project description:

Nematomorpha (also known as Gordian worms, horsehair or hairworms) are a phylum of entirely parasitic worms, that infect invertebrates. To develop into adults and find a mate, the parasite must move from their terrestrial host to an aquatic environment. They achieve this by manipulating host behaviour, causing it to jump into water in a 'suicide behaviour'. It is not known how the nematomorph coerces its host into water. Host manipulation by parasites is widespread. However, we know little about the mechanism(s) parasites have evolved to manipulate host behaviour, particularly at a molecular level. Nematomorphs infect insects worldwide including the UK, and offer a system to study host manipulation by parasites in a tractable system. We are culturing nema-tomorphs in the laboratory using a natural host, the cricket. Understanding how these parasites can manipulate host behaviour will provide a foundation for understanding behavioural manipulation of hosts more widely.

In this project we will investigate behavioural manipulation of the host by nematomorph parasites and address questions such as do parasites secrete molecules into the host to manipulate host behaviour? And, how do these molecules manipulate behaviour of the host? This project will involve laboratory work including molecular biology and behavioural assays, and computational based work. The student will receive full training in all aspects of the project. There are also potential opportunities to visit and work with collaborators in New Zealand and Japan.

**Our aim as the SWBio DTP is to support students from a range of backgrounds and circumstances. Where needed, we will work with you to take into consideration reasonable project adaptations (for example to support caring responsibilities, disabilities, other significant personal circumstances) as well as flexible working and part-time study requests, to enable greater access to a PhD. All our supervisors support us with this aim, so please feel comfortable in discussing further with the listed PhD project supervisor to see what is feasible.**