



PhD Project Opportunity

Parasitic Puppeteers - How do They Pull the Strings?

We are currently seeking at least one, but potentially several PhD students with interests in genetics, evolution, parasitology and neuroscience to investigate the molecular mechanisms through which parasitic worms alter the behaviour of their insect hosts.

Project Description

Parasites can have profound effects on the animal hosts they invade, manipulating host biology with exquisite precision to enhance host-to-host transmission. One of the most extraordinary of these host manipulations is the water-seeking behaviour that some nematodes and hairworms induce in their hosts so that the worms might exit the host and reproduce. The process is the stuff of science fiction; the worm hijacks the host's central nervous system forcing it to seek water. Once water is found the adult worm, often many times the size of the host, emerges, sacrificing the host. This amazing alteration in behaviour is induced by parasitic worms spanning two phyla (Nematoda and Nematomorpha) and is observed in a variety of arthropod hosts, notably crickets, weta, earwigs, and sandhoppers, leading us to hypothesise that a common and conserved mechanism is being utilised by the parasites to induce this behaviour in their hosts. Here we propose to couple field and laboratory studies of two phylogenetically distinct hosts and their parasites, with powerful genomic and bioinformatic comparisons to elucidate the trigger and genetic cascade through which these parasitic puppeteers elicit this highly conserved, yet astonishing behavioural response.

The project emerges from a new Marsden Grant headed by Professor Neil Gemmell (Anatomy) in collaboration with Professor Robert Poulin (Zoology) and will be based in the Gemmell laboratory at the University of Otago.

The Ideal Candidate

The ideal candidate will possess experience in molecular genetics/genomics, evolutionary biology and bioinformatics. Knowledge of NGS approaches and analyses is desirable, while past work in comparative genomics and an interest in parasitology and neurobiology may be helpful. The candidate will be motivated and organized, with a demonstrated capacity to master the broad skill set necessary for the successful completion of a research project. They will be collegial and able to work alongside a wide variety of people. In addition they will have a strong commitment to academic and research excellence. Minimum qualifications: B.Sc. (Hons) and/or M.Sc. in Genetics, Genomics, Molecular Biology or equivalent with an A average or better.

Scholarship Funding: Financial support is expected to be available for a high achieving student with an A average or better via a University of Otago or Departmental scholarship see <http://www.otago.ac.nz/study/scholarships/>.

Eligibility: The University of Otago and Departmental scholarships are open to all nationalities. However, overseas candidates for whom English is not a first language must satisfy the [English Language Requirements of the University](#) to be eligible for study (see). Other international eligibility criteria are [here](#).

How to Apply: Interested applicants are encouraged to make informal enquiries to Professor Neil Gemmell. Please send your Curriculum Vitae, a copy of your academic transcript, a sample of your written scientific work and the names of three referees with a covering letter to:

Professor Neil J. Gemmell
e-mail: neil.gemmell@otago.ac.nz

Further information

[Gemmell lab](#)

Applications close on 21 April 2017. Ideally, the successful applicant would start by mid 2017.