

OPENINGS FOR 2-3 GRADUATE POSITIONS (MSc or PhD) for research related to:

Exploring the drivers of biogeographic patterns in genetic diversity

Department of biological sciences, University of Manitoba, Winnipeg, Manitoba, Canada

POSITION START DATE: Flexible

CLOSING DATE FOR APPLICATIONS: We will begin review of applications 1 June 2023 but **the positions will remain open until filled**

CONTACT: Colin Garroway at colin.garroway@umanitoba.ca

PLEASE SEND: Your CV and a brief cover letter introducing yourself, your research experience and interests, and tell me why you are interested in the positions.

Come work with the Garroway lab at the University of Manitoba! We are a diverse, open, inclusive, and collaborative research team. We aim to foster critical thinking and creativity within a supportive learning and research environment and encourage EVERYONE interested to apply. We know confidence gaps and imposter syndrome are natural, normal, and commonly felt. Don't let that hold you back—rest assured we want to hear from you!

The holders of these positions will work on research questions related to my NSERC Discovery Grant research program. This means research topics can be very flexible, and there will be lots of opportunities for students to pursue their own interests. We can accommodate broad interests across taxonomic groups. Depending on research interests we can focus on gaining skills and knowledge in any one or a combination of ecological, evolutionary, and population genetic/genomic research fields. These can be approached both applied and basic research directions. Research will be primarily computer-based and we will provide all the training needed for a successful research project.

Our general research aim is to build an understanding of the causes and patterning of biodiversity at the genetic level and to link genetic diversity to other levels of biodiversity. Genetic diversity is the foundation of biodiversity—it underlies population persistence, the capacity to adapt to environmental change, and, ultimately, ecosystem stability and resilience. Genetic diversity is also particularly vulnerable to human activities that degrade environments. Despite underlying all higher levels of biodiversity, the patterns and causes of variation in genetic diversity across species are largely unknown. Filling this knowledge gap will help us build our fundamental understanding of how biodiversity is generated and is critical for conservation.

Our approach to this work has come to be called 'macrogenetics'. Macrogenetics encompasses population genetic research that repurposes genetic data, whether collected from the literature or harvested raw data, to address new questions about the ecological and evolutionary causes and consequences of genetic variation across multiple species. The term macrogenetics is new, but the approach is old. However, interest in the area is growing due to the accumulation of publicly archived genetic data. The group has amassed a very large data set, so students can hit the ground running with data. But we will also expect students to expand the database in line with their own research questions and taxonomic interests.

Examples of the type of analyses and breadth of questions are listed below. Rest assured we can provide lots of project guidance as well.

- <https://royalsocietypublishing.org/doi/full/10.1098/rspb.2019.2497> (preprint: doi: <https://doi.org/10.1101/733170>)
- <https://www.pnas.org/doi/abs/10.1073/pnas.2102860119> (preprint: <https://doi.org/10.32942/osf.io/wbq83>)
- <https://onlinelibrary.wiley.com/doi/abs/10.1111/ele.14058> (free to read)

We have funding for stipends, conference travel and all research related expenses. If you have additional questions please get in touch!

You can explore the group more at <https://www.garroway-lab.com/> and <https://scholar.google.ca/citations?user=Sbz1W4oAAAAJ&hl=en>