Amphibians are declining worldwide, in part due to a sweeping fungal pandemic. Salamanders are vastly numerous and ecologically important in the Great Lakes region, but we know little about their current numbers or response to the spreading disease. My research goals are to gain insight into salamander disease response and increased knowledge of our populations through non-invasive environmental DNA surveys.

My GLOBES real world practicum supported my studying under Dr. James Bogart at the University of Guelph. Dr. Bogart is the principal expert in mole salamanders (most common group in the Great Lakes). The training resulted in:

- an immense increase in my understanding of the system, habitat, and history of the system.
- improved targeting of my dissertation project.
- a cascade of networking with other researchers and conservation groups.

I was able to use this training to meaningfully approach a study in salamander disease response, as well as design a means of identifying salamanders and breeding ponds using only water they live in (environmental DNA, or eDNA). This method is cheap, quick, and requires no expertise.

GLOBES also provided communications training, which resulted in:

- a successful crowd funding enterprise that funded my research for two years.
- understanding of message tailoring that led to my participation in an international conservation campaign, with my logo and message even published in several country’s publications.
- work with several colleges and management agencies to implement my eDNA survey protocols for salamanders in MN, MI, NY, and WI.
- invitations to speak at management meetings in the midwest.

Learning how to communicate across disciplines has made the applied part of my research instantly accessible and applicable.

An interdisciplinary focus in my research has allowed me to easily analyze much larger and more complicated data sets than would have been possible without the understanding of both biology and computer science. As a result, I will be publishing some of the first genomic resources for Great Lakes salamanders and the first information on their response to the pandemic disease contributing to worldwide amphibian decline.

Additionally, the training has:

- culminated in my current position as an instructor of record for an intro bioinformatics class for the biology department (cross listed computer science/biology course).
- resulted in several collaborations and papers with other labs.
- improved my marketability.

The training and framework for interdisciplinary studies provided by GLOBES has made my research more effective – in time, in scope, and in dissemination.