

The Biodiversity Seminar Series is pleased to announce

Thomas Braukmann

from CBG-BIO

presenting the talk

**The strengths and pitfalls of DNA barcodes for
the vascular plants of Canada**

Abstract:

The Biodiversity Institute of Ontario has joined with ten Canadian Herbaria to produce a complete DNA barcode library for the vascular plants of Canada. This collaborative effort with researchers and herbaria across Canada presents the accumulation of the first DNA barcode library for an entire country's vascular plant flora. Approximately 95% of the 5108 species with non-hybrid origins are represented by at least one of three standard DNA barcodes. We sampled 1-3 specimens per species and generated over 20,000 DNA barcodes with 86% coverage for *rbcL*, 47% for *matK*, and 75% for *ITS2*. We estimated phylogenetic distance (PD), mean pairwise distance (MPD), and mean nearest taxon distance (MNTD) for different plant families and genera as a predictor of barcoding success.

Using plant lists from Koffler scientific reserve and 27 provincial parks, we simulated community-based data sets to test the efficacy of barcoding in the different floristic regions of Canada using blast and mothur. Our results support blast as having a higher discriminatory power for the three barcodes than mothur. Despite PD, MPD and MNTD supporting *ITS2* as the most genetically diverse marker, *matK* had the highest species discrimination (~81%) followed by *ITS2* (~72%) and *rbcL* (~44%). Furthermore, genus level identification was robust for *rbcL* (~91%), *matK* (~98%), and *ITS2* (~96%). MNTD and MPD were strong predictors of poor species resolution within a number of groups (i.e. *Salix* and *Crataegus*). DNA barcoding is a useful tool for community level analyses and serves an important resource for a wide range of applications that require taxonomic identification, including forensics, forestry, and conservation biology.

Brief Bio:

In 2005 I completed my Honours BSc at UofT in Biology. I finished my PhD in 2014 from UofT. My thesis focused on the evolution of plastid (chloroplast) in non-photosynthetic plants particularly with plants in the heather (Ericaceae) family. I started working at BIO last May on the plants of Canada, and NGS analysis for malaise traps and failure tracking.

When: Thursday April 21st 2016 at 12:00 pm

Where: Visualization Theatre, Room 1009
Biodiversity Institute of Ontario

For scheduling and more information on the seminars, please visit:

<http://biodiversitygenomics.net/resources/seminar-series/>

