


Jarrett D. Phillips, Ph.D.  
School of Computer Science  
Department of Integrative Biology  
University of Guelph  
✉ [jphill01@uoguelph.ca](mailto:jphill01@uoguelph.ca)  
 [jphill01](#)

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## **EXECUTIVE SUMMARY**

My academic work and research interests can best be described as *computational molecular biodiversity science*. Biodiversity is under threat in a rapidly changing world, where mitigation requires innovative and collaborative solutions from multiple disciplines. DNA-based specimen identification and species discovery through techniques like DNA barcoding and environmental DNA (eDNA) offer promising ways forward, yet produce overwhelming amounts of data. I leverage AI/ML/Data Science/Big Data methods to help researchers find meaningful signal in a vast sea of noise.

## **ACADEMIC APPOINTMENTS**

**Adjunct Professor**, School of Computer Science 2023–Present  
University of Guelph

## **EDUCATION**

**Ph.D.** in Computational Sciences, University of Guelph 2016–2022

**Co-Advisors:** Dr. Daniel Gillis and Dr. Robert Hanner

**Advisory Committee Members:** Dr. Deborah Stacey and Dr. Graham Taylor

**Thesis:** A Novel Statistical Framework for Assessment of Intraspecific Haplotype Sampling Completeness: Implications for DNA Barcode Gap Estimation

**Master of Bioinformatics (MBinf.)**, University of Guelph 2013–2014

**Co-Advisors:** Dr. Robert Hanner and Dr. Daniel Ashlock

**Thesis:** Assessing DNA Barcode Haplotype Sampling Diversity in the Ray-finned Fishes (Chordata: Actinopterygii)

**BSc. (Hons.)** in Biological Science, University of Guelph 2009–2013

Coursework in bioinformatics, ecology, evolutionary biology, comparative physiology, genetics, mathematics, and statistics

## **RESEARCH EXPERIENCE**

### **Postdoctoral Fellow**

2023–Present

University of Guelph  
GBADs Informatics Team  
Stacey Lab, School of Computer Science  
Supervisor: Dr. Deborah Stacey

- Currently developing an R package to run a compartmentalized equation-based Dynamic Population Model (DPM) for the Global Burden of Animal Diseases (GBADs) initiative to calculate the Animal Health Loss Envelope (AHLE) in livestock species as part of a larger team of computer scientists, software engineers, data scientists, epidemiologists, and veterinarians
- Co-developed and ran a week-long data workshop at the University of Liverpool alongside other members of the GBADs Informatics Working Group and international colleagues

### **Postdoctoral Fellow**

2023–Present

University of Guelph  
Gillis Lab, School of Computer Science  
Hanner Lab, Department of Integrative Biology  
Supervisors: Drs. Daniel Gillis and Robert Hanner

- Mentored and supervised CIS\*4900/4910, STAT\*4600, IBIO\*6070, and URA students in projects on seafood fraud and environmental DNA sampling using computational methods
- Participated in conceptualization and drafting of various manuscripts for both academic and non-academic audiences, where I was lead author on most

### **Postdoctoral Fellow**

2022

University of Guelph  
Hanner Lab, Department of Integrative Biology  
Supervisor: Dr. Robert Hanner

- Mentored and supervised a Master of Bioinformatics (MBINF.) BINF\*6999 student on research project examining DNA barcoding in Canadian pests and disease vectors
- Participated in conceptualization and drafting of various manuscripts and invited book chapters, many as primary author

### **Summer Research Assistant**

2016

Algoma University  
Plant and Soil Ecology Lab, Department of Biology  
Invasive Species Research Institute (ISRI)  
Supervisor: Dr. Pedro Antunes

- Offered bioinformatics and statistical analysis support in R
- Assisted Principal Investigator and undergraduate thesis student with initial drafting of a manuscript on invasive plant root lesion staining quantification

**Lab Assistant Volunteer**

2014–2016

Algoma University  
Plant and Soil Ecology Lab, Department of Biology  
Invasive Species Research Institute (ISRI)  
Supervisor: Dr. Pedro Antunes

- Offered bioinformatics and statistical analysis support in R
- Assisted with collaborative and outreach initiatives for the Terrestrial Invasive Plant Species (TIPS) Network Project through drafting communication letters to public and private conservation agencies across Canada and the USA seeking volunteers to collect invasive plant species for root lesion quantification

**Undergraduate Research Assistant**

2013

University of Guelph  
Vaccine Discovery Research Group  
Supervisor: Dr. Mario Monteiro

- Performed various experimental techniques (gas chromatography-mass spectrometry (GC-MS) and Nuclear Magnetic Resonance (NMR)) on bacterial polysaccharide samples for vaccine synthesis and development under the supervision of qualified graduate students

**TEACHING EXPERIENCE****Graduate Teaching Assistant (GTA)**

2016–2020

University of Guelph

**CIS\*3130 – System Modelling and Simulation**

2020

~ 30 students · Python

- Statistical and Monte Carlo methods

**CIS\*1910 – Discrete Structures in Computing I**

2017

~ 300 students

- Deductive logic, set theory, and mathematical proof techniques

**CIS\*2460 – Modelling of Computer Systems**

2016–2019

~ 60 students · R, Excel, Java

- Statistical and Monte Carlo methods

**STUDENT SUPERVISION AND MENTORSHIP**

\* Indicates students under my direct mentorship or supervision

\*\* Indicates students under my indirect mentorship or supervision

**\*Richard Cui**

2025

Summer Undergraduate Research Assistant (URA) · Dynamical modelling of seafood fraud in the supply chain

**\*Nikolett Toth**

2024-2025

CIS\*4900/4910 · Mining association rules for eDNA spatiotemporal sampling

<b>*Nikolett Toth</b>	2024
Summer Undergraduate Research Assistant (URA) · Mining association rules for eDNA spatiotemporal sampling	
<b>*Nathan Zeinstra</b>	2024
IBIO*6070 · Bayesian habitat occupancy modelling of sea lamprey using eDNA	
<b>*Fynn De Vuono-Fraser</b>	2024
CIS*4900/4910 · Bayesian modelling of seafood fraud in the Canadian supply chain	
<b>*Zaid Al-Gayyali</b>	2023
Summer Undergraduate Research Assistant (URA) · Seafood Fraud Visualization Tool Shiny app	
<b>*Fynn De Vuono-Fraser (with Dan Gillis)</b>	2023
STAT*4600 · Bayesian modelling of seafood fraud in the Canadian supply chain	
<b>*Amina Asif (with Bob Hanner)</b>	2022
BINF*6999 · DNA barcode gap analysis of Canadian disease vectors and agricultural pests	
<b>*Navdeep Singh (with Dan Gillis)</b>	2021
CIS*4900 · HACSim R Shiny web application	
<b>*Scarlett Bootsma (with Dan Gillis)</b>	2020–2021
CIS*4900/4910 · HACSim simulation study	
<b>**Maya Persram (with Bob Hanner)</b>	2020
Hanner Lab volunteer · R reporting ecological meta-analysis	
<b>**Ashley Chen (with Bob Hanner)</b>	2020
Hanner Lab volunteer · R reporting ecological meta-analysis	
<b>**Olivia Friesen Kroeker (with Bob Hanner)</b>	2020
Hanner Lab volunteer · R reporting ecological meta-analysis	
<b>**Christina Fragel (with Bob Hanner)</b>	2018–2019
BINF*6999 · DNA barcode sequence classification with machine learning	
<b>**Jiaojia (Paula) Yu (with Bob Hanner)</b>	2018–2019
BINF*6999 · MDMAPR R Shiny app	
<b>**Danielle St. Jean (with Dan Gillis)</b>	2018–2019
MSc. thesis · DNA barcode sequence classification with machine learning	
<b>*Steven French (with Dan Gillis)</b>	2018
CIS*4900/4910 · HACSim R package	
<b>**Julia Harvie (with Bob Hanner)</b>	2018–2019
MCB*4500/4510 · Data mining GenBank and BOLD	
<b>**Ankita Bhanderi (with Bob Hanner)</b>	2018
BINF*6999 · Data mining GenBank and BOLD	

### **ASSISTANTSHIPS, AWARDS, SCHOLARSHIPS, AND GRANTS<sup>1</sup>**

#### **Completed**

<b>Food from Thought Advancing Research Impact (ARIF) Fund – Livestock Innovation Grant</b>	2024
University of Guelph	\$40000.00 CAD
<ul style="list-style-type: none"> <li>1-year postdoctoral funding to develop and refine the Dynamic Population Model (DPM) to assess global disease burden in livestock</li> </ul>	

<b>Food from Thought Advancing Research Impact (ARIF) Fund</b>	2022
University of Guelph	\$30000.00 CAD
<ul style="list-style-type: none"> <li>1-year postdoctoral funding to develop a Bayesian hierarchical binary logistic time-series regression model of seafood fraud in the Canadian supply chain</li> </ul>	
<b>SoCS Travel Grant</b>	2019
University of Guelph	\$1000.00 CAD
<ul style="list-style-type: none"> <li>Supported travel to the 8<sup>th</sup> International Barcode of Life Conference in Trondheim, Norway to present doctoral research</li> </ul>	
<b>Arthur D. Latornell Graduate Travel Grant</b>	2019
University of Guelph	\$500.00 CAD
<ul style="list-style-type: none"> <li>Awarded for first-class academic standing in Ph.D. coursework</li> <li>Supported travel to the 8<sup>th</sup> International Barcode of Life Conference in Trondheim, Norway to present work related to resource management and conservation</li> </ul>	
<b>Graduate Teaching Assistantships</b>	2017–2020
University of Guelph	\$34,506.00–35,148.00 CAD
<b>Graduate Research Assistantships</b>	2017–2019
University of Guelph	\$11,000.00 CAD
<b>CPES Graduate Dean’s Scholarship</b>	2017
University of Guelph	\$3500.00 CAD
<ul style="list-style-type: none"> <li>Awarded in recognition of achieving over 85% in Master’s coursework</li> </ul>	
<b>CPES Graduate Excellence Entrance (GEE) Scholarship</b>	2016
University of Guelph	\$30000.00 CAD
<ul style="list-style-type: none"> <li>Awarded in recognition of achieving over 85% in Master’s coursework</li> </ul>	

In preparation

<b>NSERC Alliance Society Grant</b>	2025
University of Guelph	\$5 million CAD
AI-Driven Biodiversity Restoration: Scalable Solutions for Ecosystem Monitoring and Conservation	
<ul style="list-style-type: none"> <li>Research in collaboration with over 10 University of Guelph members in multiple departments incorporating acoustic surveys, camera trapping and thermal imaging, environmental DNA (eDNA) sampling, and hydrological and soil modelling</li> </ul>	
<b>NSERC CREATE Grant</b>	2025
University of Guelph	\$9.9 million CAD
AI-Driven Biodiversity Restoration: Scalable Solutions for Ecosystem Monitoring and Conservation	
<ul style="list-style-type: none"> <li>Research in collaboration with over 10 University of Guelph members in multiple departments incorporating acoustic surveys, camera trapping and thermal imaging, environmental DNA (eDNA) sampling, and hydrological and soil modelling</li> </ul>	

**New Frontiers in Research Fund (NFRF)** 2025  
 University of Guelph \$24 million CAD  
 AI-Driven Biodiversity Monitoring: Scalable Solutions for Ecosystem Restoration through Interdisciplinary Innovation

- Research in collaboration with over 10 University of Guelph members in multiple departments incorporating acoustic surveys, camera trapping and thermal imaging, environmental DNA (eDNA) sampling, and hydrological and soil modelling

## **ACADEMIC SERVICE**

**Pathways to Increase Standards and Competency in eDNA Surveys (PISCeS) Conference** 2023  
 University of Guelph

- Organized and participated in international eDNA conference hosted by the Hanner Lab
- Duties included registration, upload, and audiovisual support

**School of Computer Science (SoCS) Search Committee** 2018  
 University of Guelph

- Associate Professor position in cybersecurity
- Responsibilities included reviewing and ranking received applications, shortlisting strong candidates to be invited for formal interviews, participating in interview questioning, and attending organized events with candidates and other SoCS faculty

**School of Computer Science (SoCS) Search Committee** 2017–2018  
 University of Guelph

- Two-year contractually-limited Assistant Professor position in cybersecurity
- Tasks included reviewing and ranking received applications, shortlisting strong candidates to be invited for formal interviews, participating in interview questioning, and attending organized events with candidates and other SoCS faculty

## **ACADEMIC PEER REVIEW SERVICE**

*Ecology and Evolution, F1000 Research, Frontiers in Ecology and Evolution, Lifestyle Genomics, Mitochondrial DNA Part A, Molecular Ecology Resources, Molecular Biology Reports, Methods in Ecology and Evolution*

## **PROCEEDINGS**

**CEPS Undergraduate Student Poster Day** (student poster presentation) 2024  
 Nikolett Toth · Association Rule Mining of eDNA Datasets  
 University of Guelph, Canada

**CBS Undergraduate Poster Session** (student poster presentation) 2024  
 Nikolett Toth · Association Rule Mining of eDNA Datasets  
 University of Guelph, Canada

**9<sup>th</sup> International Barcode of Life Conference** (poster presentation) 2024  
 Estação das Docas, Brazil · A Measure of the DNA Barcode Gap for Applied and Basic Research  
 (not attended)

<b>GBADs Technical Workshop</b> (oral presentation)	2023
University of Liverpool, England · The GBADs R Package (and Why We Need it!)	
<b>CEPS Student Research Day</b> (student poster presentation)	2023
Fynn De Vuono-Fraser · Estimating Seafood Mislabelling Rates in Canada Using Bayesian Modelling	
University of Guelph, Canada	
<b>Pathway to Increase Standards and Competency of eDNA Surveys (PICSeS)</b>	2023
<b>International Conference</b> (poster presentation)	
University of Guelph, Canada	
<b>8<sup>th</sup> International Barcode of Life Conference</b> (oral presentation)	2019
NTNU University Museum and Norwegian Biodiversity Information Centre, Norway	
<b>Guelph BioMathematics and Statistics (BioM&amp;S) Symposium</b>	
<b>Artificial Intelligence and Machine Learning in Biology</b> (attended)	2019
University of Guelph, Canada	
<b>CEPS Undergraduate Student Poster Day</b> (student poster presentation)	2018
Steven French · Estimating Sampling Size Using Haplotype Accumulation Curves and Semiparametric Models	
University of Guelph, Canada	
<b>7<sup>th</sup> International Barcode of Life Conference</b> (oral presentation)	2017
University of Johannesburg, South Africa	
<b>6<sup>th</sup> International Barcode of Life Conference</b> (poster presentation)	2015
University of Guelph, Canada	

## **SOFTWARE DEVELOPMENT**

RulesTools · R package

- Streamlined tools to facilitate association rule mining and visualization using various discretization and imputation methods, along with heatmaps and Euler diagrams
- R package available for download through the Comprehensive R Archive Network ([CRAN](#)) package repository
- Has been downloaded over 700 times since publication in January 2025

GBADsDPM (Global Burden of Animal Diseases Dynamic Population Model) · R package

- A novel stochastic age- and sex-structured compartmentalized equation-based model to assess the burden of animal diseases in livestock such as cattle, small ruminants, and poultry within developing countries like Ethiopia

HACSim (Haplotype Accumulation Curve Simulator) · R package · R Shiny web app

- A novel nonparametric stochastic (Monte Carlo) local search optimization method of iteratively generating species' haplotype accumulation curves through extrapolation to assess within-species sampling completeness
- R package and Shiny app respectively available for download through [CRAN](#) or at [shinyappps.io](#)
- Publication in *PeerJ Computer Science* was one of the top five most viewed papers in the category *Optimization Theory and Computation*
- Has been downloaded over 40000 times since being published in May 2019

## VLF (Very Low Frequency) · R package

- A novel tool to assess PCR errors, sequencing errors, *etc.* in the form of very low frequency variants, within DNA sequences using a sliding window approach
- R package available for download through [CRAN](#)
- Manuscript published in the *Biodiversity Data Journal*
- Has been downloaded over 40000 times since publication in 2013

## REFEREED WORK

### Journal Articles

Citations: 278 · h-index: 6 (According to Google Scholar, as of June 20, 2025)

\* Indicates students under my direct mentorship or supervision

\*\* Indicates students under my indirect mentorship or supervision

### Published or Accepted

9. **Phillips, J.D.**, Hubert, N. and Hanner, R.H. A Bayesian coalescent model of the DNA barcode gap. Authorea. DOI: [10.22541/au.174073683.37707806/v1](#)
8. Raymond, K., Sobkowich, K.E., **Phillips, J.D.**, Nguyen, L., McKechnie, I., Mohideen, R.N., Fitzjohn, W., Szurkowski, M., Davidson, J., Rushton, J., Stacey, D.A. and Bernardo T.M. (2024). GBADs informatics strategy: User-centric tools, data quality, and model interoperability. *WOAH Scientific and Technical Review*, **43**: 96-107. DOI: [10.20506/rst.43.3522](#). Number of article citations: 1.
7. **Phillips, J.D.** and \*De Vuono-Fraser, F.A. (2024). Statistical modelling of seafood fraud in the Canadian supply chain. bioRxiv. DOI: [10.1101/2024.02.05.578947](#).
6. **Phillips, J.D.**, Athey, T.B.T., Hanner, R.H. and McNicholas, P.D. VLF: An R package for the analysis of very low frequency variants in DNA sequences. *Biodiversity Data Journal*, e96480. DOI: [10.3897/BDJ.11.e98480](#). Number of article citations: 2.
5. **Phillips, J.D.**, Gillis, D.J. and Hanner, R.H. (2022). Lack of statistical rigor in DNA barcoding likely invalidates the presence of a true species' barcode gap. *Frontiers in Ecology and Evolution*, **10**: 859099. DOI: [10.3389/fevo.2022.859099](#). Number of article citations: 44.
4. D'Ercole, J., Dincă, V., Opler, P.A., Kondla, N.G., Schmidt, C.B., **Phillips, J.D.**, Robbins, R., Burns, J.M., Miller, S.E., Grishin, N., Zakharov, E.V., deWaard, J.R., Ratnasingham, S. and Hebert, P.D.N. (2021). A DNA barcode library for the butterflies of North America. *PeerJ*, **9**: e11157. DOI: [10.7717/peerj.11157](#). Number of article citations: 26.
3. **Phillips, J.D.**, \*French, S.H., Hanner, R.H. and Gillis, D.J. (2020). HACSim: An R package to estimate intraspecific sample sizes for genetic diversity assessment using haplotype accumulation curves. *PeerJ Computer Science*, **6**(192): 1-37. DOI: [10.7717/peerj-cs.243](#). Number of article citations: 24.
2. **Phillips, J.D.**, Gillis, D.J. and Hanner, R.H. (2019). Incomplete estimates of genetic diversity within species: Implications for DNA barcoding. *Ecology and Evolution*, **9**(5): 2996-3010. DOI: [10.1002/ece3.4757](#). Number of article citations: 143.
1. **Phillips, J.D.**, Gwiazdowski, R.A., Ashlock, D. and Hanner, R. (2015). An exploration of sufficient sampling effort to describe intraspecific DNA barcode haplotype diversity: examples from the ray-finned fishes (Chordata: Actinopterygii). *DNA Barcodes*, **3**: 66-73. DOI: [10.1515/dna-2015-0008](#). Number of article citations: 33.



### Submitted or Under Revision

3. **Phillips, J.D.** and \*De Vuono-Fraser, F.A. Statistical modelling of seafood fraud highlights uncertainties in products from Metro Vancouver, British Columbia, Canada: Revisiting Hu *et al.* (2018). Submitted to *RSS Data Science and Artificial Intelligence*.
2. **Phillips, J.D.** and \*De Vuono-Fraser, F.A. Swimming in uncertainty: How proper statistical modelling can help expose seafood product mislabelling. Submitted to *CHANCE*.
1. **Phillips, J.D.**, Hubert, N. and Hanner, R.H. A Bayesian coalescent model of the DNA barcode gap. Submitted to *Molecular Ecology Resources*.

### In Preparation or To Be Submitted

8. **Phillips, J.D.**, Cui, R.C., and Yodzis, M.P. Seafood market product fraud erodes both consumer trust and resource sustainability within the global supply chain. Targeted to *PNAS*.
7. \*Toth, N., Antonie, M.L., Hanner, R.H., Gillis, D.J., and **Phillips, J.D.** Mining association rules for targeted spatiotemporal aquatic environmental DNA (eDNA) sampling. Targeted to *Environmental DNA*.
6. **Phillips, J.D.**, \*Al-Gayyali, Z.B., \*De Vuono-Fraser, F.A., Hanner, R.H. and Gillis, D.J. The Seafood Fraud Visualization Tool: An R Shiny web app to summarize, model, and visualize seafood mislabelling trends in the supply chain.
5. Morey, K.C., **Phillips, J.D.**, Loeza-Quintana, T. and Hanner, R.H. Haplotype diversity reveals challenges and opportunities for developing targeted detection assays for COI in Canadian freshwater fish. Targeted to *Environmental DNA*.
4. Young, R.G., \*\*Persram, M., \*\*Friesen, O., \*\*Chen, A., \*\*Yu, J., **Phillips, J.D.** and Hanner, R.H. Incomplete and irregular reporting of the R statistical and computing environment highlights the need for citation guidelines to support scientific reproducibility.
3. **Phillips, J.D.**, \*Singh, N., Hanner, R.H. and Gillis, D.J. The HACSim R Shiny app: A web interface to estimate specimen sampling sufficiency for species genetic diversity assessment with DNA sequence data.
2. D'Ercole, J., Dapporto, L., **Phillips, J.D.**, Dincă, V.E., Vila, R., Talavera, G. and Hebert, P.D.N. Macrogenetics of North American butterflies—The impact of Quaternary climatic fluctuations. Targeted to *PNAS*.
1. **Phillips, J.D.**, \*Bootsma, S.E., Hanner, R.H. and Gillis, D.J. Solving the genetic specimen sample size problem with a local search optimization algorithm. Targeted to *Methods in Ecology and Evolution*.

### **Book Chapters**

#### Published or Accepted

2. **Phillips, J.D.**, Griswold, C.K., Young, R.G., Hubert, N. and Hanner, R.H. (2024). A Measure of the DNA Barcode Gap for Applied and Basic Research. In: DeSalle, R. (eds) DNA Barcoding. Methods in Molecular Biology, vol 2744. Humana, New York, NY.  
URL: [https://link.springer.com/protocol/10.1007/978-1-0716-3581-0\\_24](https://link.springer.com/protocol/10.1007/978-1-0716-3581-0_24) Number of article citations: 1.
1. Hubert, N., **Phillips, J.D.**, Hanner, R.H. (2024). Delimiting Species with Single-Locus DNA Sequences. In: DeSalle, R. (eds) DNA Barcoding. Methods in Molecular Biology, vol 2744. Humana, New York, NY. URL: [https://link.springer.com/protocol/10.1007/978-1-0716-3581-0\\_3](https://link.springer.com/protocol/10.1007/978-1-0716-3581-0_3) Number of article citations: 1.

### **Conference Proceedings**

4. Morey, K., Loeza-Quintana, T., **Phillips, J.** and Hanner R. (2023). Haplotype diversity reveals challenges and opportunities for developing targeted detection assays for *COI* in Canadian freshwater fish. Pathways to Increase Standards and Competency in eDNA Surveys (PISCeS) Conference. Poster.
3. **Phillips, J.D.**, Gillis, D. and Hanner, R. (2019). HACSim: Iterative extrapolation of haplotype accumulation curves for assessment of intraspecific COI DNA barcode sampling completeness Scientific abstracts from the 8th International Barcode of Life Conference, Trondheim, Norway (ed. Torbjørn Ekrem), *Genome*, 62(6): 349-453. Oral presentation.
2. **Phillips, J.D.**, Gillis, D. and Hanner, R. (2017). Intraspecific sample size estimation for DNA barcoding: Are current sampling levels enough? Scientific abstracts from the 7th International Barcode of Life Conference, Johannesburg, South Africa (ed. M. van der Bank), *Genome*, 60(11): 881-1019. Oral presentation.
1. **Phillips, J.D.**, Gwiazdowski, R.A., Ashlock, D. and Hanner, R. (2015). An exploration of sufficient sampling effort to describe intraspecific haplotype diversity in the ray-finned fishes (Chordata: Actinopterygii). Scientific abstracts from the 6th International Barcode of Life Conference, Guelph, ON., Canada (ed. S.J. Adamowicz), *Genome*, 58(5): 163-303. Poster.

## **NON-REFEREED WORK**

\* Indicates students under my direct mentorship or supervision

12. **Phillips, J.D.**, \*De Vuono-Fraser, F.A., Gillis, D.J., and Hanner, R.H. (2024). Statistical modelling of seafood fraud. Whiteboard explainer video. URL: <https://www.moon-man.com/whiteboard-animation-production-company>.
11. \*Toth, N. (2024). eDNA Collection Gets a Tech Update. Student contributed CEPS Research Highlights article. URL: <https://www.uoguelph.ca/ceps/news/2024/07/edna-collection-gets-tech-upgrade>
10. \*Toth, N. (2024). Unravelling eDNA with Association Rule Mining. Contributed guest post to the Science Borealis-syndicated blog of Dr. Daniel Gillis. URL: <https://danielgillis.wordpress.com/2024/08/15/unravelling-edna-with-association-rule-mining/>
9. **Phillips, J.D.** (2024). Summer URA Position. Contributed guest post to the Science Borealis-syndicated blog of Dr. Daniel Gillis. URL: <https://danielgillis.wordpress.com/2024/02/07/summer-ura-position-2/>
8. **Phillips, J.D.** (2022). A Novel Statistical Framework for Assessment of Intraspecific Haplotype Sampling Completeness: Implications for DNA Barcode Gap Estimation. Ph.D. Thesis. URL: <https://atrium.lib.uoguelph.ca/items/8addfcc5-f21c-4691-89b7-c4db051892eb>
7. **Phillips, J.D.** (2022) Mind the Gap — The DNA Barcode Gap, That Is. Contributed CEPS Research Highlights article. URL: <https://www.uoguelph.ca/ceps/news/2022/08/mind-gap---dna-barcode-gap>
6. **Phillips, J.D.** (2020). Barcode Cracking. Contributed CEPS Research Highlights article. URL: <https://www.uoguelph.ca/ceps/news/2020/02/barcode-cracking>
5. **Phillips, J.D.** (2020). Protecting Biodiversity Through the Lens of Genetic Diversity. Contributed guest post to the Science Borealis-syndicated blog of Dr. Daniel Gillis. URL: <https://danielgillis.wordpress.com/2020/01/30/protecting-biodiversity-through-the-lens-of-genetic-diversity/>
4. **Phillips, J.D.** (2019). IBOL8 and the Midnight Sun. Contributed guest post to the Science Borealis-syndicated blog of Dr. Daniel Gillis. URL: <https://danielgillis.wordpress.com/2019/07/02/reflections-ibol8-and-the-midnight-sun/>
3. **Phillips, J.D.** (2017). The Big Five and IBOL7. Contributed guest post to the Science Borealis-syndicated blog of Dr. Daniel Gillis. URL: <https://danielgillis.wordpress.com/2017/12/06/reflections-the-big-five-and-ibol7/>

2. **Phillips, J.D.** (2016). Sample size estimation for DNA barcoding: Are current sampling levels enough? Contributed guest post to the DNA Barcoding Blog of Dr. Dirk Steinke. URL: <http://dna-barcoding.blogspot.com/2016/01/guest-post-sample-size-estimation-for.html>
1. **Phillips, J.D.** (2016). Sample size estimation for DNA barcoding of ray-finned fishes: Are current sampling levels enough? Contributed newsletter article to the Barcode Bulletin, 7(1).

## **VOLUNTEER EXPERIENCE**

2. **Student Research Connections Networking Night** 2025  
University of Guelph
  - Connected with motivated undergraduate students interested in conducting research projects under my supervision over the summer semester and beyond
1. **Wireframing session** 2021-2024  
University of Guelph
  - Participated in student-led use case mobile app prototype demonstrations for CIS\*3750 – System Analysis and Design in Applications
  - Graded students based on several factors via Qualtrics surveys

## **REFERENCES**

Dr. Daniel Gillis  
Full Professor & Statistician  
School of Computer Science  
University of Guelph  
50 Stone Road East  
Guelph, ON.  
N1G 2W1  
[dgillis@uoguelph.ca](mailto:dgillis@uoguelph.ca)

Dr. Robert Hanner  
Full Professor  
Department of Integrative Biology  
Biodiversity Institute for Conservation Synthesis  
University of Guelph  
Guelph, ON.  
50 Stone Road East  
N1G 2W1  
(519) 824-4120 ext. 53479  
[rhanner@uoguelph.ca](mailto:rhanner@uoguelph.ca)

Dr. Deborah Stacey  
Associate Professor Emerita  
School of Computer Science  
University of Guelph  
50 Stone Road East  
Guelph, ON.  
N1G 2W1  
[dastacey@uoguelph.ca](mailto:dastacey@uoguelph.ca)

Dr. Graham Taylor  
Full Professor  
School of Engineering  
University of Guelph  
50 Stone Road East  
Guelph, ON.  
N1G 2W1  
(519) 824-4120 ext. 53644  
[gtaylor@uoguelph.ca](mailto:gtaylor@uoguelph.ca)

Dr. Dirk Steinke  
 Associate Director – Analytics  
 Adjunct Professor  
 Centre for Biodiversity Genomics  
 Department of Integrative Biology  
 University of Guelph  
 50 Stone Road East  
 N1G 2W1  
 Guelph, ON.  
 (519) 824-4120 ext. 53759  
[dsteinke@uoguelph.ca](mailto:dsteinke@uoguelph.ca)

Dr. Sarah Adamowicz  
 Full Professor  
 Department of Integrative Biology  
 University of Guelph  
 50 Stone Road East  
 N1G 2W1  
 Guelph, ON.  
 (519) 824-4120 ext. 53055  
[sadamowi@uoguelph.ca](mailto:sadamowi@uoguelph.ca)

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<sup>1</sup> Only includes received assistantships, awards, scholarships, and grants. Non-funded grants are below.

<b>Food from Thought Advancing Research Impact (ARIF) Fund – Knowledge Mobilization Grant</b>	2024
University of Guelph	\$30000 CAD
• 1-year postdoctoral funding to develop association rule classifiers for targeted aquatic eDNA species detection	
<b>NSERC Postdoctoral Fellowship</b>	2021
University of Waterloo	\$90000.00 CAD
• 2-year postdoctoral funding to develop an ensemble machine learning model for taxonomic classification of regulated species in Canada	
<b>Guelph Institute for Environmental Research Small Grants Program (GIER SGP)</b>	2020
University of Guelph	\$15000.00 CAD
• 1-year postdoctoral funding to develop a Bayesian hierarchical binary logistic time-series regression model of seafood fraud in the Canadian supply chain	