

# Andrew D. Nguyen

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## Research Interests

I am broadly interested in constructing narratives from data to address real world problems.

## Experience

**2019-Present Associate Scientist**, People for the Ethical Treatment of Animals, Regulatory Toxicology Department (PETA)

Work collaboratively with government agencies and industry stakeholders on the adoption and usage of non-animal test methods in the areas of pyrogen testing and personal lubricants

Aggregate and analyze diverse datasets of systemic toxicological apical endpoints to inform regulatory testing needs

Review *in silico* models of systemic toxicity and provide model developers with feedback

Research and draft safety testing strategies for food ingredients

Create educational materials for the dissemination of non-animal test approaches for food testing and weight of evidence

Disseminated scientific works and findings through blogs, webpages, factsheets, webinars, presentations, and peer-reviewed scientific literature

**2017 - 2019 Postdoctoral Associate**, University of Florida

Supervisor: Dr. Daniel Hahn

Managed and led an National Science Foundation funded project on the seasonal adaptation of agricultural insect pests

Investigated behavioral rhythms with time series analyses and fitting statistical models

Communicated findings in technical journals and at scientific conferences

Hosted workshops for conducting reproducible science

**2012-2017 Dissertation research**; University of Vermont

Worked independently and in collaboration to complete Dimensions of Biodiversity, National Science Foundation grant objectives

Completed projects starting from ideas to experimentation, data analysis, visualization, and manuscript preparation

Disseminated research through seminars and workshops within the Biology Department

Organized weekly meetings for project progress and reported updates

**2014 Research Associate**, Dr. Lori Stevens lab; University of Vermont

Determined infection frequency of Trypanosome parasites in Kissing bugs that cause Chagas disease  
Fitted statistical models for infection rates

**2010-2011 Technician**; Reaction Biology Corp

High-throughput screening of potentially therapeutic small compounds

**2009-2010 Technician**, Antibody Core Department; Morphotek Inc.

Developed therapeutic antibodies against Acute Myeloid Leukemia (AML)  
Experimentally carried out bulk antibody and antigen production

**2007-2008 Co-op intern**, Reproductive Toxicology; GlaxoSmithKline

Studied red blood cell differentiation from mouse embryonic stem cells  
Experimentally analyzed rabbit blood hormone markers

**2006-2007 Co-op intern**, Antibody Core Department; Morphotek Inc.

Developed neutralizing antibodies against Staphylococcal Enterotoxin B (SEB)

## Education

**2012-2017 PhD, Biology**; University of Vermont (Burlington), Department of Biology

*Thesis title: Evolutionary innovations in ants to thermally stressful environments*

Advisors: Sara Helms Cahan, Nicholas J. Gotelli

Committee: Brent L. Lockwood, Jill Preston

**2004-2009 BSc, Biology**; Drexel University (Philadelphia)

## Publications

Undergraduate researchers in *italics*

11. Petersen, E. J., **Nguyen, AD**, et al. (2021) Characteristics to consider when selecting a positive control material for an in vitro assay, ALTEX - Alternatives to animal experimentation. doi: 10.14573/altex.2102111. **Both authors contributed equally**; Paper link 10. **Nguyen AD** et al. 2019. Trade-Offs in Cold Resistance at the Northern Range Edge of the Common Woodland Ant *Aphaenogaster picea* (Formicidae). The American Naturalist. 194:6 Paper and Data 9. Powell THQ, **Nguyen AD**, et al. 2020. A rapidly evolved shift in life-history timing during ecological speciation is driven by the transition between developmental phases. Journal of Evolutionary Biology 33:10. Paper link 8. **Nguyen AD**, *DeNovellis K, Resendez S, Pustilnik JD*, Gotelli NJ, Parker JD, Cahan SH. 2017. Effects of desiccation and starvation on thermal tolerance and the heat-shock response in forest ants. J Comp Physiol B:1–10. Paper 7. **Nguyen AD**, Gotelli NJ, Cahan SH. 2016. The evolution of heat shock protein sequences, cis-regulatory elements, and expression profiles in the eusocial Hymenoptera. BMC Evolutionary Biology 16:15. Paper and Data 6. Helms Cahan S, **Nguyen AD**, Zhou Y. Population genomics supports multiple hybrid zone origins of socially hybridogenetic lineages of *Pogonomyrmex* harvester ants. Evolution (N Y). 2022;76(5):1016-1032. doi:10.1111/evo.14481 5. Stevens L, Lima-Cordón RA, Helms Cahan S, **Nguyen AD**, et al. Catch me if you can: Under-detection of *Trypanosoma cruzi* (Kinetoplastea: Trypanosomatida) infections in *Triatoma dimidiata* s.l. (Hemiptera: Reduviidae) from Central America. Acta Trop. 2021;224:106130. doi:10.1016/J.ACTATROPICA.2021.106130 4. Helms Cahan S, **Nguyen AD**, Stanton-Geddes J, Penick CA, Hernáiz-Hernández Y, DeMarco BB, Gotelli NJ. 2017. Modulation of the heat shock response is associated with acclimation to novel temperatures but not adaptation to climatic variation in the ants *Aphaenogaster picea* and *A. rudis*. Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology 204:113–120. Paper and Data 3.

Stanton-Geddes J, **Nguyen A**, Chick L, Vincent J, Vangala M, Dunn RR, Ellison AM, Sanders NJ, Gotelli NJ, Cahan SH. 2016. Thermal reactionomes reveal divergent responses to thermal extremes in warm and cool-climate ant species. BMC Genomics 17:171. Paper and Data 2. Cicconardi F,...**Nguyen AD**,...,Steiner FM,Schlick-Steiner, BC. 2020. Genomic signature of shifts in selection in a sub-alpine ant and its physiological adaptations. Molecular Biology and Evolution. <https://doi.org/10.1093/molbev/msaa076> Paper 1. Lau MK, Ellison AM, **Nguyen A**, Penick C, DeMarco B, Gotelli NJ, Sanders NJ, Dunn RR, Helms Cahan S. 2019. Draft Aphaenogaster genomes expand our view of ant genome size variation across climate gradients. PeerJ 7:e6447 <https://doi.org/10.7717/peerj.6447>

## Skills

### Computing:

- *R* – Data wrangling, visualization, and analysis within the *tidyverse*
- *Unix* – General command line, shell bash scripting, and remote computing
- *Github* – Reproducible science through version control and online notebooks/documentation
- *Phylogenetics* - Maximum likelihood (RAxML) and Bayesian (MrBayes) methods
- Nucleotide and Protein Sequence analysis
- *Microsoft Office* – Data preparation, organization, and word processing
- Mendeley - organize references in a collaborative fashion

### Laboratory:

- RNA,DNA, and protein isolation
- PCR and qPCR
- Gel electrophoresis: polyacrylamide and agarose
- Immunochemistry - western blots, ELISAs, IHC
- Cell culture (primary and established lines)
- Flow Cytometry

## External Reviewer

Computational Toxicology  
 Innate Immunity  
 The Journal of Pathology  
 Genome Biology and Evolution  
 Molecular Ecology  
 Journal of Animal Ecology  
 Journal of Experimental Biology  
 Scientific Reports  
 Conservation Physiology  
 Journal of Insect Physiology  
 Insectes Sociaux  
 Insect Science

## Conferences/Workshops Attended

- 2022** ASCCT, Gaithersburg, MD  
**2020** Practical Methods for In Vitro Toxicology Workshop, Gaithersburg, MD  
**2019** Integrating Modern Science Approaches, Houston, Texas  
Computational TOxicology: Peeking into the clouds while keeping our feet on solid ground, Gaithersburg, MD  
**2018** Evolution, Montpellier, France  
**2017** Society of Integrative and Comparative Biology, New Orleans, LA  
Entomological Society of America, Denver, CO  
**2016** Evolution, Austin, Texas  
**2014** Evolution, Raleigh, North Carolina  
Molecular Biology and Evolution, Old San Juan, Puerto Rico  
**2013** Northeast Natural History - Ant Ecology session, Springfield, Massachusetts  
**2012** International Union for the Study of Social Insects - North American Section Meeting (IUSSI-NAS), Greensboro, North Carolina

## Organizational Membership

- 2019-Present** American Society for Cellular and Computational Toxicology (ASCCT)  
**2017-2018** Society for Research on Biological Rhythms (SRBR)  
Entomological Society of America (ESA)  
**2015-2017** American Society of Naturalists (ASN)  
**2014-2015** Society for Integrative & Comparative Biology (SICB)  
**2012-2013** Society of Molecular Biology and Evolution (sMBE)  
International Union for the Study of Social Insects (IUSSI)  
Ecological Society of America (ESA)

## University Service

- 2018-2019** University Minority Mentor Program (UMMP)
- Help first year undergraduate students transition into university life.
- 2018-2019** Editor, University of Florida Postdoctoral Editors Association (UF-PEA)
- Edit written documents for language usage, punctuation, and organization.

## Outreach

- 2015** **Helper**, Software Carpentry, University of Vermont  
Helped participants troubleshoot code (Unix command line, R, Github)
- 2012** **Graduate Mentor**, Ant Camp, University of Vermont  
Collected ants and described their natural history with high school students