Andrew D. Nguyen

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Research Interests

I am broadly interested in uncovering new knowledge with quantitative rigor and without infringing upon any sentient being's right to a free life or personhood.

Experience

2019-Present **Advisor**, PETA International Science Consortium LTD. (PISCLTD)

Promote non-animal testing methods

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

Supervisor: Dr. Daniel Hahn

Managed and led National Science Foundation funded project on 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 through put 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)

Funding, Awards, and Grants

2017 Suiter Prize Travel Award - $1,000

Publications

Undergraduate researchers in *italics*

1. **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
2. **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
3. 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
4. **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
5. 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

Skills

Computing:

- *Unix* – General command line, shell bash scripting, and remote computing
- *R* – Data analysis and visualization
- *(R)Markdown* – Integrative word processing and technical reporting
- *Python* – Written scripts to parse genomic data
- *Github* – Reproducible science through version control and online notebooks
- *HTML* – Website development
- *Phylogenetics* - Maximum likelihood (RAxML) and Bayesian (MrBayes)
- *Geneious* – Sequence analysis
- *Microsoft Office* – Data preparation, organization, and word processing

Laboratory:

- RNA,DNA, and protein isolation
- PCR and qPCR
- Gel electrophoresis: polyacrylamide and agarose
- Western blotting; immunohistochemistry
- Cell culture (primary and established lines)
- Flow Cytometry

External Reviewer

Genome Biology and Evolution (1)
Molecular Ecology (1)
Journal of Animal Ecology (1)
Journal of Experimental Biology (1)
Scientific Reports (1)

Conservation Physiology (1)
Journal of Insect Physiology (1)
Insectes Sociaux (2)
Insect Science (1)

Research Presentations

2018 ***Adaptive shifts in heat shock protein gene expression profiles predict upper thermal limits in eastern forest ants***, Evolution, France (talk)

2017 ***Northern range limits of common forest ants is reflected in trade-offs between basal and induced cold tolerances***, Society of Integrative and Comparative Biology Conference, New Orleans, LA (talk)

2016 ***Implementing strategies to achieve reproducible research***, BioLunch, University of Vermont, Department of Biology, Burlington Vt (talk)

Northern range limits of common forest ants is reflected in trade-offs between basal and induced cold tolerances, Evolution meeting, Austin, TX (poster)

2015 ***Temperature adaptations in common woodland ants***, BioLunch, University of Vermont, Department of Biology, Burlington VT (talk)

2014 ***Surviving in a warming world: thermal adaptation in ants***, BioLunch, University of Vermont, Department of Biology, Burlington, VT (talk)

2013 ***Impact of environmental stress on thermal tolerance in Aphaenogaster picea***EcoLunch, University of Vermont Department of Biology, Burlington, VT (talk)

Physiological response to climate change in Aphaenogaster picea, Northeast Natural History-Ant Ecology session, Springfield, MA (talk)

2012 ***Heat shock proteins and thermal tolerance in Aphaenogaster picea***, EcoLunch, University of Vermont Department of Biology, Burlington, Vt (talk)

Sequence and Cis-regulatory Evolution of Heat Shock Protein hsp83, in Social Hymenoptera, International Union for the Study of Social Insects- North American Section Meeting (IUSSI-NAS), Greensboro, NC (poster)

Heat shock proteins and thermal tolerance in Aphaenogaster rudis, Aphaenophest, Petersham, MA (talk)

Conferences Attended

2018 Evolution, Montepllier, 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

American Society of Naturalists (ASN)
Society for Integrative & Comparative Biology (SICB)
Soceity for Reserach on Biological Rhythms (SRBR)
Entomological Society of America (ESA)
Society of Molecular Biology and Evolution (sMBE)
International Union for the Study of Social Insects (IUSSI)
Ecological Society of America (ESA)

Teaching Experience

2017 **Ecological Genomics** - Teaching Assistant, University of Vermont

2016	Invited Lecture, **Evolution**, University of Vermont,
2015	Invited Lecture, **Evolutionary Biology** for non majors, University of Vermont
2014	Invited Lecture, **Evolution**, University of Vermont
2014	**Exploring Biology** - Teaching Assistant, University of Vermont
2013	**Cell and Molecular Biology** - Teaching Assistant, University of Vermont
2012-2014	**Ecology and Evolution** - Teaching Assistant, University of Vermont
2012	**Principles of Biology** - Teaching Assistant, University of Vermont

Mentoring

Undergraduate Researchers:

- **Ariana Maleki** and **John Matthew Fisher** worked on developing microsatellites for population genetic work on common woodland ants.
- **Kerri Pinder**, **Skyler Resendez**, and **Jeremy Pustilnik** worked on how previous exposures to starvation and desiccation impact thermal tolerance and underlying stress responses (using heat shock proteins as a proxy). This work led to a manuscript in the Journal of Comparative Physiology B
- **Teddy Herriman** and **Austin Sherburne** worked on identifying potential morphological innovations that may temper and/or mitigate the effects of heat stress.
- **Curtis A. Provencher** worked on how experimental warming affects the stress levels of common woodland ants.
- **Megan Brown** and **Jordan Zitnay** identified trade-offs between constitutive and induced cold tolerances at the northern range boundary in common forest ants, likely constraining their northern expansion.

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, puctuation, 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