

Andrew D. Nguyen

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Research Interests

I am broadly interested in understanding the ecological, evolutionary, and genomic determinants of resiliency or susceptibility to climate change.

Education

- 2012-2017 (expected)** **PhD, Biology**; University of Vermont (Burlington), Department of Biology
Thesis title: Evolutionary innovations of 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
- 2015-2016** Research Assistantship - \$28,000/year

Publications

- Helms Cahan S, **Nguyen AD**, Stanton-Geddes J, Penick CA, HernáizHernández 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](#)
- 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](#) (Open Access)
- 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](#) (Open Access)

Forthcoming

- Nguyen AD**, DeNovellis K, Resendez S, Pustilnik J, Gotelli NJ, Parker JD, Helms Cahan S. (2016). Effects of desiccation and starvation on thermal tolerance and the cellular stress response in forest ants. In review at the *Journal of Comparative Physiology B*.

Research Experience

- 2012-2017** **Dissertation research**; University of Vermont
Worked independently and in collaboration to complete Dimensions grant objectives.
Took projects from ideas to experimentation, data analysis, visualization, and manuscript preparation.
- 2014** **Research Associate, Dr. Lori Stevens lab**; University of Vermont
Determined infection frequency of Trypanosome parasites in Kissing bugs that cause Chagas disease.

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).
2007-2008	Co-op intern , Reproductive Toxicology; GlaxoSmithKline Studied red blood cell differentiation from mouse embryonic stem cells.
2006-2007	Co-op intern , Antibody Core Department; Morphotek Inc. Developed neutralizing antibodies against Staphylococcal enterotoxin B (SEB).

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

Molecular Ecology
Insect Science

Research Presentations

2017	<i>Northern range limits of common forest ants is reflected in trade-offs between basal and induced cold tolerances</i> , Society of Integrative and Comparative Biology Conference, New Orleans, LA (talk)
2016	<i>Implementing strategies to achieve reproducible research</i> , BioLunch, University of Vermont, Department of Biology, Burlington Vt (talk) <i>Northern range limits of common forest ants is reflected in trade-offs between basal and induced cold tolerances</i> , Evolution meeting, Austin, TX (poster)
2015	<i>Temperature adaptations in common woodland ants</i> , BioLunch, University of Vermont, Department of Biology, Burlington VT (talk)
2014	<i>Surviving in a warming world: thermal adaptation in ants</i> , BioLunch, University of Vermont, Department of Biology, Burlington, VT (talk)
2013	<i>Impact of environmental stress on thermal tolerance in Aphaenogaster picea</i> EcoLunch, University of Vermont Department of Biology, Burlington, VT (talk) <i>Physiological response to climate change in Aphaenogaster picea</i> , Northeast Natural History- Ant Ecology session, Springfield, MA (talk)
2012	<i>Heat shock proteins and thermal tolerance in Aphaenogaster picea</i> , EcoLunch, University of Vermont Department of Biology, Burlington, Vt (talk) <i>Sequence and Cis-regulatory Evolution of Heat Shock Protein hsp83, in Social Hymenoptera</i> , International Union for the Study of Social Insects- North American Section Meeting (IUSSI-NAS), Greensboro, NC (poster) <i>Heat shock proteins and thermal tolerance in Aphaenogaster rudis</i> , Aphaenophest, Petersham, MA (talk)

Conferences Attended

2017	Society of Integrative and Comparative Biology, New Orleans, LA
2016	Evolution, Austin, Texas 2014 Evolution, Raleigh, North Carolina
2014	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

Society for Integrative & Comparative Biology (SICB)
American Society of Naturalists (ASN)
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).
- **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.

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