

Andrew D. Nguyen, PhD candidate

Department of Biology
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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

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| 2012-Present | University of Vermont, Burlington, Vermont, Ph.D. in Biology
Expected Graduation: May 2017
Co-Mentors: Dr. Sara Helms Cahan, Dr. Nicholas J. Gotelli
Concentration in Ecology and Evolutionary Biology |
| 2004-2009 | Drexel University, Philadelphia, Pennsylvania, B.S. Major: Biology |

Publications: Refereed Journal Articles

- 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.
- 2.) **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.
- 1.) 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.

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*.

Awards and Grants

2016 Suiter Prize Travel Award - \$1,000

Research Experience

2012-Present **Ph.D. candidate**, University of Vermont.
Uncovering evolutionary innovations in temperature adaptations in forest ants.

2014 **Research Associate**, 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**, Morphotek Inc.
Developed therapeutic antibodies against Acute Myeloid Leukemia (AML).

2007-2008 **Intern**, GlaxoSmithKline
Studied red blood cell differentiation from mouse embryonic stem cells.

2006-2007 **Intern**, Morphotek Inc.
Developed neutralizing antibodies against Staphylococcal enterotoxin B (SEB).

Skills

Computing: Unix, R, python, Github, Phylogenetics (RAxML, MrBayes), Geneious, HTML, Microsoft excel/word

Lab:

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

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 (IUSI)
Ecological Society of America (ESA)

External Reviewer

Insect Science

Research Presentations

- 2016 “Northern range limits of common forest ants is reflected in trade-offs between constitutive and induced cold tolerances”, Ecology Evolution and Environmental Biology, University of Vermont, Burlington, Vt (talk)
- 2016 “Implementing strategies to achieve reproducible research” BioLunch, University of Vermont, Department of Biology, Burlington Vt (talk)
- 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 2012, Petersham, MA (Talk)

Conferences Attended

- 2017 Society of Integrative and Comparative Biology
- 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.

Teaching Experience

- 2016 Invited Lecture, Evolutionary Biology, University of Vermont, Burlington, VT
- 2015 Invited Lecture, Evolutionary Biology for non majors, University of Vermont, Burlington, VT
- 2014 Invited Lecture, Evolution, University of Vermont, Burlington, VT
- 2014 Exploring Biology Laboratory, University of Vermont, Burlington, VT
- 2013 Cell and Molecular Biology Laboratory, University of Vermont, Burlington, VT
- 2012-2014 Ecology and Evolution Laboratory, University of Vermont, Burlington, VT

2012 Principles of Biology Laboratory, University of Vermont, Burlington, VT

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

2012 Graduate Mentor, Ant Camp, University of Vermont Department of Biology
Aided in communicating and demonstrating ant collecting to high school students