

Hu, Yi

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Education

Drexel University, Philadelphia, PA, USA

Degree: Ph.D. candidate (2009 – 2015)

Major: Ecology and Evolutionary Biology

Beijing Normal University, Beijing, China

Degree: M.Sc (2006 – 2009)

Major: Plant Ecology

Beijing Normal University, Beijing, China

Degree: B.Sc (2002 – 2006)

Major: Biology

Research Experience

2015 – present: Postdoctoral Research Fellow (Drexel University, PA, USA)

Advisor: Dr. Jacob Russell.

Identifying how the ecological and evolutionary interactions between host and symbiont shape holobiont biodiversity.

2009 – 2015: PhD research (Drexel University, PA, USA)

Advisor: Dr. Jacob Russell.

Dissertation: "The role of symbiotic bacteria in the evolution of ant herbivory".

*Characterizing the diversity of gut bacterial community of *Cephalotes varians* ants and assessing functions of gut bacteria of *Cephalotes varians* ants.*

2006 – 2009: Master research (Beijing Normal University, Beijing, China)

Advisor: Dr. Dayong Zhang.

Dissertation: "Female fitness reduction with clone size due to early-acting inbreeding depression in a monkshood, *Aconitum kusnezoffii* (Ranunculaceae)"

Conducting field investigation to assess the negative effects of self-pollination on female fertility associated with clone size.

Publications:

- **Hu Y**, Liao WJ, Zhang DY, Barrett SC (2015) Experimental analysis of mating patterns in a clonal plant reveals contrasting modes of self-pollination. *Ecology and Evolution* 5: 5423-5431. (IF=2.32, Ecology Q1 63/145)
- Russell JA*, **Hu Y***, Chau L, Pauliushchik M, Anastopoulos I, Anandan S, Waring MS (2014) Indoor biofilter growth and exposure to airborne chemicals similarly alter bacterial communities from plant roots. *Applied and Environmental Microbiology* 80: 4805-4813. *These authors contributed equally to this manuscript. (IF=3.952, Microbiology Q1 24/119)
- **Hu Y**, Łukasik P, Moreau CS, Russell JA (2014) Correlates of gut community composition across an ant species (*Cephalotes varians*) elucidate causes and consequences of symbiotic variability. *Molecular Ecology* 23: 1284-1300. (IF=6.494, Ecology Q1 11/145)
- Russell JA, Weldon S, Smith AH, Kim KL, **Hu Y**, Łukasik P, Doll S, Anastopoulos I, Novin M, Oliver KM (2013) Uncovering symbiont-driven genetic diversity across North American pea aphids. *Molecular Ecology* 22: 2045-2059. (IF=6.494, Ecology Q1 11/145)
- Anderson KE, Russell JA, Moreau CS, Kautz S, Sullam K, **Hu Y**, Basinger U, Mott BM, Buck N and Wheeler D (2012) Highly similar microbial communities are shared among related and trophically similar ant species. *Molecular Ecology* 21, 2282-2296. (IF=6.494, Ecology Q1 11/145)
- Liao WJ., **Hu Y**, et al. (2009). Female reproductive success decreases with display size in monkshood, *Aconitum kusnezoffii* (Ranunculaceae). *Annals of Botany* 104 (7):1405-1412. (IF=3.501, Plant Sciences Q1 30/196)

Conference presentations:

- **Hu Y**, Łukasik P, Moreau CS, Russell JA (December 2015): All hands on deck for nitrogen metabolism in an ancient, multi-partite symbiosis between turtle ants and gut bacteria. Oral presentation, the sixth Social Insects in the North-East Regions, Scranton, PA, USA.
- **Hu Y**, Łukasik P, Sanders J, Moreau CS, Russell JA (November 2015): Nutritional roles of gut symbionts in an herbivorous ant *Cephalotes varians*. Oral presentation, the 2015 Annual Meeting of Entomological Society of America, Minneapolis, MN, USA.

- **Hu Y**, Lukasik P, Sanders J, Moreau CS, Russell JA (June 2014): Roles of gut bacteria in nutrition of an ant species *Cephalotes varians*. Poster presentation, Evolution 2014, Raleigh, USA.
- **Hu Y**, Lukasik P, Moreau CS, Russell JA (May 2014): Assessing the diversity, variability and nutritional roles of gut bacteria in *Cephalotes varians*. Oral presentation, the third Social Insects in the North-East Regions, Philadelphia, PA, USA.
- Russell JA, Lukasik P, **Hu Y**, Moreau CS (November 2013). Diversity and abundance of microbial symbionts across the ants (Hymenoptera: Formicidae). Oral presentation, the 2013 Annual Meeting of Entomological Society of America, Austin, Texas, USA.
- Lukasik P, **Hu Y**, O'Donnell S, Russell JA (November 2012) Do army ants and their associated arthropods share symbiotic bacteria? Poster presentation, the 2012 Annual Meeting of the Entomological Society of America, Knoxville, TN, USA.
- Russell JA, **Hu Y**, Lukasik P, Moreau CS (November 2012) Variation in the bacterial gut communities of ants across diets and geographic locations. Oral presentation, the 2012 Annual Meeting of the Entomological Society of America, Knoxville, TN, USA.
- **Hu Y**, Chau L, Moreau CS, Holway D, Russell JA (November 2012): Variation of symbiotic gut communities across diets and colonies of the ant *Cephalotes varians*. Poster presentation, the 2012 Annual Meeting of the Entomological Society of America, Knoxville, TN, USA.
- **Hu Y**, Lukasik P, Lan Y, Moreau CS, Rosen G, Russell JA (July 2012): Variation of symbiotic gut communities across diets and colonies of the ant *Cephalotes varians*. Poster presentation, the 1st Joint Congress on Evolutionary Biology, Ontario, Canada.
- **Hu Y**, Moreau CS, Russell JA (November 2011) Assessing the diversity and stability of gut bacteria in *Cephalotes varians*. Poster presentation, the 2011 Annual Meeting of the Entomological Society of America Reno, Nevada, USA
- **Hu, Y**, Liao WJ, Zhang DY (June 2008): Quantifying the Relative Contributions of Geitonogamy and Autogamy to Overall Selfing Rates in *Aconitum kusnezoffii* (Ranunculaceae). Oral presentation: 75th Annual Conference of Botanical Society of China. Lanzhou, China.

Workshops

- 2015 Microbial Genomics & Metagenomics Workshops
(Offered by the U.S. Department of Energy Joint Genome Institute)
- 2012 NESCent Academy Next-gen Sequencing course
(Offered by the National Evolutionary Synthesis Center)
- 2011 The Ant Course
(Offered by California Academy of Sciences)

Honor and awards

- 2015 Short Visit Grant funded by Swiss National Science Foundation.
\$10,000.
- 2014 McLean Fellowship of Drexel University. \$12,000.
- 2014 Travel award of Drexel University Office of Graduate Studies. \$250
- 2012 Travel award of Society for the Study of Evolution. \$500.
- 2014,2012,2011 Travel award of Department of Biology at Drexel University. \$250.

Skills

- Statistics/Bioinformatics
 - ✧ Phylogenetic analysis and Genotyping data analysis (Terminal-Restriction Fragment Length Polymorphism and Microsatellite)
 - ✧ Proficient in 16S Pyrosequencing/Illumina data analysis using different tools: QIIME, mothur, R, matlab
 - ✧ Next-generation sequencing data analysis: IMG/MER pipeline, genome assembly, read-mapping, annotation and gene prediction.
- Molecular Biology
 - ✧ DNA extraction, PCR, real-time PCR, cloning
 - ✧ RNA extraction, rRNA depletion using Ribo-Zero Gold Kit, assessment of the quality and quantity of RNA samples using Agilent Bioanalyzer and Nanodrop systems
 - ✧ TRFLP, SSR, Sanger sequencing, next-generation sequencing

Teaching experience

- 2014 BIO222: Microbiology, lab (fall term)
 BIO141: Essential Biology, lab (summer term)
- 2013 BIO124: Evolution and organism diversity, recitation (winter term)
 BIO122: Cells and Genetics, lab (fall term)
- 2012 BIO124: Evolution and organism diversity, recitation (winter term)
 BIO122: Cells and Genetics, lab (fall term)
- 2011 ENV527: Molecular Ecology, lab (winter term)