

DR. LILY KHADEMPOUR – CURRICULUM VITAE

Lily.Khadempour@csun.edu

EDUCATION

University of Wisconsin-Madison 2011-2018

Advisor: Prof. Cameron Currie

Department of Integrative Biology - PhD

University of British Columbia 2008-2011

Advisor: Prof. Colette Breuil

Faculty of Forestry, Department of Wood Science – MSc with honors

University of British Columbia 2002-2007

Faculty of Science – BSc in Ecology and Environmental Biology

Spent two semesters abroad at the University of Otago, New Zealand

RESEARCH EXPERIENCE

Postdoctoral Researcher November 2018-Present

Research group of Prof. Casey terHorst – California State University, Northridge

- Studying the eco-evolutionary dynamics of protozoa and bacteria found in pitcher plants

Postdoctoral Researcher February 2018-November 2018

Research group of Prof. Cameron Currie – University of Wisconsin-Madison

- Comparative genome project examining the fungal cultivar of leaf-cutter ants through an evolutionary transition from dicot to grass specialization.

Research Assistant 2011-2018

Research group of Prof. Cameron Currie – University of Wisconsin-Madison

- Studied the microbial mediation of herbivory in leaf-cutter ant fungus gardens through approaches in ecology, evolutionary biology, genomics, metagenomics and metaproteomics.

Research Assistant 2007-2011

Research group of Prof. Colette Breuil – University of British Columbia

- Developed target-specific primers for quantitative PCR to identify and detect fungal associates of the mountain pine beetle from cultures and environmental samples. This tool was used in a year-long study to monitor fluctuations in the relative abundance of these fungi through the lifecycle of the beetle.

Mycological Lab Technologist 2006-2007

FPInnovations – Forintek Division

- Worked on a variety of projects involving fungi in the wood industry. Primarily worked as a technician studying the effects of heat-treatment for the disinfection of mountain pine beetle killed wood.

TEACHING EXPERIENCE

Teaching Assistant

Fall 2011, 2012

Comparative Vertebrate Anatomy Laboratory – University of Wisconsin-Madison

- Taught dissection techniques and vertebrate anatomy
- Wrote and graded exams
- Mentored undergraduate teaching assistants

Teaching Assistant

2008-2011

Wood Chemistry Laboratory – University of British Columbia

- Taught lab techniques and principles in wood chemistry and mycology
- Created lesson plans, designed new lab sessions and helped to write the lab manual
- Graded assignments, reports and oral exams

Guest Lectures

Biological Principles, CSUN

2018

Biology and Genetics of Filamentous Fungi, UW-Madison

2016

Diversity, Ecology and Evolution of Microorganisms, UW-Madison

2015 - 2018

Symbiosis Seminar for Biology Majors, Providence College, Rhode Island

2015

Wood Chemistry, University of British Columbia

2009 - 2011

PEER-REVIEWED PUBLICATIONS

h-index: 7, citations 124, [Google Scholar page](#)

7. Paludo, C.R., Menezes, C., Silva-Junior, E.A., Vollet-Neto, A., Andrade-Dominguez, A., Pishchany, G., **Khadempour, L.**, do Nascimento, F.S., Currie, C.R., Kolter, R., Clardy, J., Pupo, M.T. (2018) Stingless bee larvae obtain steroids from a fungal source. *Scientific Reports* 8:1122.
6. **Khadempour, L.**, Burnum-Johnson, K., Baker, E., Nicora, C., Webb-Robertson, B., Monroe, M., Huang, E., Smith, R., Currie, C. (2016) The fungal cultivar of leaf-cutter ants produces specific enzymes in response to different plant substrates. *Molecular Ecology* 25: 5795-5805.
5. Aylward, F.O., **Khadempour, L.**, Tremmel, D.M., McDonald B.R., Nicora C.D., Wu, S., Moore, R.J., Orton, D.J., Monroe, M.E., Pichowski, P.D., Purvine, S.O., Smith, R.D., Lipton, M.S., Burnum-Johnson, K.E. and Currie, C.R. (2015) Enrichment and Broad Representation of Plant Biomass-degrading Enzymes in the Specialized Hyphal Swellings of *Leucoagaricus gongylophorus*, the Fungal Symbiont of Leaf-Cutter Ants. *PLoS ONE* 10(8), e0134752
4. **Khadempour, L.**, LeMay, V., Jack, D., Bohlmann, J. and Breuil, C. (2012) The relative abundance of mountain pine beetle fungal associates through the beetle life cycle in pine trees. *Microbial Ecology*. 64: 909-917.

3. **Khadempour, L.**, Massoumi Alamouti, S., Hamelin, R., Bohlmann, J. and Breuil, C. (2010) Target-specific PCR primers can detect and differentiate ophiostomatoid fungi from microbial communities associated with the mountain pine beetle *Dendroctonus ponderosae*. *Fungal Biology*. 114: 825-33.
2. Tsui, C.K.M., Wang, B., **Khadempour, L.**, Massoumi Alamouti, S., Bohlmann, J, Murray, B.W. and Hamelin R.C. (2010) Rapid identification and detection of pine pathogenic fungi associated with mountain pine beetles by padlock probes. *Journal of Microbiological Methods*. 83: 26-33.
1. Tsui, C.K.M., Feau, N., Ritland, C.E., Massoumi Alamouti, S., Diguistini, S., **Khadempour, L.**, Bohlmann, J., Breuil, C. and Hamelin, R.C. (2009) Characterization of microsatellite loci in the fungus, *Grosmannia clavigera*, a pine pathogen associated with the mountain pine beetle. *Molecular Ecology Resources*. 9: 1500–1503.

OTHER PUBLICATIONS

Khadempour, L., Lim Y.W., Massoumi Alamouti, S. and Breuil, C. DNA-based tools for monitoring ophiostomatoid fungi. Proceeding for The 41st Annual Meeting of the International Research Group on Wood Protection, May 9-14, 2010, Biarritz, France.

Uzunovic, A. and **Khadempour, L.** (2007) Heat disinfestations of mountain pine beetle-affected wood. Mountain pine beetle initiative working paper 2007-14. Natural Resources Canada, Canadian Forest Service, Pacific Forestry Centre, 506 West Burnside Road, Victoria, BC.

FORTHCOMING PUBLICATIONS

Underlined indicates mentees.

Khadempour, L., Fan, H., Keefover-Ring, K., Nagamoto, N., Carlos-Shanley, C., Dam, M., Tallarico Pupo, M., Currie, C.R. Metagenomics reveals diet-specific specialization of bacterial communities in fungus gardens of grass- and dicot-cutter ants. (*In review – preprint available* DOI:10.1101/250993)

Khadempour, L., Kyle, J., Monroe, M., Smith, R., Lipton, M., Currie, C.R., Baker, E., Burnum-Johnson, K. From plants to ants: Evaluating lipid-specific changes in leaf-cutter ant fungus gardens. (*In revision*)

Francoeur, C.B., **Khadempour, L.**, Gotting, K., Moreira-Soto, R.D., Book, A.J., Pinto-Tomás, A.A., Keefover-Ring, K., Currie, C.R. Bacterial mediation of plant secondary compound degradation in the leaf-cutter ant system (*Submitted - preprint available* DOI: 10.1101/865212)

Khadempour, L., Rivas-Quijano, L., terHorst, C. Bacterial strains affect protozoan consumer growth rates (*In prep*)

Khadempour, L., Chevrette, M., Wang, Y.W., Francoeur, C., Sandstrom, S., Rodriguez, A., Tallarico Pupo, M., Currie, C. Leaf-cutter ant fungal cultivar genomes: evolutionary transitions to a novel substrate. (*In prep*)

ORAL PRESENTATIONS

Invited talks

Ant farmers and their fungal crop: coevolution in an ancient agricultural system. Spotlight session: Origins, stability, and benefits of interspecific cooperation in a changing world. Evolution Annual Meeting. June 21-25, 2019, Providence, RI, USA.

Microbial mediation of herbivory in leaf-cutter ant fungus gardens. California State University, Northridge. September 21, 2018 Los Angeles, CA, USA.

Microbial mediation of herbivory in leaf-cutter ant fungus gardens. University of Connecticut. September 5, 2018. Storrs, CT, USA.

Microbial mediation of herbivory in leaf-cutter ant fungus gardens. University of Texas-Austin. April 25, 2018, Austin, TX, USA.

Microbial mediation of herbivory in leaf-cutter ant fungus gardens. University of Würzburg. February 20, 2018, Würzburg, Germany.

Microbial mediation of herbivory in leaf-cutter ant fungus gardens. University of Copenhagen February 16, 2018, Copenhagen, Denmark.

Contributed talks

Microbial mediation of a transition to novel substrate utilization by *Atta* leaf-cutter ants. Ecological Society of America (ESA) Annual Meeting. August 6-11, 2017, Portland, OR, USA.

Metaproteomic analysis reveals a substrate-specific response of leaf-cutter ants' fungal cultivar. International Society for Microbial Ecology (ISME16), August 21-26, 2016, Montréal, QC, Canada.

Substrate-specific enzyme response in the microbial community of leaf-cutter ant fungus gardens. Symbiosis Symposium in the Department of Bacteriology, UW-Madison. August 1, 2014, Madison, WI, USA.

Changes in abundance of mountain pine beetle associated fungi. The 60th Annual Meeting of the Entomological Society of America, November 12-14, 2012, Knoxville, TN, USA.

DNA-based tools for monitoring ophiostomatoid fungi. The 41st Annual Meeting of the International Research Group on Wood Protection, May 9-14, 2010, Biarritz, France.

Species-specific primers and quantitative PCR for monitoring mountain pine beetle fungal associates. Joint Annual Meeting of the Entomological Society of Canada and the Entomological Society of British Columbia, October 31-November 3, 2010, Vancouver, BC, Canada.

POSTER PRESENTATIONS

Microbial mediation of herbivory in leaf-cutter ant fungus gardens. 7th Conference on Beneficial Microbes, July 8-11, 2018, Madison, WI.

Bacterial community metagenomics in fungus gardens of leaf-cutter ants. 12th Annual DOE Joint Genome Institute Genomics of Energy & Environment Meeting, March 20-23, 2017, Walnut Creek, CA.

Substrate-specific enzyme production from a herbivore-associated microbe. Great Lakes Bioenergy Research Centre Annual Science Meeting, May 17-19, 2016, Lake Geneva, WI.

The fungal cultivar of leaf-cutter ants: a substrate-specific response to a diverse diet. Gordon Research Conference on Animal-Microbe Symbioses, June 21-26, 2015, Waterville Valley, NH.

Substrate-specific enzyme production from leaf-cutter ant fungal cultivar. Great Lakes Bioenergy Research Centre 8th Annual Science Retreat, May 20-22, 2015, South Bend, IN.

Substrate-specific protein expression of biomass degrading enzymes in a natural symbiotic microbial community. Raper Symposium, Department of Bacteriology, UW-Madison, August 30, 2014. Madison, WI.

Substrate-specific protein expression of biomass degrading enzymes in a natural symbiotic microbial community. Great Lakes Bioenergy Research Centre 7th Annual Science Retreat, May 19-21, 2015, South Bend, IN.

TEACHER TRAINING

Active Learning 101 *2019*

Faculty Development at CSUN

- Learned about various teaching strategies to engage students in deep learning

Group ACTIVETies Inside and Outside the Classroom *2019*

Faculty Development at CSUN

- Discussed/learned about best practices for encouraging effective group work in classrooms

UW-Madison Teaching and Learning Symposium *2017*

- Participated in sessions on active learning, improving pedagogy through empirical evidence and identifying and acknowledging our implicit biases.

Instructional Skills Workshop 2009
 UBC Centre for Teaching, Learning and Technology
 - Learned teaching techniques and how to write lesson plans
 - Created, practiced and received feedback on lessons
 - Learned techniques for laboratory, discussion group and lecture teaching

GRANTS AND AWARDS

USDA-Hatch Grant (lead PI-Currie, with Khadempour as lead author) 2014-2018
 The role of microbial symbionts in substrate specialization in leaf-cutter ants
 UW-Madison Graduate School Student Research Travel Grant to travel to the 2017
 ESA meeting in Portland, OR.
 John Jefferson Davis award for travel to the ESA meeting in Portland, OR. 2017
 Department of Bacteriology award for travel to the ISME meeting in Montreal, Canada. 2016
 John Jefferson Davis award for travel to the ISME meeting in Montreal, Canada. 2016
 UW-Madison Department of Zoology Graduate Research Grant for fieldwork 2014
 in São Paulo, Brazil.
 John Jefferson Davis award for travel to Entomological Society of 2012
 America meeting in Knoxville, TN.
 Ron Cockcroft Award for travel to the The 41st Annual Meeting of the 2010
 International Research Group on Wood Protection, Biarritz, France.

SERVICE AND OUTREACH

Organized a seven-part professional development workshop series for all 2019
 Los Angeles area postdocs
 Created website, ScienceQnA.org for science outreach 2019
 Founding President of the CSUN Postdoc Association January 2019 - Present
 Reviewer for SACNAS student travel scholarship and presentation abstracts 2019-Present
 Judge for student poster presentations at the CSUN Annual Student Research 2019
 and Creative Works Symposium
 Participated in Skype a Scientist with three classrooms 2018
 Participated in Currie Lab science outreach booths multiple times per year 2011-2018
 In collaboration with PBS, created “PBS Learning Media: Leaf-cutter Ants, 2015
 A Farming Super-Organism” educational tool ([website here](#))

For information on mentoring experience and references, please contact Lily Khadempour.