

Melissa A. Cregger

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Education

PhD, Ecology and Evolutionary Biology, University of Tennessee, 2007-2012

BS, Biological Sciences, University of Southern Indiana, 2003

Appointments

Liane Russell Fellow, Oak Ridge National Laboratory, 2015-present

Post-doctoral Research Associate, Oak Ridge National Laboratory, 2014-2015

Post-doctoral Research Fellow, Institute for Genomic Biology, University of Illinois, 2012-2014

Department of Energy Global Change Education Fellow, 2009-2012

Graduate Teaching Assistant, University of Tennessee, 2008-2009

Graduate Research Assistant, University of Tennessee, 2007-2008

Refereed publications

Cregger MA, Veach A, Schadt CW (In prep) Plant microbe interactions across the *Populus* ecosystem. Applied and Environmental Microbiology.

Classen AT, Sundqvist M, Henning JA, Newman GS, Moore JAM, **Cregger MA**, Moorhead L (2015) Direct and indirect effects of climate change on soil microbial and soil microbial-plant interactions: What lies ahead? Ecosphere 6:1-21.

Cregger MA, McDowell NG, Pockman W, Classen AT (2014) The impact of precipitation change on nitrogen cycling in a semi-arid ecosystem. Functional Ecology 28:1534-1544.

Cregger MA, Sanders NJ, Dunn RR, Classen AT (2014) Microbial communities respond to experimental warming, but site matters. PeerJ 2:e358.

Wright P*, **Cregger MA**, Souza L, Sanders N, Classen AT (2014) Interactive effects of herbivory, nitrogen fertilization, and plant invasion on above and belowground community structure and function. Ecology and Evolution 6:732-742.

McCord A, Chapman CA, Weny G, Tumukunde A, Hyeroba D, Klotz K, Koblings A, Mborra D, **Cregger MA**, White B, Leigh S, Goldberg TL (2014) Fecal microbiomes of non-human primates in western Uganda reveal species-specific

communities largely resistant to habitat perturbation. *American Journal of Primatology* 76:347-354.

Yeoman CJ, Thomas SM, Berg Miller ME, Ulanov AV, Torralba M, Lucas S, Gillis M, **Cregger MA**, Gomez A, Ho M, Leigh SR, Stumpf R, Creedon DJ, Smith MA, Weisbaum JS, Nelson KE, Wilson BA, White BA (2013) A multi-omic systems-based approach reveals metabolic markers of bacterial vaginosis and insight into the disease. *Plos One* 8:e56111.

Cregger MA, Schadt CW, McDowell NG, Pockman WT, Classen AT (2012) Soil microbial community response to precipitation change in a semi-arid ecosystem. *Applied and Environmental Microbiology* 78:8587-8594.

Lessard JP, Reynolds WN, Bunn WA, Genung MA, **Cregger MA**, Felker-Quinn E, Barrios-Garcia MN, Stevenson ML, Lawton M, Brown CB, Patrick M, Rock JH, Jenkins MA, Bailey JK, Schweitzer JA (2012) Equivalence in the strength of deer herbivory on above and below ground communities. *Basic and Applied Ecology* 13:59-66.

Genung MA, Lessard JP, Brown C, Bunn W, **Cregger MA**, Reynolds W, Felker-Quinn E, Stevenson M, Hartley A, Crutsinger G, Schweitzer J, and Bailey J (2010) Non-additive effects of genotypic diversity increase pollinator visitation. *Plos One* 5(1): e8711.

Kardol P, **Cregger MA**, Company C, and Classen AT (2010) Soil ecosystem functioning under climate change: plant species and community effects. *Ecology* 91:767-781.

Gustavson MD, Bourke-Martin B, Reilly D, **Cregger M**, Williams C, Mayotte J, Zerkowski M, Tedeschi G, Pinard R, and Christiansen J (2009) Standardization of HER2 Immunohistochemistry in breast cancer by automated quantitative analysis (AQUA). *Archives of Pathology and Laboratory Medicine* 133:1413-1419.

Gustavson MD, Bourke-Martin B, Reilly DM, **Cregger M**, Williams C, Tedeschi G, Pinard R, Christiansen J (2009) Development of an Unsupervised Pixel-based Clustering Algorithm for Compartmentalization of Immunohistochemical Expression Using Automated QUAntitative Analysis. *Applied Immunohistochemistry & Molecular Morphology* 17:329-337.

Giltneane JM, Ryden L, **Cregger M**, Bendahl P.O, Jirstrom K, Rimm DL (2007) Quantitative measurement of epidermal growth factor receptor is a negative predictive factor for tamoxifen response in hormone receptor - Positive premenopausal breast cancer. *Journal of Clinical Oncology* 25:3007-3014.

Pozner-Moulis S, **Cregger M**, Camp RL, Rimm DL (2007) Antibody validation by quantitative analysis of protein expression using expression of Met in breast cancer as a model. *Laboratory Investigation* 87:251-260.

Shields JM, Thomas NE, **Cregger M**, Berger AJ, Leslie M, Torrice C, Hao HL, Penland S, Arbiser J, Scott G, Zhou T, Bar-Eli M, Bear JE, Der CJ, Kaufmann WK, Rimm DL, Sharpless NE (2007) Lack of extracellular signal-regulated kinase mitogen-activated

protein kinase signaling shows a new type of melanoma. *Cancer Research* 67:1502-1512.

Cregger M, Berger AJ, Rimm DL (2006) Immunohistochemistry and quantitative analysis of protein expression. *Archives of Pathology & Laboratory Medicine* 130:1026-1030.

Dolled-Filhart M, McCabe A, Giltneane J, **Cregger M**, Camp RL, Rimm DL (2006a) Quantitative in situ analysis of beta-catenin expression in breast cancer shows decreased expression is associated with poor outcome. *Cancer Research* 66:5487-5494.

Dolled-Filhart M, Ryden L, **Cregger M**, Jirstrom K, Harigopal M, Camp RL, Rimm DL (2006b) Classification of breast cancer using genetic algorithms and tissue microarrays. *Clinical Cancer Research* 12:6459-6468.

Awards and grants

2016

Oak Ridge National Laboratory, LDRD Director's R and D Funds – Understanding the microbially-driven mechanisms behind the rapid responses of soils to short-term disturbance events that result in large nitrous oxide emission pulses. Co-investigator (\$1,080,000)

2015

Oak Ridge National Laboratory, LDRD Russell Project Funds – Effects of tree mortality on belowground community structure, function, and carbon cycling. Primary Investigator (\$392,000)

Oak Ridge National Laboratory, LDRD Seed Project Funds – Targeted metagenomic analysis of the novel bacterial phylum AD3 from Walker Branch Watershed shallow subsurface soils. Co-investigator (\$30,000)

2012

University of Tennessee Dept. of Ecology and Evolutionary Biology, Summer Research Funding (\$1,400)

2011

The Marvin L. Wesely Award for best use of DOE mentors and achievement, Department of Energy Global Change Education Program (\$2,400)

Arthur Klorfein Scholarship and NASA fellowship to attend the Microbial Diversity Course, (\$5,760)

Travel funding from the University of Tennessee to attend the Boreal Forest Ecology Course (\$1,200) and the Microbial Diversity Course (\$3,000)

Cokkinias Graduate Fellowship for Outstanding Scholarly Achievement by a Graduate Student (\$2,000)

University of Tennessee Dept. of Ecology and Evolutionary Biology, Summer Research Funding (\$1,500)

2010

Travel funding from Argonne national laboratory to attend the Metagenomics Soil Workshop (\$675)

University of Tennessee Dept. of Ecology and Evolutionary Biology, Summer Research Funding (\$1,475)

Graduate researchers in ecology, behavior, and evolution (GREBE), University of Tennessee, Travel Grant (2010): \$125

2009

Department of Energy, Graduate Research Environmental Fellowship (2009-2012) (\$85,500)

Department of Defense, Science, Mathematics, And Research for Transformation – Awarded and declined (\$105,000)

University of Tennessee Dept. of Ecology and Evolutionary Biology, Summer Research Funding (\$1,475)

University of Tennessee, Summer Research Funding (\$3,600)

Graduate researchers in ecology, behavior, and evolution (GREBE), University of Tennessee, Travel Grant (2009): \$125

Invited Courses and Workshops

BGI Workshop, ShenZhen China, 2013

Microbial Diversity Course, Marine Biological Laboratory, 2011

Boreal Forest Ecology Course, Umea University, 2011

Teaching experience and undergraduate advising

GEM mentor: Francisco Fields (Summer 2016, Oak Ridge National Laboratory, Microbiology)

SULI mentor: Taylor Lyon (Summer 2016, Oak Ridge National Laboratory, Ecology)

HERE mentor: Miranda Crouch (Fall 2015, Oak Ridge National Laboratory, Microbiology)

Undergraduate mentor: Shunzhe Yao (2013-2014, University of Illinois, Statistics)

Undergraduate mentor: Annette Merkel (2013-2014, University of Illinois, Microbiology)

Undergraduate mentor: Jim Bruce (2013-2014, University of Illinois, Microbiology)

Undergraduate mentor: Deba Imafidon (2013, University of Illinois, Microbiology)

Undergraduate mentor: Phoebe Wright (2009-2011, University of Tennessee, Ecology)

2009 Ecology laboratory instructor (BIO 250)

2009 Ecology guest lecturer (BIO 250)

2008 Biology laboratory instructor, Introduction to Biology, Biodiversity Laboratory (BIO 130)

Professional/honorary associations

Ecological Society of America

American Society for Microbiology

Professional service and outreach

Organizing chair: Career development seminar “*Careers outside of academia*”. Institute for Genomic Biology, 2013

Organizing co-chair: Institute for Genomic Biology Fellows Symposium, 2013

Organizing committee: Genome Day, 2012

Organizing chair: IGB theme hopping, Host-Microbe Systems, 2012

Manuscript reviewer: *Ecosystems, Functional Ecology, Journal of Plant Ecology, Microbial Ecology, Plant Ecology, Plos One, Soil Biology & Biogeochemistry, Soil Science Society of America Journal*

Published abstracts

Cregger MA, Crouch M*, Yang Z, Schadt CW (2015) Plant microbe interactions: The *Populus* Atlas. Oak Ridge National Laboratory, Argonne National Laboratory Soils Workshop. Argonne, Illinois. *Poster*

Cregger MA, Crouch M*, Yang Z, Schadt CW (2015) Plant microbe interactions: The *Populus* Atlas. Oak Ridge National Laboratory, 3rd annual Post-doctoral Symposium. Oak Ridge, TN. *Poster*

Cregger MA, McCord A, Chapman C, Weny G, Tumukunde A, Hyeroba D, Klotz K, Koblings A, Mbora D, Leigh S, Goldberg T, White B (2014) Digestive physiology structures gut bacterial communities across taxa. University of Illinois, Institute for Genomic Biology Fellows Symposium. Urbana, Illinois. *Poster*

Cregger MA, McCord A, Chapman C, Weny G, Tumukunde A, Hyeroba D, Klotz K, Koblings A, Mbora D, Leigh S, Goldberg T, White B (2014) From humans to livestock: digestive physiology structures gut microbial communities across a wide range of taxa. Gut microbiology: From sequence to function. Aberdeen, Scotland. *Poster*

Classen AT, **Cregger MA** (2012) Soil microbial response to precipitation change. American Geophysical Union meeting. San Francisco, California. *Talk*

Cregger MA, McDowell NG, Schadt CW, Classen AT (2011) Microbial structure and function in a changing ecosystem. Department of Energy Global Change Education

Program Summer Workshop. Knoxville, Tennessee. *Marvin L. Wesely Award. Talk*

Cregger MA, McDowell NG, Classen AT (2011) Precipitation change alters soil microbial communities in a pinyon-juniper woodland. Boreal Forest Ecology Course. Umea, Sweden. *Talk*

Cregger MA, McDowell NG, Pockman W, Classen AT (2010) Indirect effects of precipitation change alter soil microbial community structure in a Pinon-Juniper woodland. Argonne National Laboratory Soils Workshop. Argonne, Illinois. Travel grant (MAC) *Poster*

Cregger MA, McDowell NG, Pockman W, Classen AT (2010) Drought induced shifts in plant composition alter nitrogen cycling in a pinyon-juniper woodland. Bulletin of the Ecological Society of America. Pittsburg, Pennsylvania. *Talk*

Cregger MA, McDowell NG, Pockman W, Classen AT (2010) Indirect effects of precipitation change drive nitrogen cycling in a pinyon-juniper woodland. Association of Southeastern Biologists meeting. Asheville, North Carolina. *Talk*

Wright P*, **Cregger MA**, Sanders NJ, Classen AT (2010) Interactions among insect herbivory, invasive plants, and soil nutrients alters soil microbial function. Association of Southeastern Biologists meeting. Asheville, North Carolina. *Talk*

Cregger MA, McDowell NG, Pockman WT, Yopez EA, Classen AT (2009) Precipitation change shapes nitrogen cycling in a pinyon-juniper woodland. Bulletin of the Ecological Society of America. Albuquerque, New Mexico. *Talk*

Kardol P, **Cregger MA**, Company CE, Classen AT (2009) Changes in plant community composition affect multifactor climate change effects on soil ecosystem functioning. Soil Ecology Society 12th Biennial International Conference. Brattleboro, Vermont. *Talk*

Kardol P, **Cregger MA**, Company CE, Classen AT (2008) Multi-factor climate change effects on soil ecosystem functioning depend on changes in plant species composition. Dissertations Initiative for the Advancement of Climate Change Research (DISCCRS) IV Symposium, Saguaro Lake Ranch, Arizona. *Invited talk*

Cregger MA, Company C, Classen AT (2008) Effect of climate change on soil enzymatic activity in an old field community. Bulletin of the Ecological Society of America. Milwaukee, Wisconsin. *FESIN & UTK travel award (MAC). Poster*

* = undergraduate collaborator

References

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