

Updated January 2021

## JEFFREY S. NORMAN

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### Professional preparation

- 2014 – 2018 Postdoctoral Research Associate, Michigan State, Department of Plant Biology  
Advisor: Maren L. Friesen  
Co-PI on NSF EAGER grant  
Co-instructor: BS-162 (Organisms and Populations) Spring 2017
- 2008 – 2013 PhD., Virginia Tech, Department of Biological Sciences (Awarded Dec. 2013)  
Advisor: John E. Barrett  
Dissertation Title: Environmental Controls on the Diversity, Growth, and Activity of Ammonia-Oxidizing Microorganisms in Temperate Forest Soils  
Teaching Assistant: Microbiology, Stream Ecology, General Biology
- 2000-2005 B.S. in Biology and B.S. in Psychology, Virginia Tech, Blacksburg VA

### Peer-Reviewed Publications

- 2020 12) Norman JS, Smercina DN, Hileman JT, Tiemann LK, Friesen ML. (2020) Soil aminopeptidase induction is unaffected by inorganic nitrogen availability. *Soil Biology & Biochemistry* 149, 107952.
- 2019 11) White RA, Norman JS, Mclachlan EE, Dunham JP, Garoutte A, Friesen ML. (2019) Revealing the Draft Genome Sequence of *Bradyrhizobium* sp. Strain 3458, an Effective Symbiotic Diazotroph Isolated from Cowpea (*Vigna unguiculata*) Genotype IT82E-16. *Microbiology resource announcements* 8 (38) e00813-19.
- 10) White RA, Norman JS, Mclachlan EE, Dunham JP, Garoutte A, Friesen ML. (2019) Elucidation of the genome of *Bradyrhizobium* sp. strain USDA 3456, a historic agricultural diazotroph from cowpea (*Vigna unguiculata*). *Microbiology resource announcements* 8 (33) e00812-19.
- 2018 9) Rowe SL, Norman JS, Friesen ML. (2018). Coercion in the evolution of plant-microbe communication: a perspective. *Molecular Plant Microbe Interactions* 31 (8) 789-794.
- 2017 8) Lin L\*, Norman JS\*, Barrett JE. (2017). Ammonia-uptake kinetics and domain-level contributions of bacteria and archaea to nitrification in temperate forest soils. *Ecological Modelling* 362:111-119.
- 7) Norman JS, King GM, Friesen ML. (2017). *Rubrobacter spartanus* sp. nov., a moderately thermophilic oligotrophic bacterium isolated from volcanic soil. *IJSEM* 67: 3597-3602.

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### **Peer-Reviewed Publications (continued)**

- 2017 (contd.) 6) Norman JS, Hare JR<sup>+</sup>, Friesen ML. (2017). Comment: Isolation and screening of bacteria for their diazotrophic potential and their influence on growth promotion of Maize seedlings in greenhouses. *Frontiers in Plant Science* 8: 212.
- 5) Norman JS, Friesen ML. (2017) Complex N acquisition by soil diazotrophs: How the ability to release exoenzymes affects N fixation by terrestrial free-living diazotrophs. *The ISME Journal* 11: 315-326.
- 2016 4) Norman JS, Barrett JE. (2016). Substrate availability drives spatial patterns in richness of ammonia-oxidizing bacteria and archaea in temperate forest soils. *Soil Biology & Biochemistry* 94: 169-172.
- 3) MacKellar D, Lieber L, Norman JS, Bolger A, Tobin C, Murray JW, Oksaksin M, Chang RL, Ford TJ, Nguyen PQ, Woodward J, Permingeat HR, Joshi NS, Silver PA, Usadel B, Rutherford AW, Friesen ML, Prell J. (2016). *Streptomyces thermoautotrophicus* does not fix nitrogen. *Scientific Reports* 6: 20086.
- 2015 2) Norman JS, Lin L, Barrett JE. (2015). Paired carbon and nitrogen metabolism by ammonia-oxidizing bacteria and archaea in temperate forest soil. *Ecosphere* 6: 176.
- 2014 1) Norman JS, Barrett JE. (2014). Substrate and nutrient limitation of ammonia-oxidizing bacteria and archaea in temperate forest soils. *Soil Biology & Biochemistry* 69: 141-146.
- \*these authors contributed equally to this work as co-first authors*  
*<sup>+</sup>indicates undergraduate student that I mentored*

### **Grants and fellowships**

- 2015 \$168,417 awarded (Co-PI) – NSF - Division of Environmental Biology  
Early-concept Grants for Exploratory Research (EAGER)  
Exploring recalcitrant N regulation of free-living nitrogen fixation in terrestrial systems
- 2013 1 semester graduate stipend - Virginia Tech Dept. of Biological Sciences  
USGA fellowship recipient – fall 2013
- 2012 \$14,999 awarded (Co-PI) – NSF – Division of Environmental Biology  
Doctoral Dissertation Improvement Grant  
Do the concomitant effects of pH and NH<sub>4</sub><sup>+</sup> concentration on NH<sub>3</sub> availability explain differential NH<sub>3</sub> oxidation by bacteria and archaea?
- \$1,154 awarded (PI) – Virginia Tech, Fralin OBE  
Graduate Research Grant  
Environmental Controls on the Activity of Ammonia Oxidizing Archaea and Bacteria in Temperate Forest Soils
- (continued on next page)*

### **Grants and fellowships (continued)**

- 2012 (contd.) \$4,968 awarded (Co-PI) - Virginia Tech, Fralin OBE  
Proposal Incubation grant  
Detecting quorum-sensing in terrestrial environments and assessing its role in ecosystem processes
- 2011 \$2,045 awarded (PI) – Virginia Tech, Fralin OBE  
Graduate Research Grant  
Controls on the Growth of Ammonia Oxidizing Archaea and Bacteria
- 2010 \$400 awarded (PI) - Virginia Tech Graduate School  
Graduate Research Development Program  
Macroinvertebrate Consumer Effects on Microbial Communities During Leaf Breakdown in Streams

### **Teaching:**

- 2020 Evolutionary Genetics (Adjunct Professor – Lafayette College)  
Microbial Ecology and Evolution (Adjunct Professor – Lafayette College)
- 2019 Microbial Extremophiles (Adjunct Professor – Lafayette College)  
Biodiversity & Ecosystem Function (Adjunct Professor – Lafayette College)
- 2018 Environmental Science (Adjunct Professor – Moravian College)  
Microbial Diversity (Adjunct Professor – Lafayette College)
- 2017 Organisms and Population Lecture (Co-instructor – MSU)  
*with Chuck Elzinga, Lyman Briggs College, MSU*
- 2016 Completed “Pathways to Scientific Teaching” Seminar  
*Taught by Diane Ebert-May, Dept. of Plant Biology, MSU*
- 2013 General Biology Lab (Teaching Assistant – Virginia Tech)
- 2012 Stream Ecology Lecture/Lab (Teaching Assistant – Virginia Tech)
- 2008-2011 General Microbiology Lab (Teaching Assistant – Virginia Tech)

### **Service:**

- External Reviewer, Honors Thesis Committees, Lafayette College (May 2019)  
Reviewer: *Soil Biology & Biochemistry*  
Secretary, VT Biology Graduate Student Association (2012-2013)  
Graduate Representative from Virginia Tech, Coweeta LTER (2012-2013)  
Graduate Representative, VT Hiring Search Committee (2011)

**Presentations** (+ indicates undergraduate student that I mentored)

- 2017 Hileman JT<sup>+</sup>, Norman JS, Smercina DK, Tiemann LK, Friesen ML. Induction of and Use of Nitrogen in Exoenzymes Produced by Free Living Diazotrophs. Poster Presentation. Kellogg Biological Station Undergraduate Research Symposium. Hickory Corners MI, August 2017.
- Norman JS, West WE, Tiemann LK, Friesen ML, Evans SE. The contribution of Alternative Nitrogenases to Nitrogen Fixation in Switchgrass Rhizospheres on Marginal Lands. Poster Presentation. Genomic Sciences Program Annual Principal Investigator (PI) Meeting. Arlington VA, February 2017.
- 2016 Norman JS. Understanding terrestrial nitrogen cycling as a consequence of microbial behavior. Weekly Seminar Series, Kellogg Biological Station, Hickory Corners, MI, February 2016. (*invited talk*)
- Norman JS, Friesen ML. How the ability to release exoenzymes may affect rates of nitrogen fixation by free-living soil diazotrophs. Poster Presentation. 16<sup>th</sup> International Symposium on Microbial Ecology (ISME 2016). Montreal, QC, Canada, August 2016.
- 2015 Murray JW, MacKellar D, Lieber L, Norman JS, Bolger A, Tobin C, Oksašin M, Chang RL, Ford TJ, Nguyen PQ, Woodward J, Permingeat HR, Joshi NS, Silver PA, Usadel B, Rutherford AW, Friesen ML, Prell J. *Streptomyces thermoautotrophicus* does not fix nitrogen. Oral Presentation. 19<sup>th</sup> International Congress on Nitrogen Fixation, Pacific Grove, CA, October 2015.
- Norman JS, Friesen ML. How the ability to acquire recalcitrant N may affect rates of fixation by free-living diazotrophs. Oral Presentation. 20<sup>th</sup> European Nitrogen Cycle Meeting, Aberdeen Scotland, September 2015.
- Norman JS, Friesen ML, MacKellar D, Prell J, Murray JW, Tobin C, Lieber L, Rutherford B, Bolger AM, Silver P, Usadel B, Permingeat HR. New investigations into oxygen-tolerant (superoxide-dependent) nitrogen fixation by *Streptomyces thermoautotrophicus*. Oral Presentation. Ecological Society of America Meeting, Baltimore, MD, August 2015.
- 2014 MacKellar D, Bolger T, Tobin C, Murray JW, Lieber L, Norman JS, Friesen ML, Permingeat H, Rutherford B, Usadel B, Silver P, Prell J. The genome of *Streptomyces thermoautotrophicus* does not contain sequences of classical or non-classical nitrogenases and three independent isolates do not fix nitrogen. Poster Presentation. European Nitrogen Fixation Conference, Tenerife, Canary Islands, Spain. September 2014.
- Gopinath SG<sup>+</sup>, Norman JS, Friesen ML. Isolation and characterization of novel thermophilic nitrogen-fixing microbes from Centralia, Pennsylvania. Poster Presentation. The Mid-Michigan Symposium for Undergraduate Research Experiences. East Lansing, MI, July 2014.

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## **Presentations (continued)**

- 2013      Norman JS, Barrett JE. Environmental controls on the diversity of ammonia-oxidizing microorganisms in temperate forest soils. Oral Presentation. Ecological Society of America Meeting, Minneapolis, MN, August 2013.
- 2012      Norman JS, Barrett JE. Edaphic Factors affect the abundance and activity of ammonia oxidizing microbes in Soils at Coweeta LTER. Poster Presentation. LTER All Scientists Meeting, Estes Park, CO, Sept 2012.
- Ursell T, Warren RJ, Keiser AD, Norman JS, Barrett, J.E., and Bradford, M.A. *Microstegium vimineum* is associated with changes in nitrogen availability and fluxes across a broad landscape. Poster Presentation. LTER All Scientists Meeting, Estes Park, CO, Sept 2012.
- Norman JS, Barrett JE. Environmental controls on the activity of ammonia oxidizing archaea and bacteria in temperate forest soils. Oral Presentation. Ecological Society of America Meeting, Portland, OR, Aug 2012.
- Barrett JE, Norman JS, Ursell T, Bradford MA. The influence of *Microstegium* invasions on soil nitrifier communities. Poster Presentation. Ecological Society of America Meeting, Portland, OR, Aug 2012.
- Ursell T, Warren RJ, Keiser AD, Norman JS, Barrett JE, Bradford MA. Ecosystem impacts of *Microstegium vimineum* vary across a regional gradient. Poster Presentation. Ecological Society of America Meeting, Portland, OR, Aug 2012.
- Norman JS, Barrett JE. Environmental controls on the activity and abundance of ammonia oxidizing microorganisms in Coweeta soils. Oral Presentation. Coweeta LTER Summer Meeting, Otto, NC, June 2012.
- Norman JS, Barrett JE. Environmental controls on the abundance and activity of ammonia oxidizing bacteria and archaea in temperate forest soils. Oral Presentation. Ecological Society of America Mid-Atlantic Chapter Meeting, Blacksburg, VA, April 2012.
- Opgrand ML<sup>+</sup>, Norman JS, Barrett JE. Environmental factors influencing the distribution of *Leptospira interrogans* in soil and surface waters using quantitative PCR. Poster Presentation. Ecological Society of America Mid-Atlantic Chapter Meeting, Blacksburg, VA, April 2012.
- Norman JS, Barrett JE. Niche differentiation by ammonia oxidizing bacteria and archaea in temperate forest soils. Poster Presentation. Virginia Tech Research Day, Feb 2012.
- 2011      Norman JS, Barrett JE. Growth and Abundance of Ammonia Oxidizing Bacteria and Archaea in Temperate Forest Soils. Poster presentation. Coweeta LTER Mid-term site review, June 2011.
- Norman JS, and Barrett JE. Environmental Controls on the Diversity of Ammonia Oxidizing Microorganisms in Temperate Forest Soils. Poster presentation. Virginia Tech Research day, Feb 2011.

### **Undergraduate Mentoring:**

- 2017 Jonathon Hileman (Eureka College). Exploring recalcitrant N regulation of free-living nitrogen fixation in terrestrial systems.  
*Project was done as part of the NSF-sponsored Research Experience for Undergraduates (REU) program.*
- 2016-2017 Jake Hare (Michigan State). Isolation and characterization of oxygen-tolerant diazotrophs from marginal-land biofuel soils and switchgrass leaves.  
*Project was done for an independent research credit in the pursuit of a B.S. in Microbiology at Michigan State University.*
- 2015 Madalyn Gildea (Michigan State). Optimization of ultracentrifugation procedure for stable isotope probing with  $^{15}\text{N}$ -labelled DNA.  
*Project was done for an independent research credit in the pursuit of a B.S. in Microbiology at Michigan State University.*
- 2014 Saarang Gopinath (Michigan State). Isolation and characterization of novel thermophilic nitrogen-fixing microbes from Centralia, Pennsylvania.
- 2014 Jake Lehman (Michigan State). Optimization of a fluorescent probe-hybridization assay for identifying diazotroph colonies on mixed plates.
- 2012 Melinda Opgrand (Virginia Tech). Environmental factors Influencing the distribution of *Leptospira interrogans* in soil and surface waters.