Brandon Monier

CURRICULUM VITAE

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Education

2013 – present
Ph.D. - Department of Biology and Microbiology
South Dakota State University
Supervisor: Drs. Heike Bücking and Jose Gonzalez-Hernandez
Thesis title: Microbial communities and their impact on bioenergy crops in dynamic environments

2013
M.S. - Department of Agronomy, Horticulture and Plant Science
South Dakota State University
Supervisor: Dr. Jose Gonzalez-Hernandez
Thesis title: The analysis of cytotypic variation and construction of a bacterial artificial chromosome (BAC) library of Midwestern prairie cordgrass (*Spartina pectinata* Link) genotypes

2008
B.S. - Microbiology
South Dakota State University

Additional Laboratory Experience

2016 – present
Research Assistant
South Dakota State University
Supervisor: Dr. Qin Ma
Subject: The development of *R* and *Shiny* applications for RNA-seq analysis and visualizations

2007 – 2008
Undergraduate Research Assistant
South Dakota State University
Supervisor: Dr. Gonzalez-Hernandez
Subject: Agrobacterium tumefaciens-mediated transformation of the necrotrophic plant pathogen, Pyrenophera tritici-repentis

Teaching and Mentoring Experience

2018	**Teaching Assistant** BOT-327L, Plant Physiology South Dakota State University
2016	**Teaching Assistant** BIOL-153L, General Biology II South Dakota State University
2015	**Teaching Assistant** BOT-201L, General Botany South Dakota State University
2014 – 2017	**Teaching Assistant** BIOL-151L, General Biology I South Dakota State University
2011	**Teaching Assistant** PS-333L, Diseases of Field Crops South Dakota State University

- *April DeMell*, undergraduate (3 months, full-time), South Dakota State University, 2016
- *Clarissa Mercado*, undergraduate (3 months, full-time), South Dakota State University, 2016
- *Jerry Cordero Sepulvéda*, undergraduate (3 months, full-time), South Dakota State University, 2015
- *Winly Mai*, undergraduate (3 months, full-time), South Dakota State University, 2015
- *Merritt Burch*, undergraduate (3 months, full-time), South Dakota State University, 2014
- *Vincent Peta*, undergraduate (2 semesters), South Dakota State University, 2013 - 2014
- *Sabrina Bushlack,* undergraduate (3 months, full-time), South Dakota State University, 2013
- *Linh Anh Cat,* undergraduate (3 months, full-time), South Dakota State University, 2013

Programming Languages

R, Python, Perl, bash/shell, markup languages including LaTeX, R Markdown, HTML, CSS, and some superficial knowledge of JavaScript and Vimscript.

Publications in Preparation (*: co-first authors):

5. **Monier B.**, Gonzalez-Hernandez J., Bücking H., Transcriptome analysis of a model grass species reveals differential gene expression under mycorrhizal symbiosis (In preparation).

4. **Monier B.,** Burch M., DeMell A., Cat L., Gonzalez-Hernandez J., Bücking H. Impact of the arbuscular mycorrhizal symbiosis on the biomass potential of the bioenergy crop, prairie cordgrass (In preparation).

3. **Monier B.***, McDermaid A.*, Zhao J., Fennell A., Ma Q. IRIS-DGE: An integrated RNA-seq data analysis and interpretation system for differential gene expression. (Submitted). https://doi.org/10.1101/283341

2. McDermaid A.*, **Monier B.***, Zhao J., Ma Q. ViDGER: An R package for integrative interpretation of differential gene expression results of RNA-seq data. (Submitted). https://doi.org/10.1101/268896

Publications:

1. **Monier B.,** Peta V., Mensah J., Bücking H. (2017) Inter- and intraspecific fungal diversity in the arbuscular mycorrhizal symbiosis. *Mycorrhiza-Function, Diversity, State of the Art*. 253-274. https://doi.org/10.1007/978-3-319-53064-2_12

Oral Presentations (presenter underlined):

Monier B. Microbial communities and their impact on bioenergy crops in dynamic environments. South Dakota State University Life Science Seminar Series. November 2017. Brookings, South Dakota.

Monier B., Gonzalez-Hernandez J., Bücking H., An Ancient Accord Between Plants and Fungi Spells Prosperity for Bioenergy Crops. American Society of Plant Biologists (ASPB) Midwest Section Conference. April 2016. Brookings, South Dakota.

Bücking H., Gonzalez-Hernandez J., Liepold E., **Monier B.** Beneficial plant microbe interactions and their potential application to increase biomass production and environmental sustainability of prairie cordgrass. North Central Regional Sun Grant Center Meeting. March 2014.

Poster Presentations (presenter underlined):

Monier B., DeMell, A., Burch, M., Gonzalez-Hernandez J., Bücking H. Impact of arbuscular mycorrhizal communities on the biomass production of prairie cordgrass – a potential bioenergy crop. International Conference on Mycorrhiza (ICOM9), 30 July – 4 August 2017, Prague, Czech Republic.

Monier B., Gonzalez-Hernandez J., Bücking H., Transcriptome Analysis of a model grass species reveals differential gene expression in arbuscular mycorrhizal symbiosis. Day of Scholars. April 2017, Brookings, South Dakota.

Monier B., Gonzalez-Hernandez J., Bücking H. Plant-microbe interactions show benefits for bioenergy crops. American Society for Microbiology (ASM) North Central Branch Meeting, October 2014, Superior, Wisconsin.

DeMell A., **Monier B.**, Peta V., Bücking H. Influence of arbuscular mycorrhizal interactions on biomass and nutrient uptake in *Spartina pectinata*. South Dakota Experimental Program to Stimulate Competitive Research (SD EPSCoR) Research Symposium, July 2016, Pierre, South Dakota.

Cordero-Sepulveda J., Mai W., **Monier B.**, Peta V., Bücking H. Optimizing biomass production in *Spartina pectinata* through arbuscular mycorrhizal symbiosis. South Dakota Experimental Program to Stimulate Competitive Research (SD EPSCoR) Research Symposium, July 2015, Pierre, South Dakota.

Burch M., **Monier B.**, Gonzalez-Hernandez J., Bücking H. Plant-microbe interactions affect biomass production of *Spartina pectinata,* a potential bioenergy crop. Sanford Undergraduate Research Symposium, July 2014, Sioux Falls, South Dakota.

Burch M., **Monier B.**, Gonzalez-Hernandez J., Bücking H. Plant-microbe interactions affect biomass production of Spartina pectinata, a potential bioenergy crop. South Dakota Experimental Program to Stimulate Competitive Research (SD EPSCoR) Research Symposium, July 2014, Pierre, South Dakota.

Cat L., Bushlack S., **Monier B.**, Bücking H. Mycorrhizae and biofuel crop yield: variation in prairie cordgrass genotypes. South Dakota Experimental Program to Stimulate Competitive Research (SD EPSCoR) Research Symposium, July 2013, Pierre, South Dakota.

Monier B., Gonzalez-Hernandez J., Boe A., Owens V., Stein J. Construction of a prairie cordgrass (*S. pectinata*) BAC library. Plant and Animal Genome Conference (PAG XIX), January 2011, San Diego, California.

Developed Software

ViDGER*	A Bioconductor package for the Visualization of Differential Gene Expression Results using R. https://doi.org/doi:10.18129/B9.bioc.vidger
IRIS-DGE*	Interactive RNAseq data analysis & Interpretation System for Differential Gene Expression analysis.
ggDESeq*	A visualization suite for DESeq related data frames that implements ggplot2 aesthetics.
PerlSeq*	A Perl program to collect information from FASTA-related text data.
fractus*	Fractal generation in R.

**Creator, author, and current maintainer*

Professional Societies

- American Society of Microbiology
- TriBeta National Biological Honor Society