Schuyler D. Smith

Ph.D. Candidate - Bioinformatics and Computational Biology
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Education

Ph.D.	**Bioinformatics and Computational Biology**	2021
	Iowa State University, Ames, IA	
M.S.	**Plant Breeding and Quantitative Genetics**	2015
	Texas A&M University, College Station, TX	
B.S.	**Genetics**	2012
	Iowa State University, Ames, IA	

Experience

Graduate Research Assistant - Ph.D.   2017 – 2021.
Genomics and Environmental Research in Microbial Systems Laboratory
Iowa State University - Ames, Iowa

Graduate Research Assistant - Ph.D.   2015 – 2016
Potato Breeding and Genetics Laboratory
University of Wisconsin - Madison - Madison, Wisconsin

Biological Science Technician - Internship   2014
Arid-Land Agricultural Research Center.
United States Department of Agriculture - Maricopa, Arizona

Graduate Research Assistant - M.S.   2013 - 2015
Maize Breeding and Genetics Program
Texas A&M University - College Station, Texas

Maize Breeding Intern   2012
Huxley Research Station.
Monsanto Company - Huxley, Iowa

Maize Product Trait Development Intern – 6 month   2011
Willmar Research Station.
DuPont Pioneer - Willmar, Minnesota

Publications

Schuyler D. Smith, Choi, J., Howe, A. *Diversity of Antibiotic Resistance genes and Transfer Elements-Quantitative Monitoring (DARTE-QM): a method for sequencing microbiome functional profiles*. 2021.

Yu, W., Lawrence, N. C., Sooksa-nguan, T., **Smith, S.D.**, Tenesaca, C., Howe, A. C., Hall, S. J. *Microbial linkages to soil biogeochemical processes in a poorly drained agricultural ecosystem*. 2021.

Schuyler D. Smith, Colgan, P., Yang, F., Rieke, E.L., Soupir, M.L., Moorman, T.B., Allen, H.K., Howe, A. *Investigating the dispersal of antibiotic resistance associated genes from manure application to soil and drainage waters in simulated agricultural farmland systems*. 2019.

Schuyler D. Smith *phylosmith: an R-package for reproducible and efficient microbiome analysis with phyloseq-objects*. 2019.

Choi, J., Rieke, E.L., Moorman, T.B., Allen, H.K., **Smith, S.D.**, Howe, A. *Practical implications of erythromycin resistance gene diversity on surveillance and monitoring of resistance*. 2018.

Schuyler D. Smith, Heffner, E., Murray, S.C. *Molecular analysis of genetic diversity in a Texas maize breeding program*. 2015.

Software

[phylosmith](): an R-package for reproducible and efficient microbiome analysis with phyloseq-objects.
[ssBLAST](): an R-package of efficient C++ functions to parse BLAST outputs and wrangle corresponding FASTQ/FASTA files.
[simple.dada](): an R-package for streamlined implementation of the dada2 processing pipeline.
[schuylR](): an R-package of various functions that I often find useful.
[genome_tools](): an R-package with various functons for genomic data analysis.
[linux_box_sync](): a shell program to sync a local Box directory to the cloud.
[hpcc_R_setup](): a shell program to setup R on the MSU-HPCC.

Posters

Smith, S.D. *phylosmith: an R-package for reproducible and efficient microbiome analysis with phyloseq-objects*. Presented at the 27th ISMB/18th ECCB. 2019, July 21-25. Basel, Switzerland.

Smith, S.D., Villanueva, P.E., Fukami, T., Howe, A. *Co-Occurrence Networks Reveal Key OTUs in Flower Nectar Microbiomes Across Dispersal Treatments*. Presented at the 17th ISME. 2018, August 12-17. Leipzig, Germany & the NSF Research Traineeship (NRT) Annual Meeting. 2018, September 27-28. Arlington, Virginia.

Smith, S.D., Howe, A. *Examining Antibiotic Resistance Gene (ARG) horizontal transfer and introduction through farmland soil microbiomes as a result of modern farming practices*. Presented at the 3rd Annual Front Rang Computational & Systems Biology Symposium: Microbiome. 2017, June 12-13. Fort Collins, Colorado.

Smith, S.D., Endelman, J.B. *Genotyping by Sequencing for Autotetraploid Species*. Presented at the 5th International Conference on Quantitative Genetics. 2016, June 12-17. Madison, Wisconsin. & the 11th Annual National Association of Plant Breeders Meeting. 2016, August 15-18. Raleigh, North Carolina.

Workshops Taught

Data Carpentry: Genomics	
George Washington University, Washington, D.C.	2020
Data Carpentry: Ecology	
Merck & Co., Online	2020
Merck & Co., Upper Gwynedd, PA	2019
Girls in Science Initiaive	
Science Center of Iowa, Des Moines, IA	2019
Data Analyses for Metagenomic Advances in Microbial Ecology	
Kellog Research Station, Hickory Corners, MI	2017 & 2018
Introduction to Data Analysis for Biology Graduate Students.	
Iowa State University, Ames, IA	2017 & 2018
Iowa State BCB Data Analysis Language Workshops	
Introduction to Unix	2017 & 2018
Introduction to Python	2017

Awards, Fellowships, Honors, & Recognitions

Iowa State University	
• College of Engineering Interdepartmental Research Fellow	2017 - 2020
• Selected P3 representative for 2018 NSF-NRT Annual Meeting	2018
• NSF-NRT Predictive Plant Phenomics Fellow	2017 - 2018
• Academic Recognition Award	2008 - 2012
Texas A&M University	
• Willie May Harris Fellow	2013 - 2014

Applicable Skills

R	Shell (BASH)	LaTeX	Linux
C++	HTML	Markdown	Windows
python	SQL	git	MacOS