

# Schuyler D. Smith

Ph.D. Candidate - Bioinformatics and Computational Biology  
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## Education

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

## Experience

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<b>Graduate Research Assistant - Ph.D.</b>	2017 – 2021.
Genomics and Environmental Research in Microbial Systems Lab, Ames, Iowa Iowa State University	
<b>Graduate Research Assistant - Ph.D.</b>	2015 – 2016
Potato Breeding and Genetics Laboratory, Madison, Wisconsin University of Wisconsin - Madison	
<b>Biological Science Technician - Internship</b>	2014
Arid-Land Agricultural Research Center, Maricopa, Arizona United States Department of Agriculture – ARS	
<b>Graduate Research Assistant - M.S.</b>	2013 - 2015
Maize Breeding and Genetics Program, College Station, Texas Texas A&M University	
<b>Maize Breeding Intern</b>	2012
Huxley Research Station, Huxley, Iowa Monsanto Company	
<b>Maize Product Trait Development Intern – 6 month</b>	2011
Willmar Research Station, Willmar, Minnesota DuPont Pioneer	

## Publications

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- 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

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**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.  
**schuyIR**: an R-package of various functions that I often find useful.  
**genome\_tools**: an R-package with various functions 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

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**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 Range 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

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- Data Carpentry: Genomics  
George Washington University, Washington, D.C. 2020
- Data Carpentry: Ecology  
Merck & Co., Upper Gwynedd, PA 2019  
Merck & Co., Online 2020
- Girls in Science Initiative  
Science Center of Iowa, Des Moines, IA 2019
- Data Analyses for Metagenomic Advances in Microbial Ecology  
Kellogg 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

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### Iowa State University

- Selected P3 representative for 2018 NSF-NRT Annual Meeting 2018
- College of Engineering Interdepartmental Research Fellow 2017 - 2020
- 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

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|----------|----------------|------------|-----------|
| • R      | • Shell (BASH) | • $\LaTeX$ | • Linux   |
| • C++    | • HTML         | • Markdown | • Windows |
| • python | • SQL          | • git      | • MacOS   |