Schuyler D. Smith

Ph.D. Candidate - Bioinformatics and Computational Biology
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Education

Ph.D.	**Bioinformatics and Computational Biology** Iowa State University of Science and Technology, Ames, IA	ABD
M.S.	**Quantitative Genetics** Texas A&M University, College Station, TX	2015
B.S.	**Genetics** Iowa State University of Science and Technology, Ames, IA	2012

Experience

Iowa State University of Science and Technology Genomics and Environmental Research in Microbial Systems Lab, Ames, Iowa Graduate Research Assistant - Ph.D.	2017 - pres.
University of Wisconsin-Madison Potato Breeding and Genetics Laboratory, Madison, Wisconsin Graduate Research Assistant - Ph.D.	2015 - 2016
United States Department of Agriculture - ARS Arid-Land Agricultural Research Center. Maricopa, Arizona Biological Science Technician (Internship)	2014
Texas A&M University Maize Breeding and Genetics Program, College Station, Texas Graduate Research Assistant - M.S.	2013 - 2015
Monsanto Company Huxley Research Station. Huxley, Iowa Maize Breeding Intern	2012
DuPont Pioneer Willmar Research Station. Willmar, Minnesota Maize Product Trait Development Intern - 6 month	2011
United States Department of Agriculture - ARS Soybean Genomics Laboratory - Graham Lab. Ames, Iowa Undergraduate Research Assistant	2010 - 2011

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.* Preparing submission. 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.* Soil Biology and Biochemistry, 108228. March, 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.* PLOS One. journal.pone.0222470 September, 2019.

Schuyler D. Smith *phylosmith: an R-package for reproducible and efficient microbiome analysis with phyloseq-objects.* Journal of Open Source Software. 10.21105/joss.01442 June, 2019.

Choi, J., Rieke, E.L., Moorman, T.B., Soupir, M.L., Allen, H.K., **Smith, S.D.**, Howe, A. *Practical implications of erythromycin resistance gene diversity on surveillance and monitoring of resistance.* FEMS microbiology ecology. 10.1093/femsec/fiy006 January, 2018.

Schuyler D. Smith, Heffner, E., Murray, S.C. *Molecular analysis of genetic diversity in a Texas maize breeding program.* Maydica. cabdirect.org/abstract/201 2015.

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.

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.

schuylR: an R-package of various functions I've written, that I often find useful.

Skills

- R
- C++
- Python

- Shell (BASH)
- SQL
- html

- LaTeX
- Markdown
- Git

- Linux
- Windows
- MacOS

Workshops Instructed

- 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 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 of Science and Technology
- 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

Certifications

- Data Carpentry - Course Instructor   2017