Schuyler D. Smith

Ph.D. Student in Bioinformatics and Computational Biology
Department of Agriculture and Biosystems Engineering
College of Engineering
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Education

Ph.D. **Iowa State University of Science and Technology, Ames, IA** 2017 - pres.
Bioinformatics and Computational Biology
Dissertation:
Research focus: metagenomic community analysis, microbial ecology.
Advisor: Dr. Adina Howe Committee Members: Dr. Tadashi Fukami
Co-Advisor: Dr. Ido Friedberg Dr. Dan Nettleton Dr. Gwyn Beattie

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M.S. **Texas A&M University, College Station, TX** 2013 - 2015
Quantitative Genetics and Plant Breeding
Thesis: *Molecular Characterization of the Texas Maize Breeding Program.*
Research focus: quantitative genetics, marker analysis, NIR phenotyping.
Advisor: Dr. Seth Murray

B.S. **Iowa State University of Science and Technology, Ames, IA** 2008 - 2012
Genetics

Experience

Iowa State University of Science and Technology January, 2017 - pres.
Genomics and Environmental Research in Microbial Systems Lab, Ames, Iowa
Graduate Research Assistant - Ph.D.
Identifying microbial interactions in complex systems.

University of Wisconsin-Madison June, 2015 - August, 2016
Potato Breeding and Genetics Laboratory, Madison, Wisconsin
Graduate Research Assistant - Ph.D.
Development of workflows and pipelines to automate and scale genotyping-by-sequencing and genomic prediction of quantitative traits.

United States Department of Agriculture - ARS June, 2014 - December, 2014
Arid-Land Agricultural Research Center. Maricopa, Arizona
Biological Science Technician (Internship)
Developed high-throughput phenotyping platforms for crop traits such as canopy cover, plant height, and seed counting.

Texas A&M University January, 2013 - May, 2015
Maize Breeding and Genetics Program, College Station, Texas
Graduate Research Assistant - M.S.
Developed a molecular characterization of the Texas maize germplasm and oleic-acid screening using near-infrared spectroscopy.

Monsanto Company May, 2012 - November, 2012

Huxley Research Station. Huxley, Iowa

Maize Plant Breeding Intern

Conducted research project on optimizing a high-throughput phenotyping platform looking at seed characteristics. Led crews in pollinating nurseries, and harvest.

DuPont Pioneer May, 2011 - December, 2011

Willmar Research Station. Willmar, Minnesota

Maize Product Trait Development Intern - 6 month

Conducted a QTL study for important problematic proprietary trait. Led crews for data collection in yield trials, pollination in nurseries, and harvesting.

United States Department of Agriculture - ARS January, 2010 - May, 2011

Soybean Genomics Laboratory - Graham Lab. Ames, Iowa

Student Undergraduate Research Assistant

Assisted post-doctorate researcher via PCRs, DNA extractions and preparations, gel-imaging, among other laboratory procedures.

Publications

J Choi, EL Rieke, TB Moorman, ML Soupir, HK Allen, **SD Smith**, A Howe. *Practical implications of erythromycin resistance gene diversity on surveillance and monitoring of resistance.* January, 2018. FEMS microbiology ecology. academic.oup.com/femsec/94

Smith, Schuyler D., Heffner, Elliot, Murray, Seth C. *Molecular analysis of genetic diversity in a Texas maize breeding program.* 2015. Maydica. 60. cabdirect.org/abstract/201

Posters

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.

Conferences Attended

- 2018 NSF Research Traineeship (NRT) Annual Meeting. 2018, September 27-288. Arlington, Virginia.
- 17th Annual International Symposium on Microbial Ecology. 2018, August 12-17. Leipzig, Germany.
- 4th Annual Bioinformatics and Computational Biology Symposium: he Past and Future of Bioinformatics and Computational biology. 2018, March 30. Ames, Iowa.
- 3rd Annual Front Range Computational & Systems Biology Symposium: Microbiome. 2017, June 12-13. Fort Collin, Colorado.
- 3rd Annual Bioinformatics and Computational Biology Symposium: The Breadth and Depth of Bioinformatics Analysis. 2017, March 31. Ames, Iowa.
- 11th Annual National Association of Plant Breeders Meeting. 2016, August 15-18. Raleigh, North Carolina
- 5th International Conference on Quantitative Genetics. 2016, June 12-17. Madison, Wisconsin.
- American Seed Trade Association Annual Meeting. 2015, December 9-11. Chicago, Illinois.

- NCCC: Potato Breeding and Genetics Technical Committee. 2015, December 7-9. Chicago, Illinois.

Awards, Fellowships, Honors, Recognitions

Iowa State University of Science and Technology

- Selected as represetative for the 2018 NRT Annual Meeting — 2018
- NSF-NRT Predictive Plant Phenomics Fellow — 2017 - 2018
- College of Engineering Interdepartmental Research Fellow — 2017 - pres.
- Academic Recognition Award — 2008 - 2012

Texas A&M University

- Willie May Harris Fellow — 2013 - 2014

Workshops Taught

Developer / Instructor

- Introduction to Data Analysis for Biology Graduate Students. — 2018
  Developer and Instructor for Tutorial: R Basic

Teaching Assistant

- EDAMAME 2017 *Explorations in Data Analyses for Metagenomic Advances in Microbial Ecology.* — 2017 & 2018
- Introduction to Data Analysis for Biology Graduate Students. — 2017
- BCB Data Analysis Language Workshops
  Introduction to Unix — 2017 & 2018
  Introduction to Python — 2017

Graduate Coursework Completed

M.S. Plant Breeding and Quantitative Genetics:

- Quantitative Genetics
- Statistics in Research I
- Statistics in Research II
- Plant Breeding I
- Plant Breeding II
- Experimental Design
- Molecular and Quantitative Genetics in Plant Breeding
- Host-Plant Resistance

Ph.D. Bioinformatics and Computational Biology:

- Bioinformatic Algorithms
- Statistical Bioinformatics
- Bioinformatic Systems
- Genomic Sciences
- Linear Mixed Models
- Fundamentals of Predictive Plant Phenomics
- Plant Genetics
- Biometric Procedures in Plant Breeding
- Advanced Plant Breeding
- Selection Theory
- Tools for Reproducible Research