Dean Sanders

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Education:

University of Wisconsin-Madison — Madison, WI
Ph.D. Genetics — Fall 2013 - Fall 2018

University of Wisconsin-Madison — Madison, WI
M.S. Bacteriology — Fall 2011 - Spring 2013

University of Wisconsin-Oshkosh — Oshkosh, WI
B.S. Microbiology — Fall 2008 - Spring 2011

Skills:

Computational experience:

- **Designed** bioinformatic pipelines for:
  - mRNA-Seq
  - ChIP-Seq
  - Bisulphite-Seq
- **Experience** with SNP-calling and *de novo* genome assembly
- **Proficiency in Python** for custom program design
  - Knowledge of Pandas, Numpy, Multiprocessing, and Cython modules
  - Jupyter notebook (Python 3 and R)
- **Familiar with R and Perl** for scripting, data analysis and plotting:
  - ggplot2, dplyr
- Six years experience with Unix Bash:
  - Unix file system hierarchy
  - Awk and GNU Parallel for scripting, data preprocessing and pipeline automation

Analytical techniques: Personal experience with ESI-MS/MS orbi-trap mass spectrometry and HPLC, sample prep and MS/MS data analysis

General molecular biology: Site directed mutagenesis, plasmid Isolation, molecular cloning, PCR, Sanger sequencing

Microscopy: Performed Epifluorescence and Confocal Microscopy

Experience:

Computational Biologist at the University of Wisconsin Bioinformatics Resource Center with Dr. Derek Pavelec and Dr. Mark Berres, University of Wisconsin, Madison. December 2018 - Present.

- Genotype by sequencing
- Genome prediction
- SNP imputation
- GWAS and QTL analysis
- *de novo* genome assembly
- mRNA and Bisulfite-seq analysis

Graduate research assistant investigating histone lysine to methionine mutations and loss of DNA methylation during plant development and stress in Arabidopsis thaliana with Dr. Xuehua Zhong, University of Wisconsin, Madison. December 2013 - November 2018.

- ❖ Bioinformatic analysis of mRNA, ChIP, SNP and Bisulfite sequencing data
- ❖ Mass spectrometry sample preparation, injection and customized MS/MS data analysis
- ❖ General molecular cloning, transgenic plant production

Graduate research assistant examining bacterial biofilm disruption and production of antimicrobial secondary metabolites by the social amoeba Dictyostelium with Dr. Marcin Filutowicz and Dr. Kalin Vetsigian. University of Wisconsin, September 2011- May 2013.

- ❖ Epifluorescence and confocal microscopy
- ❖ C-18 solid phase extraction, HPLC and LC/MS-TOF

Communication:

Mentoring experience:

- Personally mentored two graduate and four undergraduate students (4/6 now pursuing higher education)

Teaching assistantship:

- 3 semesters TA experience (>20 hours lecture time)

Python study group leader:

- Member of combee python study group since Fall 2016, leader in Fall 2017

Scientific meeting presentations:

- 6 conference presentations, 9 public outreach in the Wisconsin Institute for Discovery

Publications:

Sanders D *, Jiang J*, Wang B, Liu F, Zhong X (2019) *CMT2* mutation in a Tibetan *A. thaliana* accession reduces DNA methylation genomewide and increased tolerance to environmental stressors (In submission at Plant Cell)

Jiang J, **Sanders D**, Wang B, Zhong X (2019) Regulation of plant DNA methylation by UV-B (In preparation)

Mayer K*, Chen X *, **Sanders D**, Nyugen P, Moreno G, Zhong X (2018) *HOS15* binds and promotes the activity of a core histone deacetylase complex in *Arabidopsis thaliana*. (In review at Plant Physiology)

Sanders D, Fieweger R, Lu L, Qian S, Dowell J, Denu JM, Zhong X (2017) Histone lysine-to-methionine mutations reduce histone methylation and cause developmental pleiotropy. *Plant Physiology*.173, 2243-2252.

Sanders D, Katarzyna B, Fikrullah K, Rakowski S, Lozano M, Filutowicz M (2017) Multiple dictyostelid species destroy biofilms of *Klebsiella oxytoca* and other Gram negative species. *Protist*. 168, 311-325.

Lu L, Chen X, **Sanders D**, Qian S, Zhong X (2015) High-resolution mapping of H4K16 and H3K23 acetylation reveals conserved and unique distribution patterns in Arabidopsis and rice. *Epigenetics*. 10, 1044-1053.

Patent:

Marcin Filutowicz, Katarzyna Dorota Borys, **Dean Sanders** (2014). Dictyostelid amoeba and biocontrol uses thereof. US20140056850 A1. Amoebagone, LLC