

# Dean Sanders

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## Education:

### University of Wisconsin-Madison

Ph.D. Genetics

Madison, WI

Fall 2013 - Fall 2018

### University of Wisconsin-Madison

M.S. Bacteriology

Madison, WI

Fall 2011 - Spring 2013

### University of Wisconsin-Oshkosh

B.S. Microbiology

Oshkosh, WI

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**, Bo 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