JEREMY SUTHERLAND

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123 Hartswick Ave.
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EDUCATION

PhD The Pennsylvania State University, Bioinformatics and Genomics — May 2023
Dissertation: "Title"
Committee: Dr. Jesse Lasky (chair), Dr. Terrence Bell, Dr. Emily Davenport, Dr. Jia Li

BS The University of Illinois at Chicago, Biological Sciences — Dec. 2016
Thesis: "Population genetic diversity of the clonal plant Clintonia borealis on the Apostle Islands"
Advisor: Dr. Mary Ashley

College of Dupage, Biological Sciences — Dec. 2013

HONORS AND AWARDS

CAS Graduate Student Travel Award — 2022
$500

Huck International Travel Award — 2022
$1,500

FFAR Fellows Professional Development Scholarship — 2020
$5000

2020 Student Organization Award - Nomination — 2020
Outstanding Officer of the Year (PSU)

Student Leader Scholarship — 2020
$500

Dean's List — 2016
A scholarly award for students who demonstrate academic excellence.

The Elmer Hadley Award — 2016
$500

The B.J. Hoddinott Scholarship — 2012
Annual Tuition Stipend

RESEARCH EXPERIENCE

Dissertation, The Pennsylvania State University, University Park, PA 2023
Advisor: Dr. Jesse Lasky, Dr. Terrence Bell

- Project: Breeding resilient, disease-resistant switchgrass cultivars for marginal lands
- C-REEMS Grant Proposal Number: 2018-05922
- Summary: I leverage computational methods to better understand the relationships between plant host traits and their associated soil microbiome compositions in different environments. In agriculture, the host-microbiome relationship is vital to a crop's health and performance. My research innovates by combining host genotypic information with microbial and environmental information to more accurately predict switchgrass outcomes in the Northeastern United States.
- Skills: Data collection (rhizosphere soil), host phenotyping, DNA extraction from soils, 16s/ITS sequencing library prep, Bioinformatics, FASTQ processing, microbiome diversity analysis, microbial phylogenetics, host SNP variant calling, genome-wide association survey, statistical analyses, database management, genomic selection, predictive modeling, HPC computing, R, python, bash, Linux

North Carolina State University – USDA, Beltsville, MD 2017 to 2018
Research Assistant, USDA APHIS PPQ
Advisor: Dr. Kurt Zeller

- Summary: I developed and validated molecular methods for diagnosing regulatory plant pathogens for the United States Dept. of Agriculture (USDA). I developed in-house bioinformatic pipelines for the identification of molecular markers for species-specific pathogen detection. I completed genome assemblies and analysis of high-consequence pathogenic fungal species. ISO/IEC 17025:2005 certified and BSL-3 work environment.
- Skills: Wet lab, fungal culturing, DNA extraction, WGS sequencing and library prep, Bioinformatics, FASTQ processing, de novo genome assembly, BLAST, PCR primer design, PCR target bacterial cloning, qPCR methods development and validation, database management, routine lab maintenance and reporting

University of Illinois at Chicago, Chicago, IL 2015 to 2016
Undergraduate Researcher
Advisor: Dr. Mary Ashley

- Summary: I researched the effects of herbivory on the genetic population structure of *Clintonia borealis* utilizing next-generation sequencing.
- Skills: DNA extraction from plant tissue, DNA sequencing and library prep, micro-satellite analysis, routine lab maintenance and reporting
- Award: The Elmer Hadley Award is given to a student with high academic achievement who has carried out an outstanding research project in the area of ecology, evolution, or conservation biology.

University of Illinois at Chicago, Chicago, IL 2015 to 2015
Undergraduate Research Assistant
Advisor: Dr. Scott Franzblau

- Summary: I provided technical lab support including protein induction and purification, conventional PCR and analysis, anti-mycobacterial susceptibility testing, sample shipping and storage, routine lab maintenance and equipment calibration.

The Chicago Botanic Garden, Glencoe, IL 2015 to 2015
REU Intern
Advisor: Dr. Jeremie Fant

- Summary: I provided technical lab support to a project investigating the effects of source genetic material on plant reintroduction efforts.
- Skills: DNA extraction from plant tissue, conventional PCR, DNA fragment analysis and scoring.

TEACHING EXPERIENCE

The Pennsylvania State University, University Park, PA Aug. 2021 to Dec. 2021
Graduate Teaching Assistant, Biology Department

- Biology 110, Lab Sections: 007 and 047
- Bio 110 is an undergraduate lab course averaging 20 students per lab section, covering the following topics: observing biological diversity, experimental design and hypothesis development, evaluating experimental evidence, developing strong laboratory techniques
- I developed and graded quizzes, exams, and homework.
- I prepared and gave a ~1 hour lab lecture and then advised students on their lab work for the remainder of the time (up to 3 hours).

The United States Dept. of Agriculture, Beltsville, MD Aug 2018
Workshop Coordinator

- I prepared materials for and co-lead a multi-day bioinformatics workshop.
- I prepared materials for and assisted a multi-day *Phytophthora ramorum* diagnostics workshop.

PUBLICATIONS

Journal Publications

Sutherland, J., Bell, T., Trexler, R. v., Carlson, J. E., & Lasky, J. R. (2022). Host genomic influence on bacterial composition in the switchgrass rhizosphere. *Molecular Ecology*, *00*, 1–17. https://doi.org/10.1111/MEC.16549

Rivera, Y., Zeller, K., Srivastava, S., Sutherland, J., ... Abad, Z. G. (2018). Draft genome resources for the phytopathogenic fungi monilinia fructicola, M. Fructigena, M. Polystroma, and M. laxa, the causal agents of brown rot. *Phytopathology*, *108*(10), 1141–1142.

PROFESSIONAL AFFILIATIONS

The Foundation for Food and Agriculture Research, 2020-2023
Fellow
The FFAR Fellows Program is focused on building communication, networking, and leadership skills for fellows working in the agriculture sector. I participated in several of FFAR's science communication and professional development workshops. In 2021, I won FFAR's annual lightning talk competition by incorporating what I have learned during the fellowship.

Pasa Sustainable Agriculture, 2021-Present
Policy and Special Projects Intern
I engage with decision makers to promote and advocate for state and federal sustainable agriculture policy initiatives. Pasa co-sponsors my fellowship at the Foundation for Food and Agriculture Research.

Science Policy Society at Penn State, 2019-2022
President
I engaged with decision makers to promote and advocate for state and federal policy initiatives that support scientific research. I organized and attended the Alan Alda Science Communication Workshop and two AAAS Policy Writing Workshops. I co-organized our monthly Science On-Tap science outreach program. I produced and edited several of the "Sci-Pol Connect" podcast episodes. I hosted a number of panels at Penn State related to science communication and policy.

LANGUAGES

English: Native Language

Spanish: Intermediate Listener, Novice Speaker, Advanced Reading and Writing

COMPUTER SKILLS

Programming: bash, R, python

Applications: Microsoft Office, Adobe Creative Cloud Suite

Platforms: Linux, Mac OS, Windows

REFERENCES

Dr. Terrence Bell, Assistant Professor of Phytobiomes
Department of Plant Pathology and Environmental Microbiology
The Pennsylvania State University

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Dr. Jesse Lasky, Associate Professor of Biology
Department of Biology
The Pennsylvania State University
408 Huck Life Sciences Bldg.
University Park, PA 16802
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