



# Serena G. Lotreck

*Applied machine learning practitioner*

## Education

- 2019–Present **PhD**, *Michigan State University*, East Lansing, MI  
Dual PhD in Plant Biology and Computational Mathematics, Science & Engineering  
Concentrations in molecular (MPS) and computational plant science (IMPACTS)  
*Supervisor*: Dr. Shin-han Shiu
- 2015–2019 **Bachelor of Arts**, *Cornell University*, Ithaca, NY  
Major in biology with a concentration in biochemistry. *Magna cum laude*.

## Experience

- 2019–Present **Graduate Research Assistant**, *Michigan State University*, East Lansing, MI  
*Supervisor*: Dr. Shin-han Shiu  
*Research focus*: Applications of natural language processing in plant biology
- 2022–Present **Graduate Research Intern**, *Corteva Agrisciences*, Johnston, IA  
Research intern on the Breeding Technologies team
- 2022 **Graduate Teaching Assistant**, *Michigan State University*, East Lansing, MI  
Graduate TA for CMSE 202: Computational Modeling and Data Analysis II.
- 2017–2019 **Undergraduate Research Intern**, *Cornell University*, Ithaca, NY  
*Supervisor*: Dr. Georg Jander  
*Research focus*: Neonicotinoid pesticide uptake in maize
- 2018 **REU student**, *Michigan State University*, East Lansing, MI  
*Supervisor*: Dr. Robert VanBuren  
*Research focus*: Stomatal control in CAM photosynthesis

## Publications

- [1] Abigail E Bryson, Maya Wilson Brown, Joey Mullins, Wei Dong, Keivan Bahmani, Nolan Bornowski, Christina Chiu, Philip Engelgau, Bethany Gettings, (**Lotreck, Serena G** author 19 of 36) Gomezcano, Fabio, et al. Composite modeling of leaf shape across shoots discriminates *Vitis* species better than individual leaves. *bioRxiv*, 2020.
- [2] Siobhan A Cusack, Peipei Wang, **Lotreck, Serena G**, Bethany M Moore, Fanrui Meng, Jeffrey K Conner, Patrick J Krysan, Melissa D Lehti-Shiu, and Shin-Han Shiu. Predictive models of genetic redundancy in *Arabidopsis thaliana*. *Molecular biology and evolution*, 38(8):3397–3414, 2021.

[3] Serena G Lotreck. Knowledge Graphs. *MSU SciComm Voices Blog*, 2020.

## Research Talks

- 2021 **GLBRC ASM:** *Machine Learning for Plant Biology: what, why and how?*
- 2020 **STEM Village Virtual Sym.:** *Domain-specific knowledge graphs in plant biology*
- 2018 **Plant Genomics @ MSU Symposium:** *Ten minute talk on REU research*

## Fellowships

- 2020-2021 NSF-NRT IMPACTS Trainee
- 2019-2020 MPS Fellow
- 2019 GRFP Honorable Mention

## Service

- 2021-2022 **MSU QT-Grad**, *President*
- 2020-2022 **Plant Biology Peer Mentorship Program Committee**
- 2020-Present **Plant Biology Peer Mentorship Program**, *Mentor*
- Sept. 2020 **Out for Undergrad Engineering Conference**, *Mentor*

## Languages

**Spanish:** Fluent  
**Scottish Gaelic:** Novice

## Skills

**Programming languages:** Python, R  
**Software packages:** scikit-learn, spaCy, pandas, git

## Interests

- 2021 **Dancer**, *Happendance Velocity Company*, Lansing, MI
- 2021 Wilderness First Aid certification, exp. 06/2023
- 2020 **Climbing/hiking trip leader**, *Fieldston Emerging Leaders*, NY, NY (Cancelled due to COVID-19)
- 2017-2019 **Rock climbing instructor**, *Cornell Outdoor Education*, Ithaca, NY