# Sarah J. Weintraub

sweintraub5@gmail.com • Worcester, MA

## EDUCATIONAL BACKGROUND

**Doctor of Philosophy, Bioinformatics and Computational Biology** expected graduation**:** May 2025
Worcester Polytechnic Institute

**Bachelor of Science, Microbiology and Cell Science** May 2019
University of Florida, Minor: Bioinformatics

## PERSONAL STATEMENT

Bright, hard-working and curious individual. Excited to explore new technologies in genetics and alternative energy as it pertains to climate solutions. Ultimately wants a career as a Bioinformatician studying sustainable energy.

## EMPLOYMENT EXPERIENCE

Young Lab, Chemical Engineering, Worcester Polytechnic Institute Aug. 2021-present
**Graduate Research Assistant** *with Dr. Eric M. Young*
Research Highlights:

- Developed machine learning method to compare multiple yeasts transcriptomics for on-boarding non-model organisms for genetic engineering for healthcare and sustainable energy.
    - Transcriptomics, metabolism, comparative genomics
- Improved and sustained genome assembler, Prymetime, by expanding utility to bacterial organisms and accessibility to HPC in addition to cloud providers.
    - Collaborations from this work:
        - Integration of episomal/integrative plasmids causes the genotypic and phenotypic diversity in metabolically engineered Saccharomyces cerevisiae
        - Genetic basis for probiotic yeast phenotypes revealed by nanopore sequencing

Center for Psychiatric Genetics, NorthShore University HealthSystem Sept. 2019-Aug. 2021
**Research Assistant** *with Dr. Jubao Duan*
Research Highlights:

- Cloning with Lentivirus plasmid to increase editing efficiency
- Editing and analysis of human induced pluripotent stem cells (hiPSC) lines with ABEmax to target BAG5 for further understanding of the molecular basis of schizophrenia and other neuropsychiatric and neurological disorders
- Analysis of RNA-seq data and creating protocols in R for designing pegRNAs

University of Florida Plant Biotechnology and Biochemistry Lab Jan. 2017-Aug. 2019
**Independent Researcher** *with supervisory of Dr. Thomas A. Colquhoun*

Research Highlights:

- Big Data analysis comparing *Lilium* volatile emission and transcriptome accumulation across genotypes for volatile biosynthesis elucidation
    - Awarded grant as University Scholar
    - Presented research at the 2018 Florida Genetics Symposium
    - Presented research at the UF Undergraduate Research Symposium
- Genotyping and phenotyping transgenic knockdown petunias
- Volatile collections of 4-Methyl-5-Vinylthiazole abundance for caladium cultivar screening
- Measured anthocyanin levels using spectrophotometry on tomato

University of Florida Emerging Pathogens Institute Aug. 2016-Dec 2016
**Undergraduate Research Assistant** *with supervisory of Dr. Afsar Ali* Research Highlights:

- Cultured the pathogenic bacteria *Vibrio cholerae*
- Training through AALAS Learning Library (transcript available upon request)

University of Florida Institute of Aging Aug. 2015-Dec. 2015
**Undergraduate Research Assistant** *with supervisory of Dr. Shinichi Someya* Research Highlights:

- Tested Glutathione S-Transferase's (GST) role to maintain hearing function and GST deficiency which promotes oxidative stress
- Examined cisplatin-induced cochlear cell damage and early onset of hearing loss in mice
- Animal handling training

**TradePMR Assistant to Chief Financial Officer** May-Aug. 2015, May-Aug. 2016
Developed an organizational product for documents to be found and shared within the brokerage firm, becoming widely adopted within the company as a systemic shift in the workflow for all employees.

## SKILLS

Software proficiencies: R, Python, Unix, Bash
Bioinformatics analysis: NGS data processing, RNA-seq, functional genomics and annotation, machine learning and data science, pipeline development and workflow management, database management, computing infrastructure (HPC and cloud computing)
Basic research experience: base editing techniques in iPSC, sanger Sequencing, iPSC and tissue culture maintenance, generalized and specialized PCR techniques, bacterial expression of recombinant protein, nucleotide isolation and manipulation, protein purification and manipulation, volatile compound collection, mouse training/handling

## PUBLICATIONS

**Weintraub, S.J**., Li, Z., Nakagawa, C.L., Collins, J.H. and Young, E.M. (2025), Oleaginous Yeast Biology Elucidated With Comparative Transcriptomics. Biotechnology and Bioengineering. https://doi.org/10.1002/bit.28891

Peng, B., **Weintraub, S. J.,** ... & Vickers, C. E. (2023). Integration of Yeast Episomal/Integrative Plasmid Causes Genotypic and Phenotypic Diversity and Improved Sesquiterpene Production in Metabolically Engineered Saccharomyces cerevisiae. ACS Synthetic Biology, 13(1), 141-156.

Keating, K. W., van Zyl, E. M., Collins, J. H., Nakagawa, C., **Weintraub, S. J**., Coburn, J. M., & Young, E. M. (2023). Phenotypic and genomic evidence for transparent cellulose, metabolic diversity, and stable cellulose production in the Acetobacteraceae. bioRxiv, 2023-08.

Joseph H Collins, Lohith Kunyeit, **Sarah Weintraub**, Nilesh Sharma, Charlotte White, Nabeeha Haq, K A Anu-Appaiah, Reeta P Rao, Eric M Young, Genetic basis for probiotic yeast phenotypes revealed by nanopore sequencing, G3 Genes | Genomes | Genetics, 2023;, jkad093, https://doi.org/10.1093/g3journal/jkad093

Dobrindt K, Zhang H, Das D, Abdollahi S, Prorok T, Ghosh S, **Weintraub S**, Genovese G, Powell SK, Lund A, Akbarian S. *Publicly available hiPSC lines with extreme polygenic risk scores for modeling schizophrenia*. Complex psychiatry. 2020;6(3-4):68-82.

## PRESENTATIONS

Poster presentation: **Weintraub SJ**, Li Z, Nakagawa CL, Young EM, *"*Oleaginous yeast genetic tool elucidation using comparative transcriptomic," Intelligent Systems for Molecular Biology/European Conference on Computational Biology, Lyon, France, July, 2023.

Flash talk: "Omics characterizes the genetic basis of non-model organisms," Day of Scholarship and Learning, Flash talk presented at WPI, Worcester, MA, March 2023.

Flash talk: "Yeasts for Sustainable Energy," NSF Research Traineeship Annual Meeting, Flash talk presented at Virginia Tech, Blacksburg, VA, October 2022.

Poster presentation: **Weintraub SJ**, Li Z, Nakagawa CL, Young EM, "Comparative transcriptomics provides genetic tools for metabolic engineering in extremophile oleaginous yeasts", Intelligent Systems for Molecular Biology, Madison, WI, July, 2022.

Poster presentation: **Weintraub, Sarah J.**, Johnson, Timothy S., Colquhoun, Thomas A., (2018, October). *Weighted Gene Co-expression Network Analysis for Comparative Metabolomics in Lilium.* Poster session presented at the annual meeting of the Florida Genetics Symposium, Gainesville, FL

Poster presentation: **Weintraub, Sarah J.**, Johnson, Timothy S., Colquhoun, Thomas A., (2019, April). *Leveraging System Biology Approaches to Study Lilium Floral Volatile Production*. Poster session presented at the annual meeting of the UF Undergraduate Research Symposium, Gainesville, FL

Poster presentation: **Weintraub, Sarah J.**, Garner, Drake M. G., Burrell, Samantha R., Colquhoun, Thomas A., (2019, April). *Scent Science.* Poster presentation for "Suds and Science" event promoting science communication, Gainesville, FL

## AWARDS

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| **CEDAR Fellow** | Aug. 2022-July 2024 |
| **JustT Fellow** | Aug. 2022-July 2023 |
| **Best Poster from 4th Annual Suds and Science** | Apr. 2019 |
| **University Scholars Program** | Aug. 2018-May 2019 |
| **Florida Bright Futures Scholarship** | Aug. 2015-May 2109 |

## MEMBERSHIP

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| **Epsilon Sigma Alpha** | Aug. 2017-May 2019 |
| Networking chair | Aug. 2018-May 2019 |
| Philanthropy chair | Aug. 2017-May 2018 |
| **UF Honey Bee Club** | Aug. 2017-May 2018 |

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| **Signing Gators** | Aug. 2013-May 2019 |
| **Microbiology Club** | Aug. 2017-May 2018 |
| **Florida Crew** | Aug. 2015-May 2017 |
| Alumni and Family Event Coordinator | June 2016-May 2017 |
| Southeastern Champions | 2016 |
| 6th placed at Nationals | |

## VOLUNTEER

Science fair judge: volunteer with Alachua County School board
Science education: helped teach elementary school children biotechnology concepts with ExploringPlants
Guardian Angels: work with highly skilled German Shepherds to be placed with soldiers with PTSD
Jungle Friends: primate sanctuary providing care for New World monkeys retired from lab research, expets, or who have been confiscated by the authorities
Millcreek Farm: nonprofit sanctuary for old, abused, and abandoned horses Road clean-up of Gainesville area

## RELEVANT COURSES

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| Molecular Genetics | Bacterial and Viral Pathogens | Plant Molecular Biology |
| Organic Chemistry | Python Programming | Physics |
| Biochemistry | Bacterial Genome Analysis | Statistics |
| Principles of Microbiology | Advanced Microbiology Lab | |
| Bioinformatics | Genetical Ethics | |

## REFERENCES

Eric M. Young, Ph.D
Assistant Professor, Chemical Engineering
GP 4003, Life Sciences & Bioengineering Center, Gateway Park
+1 (508) 8316398
emyoung@wpi.edu

Jubao Duan, Ph.D.
Director, Unit of Functional Genomics in Psychiatry
Center for Psychiatric Genetics
NorthShore University HealthSystem
1001 University Place, Evanston, IL 60201
(224) 324-7564
jduan@uchicago.edu

Thomas A. Colquhoun, Ph.D.
Principle Investigator
Associate Professor

University of Florida
Department of Environmental Horticulture
(352) 273-4584
ucntcme1@ufl.edu