Sophia Gudinas

Michigan State University
Department of Biochemistry and Molecular Biology
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Education

Bachelor of Science - Biochemistry and Molecular Biology/ Biotechnology

Honors thesis title: "Characterization of the MYB31 Transcription Factor in the Regulation of Lignin Synthesis in Maize"

- **Michigan State University** College of Natural Science 2023-2025
- **Washtenaw Community College** 2021-2023

Research Experience

Student Researcher, Department of Biochemistry and Molecular Biology

January 2025 - Current

- Explored regulatory function of transcription factors involved in maize phenylpropanoid metabolism by gene editing and selective crossing
- Applied the CRISPR-Cas9 system to generate *ZmMYB31* and Zm*MYB5* mutants to test hypothesis on transcriptional regulation of lignin biosynthesis
- Observed phenotypes in maize plants as a result of a *MYB31* knockout mutation and designed experiments to analyze lignin content in maize leaf tissues

Undergraduate Research Assistant, Department of Biochemistry and Molecular Biology

October 2024 - January 2025

- Investigated different seed specific promoters and their effect on seed oil production in *Camelina sativa*
- Utilized molecular cloning and transformation techniques to obtain transgenic plants with desired promoter driven expression
- Assisted in Agrobacterium-mediated transformations via floral dip method in *Camelina Sativa*

Undergraduate Research Fellow, Lyman Briggs College

October 2023 - April 2025

- Devised and applied a set of criteria for chemistry educational videos to effectively teach students specific chemistry topics
- Discussed and evaluated YouTube chemistry videos with collaborators for a final consensus on quality of videos
- Organized and interpreted data to identify patterns between different chemistry concepts

Poster Presentations

Gudinas, S., Zajac L., Sweeder, R., Herrington, D. "Looking to YouTube for chemistry education videos? How students can search smarter."

- Lyman Briggs Research Symposium, Spring 2024
- University Undergraduate Research and Arts Forum, Spring 2024

Gudinas, S., Forestieri, L., Ivanov, A., Chisolm, V., Schrader, S., Sweeder, R., Herrington, D. "Chemistry concepts on YouTube: How well do educational videos support conceptual understanding of intermolecular forces?"

- Mid-Michigan Symposium for Undergraduate Research Experiences, Summer 2024
- Biennial Conference on Chemical Education, Summer 2024
- University Undergraduate Research and Arts Forum, Spring 2025

Chenoweth, R., Palombo, G., Senkowski, I., Forestieri, L., **Gudinas, S.**, Ivanov, A., Sweeder, R., Herrington, D. "How can I learn about gas behavior? An analysis of how YouTube videos help support students' understanding of gas behavior."

- Lyman Briggs Research Showcase, Spring 2025
- University Undergraduate Research and Arts Forum, Spring 2025

Gudinas, S., Gupta, S.K., Grotewold, E. "Molecular and genetic characterization of CRISPR-Cas9 induced mutations in transcription factors *MYB31* and *MYB5*."

- BMB Undergraduate Research Showcase, Spring 2025
- University Undergraduate Research and Arts Forum, Spring 2025
- Mid-Michigan Symposium for Undergraduate Research Experiences, Summer 2025

Fellowships and Awards

- Lyman Briggs College Research Scholar Fellowship, Fall 2023/Spring 2024
- Lyman Briggs Research Symposium Chemistry Division Award Winner Spring 2024
- College of Natural Science Undergraduate Research Scholarship, Spring 2025/ Summer 2025

Non-Academic Employment

Shift lead, Biggby Coffee, May 2023 – November 2024

- Developed leadership and communication skills through supervising and mentoring team members in a fast-paced work environment
- Delegated tasks and maintained quality control in high volume services through effective teamwork strategies

Team Member, The Fuel Café, January 2022 – October 2022

- Established a highly collaborative environment, emphasizing customer service and communication
- Designed and tested new recipes, applying an experimental approach to develop new high quality menu items

Extra-Curricular Affiliations

MSU Biochemistry Club

- Participated in outreach events promoting student engagement on and off campus
- Investigated practical applications and career options for biochemistry
- Networked with guest speakers discussing career development in academia and industry