

DANIELLE MARIE DIFRANCO, B.S.

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CAREER

Graduate Research Assistant

August 2022 – Present

University of Arizona
Laboratory of Dr. Joyce Schroeder
Tucson, AZ 85721

Undergraduate Research Assistant

October 2018 – August 2022

University of Michigan
Laboratory of Dr. Hayley McLoughlin
Ann Arbor, MI 48109

EDUCATION

Ph.D. Candidate in Cancer Biology

August 2022 – Present

University of Arizona, Tucson, AZ
Laboratory of Dr. Joyce Schroeder

B.S. in Molecular, Cellular, and Developmental Biology, Honors

2018 – 2022

University of Michigan, Ann Arbor, MI
Honors Thesis: *A Spatiotemporal Study of Oligodendrocyte Transcriptional Dysregulation in Spinocerebellar Ataxia Type 3*

AWARDS

Andrew C. Comrie Graduate Interdisciplinary Programs Doctoral Fellowship

Fall 2025 – Spring 2026

P.E.O Scholar Award Nominee, P.E.O Chapter AU – Tucson

2025

Herbert E. Carter Travel Award

2025

Herbert E. Carter Travel Award

2023

James B. Angell Scholar

2022

U-M University Honors

2018 – 2021

RESEARCH EXPERIENCE

Graduate Research Assistant, Schroeder Laboratory

March 2023 – Present

University of Arizona, Department of Molecular and Cellular Biology

- Perform wet lab skills and analysis to define the drivers of EGFR nuclear retrotranslocation.
- Perform wet lab skills and analysis to elucidate the mechanistic role of EGFR in cell migration during breast cancer metastasis and wound healing.
- Mentor students in the laboratory to assist in their training of wet lab skills and research topics.
- Present research progress at national and local meetings to share my knowledge in the field and expand my professional network.
- Attend national and local meetings to stay up to date on current technologies and research progress.

Undergraduate Research Assistant, McLoughlin Laboratory

October 2018 – August 2022

University of Michigan Medicine, Department of Neurology

- Determine the Half-Life of antisense oligonucleotide (ASO) therapy for Spinocerebellar Ataxia Type 3 (SCA3) to establish the effective redosing schedule of therapy.
- Perform qPCR and Western Blot experiments and analyze data to contribute to the investigation of oligodendrocyte dysfunction in SCA3.
- Evaluate differential expression of genes implicated in oligodendrocyte maturation in brain tissue of SCA3 diseased mouse models using RNA and qPCR.
- Maintain cleanliness and organization of laboratory space and materials to ensure experiments can be conducted efficiently.
- Maintain mouse colony and determined genotypes of mice to assure that projects have the correct mice models.
- Assist in the training of incoming laboratory members on common protocols to make sure experiments are run correctly.

Summer Undergraduate Fellow

June 2021 – July 2021

Albert Einstein College of Medicine, Bronx – Virtual

- Designed and analyzed the mock data of follow-up research to a study about the role of 14-3-3 protein in nucleocytoplasmic transport to investigate the interaction between the 14-3-3 protein and the protein exportin
- Participated in professional development and scientific skills seminars that prepared me for a career in science
- Engaged with faculty and in group work which expanded my professional network

TECHNICAL SKILLS

Molecular: cell culture, mouse perfusion and dissection, tissue homogenization, CRISPR/Cas9, lentiviral transfection, microscopy (fluorescent, light, confocal, CellCyte), gel electrophoresis, polymerase chain reaction (PCR), quantitative PCR, DNA/RNA quantification (nanodrop), DNA/RNA/protein extraction, plasmid DNA amplification and digestion, gel purification, cell fractionation, immunoblot, cell migration, MTT assay, protein immunoprecipitation

Software/Coding: R, MATLAB, ImageJ/FIJI, Prism, Microsoft Excel, CellProfiler

LEADERSHIP ROLES

Cancer Biology Student Representative

May 2025 – Present

Cancer Biology GIDP, University of Arizona

- Participate in program executive meetings to relay the needs and concern of all Cancer Biology GIDP students to the executive committee so that the program incorporates graduate student needs into its organization.
- Assist Cancer Biology GIDP students in fulfilling program requirements regarding comprehensive exams and GradPath forms to ensure students have the support they need to advance through the program.
- Organize biannual Tim and Diane Bowden Research Symposium with other cohort representatives to facilitate graduate student, faculty, and alumni networking, scientific communication, and career development.
- Organize student social events to encourage a supportive and collaborative environment among students.

Mentoring ABBS Students Program (MAP) Co-Coordinator

August 2024 – Present

Arizona Biological and Biomedical Sciences, University of Arizona

- Organize graduate student panels and events to allow current ABBS students to ask questions and to receive information from more senior students about the graduate student experience.
- Coordinate between current ABBS students and MAP mentors to ensure current ABBS students receive the assistance they need as they transition into their PhD programs.
- Organize graduate student socials so that incoming ABBS students can network with more senior graduate students.

Cancer Biology Cohort Representative**July 2023 – Present**

Cancer Biology GDP, University of Arizona

- Organize biannual Tim and Diane Bowden Research Symposium with other cohort representatives to facilitate graduate student, faculty, and alumni networking, scientific communication, and career development.
- Communicate cohort needs to the CBIO student representative to ensure the program executive committee accounts for graduate student needs.
- Provide one-on-one mentorship to students in the years below mine, helping them navigate program organization and requirements.

Joint Biology Research Retreat Committee Member**June 2023 – September 2023**

University of Arizona

- Distribute information to faculty and students for applying to present a talk or poster about their current research at the JBRR to facilitate science communication and networking.
- Communicate with program coordinators to collect presentation abstracts and help organize the retreat program and schedule in a timely manner.
- Set up retreat site to ensure attendees had adequate seating, food and drink, and poster board space.
- Design retreat t-shirt for distribution to attendees.
- Check in attendees to ensure each member received their t-shirt and rooming information.

President and Co-founder**September 2020 – April 2022**

Alpha Tau Pi Professional Biology Fraternity, University of Michigan

- Founded organization by developing membership requirements, executive board member responsibilities, and recruiting members thus creating the first professional biology fraternity at the University of Michigan
- Organize and participate in professional events featuring guest speakers, giving fraternity members access to professional development and networking opportunities
- Organize monthly meeting agendas for board and chapter meetings, ensuring successful communication between board members and fraternity members
- Facilitate Executive Board meetings to ensure every board member can share their ideas for their position

Director of Operations**September 2020 – April 2022**

Pure Dance (student led dance organization), University of Michigan

- Create a rehearsal schedule based on the number of dances we will perform at our annual showcase, ensuring every dance is completed and performance-ready

- Communicate with University staff to reserve campus spaces for participation in recruitment festivals, performances, rehearsals, and auditions, performance, and rehearsal opportunities for potential members and members
- Assist Creative Director with the organization of dance choreography to ensure there is the correct number of choreographers and dancers for each dance.

Assistant Election Director**February 2021-November 2021**

LSA Student Government, University of Michigan

- Distributed information about applying to run as an LSA Student Government Elected Representative, President, and Vice President to encourage LSA students of all backgrounds to get involved in the government
- Facilitated the Candidate Orientation Meeting to inform candidates of the position responsibilities that they are running for
- Moderated the Candidates Forum which allowed the candidates to share their platforms with the LSA student body.
- Distributed posters and social media posts to inform LSA students of the voting period and how to vote
- Organized voting locations on campus to encourage students to vote

PUBLICATIONS

Schuster KH, Zalon AJ, **DiFranco DM**, Putka AF, Stec NR, Jarrah S, Naeem A, Haque Z, Guan Y, McLoughlin HS. (2024). ASOs are an effective treatment for disease-associated oligodendrocyte signatures in premanifest and symptomatic SCA3 mice. *Molecular Therapy*, 32(5), 1359-1372, DOI: <https://doi.org/10.1016/j.ymthe.2024.02.033>

Schuster KH, **DiFranco DM**, Putka AF, Mato JP, Jarrah SI, Stec NR, Sundararajan VO, McLoughlin HS. (2023). Disease-associated oligodendrocyte signatures are spatiotemporally dysregulated in spinocerebellar ataxia type 3. *Frontiers in Neuroscience*, 17, 1118429, DOI: <https://doi.org/10.3389/fnins.2023.1118429>

Schuster KH, Zalon, AJ, Zhang H, **DiFranco DM**, Stec N, Blumenstein K, Pierce A, Guan YF, Paulson HL, McLoughlin HS. (2022). Impaired oligodendrocyte maturation is an early feature in SCA3 disease pathogenesis. *Journal of Neuroscience*, 42(8), 1604-1617, DOI: <https://doi.org/10.1523/JNEUROSCI.1954-20.2021>.

ABSTRACTS

DiFranco DM, Schroeder J: Oxidative Stress Drives Nuclear Localization of EGFR in Epithelial Cells to Promote Cell Migration. Poster. *The 39th Annual Symposium of The Protein Society*. June 2025.

DiFranco D, Schroeder J: A wound that never heals: Drivers of nuclear EGFR. Poster. *The University of Arizona Cancer Center Annual Scientific Retreat*. November 2024.

DiFranco DM, Hecksel R, Schroeder J: The role of nuclear epidermal growth factor receptor in cell migration and wound healing. Poster. *Ginny L. Clements Breast Cancer Research Institute Annual Symposium*. April 2024.

DiFranco DM, Schroeder J: The role of nuclear epidermal growth factor receptor in cell migration and wound healing. Poster. *AACR Special Conference – Advances in Breast Cancer Research*. October 2023.

- Schuster KH, Zalon AJ, **DiFranco DM**, Putka AF, Jarrah S, Stec NR, Naeem A, Haque Z, Zhang H, Guan Y, McLoughlin HS: Spatiotemporal oligodendrocyte impairments in SCA3 mice are rescued by ATXN3 gene silencing. Poster. *International Congress for Ataxia Research*. November 2022.
- Schuster KH, Zalon AJ, Zhang H, Blumenstein K, Stec N, **DiFranco D**, Pierce A, Barnes S, Guan YF, Paulson HL, McLoughlin HS: Oligodendrocyte maturation is impaired in early SCA3 disease pathogenesis. Poster. *Expanded repeat disorders: from mechanisms to therapies conference*, virtual. 2021.
- Schuster KH, Zalon AJ, Zhang H, **DiFranco DM**, Stec N, Blumenstein K, Pierce A, Guan YF, Paulson HL, McLoughlin HS: Oligodendrocyte maturation impairment occurs early in SCA3 disease pathogenesis. Poster. *Society for Neuroscience Annual Meeting*, virtual. 2021.
- DiFranco D**, Zalon AJ, McLoughlin HS: Half Life Assessment of Antisense Oligonucleotide Therapy in Spinocerebellar Ataxia Type 3 Mouse Model. Poster. *Undergraduate Research Opportunity Program (UROP) Symposium*. April 2019.

SCIENCE COMMUNICATION

- Media Interview – Megan Zahneis: As Trump Upends Funding for Research, These Scholars Turn to GoFundMe. *Chronicle of Higher Education*. July 2025.
- University Fellowship Interview: Elena Chabolla: AY26 Comrie Fellowship goes to: Danielle DiFranco, CBIO GIDP. *The University of Arizona Graduate Interdisciplinary Programs*. July 2025.
- Media Interview – Jill Ryan: University of Arizona researcher turns to crowdfunding to support cancer lab after Trump cuts. *KJZZ 91.5 Public Radio*. July 2025.
- Media Interview – Prerana Sannappanavar: U of A cancer lab turns to crowdfunding to support research. *Arizona Daily Star*. July 2025.
- Media Interview – Helen Rummel: Why this cancer lab started a crowdfunding campaign. *The Arizona Republic*. July 2025.

MENTORSHIP

Undergraduate Students Mentored During Doctoral Education

- Kloe Davis
- Josh Lederman