

SHANEN M. SHERRER

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EDUCATION

Ph.D. in Biochemistry from The Ohio State University 06/2005-08/2011
B.S. in Biochemistry and Minor in Statistical Methods from Miami University, OH 08/2001-05/2005

HONORS AND AWARDS (Selected)

National Cancer Institute (NCI) Director's Award 06/2025
NCI Division of Cancer Prevention (DCP) Group Award (1st Award) 08/2024
NCI DCP Group Award (2nd Award) 08/2024
American Association for the Advancement of Science (AAAS) Science & Technology Policy Fellowship (STPF) with placement at NCI within National Institutes of Health (NIH) 08/2023-08/2025
Council of Public Liberal Arts Colleges (COPLAC) Summer Institute Professional Development Award 06/2022
American Chemical Society (ACS) North Carolina Local Section Poster Award 09/2016
American Cancer Society Postdoctoral Fellowship 02/2014-02/2017
American Heart Association (AHA) Predoctoral Fellowship 07/2009-06/2011
NIH Chemistry-Biology Interface Training Program Fellowship 10/2008-06/2009
Robert H. Edgerley Environmental Toxicology Summer Fellowship 07/2008-09/2008
Glenn-Stokes Scholar (Ohio Science and Engineering Alliance) 08/2004-05/2005

RESEARCH EXPERIENCE (Selected)

St. Mary's College of Maryland (SMCM), St. Mary's City, MD

- Associate Professor of Biochemistry with tenure 08/2023-present
 - *On leave of absence* 09/2023-08/2025
- Assistant Professor of Biochemistry 08/2017-07/2023
 - Research focus: Determining biochemical and molecular properties of DNA mismatch repair during cross-talk with other DNA processing systems.

Duke University, Durham, NC

- Postdoctoral researcher in laboratory of Howard Hughes Medical Institute (HHMI) Investigator Dr. Paul Modrich 10/2011-07/2017
 - Research focus: Determined biochemical and molecular properties of the DNA mismatch repair system in humans.

The Ohio State University, Columbus, OH

- Graduate student researcher in Dr. Zucchi Suo's laboratory 05/2006-08/2011
 - Research focus: Determined a minimal kinetic lesion bypass mechanism utilized by Y-family *Sulfolobus solfataricus* DNA Polymerase IV (Dpo4) and mutagenic outcomes of various DNA lesion bypasses catalyzed by the four human Y-family DNA polymerases.

National Science Foundation (NSF) Research Experiences for Undergraduates program, 05/2003-07/2003

Bowling Green State University, OH

- Undergraduate student researcher in Dr. Scott Rogers' laboratory

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- Research focus: Identified microbes that were dormant in 10,000 to 400,000 year-old ice cores from Greenland and Antarctica.

Miami University, Oxford, OH

08/2002-05/2005

- Undergraduate student researcher in Dr. Ann Hagerman's laboratory
- Research focus: Investigated the antioxidant potential in various compounds extracted from plants. Also investigated the role of exercise in oxidative stress for rats by monitoring levels of certain biomarkers.

TEACHING EXPERIENCES (Selected)

Instructor at SMCM, St. Mary's City, MD

08/2017-present

- Courses: CHEM 493/494 *St. Mary's Project*, CHEM 426 *Advanced Biochemistry Laboratory*, CHEM 425 *Biochemistry II*, CHEM 420 *Biochemistry I*, CHEM 420L *Biochemistry I Laboratory*, CHEM 399 *Independent Study*, CHEM 398 *Off-Campus Internship*, MRNE 365 *Marine Environmental Toxicology*, CHEM 197/297/397 *Directed Research*, CHEM 109 *Emerging Scholars Program*, CHEM 106 *General Chemistry II*, and CHEM 106L *General Chemistry II Laboratory*
- Special Course: American Chemical Society (ACS) Laboratory Skills Short Course at SMCM 12/2021
- Guest Lecture for CHM 147 *Introductory Seminar – Chemistry/Biochemistry* in the Department of Chemistry and Biochemistry at Miami University 10/2021
- Guest Lecture for COSC 401 *Software Startup Simulator Capstone* 09/2020

Instructor for the Sisters of Nia Girls' Summer Enrichment Camp, Atlanta, GA

06/2015

- Class: *Protein Science for Young Scholars*
- Designed and executed curriculum for summer camp of middle school students

PROFESSIONAL ACTIVITIES AND AFFILIATIONS (Selected)

Moderator for an NIH-NCI Sponsored Session of the 2024 American Association for Cancer Research (AACR) Annual Meeting in San Diego, CA

04/2024

NCI DCP Early Career Working Group

08/2023-08/2025

- Point of Contact and Event Coordinator 09/2023-08/2025

RCSB Protein Data Bank Training, Outreach, and Education Working Group

06/2022-present

Vice President of Academic Affairs and Dean of Faculty Search Committee

06/2022-12/2022

Board of Trustees faculty delegate

06/2021-07/2023

- Finance, Investment, and Audit Committee

Marine Science Steering Committee

05/2021-05/2024

Developer and webmaster for <https://academicequity.smcm.edu/home>

05/2020-present

Co-Chair and presider of symposia during the ACS 2021 Spring Annual Meeting

07/2019-04/2021

Natural Science & Mathematics Colloquium Committee

06/2018-05/2020

- Organized itineraries, and hosted chemistry and biochemistry guest speakers.

Panelist for NIH Career Symposium

05/2018, 05/2021-2024

American Society for Biochemistry and Molecular Biology (ASBMB) member

01/2017-present

AAAS member

04/2009-present

PUBLICATIONS & PRESENTATIONS (Undergraduate students, *Corresponding Author)I. Peer-Reviewed Publications

1. Bowers, G.M.*, Mertz, P.S., Neiles, K.Y., Chase, D.T., Koch, A.S., Larsen, R.K., **Sherrer, S.M.**, and Townsend, T.K. (2024) A Programmatic Assessment System that Features Signature Assignments and a Longitudinal Rubric. *Research and Practice in Assessment* **19** (1), 30 – 44.
2. Mertz, P.S.*, **Sherrer, S.M.**, and Bowers, G.M. (2023) Teaching and assessing undergraduate collaboration skills scaffolded through the biochemistry curriculum using collaboration rubrics and student learning contracts. *Biochem Mol Biol Educ* **51** (5), 499 – 507.
3. **Sherrer, S.M.*** (2020) Using Scientific Poster Presentations to Scaffold Professional Communication Skill Experiences into Biochemistry Courses, In *Integrating Professional Skills into Undergraduate Chemistry Curricula*. Neiles, K.Y., Mertz, P.S., and Fair, J.D. (Eds). ACS Symposium Book Series **1365**, 165 – 178.
4. **Sherrer, S.M.*** (2020) A virtual laboratory module exploring photosynthesis during COVID-19. *Biochem Mol Biol Educ* **48**, 659 – 661.
5. Malisch, J.L.*, Harris, B.N., **Sherrer, S.M.**, Lewis, K.A., Shepherd, S.L., McCarthy, P.C., Spott, J.L., Karam, E.P., Moustaid-Moussa, N., Calarco, J.M., Ramalingam, L., Talley, A.E., Cañas-Carrell, J.E., Ardon-Dryer, K., Weiser, D.A., Bernal, X.E., and Deitloff, J. (2020) In the wake of COVID-19, academia needs new solutions to ensure gender equity. *PNAS* **117**, 15378 – 15381.
6. **Sherrer, S.M.**, Penland, E., and Modrich, P.* (2018) The mutagen and carcinogen cadmium is a high-affinity inhibitor of the zinc-dependent MutL α endonuclease. *PNAS* **115**, 7314 – 7319.
7. Taggart, D.J., Camerlengo, T.L., Harrison, J.K., **Sherrer, S.M.**, Kshetry, A.K., Taylor, J.S., Huang, K., and Suo, Z.* (2013) A High-Throughput and Quantitative Method to Assess the Mutagenic Potential of Translesion DNA Synthesis. *Nucleic Acids Res* **41**, e96.
8. **Sherrer, S.M.**, Taggart, D.J., Pack, L.R., Malik, C.K., Basu, A.K., and Suo, Z.* (2012) Quantitative analysis of the mutagenic potential of 1-aminopyrene-DNA adduct bypass catalyzed by Y-family DNA polymerases. *Mutat Res* **737**, 25 – 33.
9. **Sherrer, S.M.**, Maxwell, B.A., Pack, L.R., Fiala, K.A., Fowler, J.D., Zhang, J., and Suo, Z.* (2012) Identification of an Unfolding Intermediate for a DNA Lesion Bypass Polymerase. *Chem Res Tox* **25**, 1531 – 40.
10. **Sherrer, S.M.**, Sanman, L.E., Xia, C.X., Bolin, E.R., Malik, C.K., Efthimiopoulos, G., Basu, A.K., and Suo, Z.* (2012) Kinetic Analysis of the Bypass of a Bulky Lesion Catalyzed by Human Y-family DNA Polymerases. *Chem Res Tox* **25**, 730 – 40.
11. Song, Q., **Sherrer, S.M.**, Suo, Z., and Taylor, J.S.* (2012) Preparation of a site-specific T^mCG cis-syn cyclobutane dimer-containing template and its error-free bypass by yeast and human polymerase η . *J Biol Chem* **287**, 8021 – 8.
12. **Sherrer, S.M.**, Fiala, K.A., Fowler, J.D., Newmister, S.A., Pryor, J., and Suo, Z.* (2011) Quantitative Analysis of the Efficiency and Mutagenic Spectra of Abasic Lesion Bypass Catalyzed by Human Y-Family DNA Polymerases. *Nucleic Acids Res* **39**, 609 – 622.
13. **Sherrer, S.M.**, Beyer, D.C., Xia, C.X., Fowler, J.D., and Suo, Z.* (2010) Kinetic basis of sugar selection by a Y-family DNA polymerase from *Sulfolobus solfataricus* P2. *Biochemistry* **49**, 10179 – 10186.
14. Brown, J.A., Pack, L.R., **Sherrer, S.M.**, Kshetry, A., Newmister, S.A., Fowler, J.D., Taylor, J.S., and Suo, Z.* (2010) Identification of Critical Residues for the Tight Binding of Both Correct and Incorrect Nucleotides to Human DNA Polymerase λ . *J Mol Biol* **403**, 505 – 515.
15. Brown, J.A., Zhang, L., **Sherrer, S.M.**, Taylor, J.S.A., Burgers, P.M.J., and Suo, Z.* (2010) Pre-Steady State Kinetic Analysis of Truncated and Full-Length *Saccharomyces cerevisiae* DNA Polymerase η . *J Nucleic Acids*, pii: 871939. doi:10.4061/2010/871939.
16. Brown, J.A., Fiala, K.A., Fowler, J.D., **Sherrer, S.M.**, Newmister, S.A., Duym, W.W., and Suo, Z.* (2010) A

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Novel Mechanism of Sugar Selection Utilized by a Human X-family DNA Polymerase. *J Mol Biol* **395**, 282 – 290.

17. **Sherrer, S.M.**, Brown, J.A., Pack, L.R., Jasti, V.P., Fowler, J.D., Basu, A.K., and Suo, Z.* (2009) Mechanistic Studies of the Bypass of a Bulky Single-Base Lesion Catalyzed by a Y-Family DNA Polymerase. *J Biol Chem* **284**, 6379 – 6388.
18. Fiala, K.A., **Sherrer, S.M.**, Brown, J.A., and Suo, Z.* (2008) Mechanistic Consequences of Temperature on DNA Polymerization Catalyzed by a Y-family DNA Polymerase. *Nucleic Acids Res* **36**, 1990 – 2001.

II. Invited Talks (Selected out of 13)

1. **Shanen M. Sherrer**. A Biochemical Investigation on the Effects of Common Herbicides on Drug Metabolism. (2022) School of Science, Technology, Accessibility, Mathematics and Public Health, Gallaudet University, Washington, DC.
2. **Shanen M. Sherrer**. Keynote Address: The Importance of Research in Preparing for STEM Careers. (2021) 3rd Annual Student Research Symposium, Quest Student Research Institute, VA.
3. **Shanen M. Sherrer**. Cadmium Disruption of Human DNA Mismatch Repair. (2019) Chesapeake Biological Laboratory seminar series, University of Maryland Center for Environmental Science, MD.
4. **Shanen M. Sherrer**. A View of Big Data in Biomedical Research. (2013) BDPA Triangle monthly meeting in Research Triangle Park, NC.
5. **Shanen M. Sherrer**. Keynote Address: The Importance of Research as an Undergraduate Scholar. (2010) The 16th Annual Miami University Undergraduate Research Forum, OH.

III. Presentations (Selected out of 82. Authors italicized are the presenters)

1. **Shanen M. Sherrer***. Professional Development Extravaganza: CVs, Resumes, Networking, and Letters, Oh My! St. Mary's City, MD. (2025) Chemistry Laboratory Curriculum Innovators Summer Institute. (oral presentation)
2. Kyle D. Murphy and **Shanen M. Sherrer***. A Biochemical Investigation on the Structural Integrity of Bovine Serum Albumin During Exposure to Plastic Particles. San Antonio, TX (2024) ASBMB Annual Meeting. (poster)
3. Emily Davis*, **Shanen M. Sherrer**, and Dominiqua M. Griffin. Creating and Maintaining Your Professional Network in STEM. Rockville, MD (2024) 9th Annual Maryland Collegiate STEM Conference. (joint oral presentation)
4. **Shanen M. Sherrer***, Jessica Faupel-Badger, and Brandy Heckman-Stoddard. NCI Division of Cancer Prevention Research Resources, Funding Opportunities, and Research Workforce Activities. San Diego, CA (2024) AACR Annual Meeting. (panel presentation)
5. **Shanen M. Sherrer***. Development of a Bioinformatics Tool for Exploring Protein-Metal Interactions via Circular Dichroism Spectroscopy. Seattle, WA. (2023) ASBMB Annual Meeting. (poster)
6. Gabriella M. De Leonibus and **Shanen M. Sherrer***. Elucidation of the Mutagenic Threshold Amount of Cadmium Exposure. Arlington, VA. (2022) Sigma Xi International Forum on Research Excellence. (poster)
7. Jacob B. Wellek and **Shanen M. Sherrer***. Analysis of *Crassostrea Virginica* Protein Metal Complexes after Exposure to Toxic Environmental Pollutant Cadmium. Philadelphia, PA. (2022) ASBMB Annual Meeting. (poster)
8. **Shanen M. Sherrer*** and Amber E. Douglass. Biochemical Investigation into Cadmium-Induced Diminished Function of a Thermal Stable DNA Polymerase. virtual (2021) ASBMB Annual Meeting. (poster)
9. **Shanen M. Sherrer***. Publish or Perish: Using Research Scenarios to Connect Biochemistry Concepts. virtual (2020) Council on Undergraduate Research Virtual Biennial Conference. (poster)
10. **Shanen M. Sherrer***. Cadmium Targeting of MutL α Endonuclease Leads to Human Mismatch Repair Inhibition. Salt Lake City, UT. (2016) American Cancer Society Jiler Professors & Fellows Conference. (poster)

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11. **Shanen M. Sherrer**, Jessica A. Brown, Lindsey R. Pack, Vijay P. Jasti, Jason D. Fowler, Ashis K. Basu and Zucai Suo*. Mechanistic Studies of the Bypass of a Bulky Single-Base Lesion Catalyzed by a Y-Family DNA polymerase. University of New England, ME. (2009) Gordon Research Conference on Nucleic Acids. (poster)
12. **Shanen Sherrer** and Ann Hagerman*. Polymeric Polyphenols as Dietary Antioxidants. San Diego, CA. (2005) American Society for Biochemistry and Molecular Biology Annual Meeting. (poster)
13. **Shanen Sherrer**, Amy Krans, Jenni Hoehn, and Dr. Scott Rogers*. Life in Ancient Ice. Bowling Green State University, OH. (2003) REU/NSF Summer Conference. (poster and oral presentation)