CURRICULUM VITAE – STEVEN O. MANSOORABADI

STANDARD BIOGRAPHICAL DATA

Department: Chemistry and Biochemistry

College: Sciences and Mathematics

Present Rank: Associate Professor

Years Completed in Present Rank: 7

Years in Faculty Service at AU: 13

Years in Faculty Service Elsewhere: 0

Type of Current Appointment: Tenured

Pay Basis: 9 mo.

Graduate Faculty Status: Member

Date Awarded: 7/12/13

Education

Institution	Degree	Major	Date
University of Wisconsin-Madison	Ph.D.	Biochemistry	5/14/06
University of Wisconsin-Milwaukee	P.B.C.	Biotechnology	5/14/00
University of Wisconsin-Milwaukee	B.S.	Applied Mathematics & Physics/ Biological Sciences/Chemistry	5/14/00

Professional Experience

Institution	Rank	Period of Appointment
Auburn University	Associate Professor	8/18 – current
Auburn University	Assistant Professor	8/12 – 8/18
The University of Texas at Austin	Postdoctoral Associate	6/06 – 8/12
University of Wisconsin-Milwaukee	Laboratory Technician	8/99 – 8/00

Other Credentials

5th National School on Neutron and X-ray Scattering (8/10/03 – 8/24/03)

Signature: Steven Mansoorabadi **Date:** 12/19/25

SUMMARY OF ACTIVITIES

TEACHING (25%)

Courses Taught at Auburn
- BCHE 5180/6180 – Biochemistry I
- BCHE 5190/6190 – Biochemistry II
- BCHE 7200 – Advanced Biochemistry
- CHEM 4950/7750 – Biochemistry Seminar
- DRDD 7960 – Natural Products Chemistry
- SCMH 1010 – Concepts of Science

New Courses Developed at Auburn
- BCHE 7230 – Biochemistry of Macromolecules

Advising at Auburn
- Postdocs and Visiting Scholars (4)
- Graduate Students (16 chair, 42 member, 4 reader)
- Undergraduate Students (44 research, 8 academic)

RESEARCH (65%)

Research Grants at Auburn
- Start-up Funds: $591,947
- Intramural Funding, PI (1): $150,000
- Extramural Funding, PI (5): $2,115,411
- Extramural Funding, Co-PI (3): $8,999,751 ($1,744,599 Auburn)
- Extramural Funding Sources: ARPA-E, DOE, ExxonMobil, NSF, USDA
- Total Extramural Funding: $11,115,162 ($3,860,010 Auburn)

Publications
- Refereed Journal Articles (29 career, 13 Auburn)
- Invited Articles (5 career, 3 Auburn)
- Book Chapters (2 career, 1 Auburn)
- Patents and Inventions (1)

Presentations
- Invited Lectures (29)
- Conference Posters (49)

Service and Outreach (10%)

Departmental Service at Auburn
- Biochemistry Division Chair
- Biochemistry Search Committee Chair (3)
- Biological Imaging Search Committee
- Computational Chemistry Search Committee (3)
- Equipment Committee
- Faculty Awards Committee
- Faculty Development Committee
- Graduate Admissions Committee
- Graduate Awards Committee
- Graduate Recruiting Committee
- NMR Facility Director Search Committee
- Safety Committee
- Seminar Committee
- Space Committee Chair

University Service at Auburn
- COSAM Research Advisory Committee
- COSAM Strategic Planning Committee

Professional Service
- Proposal Reviewer: ACS-PRF (1), BBSRC-UK (3), DOE (5), NCN-Poland (1), NIH (7), NSF (13)
- Journal Reviewer (45)
- 14th Annual Southeast Enzyme Conference Chair

Outreach at Auburn
- AU Explore/Destination STEM
- STEM Summer Bridge Program
- Summer Science Institute

ALLOCATION OF TIME AND EFFORT

Teaching: 25% **Research/Creative Work:** 65%
Outreach: 5% **Service:** 5%

HONORS AND AWARDS

2021 Outstanding Faculty Undergraduate Mentor, College of Sciences & Mathematics, AU
2020 National Pre-Health Honor Society Alpha Epsilon Delta – Honorary Member
2019-2024 J. Milton Harris Endowed Professorship, College of Sciences & Mathematics, AU
2018-2019 Dean's Faculty Research Award, College of Sciences & Mathematics, AU
2017 Department of Energy, Early Career Research Program Award, DE-SC0018043
2016 National Science Foundation CAREER Award, CHE-1555138
2007 NIH Ruth L. Kirschstein National Research Service Award, F32 GM082085
2003 NIH Predoctoral Training Grant in Molecular Biophysics, T32 GM08293
2000 Honors in Biology, UWM
2000 Graduating Senior Award – Chemistry, UWM
2000 Ruth Walker Graduating Senior Award – Biological Sciences, UWM
1999 Target MD Scholarship
1999 Ruth Walker One-year Tuition Scholarship
1999 National Honor Society Phi Beta Kappa – Member
1998 Ruth Walker One-year Tuition Scholarship
1996 Academic Excellence Scholarship
1996 National Honor Society of Secondary Schools – Member

SCHOLARLY CONTRIBUTIONS

TEACHING

Courses Taught

2025	Fall	BCHE 5180/6180: Biochemistry I	3 Hrs	149/10 students
2025	Fall	CHEM 4950: Undergraduate Seminar	1 Hrs	3 students
2025	Fall	CHEM 7750: Formal Present. in Mod. Chem.	1 Hrs	4 students
2025	Summer	BCHE 5180/6180: Biochemistry I	3 Hrs	25/2 students
2025	Spring	BCHE 5190/6190: Biochemistry II	3 Hrs	116/7 students
2025	Spring	CHEM 4950: Undergraduate Seminar	1 Hrs	3 students
2025	Spring	CHEM 7750: Formal Present. in Mod. Chem.	1 Hrs	6 students
2025	Spring	SCMH 1010: Concepts of Science	3 Hrs	281 students
2024	Fall	BCHE 5180/6180: Biochemistry I	3 Hrs	194/16 students
2024	Fall	CHEM 4950: Undergraduate Seminar	1 Hrs	3 students
2024	Fall	CHEM 7750: Formal Present. in Mod. Chem.	1 Hrs	4 students
2024	Summer	BCHE 5180/6180: Biochemistry I	3 Hrs	19/4 students
2024	Spring	BCHE 5190/6190: Biochemistry II	3 Hrs	142/17 students
2024	Spring	CHEM 4950: Undergraduate Seminar	1 Hrs	4 students
2024	Spring	CHEM 7750: Formal Present. in Mod. Chem.	1 Hrs	3 students
2023	Fall	BCHE 5180/6180: Biochemistry I	3 Hrs	188/15 students
2023	Fall	CHEM 4950: Undergraduate Seminar	1 Hrs	7 students
2023	Fall	CHEM 7750: Formal Present. in Mod. Chem.	1 Hrs	1 students

2023	Summer	BCHE 5180/6180: Biochemistry I	3 Hrs	18/2 students
2023	Spring	SCMH 1010: Concepts of Science	3 Hrs	256 students
2023	Spring	BCHE 5180/6180: Biochemistry I	3 Hrs	93/7 students
2023	Spring	CHEM 4950: Undergraduate Seminar	1 Hrs	4 students
2023	Spring	CHEM 7750: Formal Present. in Mod. Chem.	1 Hrs	4 students
2022	Fall	BCHE 5180/6180: Biochemistry I	3 Hrs	137/10 students
2022	Fall	CHEM 4950: Undergraduate Seminar	1 Hrs	6 students
2022	Fall	CHEM 7750: Formal Present. in Mod. Chem.	1 Hrs	1 students
2022	Summer	BCHE 5180: Biochemistry I	3 Hrs	19 students
2022	Spring	BCHE 5190/6190: Biochemistry II	3 Hrs	53 students
2022	Spring	CHEM 4950: Undergraduate Seminar	1 Hrs	9 students
2022	Spring	CHEM 7750: Formal Present. in Mod. Chem.	1 Hrs	6 students
2021	Fall	BCHE 7200: Advanced Biochemistry I	3 Hrs	13 students
2021	Fall	CHEM 4950: Undergraduate Seminar	1 Hrs	5 students
2021	Fall	CHEM 7750: Formal Present. in Mod. Chem.	1 Hrs	3 students
2021	Spring	SCMH 1010: Concepts of Science	3 Hrs	230 students
2021	Spring	BCHE 5190/6190: Biochemistry II	3 Hrs	41 students
2021	Spring	CHEM 4950: Undergraduate Seminar	1 Hrs	5 students
2021	Spring	CHEM 7750: Formal Present. in Mod. Chem.	1 Hrs	3 students
2020	Fall	BCHE 7200: Advanced Biochemistry	3 Hrs	18 students
2020	Fall	CHEM 4950: Undergraduate Seminar	1 Hrs	1 students
2020	Fall	CHEM 7750: Formal Present. in Mod. Chem.	1 Hrs	3 students
2020	Spring	BCHE 5180/6180: Biochemistry I	3 Hrs	92/5 students
2020	Spring	CHEM 4950: Undergraduate Seminar	1 Hrs	4 students
2020	Spring	CHEM 7750: Formal Present. in Mod. Chem.	1 Hrs	8 students
2019	Fall	BCHE 5190/6190: Biochemistry II	3 Hrs	31/4 students
2019	Fall	CHEM 4950: Undergraduate Seminar	1 Hrs	6 students
2019	Fall	CHEM 7750: Formal Present. in Mod. Chem.	1 Hrs	3 students
2018	Fall	BCHE 5180/6180: Biochemistry I	3 Hrs	109/6 students
2018	Spring	BCHE 5190/6190: Biochemistry II	3 Hrs	45/2 students
2017	Fall	BCHE 5180/6180: Biochemistry I	3 Hrs	89/11 students
2017	Spring	BCHE 7230: Biochemistry of Macromolecules	3 Hrs	9 students
2016	Spring	BCHE 5190/6190: Biochemistry II	3 Hrs	77/3 students
2015	Fall	BCHE 5180/6180: Biochemistry I	3 Hrs	147/7 students
2015	Spring	BCHE 7230: Biochemistry of Macromolecules	3 Hrs	13 students
2014	Fall	BCHE 7200: Advanced Biochemistry I	3 Hrs	14 students
2014	Spring	BCHE 5180/6180: Biochemistry I	3 Hrs	130/8 students
2013	Fall	BCHE 7200: Advanced Biochemistry I	3 Hrs	21 students
2013	Spring	BCHE 7230: Biochemistry of Macromolecules	3 Hrs	10 students

Graduate Students (Former)

Major Professor

Luke A. Martz Ph.D.	Defended dissertation “Computational Investigations of Coenzyme F430 Biosynthesis and Radical *S*-Adenosyl-L-Methionine Enzyme Catalysis” in 2025. Currently working as a Product Development Specialist at Refresco North America.

Chidinma L. Odili Ph.D.	Defended dissertation “Investigations into Methyl-coenzyme M Reductase Behavior: Expression in a Heterologous Host, Putative Post-Translational Modification Genes, and Molecular Dynamics of MCR Homologues Bound to F430 Variants” in 2024. Currently working as a Global Science Communications and Medical Affairs Specialist at Chiesi Pharmaceutical Company.
Kenny Nguyen Ph.D.	Defended dissertation “The Mechanistic Studies of Dinoflagellate Bioluminescence and the Conformational Analysis of Dinoflagellate Luciferase” in 2023. Currently a Specialized Laboratory Technician at the University of Southern California.
Patrick H. Donnan Ph.D.	Defended dissertation “Computational Studies of Dinoflagellate Luciferase and Radical *S*-adenosyl-L-methionine Enzymes” in 2022. Currently a postdoctoral research fellow at the University of Michigan with Jennifer Bridwell-Rabb.
Shadi Yavari, Ph.D.	Defended dissertation “Investigation of a Large Protein Complex Important for Methyl-coenzyme M Reductase Activity” in 2022. Currently a postdoctoral research fellow at Columbia University with Natura Myeku.
Shuxin Li, Ph.D.	Defended dissertation “Novel Enzymes and Catalytic Mechanisms in Tetrapyrrole Metabolism: a Nitrogenase Homolog and a Noncanonical Heme Oxygenase” in 2021. Currently a postdoctoral research fellow at the Sun Yat-Sen University Cancer Center.
Kaiyuan Zheng, Ph.D.	Defended dissertation “A Study of Methyl-coenzyme M Reductase Maturation: Coenzyme F430 Biosynthesis and Post-translational Modifications” in 2018. Currently a postdoctoral research fellow at Virginia Polytechnic Institute and State University.
Victoria L. Owens, Ph.D.	Defended dissertation “Functional Genomics Investigation of Siroheme and Heme d_1 Biosynthesis” in 2018. Currently a Chemist with the U.S. Food and Drug Administration (FDA).
Phong D. Ngo, Ph.D.	Defended dissertation “A Story About Light and Energy: Mechanistic and Biosynthetic Investigations of Bioluminescence and Methanogenesis” in 2016. Currently an Assistant Professor at Texas Wesleyan University.

Committee Member

Md Jahangir Alam	Ph.D.	2022	Biochemistry	Dr. D. C. Goodwin
Callie Barton	Ph.D.	2022	Biochemistry	Dr. D. C. Goodwin
Brittany Boykin	M.S.	2016	Computational Chemistry	Dr. O. Acevedo
Katherine Clohan	Ph.D.	2022	Biochemistry	Dr. E. C. Duin
Paritosh Dayal	M.S.	2015	Biochemistry	Dr. H. R. Ellis

Robel Ghebreab	Ph.D.	2019	Biochemistry	Dr. E. C. Duin
Claire Graham	Ph.D.	2018	Biochemistry	Dr. H. R. Ellis
Richard Hagen	Ph.D.	2020	Biochemistry	Dr. H. R. Ellis
Adam Hosey	M.S.	2024	Organic Chemistry	Dr. R. Karimov
Juan Hu	Ph.D.	2018	Analytical Chemistry	Dr. C. J. Easley
Rejaul Islam	Ph.D.	2024	Biochemistry	Dr. D. C. Goodwin
Jessica Krewall	Ph.D.	2021	Biochemistry	Dr. D. C. Goodwin
Amanda Kurian	Ph.D.	2023	Analytical Chemistry	Dr. C. J. Easley
Jiaming Liu	Ph.D.	2023	Organic Chemistry	Dr. M. Chen
Zening Liu	Ph.D.	2020	Analytical Chemistry	Dr. W. Zhan
Suman Mazumder	Ph.D.	2013	Biochemistry	Dr. E. C. Duin
Rolande Meudom	M.S.	2016	Organic Chemistry	Dr. B. L. Merner
Jonathan Musila	Ph.D.	2017	Biochemistry	Dr. H. R. Ellis
Rene Fuanta Ngouli	Ph.D.	2018	Biochemistry	Dr. D. C. Goodwin
Olive Njuma	Ph.D.	2016	Biochemistry	Dr. D. C. Goodwin
Orobola Olajide	Ph.D.	2024	Analytical Chemistry	Dr. A. M. Hamid
Laura Stanford	Ph.D.	2019	Biochemistry	Dr. H. R. Ellis
Nirob Saha	Ph.D.	2021	Organic Chemistry	Dr. B. L. Merner
Hui Xu	Ph.D.	2020	Biochemistry	Dr. D. C. Goodwin

University Reader

Tianhan Huang	Ph.D.	2024	Biological Sciences	Dr. A. Petrov
Katherine Lawson	Ph.D.	2023	Chemical Engineering	Dr. A. J. Adamczyk
Spencer LeBlanc	Ph.D.	2019	Physics	Dr. E. Thomas
Katherine E. Vest	Ph.D.	2013	Biological Sciences	Dr. P. A. Cobine

Graduate Students (Current)

Major Professor

Prince Ansah Ph.D. Candidate	Started Spring 2025. Research is focused on bioinformatic and functional genomic investigations of dinoflagellate bioluminescence.
Thach B. Do Ph.D. Candidate	Started Spring 2024. Research is focused on mechanistic and biosynthetic studies of dinoflagellate bioluminescence.
Joshua Ehun Ph.D. Candidate	Started Spring 2022. Research is focused on luciferin-binding protein and the structure of dinoflagellate scintillons.
Dominic Fico Ph.D. Candidate	Started Spring 2023. Research is focused on computational modeling of hydrogen-deuterium exchange and lanthipeptide synthetase dynamics.
P. T. Long Nguyen Ph.D. Candidate	Started Spring 2025. Research is focused on biosynthetic studies of coenzyme B biosynthesis.
Chelsea R. Rand Ph.D. Candidate	Started Spring 2019. Research is focused on investigating the maturation and assembly of methyl-coenzyme M reductase.

Prosenjit Ray Ph.D. Candidate	Started Spring 2020. Research is focused on biochemical studies of methane formation, oxidation, and inhibition.

Committee Member

Harun Abdullah	Ph.D.	Biochemistry	Dr. R. Banerjee
Taiwo Adepoju	Ph.D.	Organic Chemistry	Dr. B. L. Merner
Perry Boulware	Ph.D.	Biochemistry	Dr. E. C. Duin
Sara Collins	Ph.D.	Biochemistry	Dr. D. C. Goodwin
Bryan Cronin	Ph.D.	Biochemistry	Dr. E. C. Duin
Arielle Dallas	Ph.D.	Biochemistry	Dr. E. C. Duin
Benedicta Donkor	Ph.D.	Chemical Education	Dr. J. Harshman
Theophila Dusabamahoro	Ph.D.	Biochemistry	Dr. E. C. Duin
Sajjad Hussain	Ph.D.	Biochemistry	Dr. R. Banerjee
Zach Jordan	Ph.D.	Biochemistry	Dr. E. C. Duin
Kimberly Kartowikromo	Ph.D.	Analytical Chemistry	Dr. A. M. Hamid
Jahbo Love	Ph.D.	Biochemistry	Dr. D. C. Goodwin
Nuzhat Munawar	Ph.D.	Entomology/Plant Pathology	Dr. J. J. Coleman
Sharon Ochieng	Ph.D.	Physical Chemistry	Dr. K. J. Patkowski
Chukwuemeka Okpala	Ph.D.	Biochemistry	Dr. E. C. Duin
Didimos Pulikkottil	Ph.D.	Organic Chemistry	Dr. B. L. Merner
Raissa Santos de Lima Rosa	Ph.D.	Biochemistry	Dr. R. C. Bernardi
Chidozie Ugochukwu	Ph.D.	Biochemistry	Dr. D. C. Goodwin

Courses and Curricula Developed

Developed course materials for Concepts of Science (SCMH 1010), the undergraduate Biochemistry sequence (BCHE 5180/6180 and BCHE 5190/6190), the graduate Biochemistry core course (BCHE 7200), and an advanced graduate special topics course (BCHE 7230), which included multimedia PowerPoint lectures, demonstrations, handouts, and written examinations. A class project was also designed for BCHE 7230 to give students experience in writing and reviewing grant proposals and presenting scientific data. Helped to design a new course in Biochemistry/Biophysics Techniques that will be co-taught with the Departments of Physics and Biological Sciences.

Other Contributions

Prepared and taught lecture on contemporary biosynthesis of natural products for DRDD 7960 Special Problems in Pharmaceutical Science: Natural Products Chemistry and wrote the corresponding exam questions/key. Presented a lecture in the Spring 2014 Biochemistry Seminar on deriving steady-state enzyme kinetic rate equations using the King-Altman method. Co-taught biophysical methods short course during the Summer 2013 semester. Presented a lecture on electron paramagnetic resonance (EPR) theory and spectral simulation methods.

Undergraduate Students

Research Advising

Stephen O. Amann (Chemistry), Kristty L. Bondurant (Biomedical Sciences), Matthew H. Brown (Biochemistry), Thomas Brown (Chemical Engineering), Scott A. Buksa (Biomedical Sciences), Kelly A. Carlquist (Biomedical Sciences), Stephen T. Chandler (Biomedical Sciences), Kirsta G. Channell (Biochemistry), Mark T. Chlarson (Biochemistry, Chemical Engineering), Alex J. Cole (Chemistry), Elijah S. Conway (Biochemistry), Thomas P. Curow (Biomedical Sciences), Luke G. Deweese (Biomedical Sciences), Thach B. Do (Biochemistry), Jonathan C. Donnan (Biochemistry), Patrick H. Donnan (Biochemistry, Physics), Aaron M. Eleazer (Polymer & Fiber Engineering), Jane R. Elliott (Biomedical Sciences), Nicholas H. Harbin (Biochemistry), Parker A. Hodges (Biochemistry), Amanda M. Holland (Chemistry), Hudson D. Honeywell (Biomedical Sciences), Jack H. Jones (Microbial Biology), Hayden Kent (Biomedical Sciences), Clare H. King (Biochemistry), Andrew S. Meehan (Biomedical Sciences), Benjamin R. J. Mueller (Biochemistry), Joseph J. Naro (Chemical Engineering), J. Wesley Nelson (Biochemistry), Phuc Thien Long Nguyen (Biochemistry), Sean P. O'Hare (Biochemistry), Rachel L. Park (Biomedical Sciences), Louisa E. Patrick (Biomedical Sciences), Gregory T. Pawel (Biochemistry, Chemical Engineering), Benjamin S. Prior (Organismal Biology), Sara Beth E. Ramsey (Biochemistry), Ryan J. Rauch (Biomedical Sciences), Austin P. Richert (Chemical Engineering), Jennifer M. Royal (Biochemistry), Catherine E. Scull (Biomedical Sciences), Travis M. Stewart (Biomedical Sciences), John R. Weaver (Biomedical Sciences), Kelsie G. Williams (Chemical Engineering), Jonathan T. Wilson (Biomedical Sciences)

Honors Theses

M. H. Brown 2017 'Biosynthetic Studies of Siroheme and Heme d_1'
A. M. Holland 2015 'Mechanistic Investigations of Methyl-coenzyme M Reductase Maturation'

Academic Advising

Biochemistry Majors: Matthew P. Berube, Jessica D. Borre, Aaron J. Hess, La'quasha J. Jones, Allysa E. King, Corey T. Lankford, Morgan L. Metzger, Gregory T. Pawel

Postdoctoral Associates

Robel Ghebreab	Started in Spring 2020. Research is focused on methane production and oxidation by recombinant methyl-coenzyme M reductase.
Selamawit M. Ghebreamlak	Worked in the laboratory from Fall 2016 – Fall 2019 on mechanistic studies of a primitive homolog of nitrogenase involved in coenzyme F430 biosynthesis. Currently a Chemist I at the Alabama Department of Agriculture and Industries.
Eta A. Isiorho	Worked in the laboratory from Fall 2017 – Spring 2020 on structural studies of tetrapyrrole biosynthetic enzymes. Currently the Macromolecular Crystallization Facility Manager at CUNY Advanced Science Research Center.

Xue-peng Yang	Worked in the laboratory from Fall 2012 – Fall 2013 on elucidating the coenzyme F430 biosynthetic pathway. Currently an Assistant Professor in the School of Food and Biological Engineering at Zhengzhou University of Light Industry.

RESEARCH/CREATIVE WORK

Refereed Journal Articles

Shelton, E. B., Yavari, S.*, Chou, C.-w., Shao, N., Wang, S., Duin, E. C., Whitman, W. B., and **Mansoorabadi, S. O.** (**2025**) An Expanded Molecular Model for the Activation of Methyl-Coenzyme M Reductase, *Biochemistry 64*, 4424-4436.

Donnan, P. H.* and **Mansoorabadi, S. O.** (**2022**) Broken-Symmetry Density Functional Theory Analysis of the Ω Intermediate in Radical *S*-Adenosyl-L-Methionine Enzymes: Evidence for a Near-Attack Conformer over an Organometallic Species, *J. Am. Chem. Soc. 144*, 3381-3385.

Li, S.*, Isiorho, E. A., Owens, V. L.*, Donnan, P. H.*, Odili, C. L.*, and **Mansoorabadi, S. O.** (**2021**) A noncanonical heme oxygenase specific for the degradation of *c*-type heme, *J. Biol. Chem. 296*, 100666.

Sahrmann, P. G., Donnan, P. H.*, Merz, K. M. Jr, **Mansoorabadi, S. O.**, and Goodwin, D. C. (**2020**) MRP.py: A Parametrizer of Post-Translationally Modified Residues, *J. Chem. Inf. Model. 60*, 4424-4428.

Donnan, P. H.,* Ngo, P. D.*, and **Mansoorabadi, S. O.** (**2018**) Constant pH Accelerated Molecular Dynamics Investigation of the pH Regulation Mechanism of Dinoflagellate Luciferase, *Biochemistry 57*, 295-299. ('*Future of Biochemistry*' Special Issue)

Ngo, P. D.* and **Mansoorabadi, S. O.** (**2017**) Investigation of the Dinoflagellate Bioluminescence Mechanism: Chemically Initiated Electron Exchange Luminescence or Twisted Intramolecular Charge Transfer?, *ChemPhotoChem 1*, 383-387.

Pierce, E., **Mansoorabadi, S. O.**, Can, M., Reed, G.H., and Ragsdale, S. W. (**2017**) Properties of Intermediates in the Catalytic Cycle of Oxalate Oxidoreductase and Its Suicide Inactivation by Pyruvate, *Biochemistry 56*, 2824-2835.

Zheng, K.*, Ngo, P. D.*, Owens, V. L.*, Yang, X. P., and **Mansoorabadi, S. O.** (**2016**) The biosynthetic pathway of coenzyme F430 in methanogenic and methanotrophic archaea, *Science 354*, 339-342.

Ngo, P. D.*, **Mansoorabadi, S. O.**, and Frey, P. A. (**2016**) Serine Protease Catalysis: A Computational Study of Tetrahedral Intermediates and Inhibitory Adducts, *J. Phys. Chem. B, 120*, 7353-7359.

Mansoorabadi, S. O., Wu, M., Tao, Z., Gao, P., Pingali, S. V., Guo, L., and Liu, H. W. (**2014**) Conformational activation of poly(ADP-ribose) polymerase-1 upon DNA binding revealed by small-angle X-ray scattering, *Biochemistry 53*, 1779-1788.

Kim, H. J., McCarty, R. M., Ogasawara, Y., Liu, Y. N., **Mansoorabadi, S. O.**, Levieux, J., and Liu, H. W. (**2013**) GenK-catalyzed C-6' methylation in the biosynthesis of gentamicin: Isolation and characterization of a cobalamin-dependent radical SAM enzyme, *J. Am. Chem. Soc. 135*, 8093-8096.

Chang, W. C., **Mansoorabadi, S. O.**, and Liu, H. W. (**2013**) Reaction of HppE with substrate analogues: Evidence for carbon-phosphorus bond cleavage by a carbocation rearrangement, *J. Am. Chem. Soc. 135*, 8153-8156.

Chang, W. C., Dey, M.*, Liu, P.*, **Mansoorabadi, S. O.***, Moon, S. J., Zhao, Z. K., Drennan, C. L., and Liu, H. W. (**2013**) Mechanistic studies of an unprecedented enzyme-catalysed 1,2-phosphono-migration reaction, *Nature 496*, 114-118.

Huang, H., Chang, W. C., Pai, P. J., Romo, A., **Mansoorabadi, S. O.**, Russell, D. H., and Liu, H. W. (**2012**) Evidence for radical-mediated catalysis by HppE: A study using cyclopropyl and methylenecyclopropyl substrate analogues, *J. Am. Chem. Soc. 134*, 16171-16174.

Choi, S. H., **Mansoorabadi, S. O.**, Liu, Y. N., Chien, T. C., and Liu, H. W. (**2012**) Analysis of UDP-D-apiose/UDP-D-xylose synthase-catalyzed conversion of UDP-D-apiose phosphonate to UDP-D-xylose phosphonate: Implications for a retroaldol-aldol mechanism, *J. Am. Chem. Soc. 134*, 13946-13949.

Calveras, J., Thibodeaux, C. J., **Mansoorabadi, S. O.**, Liu, H. W. (**2012**) Stereochemical studies of the type II isopentenyl diphosphate-dimethylallyl diphosphate isomerase implicate the FMN coenzyme in substrate protonation, *Chembiochem 13*, 42-46.

Ruszczycky, M. W., Choi, S. H., **Mansoorabadi, S. O.**, and Liu, H. W. (**2011**) Mechanistic studies of the radical *S*-adenosyl-L-methionine enzyme DesII: EPR characterization of a radical intermediate generated during its catalyzed dehydrogenation of TDP-D-quinovose, *J. Am. Chem. Soc. 133*, 7292-7295.

Tang, K. H., **Mansoorabadi, S. O.**, Reed, G. H., and Frey, P. A. (**2009**) Radical triplets and suicide inhibition in reactions of 4-thia-D- and 4-thia-L-lysine with lysine 5,6-aminomutase, *Biochemistry 48*, 8151-8160.

Munos, J. W., Pu, X., **Mansoorabadi, S. O.**, Kim, H. J., and Liu, H. W. (**2009**) A secondary kinetic isotope effect study of the 1-deoxy-D-xylulose-5-phosphate reductoisomerase-catalyzed reaction: evidence for a retroaldol-aldol rearrangement, *J. Am. Chem. Soc. 131*, 2048-2049.

Martinez-Gomez, N. C., Poyner, R. R., **Mansoorabadi, S. O.**, Reed, G. H., and Downs, D. M. (**2009**) Reaction of AdoMet with ThiC generates a backbone free radical, *Biochemistry 48*, 217-219.

Munos, J. W., Moon, S. J., **Mansoorabadi, S. O.**, Chang, W., Hong, L., Yan, F., Liu, A., and Liu, H. W. (**2008**) Purification and characterization of the epoxidase catalyzing the formation of fosfomycin from *Pseudomonas syringae*, *Biochemistry 47*, 8726-8735.

Thibodeaux, C. J., **Mansoorabadi, S. O.**, Kittleman, W., Chang, W. C., and Liu, H. W. (**2008**) Evidence for the involvement of acid/base chemistry in the reaction catalyzed by the type II isopentenyl diphosphate/dimethylallyl diphosphate isomerase from *Staphylococcus aureus*, *Biochemistry 47*, 2547-2558.

Mansoorabadi, S. O., Magnusson, O. Th., Poyner, R. R., Frey, P. A. and Reed G. H. (**2006**) Analysis of the cob(II)alamin – 5'-deoxy-3',4'-anhydroadenosyl radical triplet spin system in the active site of diol dehydrase, *Biochemistry 45*, 14362-14370.

Behshad, E., Ruzicka, F. J., **Mansoorabadi, S. O.**, Chen, D., Reed, G. H. and Frey, P. A. (**2006**) Enantiomeric free radicals and enzymatic control of stereochemistry in a radical mechanism: The case of lysine 2,3-aminomutases, *Biochemistry 45*, 12639-12646.

Yoon, M., Patwardhan, A., Qiao, C., **Mansoorabadi, S. O.**, Menefee, A. L., Reed, G. H., and Marsh, E. N. (**2006**) Reaction of adenosylcobalamin-dependent glutamate mutase with 2-thiolglutarate, *Biochemistry 45*, 11650-11657.

Mansoorabadi, S. O., Seravalli, J., Furdui, C., Krymov, V., Gerfen, G. J., Begley, T. P., Melnick, J., Ragsdale, S. W. and Reed G. H. (**2006**) EPR spectroscopic and computational characterization of the hydroxyethylidene-thiamine pyrophosphate radical intermediate of pyruvate:ferredoxin oxidoreductase, *Biochemistry 45*, 7122-7131.

Astashkin, A. V., Seravalli, J., **Mansoorabadi, S. O.**, Reed, G. H., and Ragsdale, S. W. (**2006**) Pulsed electron paramagnetic resonance experiments identify the paramagnetic intermediates in the pyruvate ferredoxin oxidoreductase catalytic cycle, *J. Am. Chem. Soc. 128*, 3888-3889.

Sims, P. A., Menefee, A. L., Larsen, T. M., **Mansoorabadi, S. O.**, and Reed, G. H. (**2006**) Structure and catalytic properties of an engineered heterodimer of enolase composed of one active and one inactive subunit, *J. Mol. Biol. 355*, 422-431.

Mansoorabadi, S. O., Padmakumar, R., Fazliddinova, N., Vlasie, M., Banerjee, R., and Reed, G. H. (**2005**) Characterization of a succinyl-CoA radical-cob(II)alamin spin triplet intermediate in the reaction catalyzed by adenosylcobalamin-dependent methylmalonyl-CoA mutase, *Biochemistry 44*, 3153-3158.

Invited Articles

Ray, P.*, Rand-Fleming, C. R.*, and **Mansoorabadi, S. O.** (**2024**) Preparation of coenzyme F430 biosynthetic enzymes and intermediates, *Methods Enzymol. 702*, 147-170.

Ghebreamlak, S. M., **Mansoorabadi, S. O.** (**2020**) Divergent Members of the Nitrogenase Superfamily: Tetrapyrrole Biosynthesis and Beyond, *ChemBioChem 21*, 1723-1728.

Reed, G. H., Ragsdale, S. W., and **Mansoorabadi, S. O.** (**2012**) Radical reactions of thiamin pyrophosphate in 2-oxoacid oxidoreductases, *Biochim. Biophys. Acta 1824*, 1291-1298.

Mansoorabadi, S. O., Thibodeaux, C. J., and Liu, H. W. (**2007**) The diverse roles of flavin coenzymes – nature's most versatile thespians, *J. Org. Chem. 72*, 6329-6342.

Reed, G. H., and **Mansoorabadi, S. O.** (**2003**) The positions of radical intermediates in the active sites of adenosylcobalamin dependent enzymes, *Curr. Opin. Struct. Biol. 13*, 716-721.

Book Chapters

Mansoorabadi, S. O., Zheng, K.*, and Ngo, P. D.* (**2017**) Biosynthesis of Coenzyme F430 and the Post-Translational Modification of the Active Site Region of Methyl-Coenzyme M Reductase, in *Metalloprotein Active Site Assembly* (Johnson, M. K. and Scott, R. A., Eds.), John Wiley & Sons, Ltd, West Sussex, UK.

Mansoorabadi, S. O., and Reed, G. H. (**2003**) Effects of electron spin delocalization and noncollinearity of interaction terms in EPR triplet powder patterns, in *Paramagnetic resonance of metallobiomolecules* (Telser, J., Ed.) pp 82-96, American Chemical Society, Washington, DC.

Invited Lectures

Assembly and Activation of Methyl-coenzyme M Reductase, 21st International Conference on Biological Inorganic Chemistry, Long Beach, CA, July 28 - August 1, 2025.

Methanogenesis Research and Global Climate Change, STEM Summer Bridge Program, Auburn University, Auburn, AL, June 17, 2024.

Functional Genomics Investigation of Coenzyme F430 Biosynthesis, Genetics Club at Auburn University, Auburn, AL, April 4, 2024.

Towards the Development of Biological Systems for Methane Formation and Oxidation, Student Chapter of the American Chemical Society, Truman State University, Kirksville, MO, September 9, 2022.

C-ing is Believing: Characterization of a Novel Heme Oxygenase from Paracoccus denitrificans, 27th Enzyme Mechanisms Conference, Tucson, AZ, January 2-6, 2022.

Mechanistic and Biosynthetic Studies of Dinoflagellate Bioluminescence, University of Kentucky, Lexington, KY, November 15, 2019.

Mechanistic and Biosynthetic Studies of Dinoflagellate Bioluminescence, Mississippi State University, Starkville, MS, November 8, 2019.

Maturation and Assembly of the Key Enzyme of Methanogenesis, SERMACS 2019, Savannah, GA, October 19-20, 2019.

Biosynthesis of Coenzyme F430 and Methyl-Coenzyme M Reductase Maturation, ExxonMobil Research and Engineering Company, Annandale, NJ, May 30, 2019.

Biosynthesis of Coenzyme F430 and Methyl-Coenzyme M Reductase Maturation, University of Illinois at Urbana-Champaign, Department of Biochemistry, Urbana, IL, April 12, 2019.

Biosynthesis of Coenzyme F430 and Assembly of Methyl-Coenzyme M Reductase, Metals in Biology Gordon Research Conference, Ventura, CA, January 27 – February 1, 2019.

Mechanistic Studies of a Primitive Homolog of Nitrogenase Involved in Coenzyme F430 Biosynthesis, 2018 Physical Biosciences Research Meeting, Gaithersburg, MD, October 28-31, 2018.

Biosynthesis of Coenzyme F430 and Assembly of Methyl-Coenzyme M Reductase, Molecular Basis of Microbial One-Carbon Metabolism Gordon Research Conference, Newry, ME, July 29 – August 3, 2018.

Biosynthesis of Coenzyme F430 and Assembly of Methyl-Coenzyme M Reductase, 4th International Conference on Applied Biotechnology, Tianjin, China, July 7, 2018.

Biosynthesis of Coenzyme F430 and Assembly of Methyl-Coenzyme M Reductase, Zhengzhou University of Light Industry, Zhengzhou, China, July 2, 2018.

Biosynthesis of Coenzyme F430 and Assembly of Methyl-Coenzyme M Reductase, Metallocofactors Gordon Research Conference, South Hadley, MA, June 10-15, 2018.

Biosynthesis of Coenzyme F430 and Assembly of Methyl-coenzyme M Reductase, Frontiers in Metalloenzymology Symposium, The Pennsylvania State University, University Park, PA, June 6-8, 2018.

Mechanistic Studies of Coenzyme F430 Biosynthesis and Methyl-coenzyme M Reductase Maturation, University of Georgia, Department of Microbiology, Athens, GA, March 8, 2018.

Mechanistic and Biosynthetic Studies of Methanogenesis and Bioluminescence, Virginia Polytechnic Institute and State University, Department of Biochemistry, Blacksburg, VA, September 8, 2017.

Single-Step Methane to Liquid Fuels: Coenzyme F430 Biosynthesis, REMOTE Program Annual Meeting, Houston, Texas, February 15, 2017.

The Chemistry and Biochemistry of Tetrapyrroles: Applications in Medical, Environmental and Energy Research, Troy University, Department of Chemistry and Physics, Troy, Alabama, November 30, 2016.

Elucidation of the Biosynthetic Pathway for the Key Coenzyme of Methanogenesis and Anaerobic Methane Oxidation and *Mechanistic and Biosynthetic Studies of Dinoflagellate Bioluminescence,* Jackson State University, Department of Chemistry and Biochemistry, Jackson, Mississippi, October 7, 2016.

Elucidation of the Biosynthetic Pathway for the Key Coenzyme of Methanogenesis and Anaerobic Methane Oxidation, Lester Andrews/Mississippi Regional Biophysical Consortium IX Joint Research Symposium, Starkville, Mississippi, May 25, 2016.

Single-Step Methane to Liquid Fuels: Biosynthetic Studies of Coenzyme F430, REMOTE Program Review Meeting, La Jolla, California, January 20, 2016.

Strategies and Challenges in Biological Methane-to-liquid Fuel Conversion, 2015 AIChE Annual Meeting, Salt Lake City, Utah, November 9, 2015.

Mechanistic and Biosynthetic Studies of Dinoflagellate Bioluminescence, Samford University, Department of Chemistry and Biochemistry, Birmingham, Alabama, May 7, 2015.

Mechanistic and Biosynthetic Studies of Dinoflagellate Bioluminescence, University of South Alabama, Department of Chemistry, Mobile, Alabama, October 24, 2014.

Mechanistic and Biosynthetic Studies of Dinoflagellate Bioluminescence, Xavier University of Louisiana, Department of Chemistry, New Orleans, Louisiana, October 2, 2014.

Mechanistic and Biosynthetic Studies of Dinoflagellate Bioluminescence, University of Alabama in Huntsville, Department of Chemistry, Huntsville, Alabama, September 5, 2014.

Tetrapyrrole Biosynthetic Studies, Mississippi Regional Biophysical Consortium VI, Starkville, Mississippi, May 30, 2013.

Posters

Ehun, J. D.; Donnan, P. H.; **Mansoorabadi, S. O.** *Understanding the Bioluminescence System of Dinoflagellates: A Combined Experimental and Computational Approach*, NOBCChE's 51st Annual Meeting, Orlando, FL, September 30 – October 3, 2024.

Odili, C. L.; Martz, L. A.; **Mansoorabadi, S. O.** *Molecular dynamics studies of the effects of F430 and post translational modifications on methyl-coenzyme M reductase and homologs catalyzing anaerobic alkane oxidation*, NOBCChE's 51st Annual Meeting, Orlando, FL, September 30 – October 3, 2024.

Martz, L. A.; Ghebreamlak, S. M.; Robison, E. B.; **Mansoorabadi, S. O.** *Mechanistic Studies of a Primitive Homolog of Nitrogenase Involved in Coenzyme F430 Biosynthesis*, Molecular Basis of Microbial One-Carbon Metabolism Gordon Research Conference, Waterville Valley, New Hampshire, August 11-16, 2024.

Ehun, J. D.; Donnan, P. H.; **Mansoorabadi, S. O.** *Understanding the Bioluminescence System of Dinoflagellates: A Combined Experimental and Computational Approach*, 14th Southeast Enzyme Conference, Atlanta, GA, April 27, 2024.

Fico, D. A.; Thibodeaux, C. J.; **Mansoorabadi, S. O.** *Dynamics 2 Observations (D2O): A Deep Learning Protocol for Mapping Molecular Dynamics Simulations to HDX-MS Measurements*, 14th Southeast Enzyme Conference, Atlanta, GA, April 27, 2024.

Martz, L. A.; **Mansoorabadi, S. O.** *Computational Investigations of Nitrogenase Homolog CfbCD Reveal Insights to its First and Last Catalytic Steps*, 14th Southeast Enzyme Conference, Atlanta, GA, April 27, 2024.

Ray, P.; **Mansoorabadi, S. O.** *Progress Towards Understanding the Mechanism of CfbCD, a Primitive Homolog of Nitrogenase from the Coenzyme F430 Biosynthetic Pathway*, 14th Southeast Enzyme Conference, Atlanta, GA, April 27, 2024.

Do, T.; Ray, P.; **Mansoorabadi, S. O.** *Purification of Pheophorbide a Oxygenase: A Possible Enzyme in Dinoflagellate Biosynthesis*, NOBCChE 50th Annual Conference, New Orleans, LA, September 11-14, 2023.

Ehun, J. D., Donnan, P. H.; **Mansoorabadi, S. O.** *Constant pH Accelerated Molecular Dynamics Investigation of the pH Regulation Mechanism of Dinoflagellate Luciferin Binding Protein*, NOBCChE 50th Annual Conference, New Orleans, LA, September 11-14, 2023.

Martz, L. A.; **Mansoorabadi, S. O.** *Computational Investigations of F430 Biosynthesis Suggest a Cooperative Mechanism of Catalysis by the Nitrogenase Homolog CfbCD*, 13th Southeast Enzyme Conference, Atlanta, GA, April 22, 2023.

Donnan, P. H.; **Mansoorabadi, S. O.** *Stereochemistry and Regiochemistry in Dinoflagellate Bioluminescence*, 13th Southeast Enzyme Conference, Atlanta, GA, April 22, 2023.

Ehun, J. D., Donnan, P. H.; **Mansoorabadi, S. O.** *Constant pH Accelerated Molecular Dynamics Investigation of the pH Regulation Mechanism of Dinoflagellate Luciferin Binding Protein*, 13th Southeast Enzyme Conference, Atlanta, GA, April 22, 2023.

O'Hare, S.; Nguyen, K.; **Mansoorabadi, S. O.** *Expression and Characterization of the Luciferase of Noctiluca scintillans*, 13th Southeast Enzyme Conference, Atlanta, GA, April 22, 2023.

Rand-Fleming, C.; **Mansoorabadi, S. O.** *Investigation of methyl coenzyme M reductase (MCR); enzyme assembly, post-translational modifications and coenzyme F430 delivery*, 2023 ASBMB Annual Meeting, Seattle, WA, March 25-28, 2023.

Rand-Fleming, C.; **Mansoorabadi, S. O.** *Investigation of Methyl-coenzyme M Reductase Assembly, Post-translational Modifications, and Coenzyme F430 Delivery*, Southeastern Regional Meeting American Chemical Society 2022, San Juan, Puerto Rico, October 19-22, 2022.

Ehun, J. D.; Donnan, P. H.; **Mansoorabadi, S. O.** *Constant pH Accelerated Molecular Dynamics (CpHaMD) Investigation of the pH Regulation of Dinoflagellate Luciferin Binding Protein*, NOBCChE 49th Annual Conference, Orlando, FL, September 26-29, 2022.

Odili, C. L.; **Mansoorabadi, S. O.** *Investigations into the Methyl-cysteine Post-translational Modifications of Methyl-coenzyme M Reductase (MCR)*, NOBCChE 49th Annual Conference, Orlando, FL, September 26-29, 2022.

Rand-Fleming, C.; **Mansoorabadi, S. O.** *Investigation of Methyl-coenzyme M Reductase Assembly and Post-translational Modifications*, NOBCChE 49th Annual Conference, Orlando, FL, September 26-29, 2022.

Odili, C. L.; Li, S.; Zheng, K.; **Mansoorabadi, S. O.** *Post-translational Modifications of Methyl-coenzyme M Reductase (MCR)*, European Molecular Biology Organization (EMBO) Conference - Protein Termini: From Mechanisms to Biological Impact, Bergen, Norway, June 8-11, 2022.

Donnan, P. H.; **Mansoorabadi, S. O.** *Towards spectroscopically consistent models of intermediates in radical S-adenosyl-L-methionine enzyme catalysis*, 12th Southeast Enzyme Conference, Atlanta, GA, April 23, 2022.

King, C.; Odili, C. L.; **Mansoorabadi, S. O.** *Investigating a potential methanogenesis marker gene candidate responsible for cis-proline post-translational modification in methyl-coenzyme M reductase*, 12th Southeast Enzyme Conference, Atlanta, GA, April 23, 2022.

Ray, P.; Huang, X.; Ramsey, S. B.; **Mansoorabadi, S. O.** *Identification and Characterization of Dinoflagellate Luciferin Biosynthetic Enzymes*, 12th Southeast Enzyme Conference, Atlanta, GA, April 23, 2022.

Donnan, P. H.; **Mansoorabadi, S. O.** *Towards spectroscopically consistent models of intermediates in radical S-adenosyl-L-methionine enzyme catalysis*, 27th Enzyme Mechanisms Conference, Tucson, AZ, January 2-6, 2022.

Odili, C. L.; Li, S.; Zheng, K.; **Mansoorabadi, S. O.** *Heterologous Expression and Post-translational Modification of Methyl-Coenzyme M Reductase*, NOBCChE 2019 National Conference, St. Louis, MO, November 18-21, 2019.

Donnan, P. H.; **Mansoorabadi, S. O.** *Computational Studies of a Novel Organometallic Intermediate in Radical SAM Enzymes*, Tenth Southeast Enzyme Conference, Atlanta, Georgia, April 13, 2019.

Odili, C. L.; Li, S.; Zheng, K.; **Mansoorabadi, S. O.** *Post-translational Modification and Heterologous Assembly of Methyl-Coenzyme M Reductase*, Tenth Southeast Enzyme Conference, Atlanta, Georgia, April 13, 2019.

Donnan, P. H.; Ngo, P. D., **Mansoorabadi, S. O.** *Computational Studies of the pH Regulation Mechanism of Dinoflagellate Luciferase*, Alabama EPSCoR Science and Technology Open House, Montgomery, Alabama, September 7-8, 2018.

Zheng, K.; Ngo, P. D.; Owens, V. L.; Yang, X. P.; **Mansoorabadi, S. O.** *Maturation of MCR and Studies of Coenzyme F430 Biosynthesis*, Ninth Southeast Enzyme Conference, Atlanta, Georgia, April 7, 2018.

Donnan, P. H.; Ngo, P. D., **Mansoorabadi, S. O.** *Computational Studies of the pH Regulation Mechanism of Dinoflagellate Luciferase*, Ninth Southeast Enzyme Conference, Atlanta, Georgia, April 7, 2018.

Huang, X.; **Mansoorabadi, S. O.** *Development of an Expression System for the Investigation of Cobalamin-dependent Radical S-Adenosyl-L-methionine Enzymes Involved in Bacteriochlorophyll c Biosynthesis*, 7th Annual Lester Andrews Graduate Research Symposium, Starkville, Mississippi, May 30-31, 2017.

Zheng, K.; Ngo, P. D.; Owens, V. L.; Yang, X. P.; **Mansoorabadi, S. O.** *Elucidation of the Biosynthetic Pathway for the Key Coenzyme of Methanogenesis and Anaerobic Methane Oxidation*, Eighth Southeast Enzyme Conference, Atlanta, Georgia, April 8, 2017.

Owens, V. L.; Zheng, K.; **Mansoorabadi, S. O.** *An Investigation Into the Potential Dual Role of SirC in the Alternative Heme Biosynthetic Pathway of Methanosarcina acetivorans C2A*, Eighth Southeast Enzyme Conference, Atlanta, Georgia, April 8, 2017.

Huang, X.; **Mansoorabadi, S. O.** *Development of an Expression System for the Investigation of Cobalamin-dependent Radical S-Adenosyl-L-methionine Enzymes Involved in Bacteriochlorophyll c Biosynthesis*, Eighth Southeast Enzyme Conference, Atlanta, Georgia, April 8, 2017.

Zheng, K.; Ngo, P. D.; Owens, V. L.; Yang, X. P.; **Mansoorabadi, S. O.** *Elucidation of the Biosynthetic Pathway for the Key Coenzyme of Methanogenesis and Anaerobic Methane Oxidation*, Molecular Basis of Microbial One-Carbon Metabolism Gordon Research Conference, Waterville Valley, New Hampshire, July 31 – August 5, 2016.

Ngo, P. D.; **Mansoorabadi, S. O.** *A Computational Investigation of Dinoflagellate Bioluminescence: Evidence for an Unprecedented Biological Twisted Intra-molecular Charge Transfer Reaction*, Lester Andrews/Mississippi Regional Biophysical Consortium IX Joint Research Symposium, Starkville, Mississippi, May 23-25, 2016.

Owens, V. L.; Zheng, K.; **Mansoorabadi, S. O.** *An Investigation Into the Potential Dual Role of SirC in the Alternative Heme Biosynthetic Pathway of Methanosarcina acetivorans C2A*, Lester Andrews/Mississippi Regional Biophysical Consortium IX Joint Research Symposium, Starkville, Mississippi, May 23-25, 2016.

Huang, X.; **Mansoorabadi, S. O.** *Investigation of Cobalamin-dependent Radical S-Adenosyl-L-methionine Enzymes Involved in Bacteriochlorophyll c Biosynthesis*, Seventh Southeast Enzyme Conference, Atlanta, Georgia, April 16, 2016.

Slaney, T. M.; **Mansoorabadi, S. O.** *Bioluminescence and Formation of the Lower Axial Ligand of Adenosylcobalamin in Acidiphilium multivorum*, Seventh Southeast Enzyme Conference, Atlanta, Georgia, April 16, 2016.

Owens, V. L.; Zheng, K.; **Mansoorabadi, S. O.** *An Investigation Into the Potential Dual Role of SirC in the Alternative Heme Biosynthetic Pathway of Methanosarcina acetivorans C2A*, Seventh Southeast Enzyme Conference, Atlanta, Georgia, April 16, 2016.

Ngo, P. D.; **Mansoorabadi, S. O.** *A Computational Investigation of Dinoflagellate Bioluminescence: Evidence for an Unprecedented Biological Twisted Intra-molecular Charge Transfer Reaction*, Seventh Southeast Enzyme Conference, Atlanta, Georgia, April 16, 2016.

Ngo, P. D.; **Mansoorabadi, S. O.** *The Mechanism of Dinoflagellate Bioluminescence: A Computational Approach to Elucidating the Structure of the Luminophore of Dinoflagellate Luciferase*, 71st SWRM/67th SERMACS, Memphis, Tennessee, November 4-7, 2015.

Owens, V. L.; Zheng, K.; **Mansoorabadi, S. O.** *Investigation Into the Potential Dual Role of SirC in the Biosynthesis of Tetrapyrroles in Methanosarcina acetivorans*, 71st SWRM/67th SERMACS, Memphis, Tennessee, November 4-7, 2015.

Ngo, P. D.; **Mansoorabadi, S. O.** *Identification and Characterization of a Novel Chlorophyll Catabolite from the Bioluminescent Dinoflagellate Pyrocystis fusiformis*, 71st SWRM/67th SERMACS, Memphis, Tennessee, November 4-7, 2015.

Ngo, P. D.; **Mansoorabadi, S. O.** *Identification and Characterization of a Novel Chlorophyll Catabolite from the Bioluminescent Dinoflagellate Pyrocystis fusiformis*, Sixth Southeast Enzyme Conference, Atlanta, Georgia, April 11, 2015.

Owens, V. L.; Nelson, J. W.; **Mansoorabadi, S. O.** *Elucidation of the Heme d_1 Biosynthetic Pathway*, Sixth Southeast Enzyme Conference, Atlanta, Georgia, April 11, 2015.

Slaney, T. M.; **Mansoorabadi, S. O.** *Bioluminescence and Formation of the Lower Axial Ligand of Adenosylcobalamin in Acidiphilium multivorum*, Sixth Southeast Enzyme Conference, Atlanta, Georgia, April 11, 2015.

Ngo, P. D.; **Mansoorabadi, S. O.** *Elucidating the Enzyme(s) Responsible for Novel Post-translational Modification of Methyl-coenzyme M Reductase*, Fifth Southeast Enzyme Conference, Atlanta, Georgia, April 5, 2014.

Owens, V. L.; **Mansoorabadi, S. O.** *Elucidation of the Heme d_1 Biosynthetic Pathway*, Fifth Southeast Enzyme Conference, Atlanta, Georgia, April 5, 2014.

Ngo, P. D.; **Mansoorabadi, S. O.** *Dinoflagellate Bioluminescence: Elucidation of the Biosynthetic Pathway of Luciferin in Pyrocystis fusiformis*, SERMACS, Atlanta, Georgia, November 13, 2013.

Mueller, B. R. J.; Yang, X.; **Mansoorabadi, S. O.** *Biosynthetic studies of F430, the key coenzyme of methanogenesis*, SERMACS, Atlanta, Georgia, November 13, 2013.

Scull, C. E.; Ngo, P. D.; **Mansoorabadi, S. O.** *Dinoflagellate Bioluminescence: An Investigation Into the Mechanism, Cooperativity, and pH Regulation of Luciferase from Pyrocystis fusiformis*, SERMACS, Atlanta, Georgia, November 13, 2013.

Patents and Inventions

Newly Issued US Patent No.: US10793863
Title: Synthesis and Oxidation of Methane
Inventor(s): Steven O. Mansoorabadi
Issue Date: October 6, 2020

Other Contributions

Wrote computer program to fit thermally resolved proximity assay data. NSF funded research on dinoflagellates was featured on the Auburn University website, in an article in the Opelika-Auburn News, on AL.com, in an interview with a local radio station, and in the '*Future of Biochemistry*' special issue of *Biochemistry*, which highlighted the work of promising early

career biochemists. DOE funded research on methanogens was highlighted in articles entitled "Masters of Methane" in *Nature Reviews Microbiology*, "Industrial Biomanufacturing: The Future of Chemical Production" in *Science*, and "Rising Stars Seek to Learn from the Master: Mother Nature", which was featured on the DOE Office of Science homepage and on newswise.com. Research was recently highlighted in the *Auburn University and the United Nations Sustainable Development Goals* report.

Grants and Contracts

N. DiLorenzo (University of Florida), U.S. Department of Agriculture, National Institute of Food and Agriculture, *Development of Next-Generation Feed Additives Targeting Methanogenesis for Immediate Use*, January 1, 2024 – December 31, 2028, $5,000,000 (Auburn Subaward: $1,567,645; S.O.M. Subaward: $498,597). **Role: Co-PI.**

S. O. Mansoorabadi, Department of Energy, *Mechanistic Studies of a Primitive Homolog of Nitrogenase Involved in Coenzyme F430 Biosynthesis*, September 1, 2022 – November 29, 2024, $109,845. **Role: PI.**

S. O. Mansoorabadi, ExxonMobil Research and Engineering Company, *Methane Production and Oxidation By Recombinant Methyl-Coenzyme M Reductase*, September 15, 2019 – December 31, 2023, $305,776. **Role: PI.**

S. O. Mansoorabadi, Department of Energy, Early Career Research Program, *Mechanistic Studies of a Primitive Homolog of Nitrogenase Involved in Coenzyme F430 Biosynthesis*, September 1, 2017 – August 31, 2022, $750,000. **Role: PI.**

S. O. Mansoorabadi, National Science Foundation, *EAGER: Towards the Development of Engineered Microorganisms and Enzyme Systems for Methane Production and Conversion to Liquid Fuel*, January 1, 2017 – December 31, 2017, $106,192. **Role: PI.**

S. O. Mansoorabadi, National Science Foundation, *CAREER: Mechanistic and Biosynthetic Studies of Dinoflagellate Bioluminescence*, May 1, 2016 – September 30, 2022, $843,598. **Role: PI.**

G. Stephanopoulos (Massachusetts Institute of Technology), Department of Energy, Advanced Research Projects Agency-Energy (REMOTE), *Single-step Methane to Liquid Fuels*, February 3, 2014 – June 30, 2017, $3,000,000 (Subaward: $156,954). **Role: Co-PI.**

D. Grabs (Arzeda Corporation), Department of Energy, Advanced Research Projects Agency-Energy (REMOTE), *Metalloenzymes for Methane Activation*, January 1, 2014 – September 30, 2015, $999,751 (Subaward: $20,000). **Role: Co-PI.**

S. O. Mansoorabadi, H. R. Ellis, P. Panizzi (Drug Discovery and Development), A. E. David (Chemical Engineering), Auburn University Intramural Grants Program, Level IV, *Macromolecular Crystallography at Auburn University,* April 1, 2014 – March 31, 2015, $150,000. **Role: PI.**

OUTREACH

Instructional Activities

AU-SSI: Prepared and presented 3 hour-long bioluminescence modules for AU-SSI on 6/10/14, 6/4/15, 6/14/16, 7/28/16, 6/14/17, and 5/20/19 and a 'Lunch and Learn' session on 6/13/18. Activities included a multimedia lecture on bioluminescence and its roles in biology, a demonstration of dinoflagellate bioluminescence, a light microscopy laboratory examining two species of dinoflagellates at different points in the circadian cycle, a tutorial on using molecular graphics software (PyMOL) to investigate the three-dimensional structures of proteins (e.g., luciferases), and an assay of firefly luciferase activity.

Destination STEM: Presented several hour long "Glow Shows" at the annual Destination STEM open house with W. Zhan on 4/25/14, 4/16/15 (3 sessions), 4/29/16 (2 sessions), 9/22/17, and 9/20/19, which were attended by over 300 local middle school students and teachers. Activities included a multimedia lecture and a series of demonstrations, many involving audience participation, illustrating principles of bioluminescence and chemiluminescence.

SERVICE

University

COSAM Research Advisory Committee (2017 – 2019): Attended meetings to discuss research opportunities and challenges in COSAM. Assembled list of research issues facing DCB faculty with C. J. Easley. Helped update list of core facilities, shared instrumentation/equipment, and infrastructure needs on campus. Relayed information to faculty members regarding research initiatives (e.g., AU Health Sciences Research Initiative) and strategic plans (e.g., for high performance computing).

COSAM Strategic Planning Committee (2019): Attended meetings and made recommendations for aligning the strategic plan of the College with the broader University plan. Part of subgroup focused on the Elevated Auburn Experience to inspire and prepare students for life and careers. Helped prepare report that identified target areas for improvement and key performance indicators.

Graduate Student Council Scholar's Forum Judge on March 4, 2014. Panelist for the COSAM workshop on the NSF CAREER program on February 26, 2019. Participated in an event for transfer students hosted by COSAM, Engineering, and Agriculture on September 10, 2019.

Department

Computational and Theoretical Chemistry Search Committee (2024 – current): Evaluated applications and made recommendations for a tenure-track, Assistant Professor position in Computational Chemistry. Hire: TBD.

Faculty Development Committee (2024 – current): Provide career development assistance to faculty, report to Departmental Chair on issues/concerns in DCB and facilitate informal communication between faculty.

Biochemistry Division Chair (2019 – current): Made teaching assignments and coordinated peer teaching evaluations. Gave recommendations for and adopted changes to course curricula. Ran the Biochemistry Divisional Seminar and began the custom of inviting guest lecturers (e.g., colleagues from other Departments) to present each semester.

Space Committee Chair (2019 – current): Completed the NSF 2021, FY21, FY22, FY23, and FY24 space surveys. Made recommendations for space allocation/utilization.

Biological Chemistry Search Committee Chair (2022 – 2023): Assigned tasks and organized meetings to evaluate and interview applicants for a tenure-track faculty position at the Assistant/Associate/Full Professor level. Organized onsite interview schedules for five faculty candidate finalists. Hire: Katherine Rush.

Dual Biochemistry Search Committee Chair (2021 – 2022): Assigned tasks and organized meetings to evaluate and interview applicants for two tenure-track faculty positions at the Assistant/Associate Professor level. Organized onsite interview schedules for seven faculty candidate finalists. Hire: Rahul Banerjee.

Graduate Admissions Committee (2017 – 2022): Evaluated applications and made recommendations for admissions to the graduate program.

Computational Chemistry Search Committee (2020 – 2021): Evaluated applications for a tenure-track, Assistant Professor position in Computational Chemistry. Hire: N/A.

Graduate Awards Committee (2019 – 2020): Made recommendations for graduate student nominations for college and university wide awards.

Faculty Awards Committee (2018 – 2020): Made recommendations for faculty/staff nominations for college and university wide awards.

Safety Committee (2015 – 2016, 2019 – 2020): Reviewed an accident that occurred during an outreach activity on 3/5/16 and made recommendations for changes to the demonstration (Ping-Pong Ball Explosion) procedure.

NMR Facility Director Search Committee (2018 – 2019): Evaluated applications for a director of the NMR Facility. Hire: Alvaro Herrera.

Graduate Recruiting Committee (2012 – 2019): Helped organize the Department of Chemistry and Biochemistry Invitational on 11/26/12, 11/22/13, 10/23/15, 11/11/16, 11/3/17, and 10/26/18. Gave research talk during the 2012, 2015, 2016, and 2018 Invitational, the 2019 Columbus State University field trip to Auburn, and the 2021 Graduate Preview. Helped design recruitment materials. Went on graduate student recruiting trips to Sam Houston State University (2/15/13 and 10/18/13), Xavier University of Louisiana (10/2/14), University of South Alabama (10/ 24/14), Samford University (5/7/15), Jackson State University (10/7/16), and Troy University (11/30/16). Also participated in prospective graduate student visitation weekends on March 25-26, 2016, March 3-4, 2017, March 2-3, 2018, March 1-3, 2019, March 6-8, 2020, March 18-19, 2022, February 24-25, 2023, and February 23-25, 2024.

Biological Imaging/Biochemistry Search Committee (2016 – 2017): Evaluated applications for a tenure-track, Assistant Professor position in Biological Imaging/Biochemistry. Hire: Monika Raj.

Computational Chemistry Search Committee (2015 – 2016): Evaluated applications for a tenure-track, Assistant Professor position in Computational Chemistry. Hire: Evangelos Miliordos.

Seminar Committee (2015 – 2016): Made recommendations to the committee chair for speakers to invite for our departmental colloquium series, the Schneller Frontiers Lecture, and the G. M. Kosolapoff Award Lecture.

Equipment Committee (2014 – 2015): Prepared NSF-MRI proposals for X-ray diffractometers in 2014 and 2015 and acquired the requisite cost-share ($300,000 per submission). Worked with VWR/Tuttnauer to acquire a new departmental autoclave. Made site visits to Rigaku Americas Corporation (7/19/17 – 7/21/17) and Bruker AXS Inc. (9/13/17 – 9/15/17) to evaluate dual source single crystal X-ray diffractometers for potential acquisition by the department. Worked with Bruker to acquire a Bruker D8 Venture dual source (Cu/Mo) X-ray diffractometer.

Professional

Presented research seminar to the Auburn Local Section of the American Chemistry Society on February 5, 2013.

Articles Reviewed

ACS Chemical Biology (2), *Archives of Biochemistry and Biophysics* (3), *BBA – Molecular Cell Research* (1), *Biochemistry* (8), *Biochimica et Biophysica Acta (BBA) - Proteins Proteomics* (1), *Chemistry: A European Journal* (1), *ChemBioChem* (1), *ChemPhysChem* (1), *Communications Biology* (1), *Frontiers in Cellular and Infection Microbiology* (1), *International Journal of Molecule Sciences* (2), *Journal of Proteins and Proteomics* (1), *Journal of the American Chemical Society* (6), *Marine Drugs* (1), *mBio* (1), *Microbiology and Molecular Biology Reviews* (1), *Molecules* (1), *Nucleic Acids Research* (1), *Nature* (2), *Organic Letters* (3), *PLOS Biology* (1), *Proceedings of the National Academy of Sciences of the United States of America* (3), *Science* (2), *Science Advances* (1), *Scientific Reports* (1)

Books Reviewed

Lehninger Principles of Biochemistry 6th Edition Pre-Revision (Table of Contents, Ch. 1-12)

Grant Proposals Reviewed

American Chemical Society, Petroleum Research Fund, Ad Hoc Reviewer (1)
Biotechnology and Biological Sciences Research Council, Ad Hoc Reviewer (3)
Department of Energy, Early Career Research Program, Ad Hoc Reviewer (5)
National Institutes of Health, Chemical Synthesis and Biosynthesis Study Section (7)
National Science Center, Poland, Ad Hoc Reviewer (1)
National Science Foundation, Chemistry of Life Processes CAREER Panel (12)
National Science Foundation, Chemistry of Life Processes, Ad Hoc Reviewer (1)