Clorice R. Reinhardt

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EDUCATION

Yale University, New Haven, CT May 2022
Molecular Biophysics and Biochemistry Ph.D Program
Integrated Program in Physical Engineering Biology

University of Wisconsin-Eau Claire, Eau Claire, WI May 2017
Bachelor of Science, Biochemistry/Molecular Biology

RESEARCH

Postdoctoral Research, Massachusetts Institute Of Technology 2022-Present
Advisor: Dr. Heather Kulik, Department of Chemical Engineering
Impact of the Local Enzyme Environment on Computed Properties of Metallocofactors

Graduate Research, Yale University 2018-2022
Advisor: Dr. Sharon Hammes-Schiffer, Department of Chemistry
Proton-Coupled Electron Transfer Reactions in Biological Systems

Undergraduate Research, University of Wisconsin-Eau Claire 2014-2017
Advisor: Dr. Sudeep Bhattacharyay, Department of Chemistry
Redox Chemistry and Protein Dynamics in Flavoenzymes

PUBLICATIONS

12. ***Reinhardt, C.R****.; Konstantinovsky, D*.; Soudackov, A.V.; and Hammes-Schiffer, S. Kinetic Model for Reversible Radical Transfer in Ribonucleotide Reductase. *Proc. Natl. Acad. Sci. USA* **2022**, *119*, e2202022119.

11. Zhong, J.; ***Reinhardt, C. R***.; Hammes-Schiffer, S., Role of Water in Proton-Coupled Electron Transfer between Tyrosine and Cysteine in Ribonucleotide Reductase. *J. Am. Chem. Soc.* **2022**, 144, 7208-7214.

10. ***Reinhardt, C. R.;*** Sayfutyarova, E.R.; Zhong, J.; Hammes-Schiffer, S., Glutamate Mediates Proton-Coupled Electron Transfer Between Tyrosines 730 and 731 in *Escherichia coli* Ribonucleotide Reductase. *J. Am. Chem. Soc.* **2021,** 143, 6054-6059.

9. ***Reinhardt, C. R.;*** Sequeira, R.; Tommos, C.; Hammes-Schiffer, S., Computing Proton-Coupled Redox Potentials of Fluorotyrosines in a Protein Environment. *J. Phys. Chem. B* **2021**, *125*, 128-136.

*Equal Contributions

8. Hu, H.; Weinzetl, M.; Shulgina, I.; Weeks, K.; Fossum, C.; Adams, L.; ***Reinhardt, C.R***.; Musier-Forsyth, K.; Bhattacharyya, S.; Hati, S., Editing Domain Motions Preorganize the Synthetic Active Sites of Prolyl-tRNA Synthetases. *ACS Catal.* **2020**, 10, 10229-10242.

7. Freeze, J.G.; Martin, J.M.; Fitzgerald, P.; Jakiela, D.; ***Reinhardt, C.R.;*** and Newton, A. S.; Orchestrating a Highly Interactive Virtual Student Research Symposium. *J. Chem. Educ.* **2020,** 97, 2773–2778.

6. ***Reinhardt, C.R.;*** Li, P.; Kang, K.; Stubbe, J.; Drennan, C.L.; Hammes-Schiffer, S. Conformational Motions and Water Structure at the α/β Interface in *E. Coli* Ribonucleotide Reductase. *J. Am. Chem. Soc.* **2020,** 142, 13768–13778.

5. Nilsen-Moe, A.; ***Reinhardt, C.R.;*** Glover, S.D.; Liang, L.; Hammes-Schiffer, S.; Hammarström., L.; Tommos, C. Proton-Coupled Electron Transfer from Tyrosine in the Interior of a de novo Protein: Mechanisms and Primary Proton Acceptor. *J. Am. Chem. Soc.* **2020,** *142*, 11550–11559.

4. ***Reinhardt, C.R***.; Huakun, H.; Bresnahan, C.G.; Hati, S.; Bhattacharyya, S. Cyclic Changes in Active Site Polarization and Dynamics Drive the 'Ping-pong' Kinetics in NRH:Quinone Oxidoreductase 2: An Insight from QM/MM Simulations. *ACS Catal.* **2018**, *8*, 12015–12029.

3. Goings, J.; ***Reinhardt, C.R.;*** Hammes-Schiffer, S. Propensity for Proton Relay and Electrostatic Impact of Protein Reorganization in Slr1694 BLUF Photoreceptor. *J. Am. Chem. Soc.* **2018**, *140*, 45, 15241–15251.

2. ***Reinhardt, C.R***.*;* Jaglinski, T.C.; Kastenschmidt, A.M. et al. Insight into the Kinetics and Thermodynamics of the Hydride Transfer Reactions between Quinones and Lumiflavin: A Density Functional Theory Study. *J Mol. Model.* **2016,** 22, 199.

1. Bresnahan, C. G.*; ***Reinhardt, C. R.**;*** Bartholow, T.; Rumpel, J. P.; North, M. A.; and Bhattacharyya, S**.** Effect of Stacking Interactions on the Thermodynamics and Kinetics of Lumiflavin: A Study with Improved Density Functionals and Density Functional Tight-Binding Protocol. *J. Phys. Chem. A* **2015***, 119, 172–182.*

*Equal Contributions

SELECTED ORAL PRESENTATIONS AND PANELS

Wesleyan University Biophysical Chemistry Seminar Series, October 2021, "Conformational Influences on Proton-Coupled Electron Transfer Reactions in Ribonucleotide Reductase."

Telluride Workshop on Proton Transfer in Biology, June 2021, "Glutamate Mediated Proton-Coupled Electron Transfer in *E. coli* Ribonucleotide Reductase."

American Chemical Society Meeting, April 2021, COMP Division, "Conformational Motions and Water Networks at the α/β Interface in *E. coli* Ribonucleotide Reductase."

Wisconsin Ronald E. McNair Post-baccalaureate Achievement Program and Student Support Services Retreat (Virtual), September 2020, Invited STEM Alumni Panelist.

Student Research Symposium, American Chemical Society-New Haven Local Section, April 2020. "Conformational Motions and Water Networks at the α/β Interface in *E. coli* Ribonucleotide Reductase."

Yale Chemistry Symposium, Yale University, August 2019. "Conformational Heterogeneity of the Ordered PCET Pathway in *E. Coli* Ribonucleotide Reductase."

University Honors Thesis Defense, University of Wisconsin-Eau Claire, May 2017. "Studies of Hydride Transfer Reactions in Quinone Reductases"

Provost's Honors Symposium, University of Wisconsin-Eau Claire, May 2016. "Towards Developing an Automated QM/MM Docking Method for Quinone Reductases"

249th National American Chemical Society Meeting Denver: PHYS Division, Computational Chemical Dynamics Symposium in Honor of Donald Truhlar. March 2015, "Quantum Mechanical/Molecular Mechanical Simulations of the Hydride Transfer Reactions in Quinone Reductase II"

INSTRUCTIONAL EXPERIENCE

Graduate:

Principles of Biochemistry Head Teaching Assistant	Fall 2019
Yale Young Global Scholars Lead Instructor	July 2019
Methods & Logic in Interdisciplinary Research Course Development	Spring 2019
Principles of Biochemistry Teaching Assistant*	Fall 2018
Yale Young Global Scholars Lead Instructor	June 2018

*Liaison to Resource Office on Disabilities

Undergraduate:

Biophysical Chemistry Laboratory Instructional Assistant	2016
General Chemistry II Laboratory Assistant	2015-2016
University Honors Program Freshman Seminar Instructor	2015

SELECTED AWARDS

Graduate (External):

National Science Foundation Graduate Research Fellow (*Research, Outreach*)	2019
Ford Foundation Predoctoral Fellowship Honorable Mention (*Research, Outreach*)	2019

Graduate (Internal):

Mary Ellen Jones Dissertation Prize (*Molecular Biophysics & Biochemistry)*	2022
Robert E. MacNab Memorial Prize (*Molecular Biophysics & Biochemistry, Best Poster Presentation at Departmental Retreat)*	2018

Undergraduate (External):

Outstanding College Chemistry Student (*Central Wisconsin Section of ACS*)	2016
Excellence in Undergrad. Research Poster Presentation (*251st National ACS Meeting*)	2016

Undergraduate (Internal):

Chair's Award-Chemistry Department Scholarship (*Service to Department*)	2017
Anna Thurston Memorial Scholarship (*Teaching, Chemistry*)	2016-2017
Ronald E. McNair Postbaccalaureate Achievement Program (*Academics, Diversity*)	2015-2017
Dr. Jack Pladziewicz Research Scholarship (*Excellence in Research*)	2015-2016
Chemistry Mentoring Scholarship (*Mentoring*)	2015-2016

SELECTED LEADERSHIP & SERVICE

American Chemical Society New Haven Section (ACS-NH) 2018-2022

Local chapter of the professional scientific organization

- Secretary (2019-2022)
- Chemists Celebrate Earth Week Coordinator (2020,2021,2022)
- 2019 Undergraduate Chapter Liaison

Científico Latino-Graduate Student Mentorship Initiative 2019-Current

Program that pairs students from underrepresented groups in STEM with graduate student mentors to guide them through the graduate school application process and conduct mock interviews.

- Mentor (3 cycles)

Open Labs 2017-2020

Graduate student outreach group working with K-8th graders in the New Haven School District. Volunteered 20+ hours performing science demonstrations in community events.

- Finance Chair (2018, 2019). Recontracted $10,000 grant with American Physical Society in 2017, funds were never received by past finance officer. The grant was used to fund science demonstrations and create an educational video series about soft-robotics and bacterial infection for teachers and outreach.