Clorice R. Reinhardt

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EDUCATION

Yale University, New Haven, CT May 2022
Ph.D, Molecular Biophysics and Biochemistry
Integrated Program in Physical Engineering Biology
University of Wisconsin-Eau Claire, Eau Claire, WI May 2017
B.S., Biochemistry/Molecular Biology

RESEARCH

Postdoctoral Research, Massachusetts Institute Of Technology 2022-Present
Advisor: Dr. Heather Kulik, Department of Chemical Engineering
Effect of the Local Environment on Reactivity in Metalloenzymes and Supramolecular Catalysts
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

14. Zhong, J.; **Reinhardt, C.R.**; Hammes-Schiffer, S., Direct Proton-Coupled Electron Transfer between Interfacial Tyrosines in Ribonucleotide Reductase. *J. Am. Chem. Soc.* **Accepted**
13. Shipps, C.; Thrush, K.L., **Reinhardt, C.R.;** Siwiecki, S.A.; Claydon, J.L.; Noble, D.B.; O'Hern, C.S. Student-led workshop strengthens perceived discussion skills and community in an interdisciplinary graduate program. *FASEB BioAdvances* **2022**; 00: 1-12.
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.
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

Bucknell University Chemistry Seminar Series, 11/2022, "How Ribonucleotide Reductase Controls the Movement of Electrons Over Time and Length Scales".
Wesleyan University Biophysical Chemistry Seminar Series*,* 10/2021, "Conformational Influences on Proton-Coupled Electron Transfer Reactions in Ribonucleotide Reductase."
Telluride Workshop on Proton Transfer in Biology, 06/2021, "Glutamate Mediated Proton-Coupled Electron Transfer in *E. coli* Ribonucleotide Reductase."
American Chemical Society Meeting, 04/2021, 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 Retreat (Virtual), 09/2020, Invited STEM Alumni Panelist.
Yale Chemistry Symposium, Yale University, 08/2019. "Conformational Heterogeneity of the Ordered PCET Pathway in *E. Coli* Ribonucleotide Reductase."
University Honors Thesis Defense, University of Wisconsin-Eau Claire, 05/2017. "Studies of Hydride Transfer Reactions in Quinone Reductases"
249th National American Chemical Society Meeting Denver: PHYS Division, Computational Chemical Dynamics Symposium in Honor of Donald Truhlar. 03/2015, "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

Principles of Biochemistry Teaching Assistant — Fall 2018
Yale Young Global Scholars Lead Instructor — Summer 2018, 2019

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 (*Comp. Division 251st National ACS Meeting*) — 2016

Undergraduate (Internal):
Chair's Award-Chemistry Department Scholarship (*Service to Department*) — 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

- 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)