

# RAYMOND BERKELEY

Scripps Research

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## RESEARCH EXPERIENCE

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**Scripps Research, La Jolla, CA**

February 2025 - Present

*Advisor: Benjamin F. Cravatt*

Structural characterization of covalent modulators of protein-protein interactions.

**University of California, San Diego, La Jolla, CA**

July 2023 - February 2025

*Advisor: Mark A. Herzik Jr.*

Development of machine learning applications for particle curation in cryoEM data.

**University of California, San Diego, La Jolla, CA**

September 2017 - July 2023

*Advisor: Galia T. Debelouchina*

Characterization of the physical and biochemical basis of protein phase transitions using chemical, structural, and computational biology methods

**University of California, Santa Cruz, Santa Cruz, CA**

August 2012 - November 2015

*Advisor: R. Scott Lokey*

Investigation of the chemical basis for the passive permeability of non-Lipinskian cyclic peptide macrocycles; determination of the mechanism of action of a bioactive small molecule by whole genome sequencing of resistant mutants.

**University of Oxford, Oxfordshire, UK**

January 2015 - March 2015

*Advisor: Stuart J. Conway*

Synthesis of analogs of a dimethylisoxazole-based bromodomain inhibitor.

## PROFESSIONAL EXPERIENCE

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**Bioinformatics Programmer II**

July 2023 - Present

**University of California San Diego, La Jolla, CA**

*Advisor: Mark A. Herzik Jr.*

Development of machine learning applications for particle curation in cryoEM data.

**Research Associate, Chemistry**

November 2015 - August 2017

**Mendel Biological Solutions, Hayward, CA**

*Advisors: Peter P. Repetti & Joshua I. Armstrong*

Discovery and development of bioactive natural products for the enhancement of crop performance in agriculture.

## EDUCATION

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**University of California San Diego**

Ph.D., Chemical Biology, 2023

## University of California Santa Cruz

B.S., Molecular, Cell, & Developmental Biology with a minor in Bioinformatics, 2015

## PUBLICATIONS

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1. Hayward, R.E., Berkeley, R.F., Gao, Z., Garhammer, M., Morizono, M.A., Njomen, E., ... Melillo, B., Cravatt, B.F. (2025). Tryptoline stereoprobe elaboration identifies inhibitors of the grp94-hspa9 chaperone complex. *bioRxiv*. ([link](#), [pdf](#))
2. Berkeley, R.F.\*, Cook, B.C.\*, Ji, D., Foroughi, A., Saladi, A., Bachochin, M., & Herzik Jr., M.A. (2025). Removal of false particle images from cryoEM data using ANTIDOTE: A Neural network Trained In Deleterious Object Elimination. *bioRxiv*. ([link](#), [pdf](#))
3. Berkeley, R.F.\*, Plonski, A.P.\*, Phan, T.M.\*, Grohe, K., Becker, L., Wegner, S., ... Mittal, J., Debelouchina, G.T. (2025). Capturing the conformational heterogeneity of HSPB1 chaperone oligomers at atomic resolution. *J. Am. Chem. Soc.*, 147. ([link](#), [pdf](#))
4. Berkeley, R.F.\*, Cook, B.C.\*, & Herzik Jr., M. (2024). Machine learning approaches to density modification improve map quality at the cost of ligand density quality. *Front. Mol. Biosci.*, 11, 1404885. ([link](#))
5. Berkeley, R.F., & Debelouchina, G.T. (2022). Chemical tools for study and modulation of biomolecular phase transitions. *Chem. Sci.*. ([link](#), [pdf](#))
6. Berkeley, R.F., Kashefi, M., & Debelouchina, G.T. (2021). Real-time observation of structure and dynamics during the liquid-to-solid transition of FUS LC. *Biophys. J.*. ([link](#), [pdf](#))
7. Lim, B. J., Berkeley, R.F., & Debelouchina, G.T. (2019). Fused split inteins: Tools for introducing multiple protein modifications. In *Methods mol. biol.* (Vol. 2133, pp. 161–181). New York, NY: Humana. ([link](#))
8. Schwoichert, J., Turner, R., Thang, M., Berkeley, R.F., Ponkey, A. R., Rodriguez, K. M., ... Lokey, R.S (2015). Peptide to Peptoid Substitutions Increase Cell Permeability in Cyclic Hexapeptides. *Org. Lett.*, 17, 2928–2931. ([link](#), [pdf](#))
9. Wride, D.A., Pourmand, N., Bray, W.M., Kosarchuk, J., Nisam, S., Quan, T., ... Lokey, R.S. (2014). Confirmation of the cellular targets of benomyl and rapamycin using next-generation sequencing of resistant mutants in *S. cerevisiae*. *Mol. Biosyst.*, 10(12), 3179–3187. ([link](#), [pdf](#))

\* equal contribution

## AWARDS AND HONORS

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2022 ACS Graduate Student and Postdoctoral Scholar Recognition Program Award for Leadership in Mentoring

2021 Bruno Zimm Award

2019–2020 San Diego Fellowship

2018–2020 NIH Chemistry-Biology Interface Predoctoral Training Program

## SERVICE

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2023 Global NMR Twitter Conference Judge

2022 ACSSA Undergraduate Research Symposium Judge

2021 Debelouchina Lab UCSD Mentor-Mentee Workshop  
2021 Mira Mesa High School ScienceBridge Program Speaker  
2021 ACSSA Undergraduate Research Symposium Moderator  
2020 UCSD Grad Pals Mentorship Program  
2018–2020 ChemPAL Mentorship Program  
2012 Juvenile Diabetes Research Foundation Counsellor

## **INVITED AND CONTRIBUTED TALKS**

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2023 San Diego cryoEM Supergroup, La Jolla, CA  
2023 Biophysical Society Annual Meeting (IDP subgroup early career speaker), San Diego, CA  
2022 UT Southwestern Biophysics Seminar Series (lightning talk), Dallas, TX  
2022 International Council on Magnetic Resonance in Biological Systems (lightning talk), Boston, MA  
2021 UCSD Graduate Student Seminar Series, Virtual  
2021 San Diego NMR Supergroup, Virtual  
2021 San Diego Python Users Group, Virtual  
2019 Chemistry Biology Interfaces Symposium, UC San Diego, La Jolla, CA  
2019 CBI-CRIN Industry Interaction Day (Lightning Talk), UC San Diego, La Jolla, CA  
2018 Chemistry Biology Interfaces Symposium, UC San Diego, La Jolla, CA

## **OTHER CONFERENCES AND POSTERS**

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2023 SoCal CryoEM Symposium (poster), UC Santa Barbara, Santa Barbara, CA  
2023 Biophysical Society Annual Meeting (poster), San Diego, CA  
2022 International Council on Magnetic Resonance in Biological Systems (poster), Boston, MA  
2022 Southern California Users of Magnets (poster), UC Santa Barbara, Santa Barbara, CA  
2021 Protein Society Annual Symposium (poster), Virtual  
2021 Experimental Nuclear Magnetic Resonance Conference (poster), Virtual  
2021 UCSD Graduate Student Seminar Series, Virtual  
2021 Biophysical Society Annual Meeting (poster), Virtual  
2020 Biomolecular Solid-State NMR Winter School, Stowe, VT  
2016 PyData San Francisco, San Francisco, CA  
2016 HPLC 2016, San Francisco, CA  
2015 William S. Johnson Symposium (poster), Stanford University, Palo Alto, CA