RAYMOND BERKELEY

Scripps Research
10550 N. Torrey Pines Rd., La Jolla, CA 92037
+1(408)644-3211 ⋄ rberkele@ucsd.edu ⋄ rayberkeley.com

RESEARCH EXPERIENCE

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

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

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

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 grpel1-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. Schwochert, 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

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

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

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

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