

Erik Nordquist

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20 Penn St, Baltimore, MD 21201

Education

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| 2023 | Ph.D. in Chemistry , University of Massachusetts Amherst. Advisor: Jianhan Chen, Ph.D. |
| 2018 | B.S. in Chemistry and Physics , The College of Idaho |

Fellowships and Awards

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| 2024 | Best of Biophysical Journal 2023 , article #5 entitled “Inner pore hydration free energy...” selected for Best of Biophys. J. 2023 (link) |
| 2023 – | T32 NIH Postdoctoral Fellowship (Cancer Biology) , University of Maryland, Baltimore and National Institutes of Health (info) |
| 2022 | Paul H. Terry Endowment Award , Chemistry Dept., University of Massachusetts Amherst |
| 2022 | Graduate Teaching Fellowship , College of Natural Sciences, University of Massachusetts Amherst (info) |
| 2020 –22 | T32 NIH Graduate Fellowship (Chemistry-Biology Interface) , University of Massachusetts Amherst and National Institutes of Health (info) |
| 2020 | William E. McEwen Poster Award , Chemistry Dept., University of Massachusetts Amherst |

Publications

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| 8. | Nordquist E[#] , Zhao M [#] , Kumar A, MacKerell A. Physics- and machine-learning based method to identify druggable binding sites using SILCS-Hotspots. J. Comput. Aid. Mol. Des. Submitted. 2024. chemRxiv DOI: 10.26434/chemrxiv-2024-hrqq9 |
| 7. | Nordquist E[#] , Zhang G [#] , Barethiya S, Ji N, White K, Han L, Jia Z, Shi J, Cui J, and Chen J. Incorporating physics to overcome data scarcity in predictive modeling of protein function: a case study of BK channels. PLOS Comput. Biol. 2023 19(9): e1011460. DOI: 10.1371/journal.pcbi.1011460 |
| 6. | Zhang L [#] , Barethiya S [#] , Nordquist E , Chen J. Machine Learning Generation of Dynamic Protein Conformational Ensembles. Molecules 2023, 28(10), 4047. DOI: 10.3390/molecules28104047 |
| 5. | Nordquist E , Zhiguang J, Chen J. Inner pore hydration free energy controls activations of the big potassium channel and its mutants. Biophys. J. 2023, 122, 1158-1167. DOI: 10.1016/j.bpj.2023.02.005 (Selected part of Best of 2023 edition) |
| 4. | Nordquist E , Clerico E, Chen J, Gierasch L. Computational Modeling of Hsp70-Client Interactions: Past, Present, and Future. J. Phys. Chem. B 2022, 126 (36), 6780–6791 DOI: 10.1021/acs.jpcb.2c03806 |
| 3. | Nordquist E[#] , Schultz S [#] , and Chen J. Using Metadynamics To Explore the Free Energy of Dewetting in Biologically Relevant Nanopores. J. Phys. Chem. B 2022, 126 (34), 6428-6437 DOI: 10.1021/acs.jpcb.2c04157 |

2. **Nordquist E**, English C, Clerico E, Sherman W, Gierasch L, Chen J. Physics-based modeling provides predictive understanding of selectively promiscuous substrate binding by Hsp70 chaperones. **PLOS Comput. Biol.** 2021, 17 (11): e1009567. DOI: [10.1371/journal.pcbi.1009567](https://doi.org/10.1371/journal.pcbi.1009567)
1. Gong X, Chiricotto M, Liu X, **Nordquist E**, Feig M, Brooks CL, Chen J. Accelerating the generalized born with molecular volume and solvent accessible surface area implicit solvent model using graphics processing units. **J. Comput. Chem.** 2020, 41, 830–838. DOI: [10.1002/jcc.26133](https://doi.org/10.1002/jcc.26133)

Presentations

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| 2024 | Talk , The College of Idaho Natural Science Symposium, “Computer simulations of proteins help understand their function”
Poster , Biophysical Society Annual Meeting, “Computational mapping of allosteric modulators of the BK channel.” |
| 2023 | Poster , Biophysical Society Annual Meeting, “A predictive model of voltage gating of BK channels via physical modeling and machine learning.” |
| 2022 | Talk , University of Massachusetts Amherst ResearchFest (PH Terry award): “Predicting protein function with physics, experiments and machine learning.”
Poster , Biophysical Society Annual Meeting, “Free energy of hydrophobic dewetting in gating of BK channels” |
| 2020 | Talk , Northeastern Structural Symposium, “Physical origins of selective promiscuity to Hsp70s revealed through physics-based modeling”
Poster , University of Massachusetts Amherst ResearchFest (WE McEwen Award): “Physical origins of selective promiscuity to Hsp70s revealed through physics-based modeling” |
| 2019 | Talk , Biophysics at University of Massachusetts Amherst, “Understanding the origins of DnaK’s selective promiscuity with physics-based modeling”
Poster , Molecular Biophysics in the Northeast, “Understanding the origins of DnaK’s selective promiscuity with physics-based modeling” |

Teaching

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| 2022 | CIRTL Associate achievement at the University of Massachusetts Amherst, for engaging in many trainings on evidence-based and inclusive teaching practices, including the preparation for the Teaching Fellowship to teach a First-year seminar. |
| 2022 | Instructor of record for First-year seminar, self-designed titled “Reconciling Atomic Chaos and Human Order” (info) |
| 2020 | Guest lectures ,
– Computer-aided Drug Design in Graduate Cancer Biology course;
Discussion seminar moderator on AlphaFold2 at Amherst College Biophysics course;
Lecture on molecular mechanics, additive force fields in UMass graduate Stat. Mech. course |
| 2018 | TA , General Chemistry I Lab

Mentoring Undergraduate research , Samantha Schultz (2020-2021), (publication #3); Callie Jillson (2019-2020) |

Service

2024	Annual Cancer Research Retreat organization committee , University of Maryland, Baltimore
2019–21	ResearchFest organization committee for Chemistry Dept., University of Massachusetts Amherst
2022, 2020	Alumni Networking Symposium organization committee , Chemistry-Biology Interface program, UMass Amherst
2021	Search committee , Grad Program Manager for Chemistry Dept. University of Massachusetts Amherst Journal Referee: Biophys. J., J. Chem. Theory Comput.

Outreach

2024	Guest presenter , RAMP high-school scholars Lunch-and-Learn, University of Maryland, Baltimore (info) Poster judge , Mount Royal Middle School Science Fair, Baltimore
2023	Guest presenter and volunteer , STEM outreach for middle-/high-schoolers in West Baltimore, CURE Program University of Maryland, Baltimore (info) Interactive demos and STEM career discussions (info)
2020–23	Reviewer for Journal of Emerging Investigators , 25 articles by middle- / high-school students (info)
2022	Lab workshop for girls summer science camp , Eureka! at University of Massachusetts Amherst (info)

Professional Development

2023–24	Responsible Conduct of Research NIH training facilitator , University of Maryland, Baltimore
2022	CITRL associate certification , University of Massachusetts Amherst, achieved through engaging in workshops and training on evidence-based and inclusive teaching practices (info)
2021	Evidence-based Undergraduate STEM Teaching , online course (info) Inclusive STEM Teaching , online course (info)