Erik Nordquist

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Education

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

Publications

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
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

Fellowships and Awards

2024	**Best of Biophysical Journal 2023,** article #5 selected as part of special annual collection. “Inner pore hydration free energy…” (link)
2023 –	**T32 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 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

Presentations

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

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

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.

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	**NIH Responsible Conduct of Research training facilitator,** University of Maryland, Baltimore
2022	**CITRL associate certification**, achieved through workshops and training for the (info)
2021	**Evidence-based Undergraduate STEM Teaching,** online course (info) **Inclusive STEM Teaching,** online course (info)