

Education

- 2011–2015 **Doctor of Philosophy**, *Department of Chemistry*, Temple University, Philadelphia.
GPA – 3.96
Advisor Prof. Vincent Voelz
- 2008–2010 **Master of Science**, *Department of Chemistry*, Sharif University of Technology, Tehran, Iran.
GPA – 3.43
Advisor Prof. Gholamabbas Parsafar
- 2004–2008 **Bachelor of Science**, *Department of Chemistry*, University of Tabriz, Tabriz, Iran.
GPA – 3.18

Research Experience

- Postdoctoral Associate**, *Weill Cornell Medical College of Cornell University*, New York.
- 2016–present Computational: Membrane Transporters, Markov State Models
Advisor Prof. Harel Weinstein
- Graduate Research Assistant**, *Temple University*, Philadelphia.
- 2012–2015 Computational: Protein Folding, Membrane Transporters, Markov State Models, Small Molecule Drug Design
Advisor Prof. Vincent Voelz
- 2011–2012 Experimental: Ultrafast Lasers, Atomic Force Microscopy
Advisor Prof. Eric Borguet
- Graduate Research Assistant**, *Sharif University of Technology*, Tehran, Iran.
- 2008–2010 Theoretical: Ionic Liquids, Equations of State
Advisor Prof. Gholamabbas Parsafar

Teaching/Mentoring Experience

- Graduate Teaching Assistant**, *Temple University*, Philadelphia.
- 2011–2015 General Chemistry One
- 2013–2014 Physical Chemistry of Biomolecules
- 2013 Physical Chemistry One
- 2012 General Chemistry Two
- Research Mentor**, *Temple University*, Philadelphia.
- 2012–2014 Helped new members of the Voelz lab with Molecular Dynamics simulations and analysis techniques including Python programming language and building Markov State Models
- Teaching Mentor**, *Sharif University of Technology*, Tehran, Iran.
- 2009 Statistical Thermodynamics

Research Interests

Discover, quantitatively understand, and leverage mechanisms of the complex molecular machinery involved in neurotransmission and intercellular communication ; Advance methods of molecular biophysics in the area of dimensionality reduction and kinetic network models of large biological systems ; Quantify kinetics, thermodynamics, and molecular pathways of substrate transport and efflux in neurotransmitter transporters ; Design small molecules/peptidomimetics targeting specific functional aspects of neurotransmitter transporters such as ion and substrate binding sites, allosteric sites, phosphorylation and palmitoylation sites ; Develop next generation analytics methods for on-the-fly annotation and identification of rare events in molecular dynamics simulations

Professional Organizations

- 2015-present Member of Biophysical Society
- 2014-2016 Member of American Chemical Society

Awards

- 2015 Biophysical Society Educational Committee Travel Award
- 2015 XSEDE15 Student Program Travel Grant award
- 2015 Daniel Swern Fellowship from Temple University for Outstanding Research

Journal Publications

Trilce Estrada, Jeremy Benson, Hector Carrillo-Cabada, **Asghar M. Razavi**, Michel A. Cuendet, Harel Weinstein, Ewa Deelman, Michela Taufer: Graphic Encoding of Macromolecules for Efficient High-Throughput Analysis, *Proceedings of the 2018 ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics*, pp 315-324, 2018

Asghar M. Razavi, George Khelashvili, Harel Weinstein: How structural elements evolving from bacterial to human SLC6 transporters enabled new functional properties, *BMC Biology*, 16:31, 2018

Giulia Morra, **Asghar M. Razavi**, Kalpana Pandey, Harel Weinstein, Anant K. Menon, George Khelashvili: Mechanisms of lipid scrambling by the G protein-coupled receptor opsin, *Structure*, Vol. 26, pp 1-12, 2018

Michael V. LeVine, Michel A. Cuendet, **Asghar M. Razavi**, George Khelashvili, Harel Weinstein: Thermodynamic Coupling Function Analysis of Allosteric Mechanisms in the Human Dopamine Transporter, *Biophysical Journal*, Vol. 114, pp 1-5, 2018

Asghar M Razavi, George Khelashvili, Harel Weinstein: A Markov State-based Quantitative Kinetic Model of Sodium Release from the Dopamine Transporter, *Nature Scientific Reports* 7:40076, 2017

Asghar M Razavi, Lucie Delemotte, Joshua R. Berlin, Vincenzo Carnevale, Vincent A. Voelz: Molecular simulations and free-energy calculations suggest conformation-dependent anion binding to a cytoplasmic site as a mechanism for Na⁺/K⁺-ATPase ion selectivity, *Journal of Biological Chemistry* , Vol. 292, pp 12412-12423, 2017

Asghar M Razavi, Vincent A Voelz: Kinetic network models of tryptophan mutations in β -hairpins reveal the importance of non-native interactions, *Journal of Chemical Theory and Computation* , Vol. 11, pp 2801-2812, 2015

Vincent A Voelz, Brandon Elmon, **Asghar M Razavi**, Guangfeng Zhou: Surprisal Metrics for Quantifying Perturbed Conformational Dynamics in Markov State Models. *Journal of Chemical Theory and Computation* , Vol. 10, pp 5716-5728, 2014

Asghar M Razavi, William M Wuest, Vincent A Voelz: Computational Screening and Selection of Cyclic Peptide Hairpin Mimetics by Molecular Simulation and Kinetic Network Models. *Journal of Chemical Information and Modeling*, Vol. 54, pp 1425-1432, 2014.

Conference Presentations

Talks

Asghar M Razavi, George Khelashvili, Michael V. LeVine, Michel A. Cuendet, Harel Weinstein: Allosteric networks in biological systems, *Distributed, Collective Computation in Biological and Artificial Systems conference, Janelia Research Campus, Ashburn, VA*, 03/2018

Asghar M Razavi*, Lucie Delemotte, Vincenzo Carnevale, Vincent A Voelz: Understanding Ion Selectivity of Na⁺,K⁺/ATPase by Computational Approach, *Biophysical Society 59th Annual Meeting*, 02/2015

★ Recipient of BPS travel award

Selected Posters

Asghar M. Razavi, George Khelashvili, Harel Weinstein : Markov State-based Quantitative Kinetic Model of Sodium Release from the Dopamine Transporter, *Biophysical Society 61th Annual Meeting*, 02/2017

Asghar M. Razavi, Heinrich Roder, Vincent A. Voelz : Early Stages of Apomyoglobin Folding Probed by Experiment and H/D Restrained Simulations, *XSEDE15*, 07/2015

Asghar M Razavi, Lucie Delemotte, Vincenzo Carnevale, Vincent A Voelz: Understanding Ion Selectivity of Na⁺,K⁺/ATPase by Computational Approach, *Mechanisms of Membrane Transport, Gordon Research Conference* , 06/2015

Asghar M Razavi, Lucie Delemotte, Vincenzo Carnevale, Vincent A Voelz: Understanding Ion Selectivity of Na⁺,K⁺/ATPase by Computational Approach, *Protein Folding Consortium*, 05/2015

Vincent A Voelz, Asghar M Razavi: Using Kinetic Network Models to Understand Folding Mechanisms of GB1 Hairpin and its Trpzip Variants, *Biophysical Society 59th Annual Meeting*, 02/2015

Asghar M Razavi, William M Wuest, Vincent A Voelz: Computational Screening and Selection of Cyclic Peptide Hairpin Mimetics by Molecular Simulation and Kinetic Network Models, *248th ACS National Meeting* 08/2014

M. H. Dinpajooh, A. Razavi Majarashin, and G. A. Parsafar: Equation of State of Nanoscale Solids and Macroscopic Solids, *5th Iranian Nanotechnology Conference* 07/2009

Invited Talks

Understanding Folding Landscapes Using the tICA Approach, Temple University, Philadelphia 04/2014

Markov State Models and Their Applications in Protein Folding, Temple University, Philadelphia 04/2013

Distillation and Vaporization Mechanisms of Ionic Liquids, Sharif University of Technology, Tehran, Iran 05/2009