

# Brian Andrews

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## Education

- Ph.D. Candidate**, *Drexel University*, Philadelphia, PA. Fall 2018–Present  
Physics - Research in Biophysics & Molecular Simulation. Expected Grad:  
May 2023.
- M.S.**, *Case Western Reserve University*, Cleveland, OH. Fall 2016–Summer 2018  
Physics - Entrepreneurship Track
- B.A.**, *Kenyon College*, Gambier, OH. Fall 2012–Spring 2016  
Physics - Math Minor - Scientific Computing Concentration

## Research

### Publications

5. Brian Andrews, Jose Guerra, Reinhard Schweitzer-Stenner, and Brigita Urbanc. Do molecular dynamics force fields accurately model ramachandran distributions of amino acid residues in water? *Phys. Chem. Chem. Phys.*, pages –, 2022.
4. Brian Andrews, Kaho Long, and Brigita Urbanc. Soluble state of villin headpiece protein as a tool in the assessment of MD force fields. *The Journal of Physical Chemistry B*, 125(25):6897–6911, Jul 2021.
3. B. Milorey, R. Schweitzer-Stenner, B. Andrews, H. Schwalbe, and B. Urbanc. Short peptides as predictors for the structure of polyarginine sequences in disordered proteins. *Biophys. J.*, 120:662–676, 2021.
2. S. Zhang, B. Andrews, R. Schweitzer-Stenner, and B. Urbanc. Intrinsic conformational dynamics of alanine in water/ethanol mixtures: An experiment-driven molecular dynamics study. *J. Phys. Chem. B*, 124(51):11600–11616, 2020.
1. B. Andrews, S. Zhang, R. Schweitzer-Stenner, and B. Urbanc. Glycine in water favors the polyproline II state. *Biomolecules*, 10:1121, 2020.

### Conference Presentations

3. B. Andrews, S. Zhang, R. Schweitzer-Stenner, and B. Urbanc. Assessing the Ability of Molecular Dynamics Force Fields to Capture Conformational Dynamics of Amino Acid Residues in Water. APS March Meeting, 2022.
2. B. Andrews, S. Zhang, R. Schweitzer-Stenner, and B. Urbanc. Glycine Shows Preference for Polyproline II Indicating Greater Role for Amino Acid Backbone. APS March Meeting, 2021.
1. B. Andrews, K. Long, and B. Urbanc. Examining the Self Assembly of the Villin Headpiece Protein: A Combined Experimental and Molecular Dynamics Study. APS Mid-Atlantic Section Fall Meeting, 2020.

### Poster Presentations

2. B. Andrews, T. Ruggiero, and B. Urbanc. Analyzing the Conformational Differences of the Intrinsically Disordered Amyloid  $\beta$ -Protein in Varying Lipid and Salt Concentrations.. Drexel URCF Showcase, 2022.

1. B. Andrews, S. Zhang, R. Schweitzer-Stenner, and B. Urbanc. Hydrogel-forming Ultrashort Oligopeptides in Water/Ethanol Mixtures as a Potential Candidate for Oral Drug Delivery. Merck Emerging Talent Symposium, 2021.

## Peer Review Contributions

Journal of Physical Chemistry Letters, Proteins, Biochemistry

## Experience

**Systems Administrator**, *Drexel University*, Philadelphia, PA. Fall 2020–Present  
Responsible for upkeep of Physics department servers as well as lab computers.

**Teaching Assistant**, *Drexel University*, Philadelphia, PA. Fall 2018–Spring 2022  
Moderate recitations and lab exercises for students with various levels of physics backgrounds.

**Adjunct Instructor**, *Salem County Community College*, Salem, NJ. Summer 2019  
Taught introductory physics where I designed my own lectures and laboratory experiments.

**Operations Intern**, *OptoQuest Inc.*, Cleveland, OH. Summer 2017–Summer 2018  
Created a machine learning model to predict postoperative risk profiles of patients undergoing eye surgeries.

**Data Science Associate**, *MedaSync Inc.*, Cleveland, OH. Fall 2017–Summer 2018  
Constructed a self-updating machine learning cost prediction model in a production environment which estimated medical costs based on diagnosis, projected length of stay, and comorbidities. This model was implemented with AWS.

## Skills

**Primary Programming Languages:** Python, C, Bash, Mathematica, MATLAB, SQL

**Computing:** Highly Parallelized HPC at Drexel URCF, XSEDE at UT. Proficient with SLURM, TORQUE, Univa Grid Engine. Proficient with distributed Windows and Linux systems.

**Development Experience:** Git, AWS (EC2, S3, Lambda, MongoDB), Google Data Studio

## Open Source Software Contributions

**OpenMM.** Summer 2022  
Allow option to add polarizable solvent directly to system. Pull request #3760 and Issue #3415: <https://github.com/openmm/openmm/>.

**pdb-tools.** Winter 2021  
Allows user to modify protein data bank files. Pull Request #112: <https://github.com/haddock/pdb-tools>.

## Extracurriculars

**Analytics Contributor and Writer**, *Pro Lacrosse Talk*, Remote. Summer 2020–Present  
Contribute via analytics articles, modeling win probabilities using machine learning, and podcast appearances.