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# Brian Andrews

## Experience

**Bucher-Jackson Postdoctoral Fellow**, *Byrn Mawr College* Fall 2023–Present

Research in structure-based mRNA folding and design using machine learning and quantum computing.

## Education

**Ph.D.**, *Drexel University* Fall 2018–Summer 2023

Physics - Explored the relationship between structural preferences of protein systems and protein-solvent, protein-protein, and protein-lipid interactions for oligopeptides and the disease-related amyloid $\beta$ protein with molecular dynamics simulations.

**M.S.**, *Case Western Reserve University* Fall 2016–Summer 2018

**B.A.**, *Kenyon College* Fall 2012–Spring 2016

## Skills

**Programming Languages:** Python, `C(++)`, Bash, SQL

**Development Experience:** Git, Machine Learning (Tensorflow, Scikit-learn), Hyperparameter Optimization (Optuna), Databases, Data Visualization (Seaborn, Google Looker Studio)

**Computing Experience:** HPC (at Drexel URCF, UT XSEDE, Athena at Bryn Mawr) and Cloud Computing (AWS) in Linux environments, Virtual Machines (Proxmox, VirtualBox), Virtual Environments (Virtualenv, Conda, Docker)

## Selected Research & Publications

5. **B. Andrews**, Jacob Abraham, Dillion Fox, Asja Radja. Limitations of RNA Folding as a Quadratic Unconstrained Binary Optimization Problem: Implications for Applicability of Modern Quantum Computers. **In Progress**.

4. **B. Andrews**. Amino Acid Residue-Specific Ramachandran Distributions Derived from a Simple Mean Field Potential. *Physical Chemistry AU*, 2024, 4, 6, 707–719.

3. **Brian Andrews**, Thomas Ruggiero, and Brigita Urbanc. How do salt and lipids affect conformational dynamics of A$\beta$42 monomers in water? *Phys. Chem. Chem. Phys.*, **25**, 2566–2583, 2023.

2. **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.

## Other Experience

**Open Source Contributor**, *GROMACS, OpenMM*

Above line includes hyperlinks to contributions

**Systems Administrator**, *Drexel University* Fall 2020–Summer 2023

Responsible for hardware maintenance, networking, deploying and retiring systems, and managing backups of Physics department Linux servers.

**Analytics Contributor**, *Pro Lacrosse Talk* 2020–2022

Constructed a machine learning model to compute in-game win probabilities.

**Operations Intern**, *OptoQuest Inc.*, Cleveland, OH Summer 2017-Summer 2018

Created a logistic regression model to predict postoperative risk for eye surgery patients with patient and structural data.