

# CURRICULUM VITAE FOR ALAN N. AMIN

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## BACKGROUND

Sept 2023-Aug 2025

**Faculty Fellow at Courant Institute, New York University**

Hosted by Andrew Gordon Wilson

June 2023-Aug 2023

**Postdoc at Jura Bioscience**

Aug 2019-May 2023

**PhD at Systems Biology Program at Harvard University**

Thesis: **Nonparametric Methods for Building and Evaluating Models of Biological Sequences**

Advised by Professor Debbie Marks

Supported by NSERC Postgraduate Scholarships – Doctoral program: \$21,000 CAD per year for three years, starting July 2022

Sept 2015- Apr 2019

**Bachelor of Science at the University of Toronto (GPA 3.98)**

Specialist in **Biochemistry** and Major in **Mathematics**

Course work: molecular genetics, biochemical methods, measure theory, bounded operator theory, abstract algebra and algebraic geometry

## PUBLICATIONS

- **Amin A N**, Gruver, N, Wilson A G. Improving Discrete Diffusion with Schedule-Conditioning. In submission, *ICLR*, 2024. <https://openreview.net/pdf?id=wQk6yaRGOi>
- **Amin A N**, Gruver N\*, Kuang Y\*, Li L\*, Elliott H, McCarter C, Raghu A, Greenside P, Wilson A G. (\*Equal contribution). Bayesian Optimization of Antibodies Informed by a Generative Model of Evolving Sequences. In submission, *ICLR*, 2024. <https://openreview.net/pdf?id=E48QvQppIN>
- Weinstein E N\*, Gollub M G\*, Slabodkin A\*, Gardner C L, Dobbs K, Cui X-B, **Amin A N**, Church G M, Wood E B. Manufacturing-Aware Generative Model Architectures Enable Biological Sequence Design and Synthesis at Petascale. *Preprint*, 2024. [arxiv.org/abs/2409.13612](https://arxiv.org/abs/2409.13612)
- **Amin A N**, Wilson A G. Scalable and Flexible Causal Discovery with an Efficient Test for Adjacency. *ICML*, 2024
- Glaser P, Paul S, Hummer A M, Deane C M, Marks D S, **Amin A N**. Kernel-Based Evaluation of Conditional Biological Sequence Models. *ICML*, 2024
- **Amin A N**, Weinstein E N\*, Marks D S\* (\*Equal contribution). A Kernelized Stein Discrepancy for Biological Sequences. *ICML*, 2023
- **Amin A N**, Weinstein E N\*, Marks D S\* (\*Equal contribution). Kernels with Guaranteed Flexibility for Reliable Machine Learning on Biological Sequences. *Preprint*, 2023. <https://arxiv.org/abs/2304.03775>
- Weinstein E N\*, **Amin A N**\*, Frazer J, Marks D S (\*Equal contribution). Non-identifiability and the blessings of misspecification in models of molecular fitness and phylogeny. *NeurIPS*, 2022 (Oral)
- Weinstein E N, **Amin A N**, Grathwohl W, Kassler D, Disset J, Marks D S. Optimal design of stochastic DNA synthesis protocols based on generative sequence models, *AISTATS*, 2022
- **Amin A N**\*, Weinstein E N\*, Marks D S (\*Equal contribution). A generative nonparametric Bayesian model for whole genomes, *NeurIPS*, 2021.
- **Amin A N**, Lin Y-H, Das S, Chan H S. “Theory for a Sequence-Specific “Fuzzy” Binding Mechanism Between a Pair of Intrinsically Disordered Proteins”, *J Phys Chem B*, 2020

- Das S, **Amin A N**, Lin Y-H, Chan H S. “Coarse-grained residue-based models of disordered protein condensates: utility and limitations of simple charge pattern parameters.” *Phys. Chem. Chem. Phys.* 2018
- Delplace V, Ortin-Martinex A, Tsai E L S, **Amin A N**, Wallace V and Shoichet M S. “Controlled Release Strategy Designed for Intravitreal Protein Delivery to the Retina.” *J. Control. Release* 2018.

## WORKSHOP PAPERS

- **Amin A N**, Gruver N\*, Kuang Y\*, Li L\*, Elliott H, McCarter C, Raghu A, Greenside P, Wilson A G. (\*Equal contribution). Bayesian Optimization of Antibodies Informed by a Generative Model of Evolving Sequences. *AIDrugsX at Neurips*, 2024 (Spotlight)
- **Amin A N**, Weinstein E N, Marks D S. A Kernelized Stein Discrepancy for Biological Sequences. *Learning Meaningful Representations of life workshop at Neurips*, 2022. (Oral)
- Shaw A, Shin J-E, Thadani N N, **Amin A N**, Marks D S. Designing Proteins using Sparse Data. *Learning Meaningful Representations of life workshop at Neurips*, 2022.
- **Amin A N\***, Weinstein E N\*, Marks D S (\*Equal contribution). A generative nonparametric Bayesian model for whole genomes *Learning Meaningful Representations of life workshop at Neurips*, 2020.

## PRESENTATIONS

Dec 2024	Mohammed AlQuraishi Lab meeting visit; <b>1h talk</b>
June 2024	NYU AI school; <b>1h talk</b>
Feb 2024	NYU centre for data science seminar; <b>1h talk</b>
Oct 2023	New York Genome Center meeting; <b>1h talk</b>
Oct 2023	CSHL SCQB seminar series invited speaker; <b>1h talk</b>
May 2023	Gatsby Machine Learning seminar; <b>1h talk</b>
May 2023	Harvard QBio group meeting; <b>20min talk</b>
May 2023	Harvard Systems Biology department Pizza talk; <b>1h talk</b>
Apr 2023	MIT Readstat Statistics reading group; <b>1.5h talk</b>
Mar 2023	Harvard Systems biology program mini symposium; <b>15 min talk</b>
Mar 2023	Stat 300 Seminar series at the Harvard Statistics Department; <b>30 min talk</b>
Dec 2022	NeurIPs, Learning Meaningful Representations of Life Workshop; <b>poster</b>
Dec 2021	NeurIPs, Learning Meaningful Representations of Life Workshop; <b>15 min talk</b>
May 2021	CSHL, Probabilistic Modeling in Genomics; <b>poster</b>
May 2021	Broad institute, Models, Inference and Algorithms Talks; <b>primer (1h talk)</b>
Dec 2020	NeurIPs, Learning Meaningful Representations of Life Workshop; <b>poster</b>

## ACADEMIC AWARDS

June 2023	Student Paper Research Award at New England Statistics Symposium ( <b>Regional</b> )	\$300
July 2022	NSERC Postgraduate Scholarships Doctoral program ( <b>National</b> )	\$21,000 (1/3 years)
Sept 2019	Ross S. Lang Scholarship ( <b>Institution</b> )	\$602
Nov 2018	Innis College Exceptional Achievement ( <b>Institution</b> )	\$740
Nov 2018	The Daniel Wilson Scholarship in Science ( <b>Institution</b> )	\$82
June 2018	Later Life Learning Scholarship ( <b>Institution</b> )	\$744
May 2018	Princeton International Internship ( <b>International</b> )	\$Lodging
May 2017	NSERC Undergraduate Student Research Award ( <b>National</b> )	\$4500
Nov 2016	Later Life Learning Scholarship ( <b>Institution</b> )	\$722
Oct 2015	President's Entrance Scholarship ( <b>Institution</b> )	\$2000

## TEACHING

Sole Instructor:

Sept 2024 – Dec 2024 CSC102 **Data Structures** at NYU  
Jan 2024 – May 2024 CSC102 **Data Structures** at NYU

### Teaching assistant:

Sept 2023 – Dec 2024 CSC102 **Data Structures** at NYU  
Sept 2021 – Jan 2022 BCMP230 **Principles and practice of drug development** at Harvard University  
Sept 2018 – Jan 2019 MAT224 **Linear Algebra** at the UofT  
Sept 2017 – Apr 2018 MAT135 & MAT136 **Calculus** at the UofT  
Sept 2016 – Apr 2017 MAT137 **Calculus!** at the UofT

## SERVICE

Oct 2024 **Reviewer** at ICLR 2025  
Sept 2024 **Reviewer** at AAAI 2024  
July 2024 **Reviewer** at Neurips 2024  
Apr 2024 **Reviewer** at eLife  
Mar 2024 **Reviewer** at ICML 2024  
Dec 2023 **Reviewer** at Neurips 2023  
June 2023 **Reviewer** at ICML 2023  
Dec 2022 **Top reviewer** at Neurips 2022 - **moderated** deep-dive session 5A  
Dec 2022 **Area-chair** at Learning Meaningful Representations of Life workshop at NeurIPS  
June 2022 **Top 10% of reviewers** at ICML 2022 - invited to **chair** a session  
Dec 2021 **Reviewer** at Learning Meaningful Representations of Life workshop at NeurIPS  
Dec 2020 **Reviewer** at Learning Meaningful Representations of Life workshop at NeurIPS

## PREVIOUS RESEARCH EXPERIENCE

Sept 2017 – Aug 2019 Advisor: **Dr. Hue Sun Chan**. University of Toronto  
Predicting interactions from sequences of disordered proteins using physics models.  
June 2018 – Aug 2018 Advisor: **Dr. Clifford Brangwynne**. Princeton University  
Measuring mechanics of nuclear membrane-less organelles investigated using microfluidics.  
May 2017 - Aug 2017 Advisor: **Dr. Molly Shoichet**. University of Toronto  
Designing new hydrogels with desired mechanical properties for drug delivery.  
July 2016 – Apr 2017 Advisor: **Dr. Ronald Kluger**. University of Toronto  
Designing method of loading tRNAs with alternative amino acids for synthetic biology.

## ORGANIZING

Sept 2020 – May 2023 Harvard Graduate Student Union steward (orientation, education, recruitment)  
Jan 2021 SysBio PhD program application assistance (Mentor for successful applicant)  
Jul 2020 – Jan 2021 Equitable mentorship equity working group in Systems biology department  
Jul 2020 Systems biology program petition for equity group (writing petition, recruitment)