Anna Kishida Thomas

AKT51@pitt.edu | +1 (734) 845 2327 | Pittsburgh, PA

EDUCATION

Ph.D. Candidate in Mathematics, University of Pittsburgh, GPA: 3.92/4.0 2021 – Expected Summer 2027
- *Thesis Committee*: Jonathan E. Rubin (advisor), Bard Ermentrout, Chengcheng Huang, Aryn H. Gittis
- *Thesis Project*: Mathematical modeling of brainstem motor dynamics: Delta oscillations in the treatment of Parkinson's disease
- Center for the Neural Basis of Cognition (CNBC) Graduate Training Certificate

B.S. Mathematics, **B.A. Computer Science**, Lehigh University, GPA: 3.62/4.0 2017 – 2021
- *Advisor*: Dr. M. Teboh-Ewungkem, *Honors Thesis*: Identifiability Analysis in Application to Math Modeling
- NCAA Division I Lehigh University Varsity Swimming & Diving (Most Improved Award)

EXPERIENCE

Graduate Teaching Fellow, *Department of Mathematics, University of Pittsburgh* 2021 – present
- Responsible for leading weekly recitations, administering and grading exams and holding office hours
- Recitations: Business Calculus (3 semesters, 70 students), Calculus I (2 semesters, 50 students)
- Grading: Modeling in Applied Math (1 semester, 27 students), Intro to Math Neuro (1 semester, 25 students), Intro to Network Science (1 semester, 10 students)

Clinical Pharmacology and Pharmacometrics Intern, *Bristol Myers Squibb*, Lawrencev., NJ Summer 2026
- Developed population pharmacokinetic (PopPK) models in Pumas and performed covariate analysis
- Supported longitudinal exposure-response (E-R) modeling in NONMEM using clinical trial data
- Contributed cross-functionally to evaluate results and communicate insights for dose selection

Quantitative Systems Pharmacology (QSP) Intern, *Simulations Plus*, Pittsburgh, PA Summer 2024
- Developed new QSP modeling technologies by integrating modeling, software, and mathematical biology
- Designed differential equations model to leverage pharmacokinetic data for simulation of drug responses
- Synthesized PK/PD data from clinical pharmacology literature to inform trial-design decisions in oncology

JOURNAL PUBLICATIONS & PRESENTATIONS

Publications
- **Thomas, A. K.,** & Rubin, J. E. (2026). *Multiple timescale dynamics of conductance-based models of brainstem locomotor neurons*. arXiv preprint arXiv:2603.11467 (under review at SIAM Life Sciences).
- Martin*, M., **Thomas*, A. K.,** & Ermentrout, G. B. (2025). *XPPLORE: Import, visualize, and analyze XPPAUT data in MATLAB*. International Journal of Bifurcation and Chaos, 35(13), 2550165.

Selected Presentations
- **Thomas, A. K.**, Rubin, J. E. (2026). *Mechanistic modeling and dynamics analysis of brainstem locomotor neurons to study motor recovery in Parkinson's disease*. MCS SIG Award presentation, ACoP, National Harbor, MD.
- **Thomas, A. K.**, Rubin, J. E. (2026). *Modeling and Analyzing Pedunculopontine Neurons and the Impact of Their Projections on Respiratory Patterning*. MS31, SIAM Life Sciences, Cleveland, OH.
- **Thomas, A. K.**, Rubin, J. E., Fallah, M., Evans, R. C., & Gittis, A. H. (2025). *Calcium currents shape PPN response to stimulation: A computational perspective.* Society for Neuroscience, San Diego, CA.
- **Thomas, A. K.**, Rubin, J. E., Fallah, M., Evans, R. C., & Gittis, A. H. (2025). *Cellular and parkinsonian network dynamics in a conductance-based model of the pedunculopontine nucleus in rodents*. SIAM Dynamical Systems, Denver, CO.
- **Thomas, A. K.**, Rubin, J. E., Fallah, M., Evans, R. C., & Gittis, A. H. (2025). *Ionic currents and the dynamics of the pedunculopontine nucleus*. CNBC Brain Bag, Pittsburgh, PA.
- **Thomas, A. K.**, Fallah, M., Evans, R. C., Gittis, A. H., & Rubin, J. E. (2024). *Computational model of basal ganglia projections to brainstem for long-term motor recovery in parkinsonian rodents*. ICMNS, Dublin, Ireland.

- **Thomas, A. K.**, Fallah, M., Evans, R. C., Gittis, A. H., & Rubin, J. E. (2023). *Computational model of basal Ganglia projections to brainstem in long-term motor recovery in Parkinson's Disease.* Association for Women in Mathematics (AWM) Student Seminar Series, University of Pittsburgh
- **Thomas, A. K.**, Clark, M., & Seggern, C., Hong, T., & Zhao, X. (2021). *Integration of Proprioceptive Feedback for Forward Locomotion in Caenorhabditis Elegans Network Model.* JMM.

GRANTS & AWARDS

- Andrew Mellon Predoctoral Fellowship, University of Pittsburgh (2026-2027)
- ISoP Mathematics and Computational Sciences (MCS) SIG Award, ACoP (2026)
- SIAM Student Travel Award (2026)
- CNBC Career Development Grant (2025, 2026)
- Winner of SIAM DSWeb Contest for Tutorials on Dynamical Systems Software (2025)
- Best poster (Red Sock) award at SIAM Conference on Applications of Dynamical Systems (2025)
- Silverman-Culver Prize for Excellence in Mathematics, Dept. of Mathematics, Univ. of Pittsburgh (2024-25)
- Department Travel Grant for Society for Mathematical Biology Annual Meeting, Columbus, OH (2023)
- Arts & Sciences Graduate Fellowship, University of Pittsburgh (Spring 2021–2022)
- Outstanding Poster Award at JMM (2021)

LEADERSHIP & MEMBERSHIPS

Leadership

- Reviewer for Pittsburgh Interdisciplinary Mathematics Review (PIMR) 2025 – present
- Mentor to 10 first-year international graduate students through Pitt Graduate Global Ties 2022 – present
- Volunteer at Girls Summer Math Camp, University of Pittsburgh 2024, 2025
- 3rd place in 2025 Super Analytics Challenge: Data-driven solutions for healthcare for homeless Feb. 2025
- Leader at Panther Leadership Summit 2024 Feb. 2024
- Mentor to 15 female STEM undergraduates through Lehigh University Mentor Collective 2018 – 2021

Committee Representation

- Pitt-CMU Directed Reading Program in Mathematics, Organizing Committee 2025 – present
- Pitt Association for Women in Mathematics Chapter officer (president 2025-26), AWM Student Chapter Award for Fundraising/Sustainability (2025-26) 2022 – present
- Pitt Math Graduate Student Organization representing 80+ Ph.D. students 2022 – present
- President of Lehigh University Mathematics and Statistics Society with 40+ members 2019 – 2021

Professional Organizations

Association for Women in Mathematics (AWM), Society for Mathematical Biology (SMB), Society for Industrial and Applied Mathematics (SIAM), American Mathematical Society (AMS), American Society for Clinical Pharmacology and Therapeutics (ASCPT), International Society of Pharmacometrics (ISoP)

SELECTED SKILLS

Coursework	Ordinary Differential Equations (ODE), Numerical Solutions to ODE, Mathematical Neuroscience, Computational Models of Neural Systems, Quantitative Systems and Cellular Neuroscience, Linear Algebra, Partial Differential Equations, Analysis, Methods in Applied Mathematics, Mathematical Biology, Foundations of Neural Basis of Cognition
Programming	Python, MATLAB, XPPAUT, Java, LaTeX (proficient); NONMEM, Pumas, Julia, R (familiar)
Modeling	Dynamical systems theory, conductance-based modeling, bifurcation analysis, parameter optimization, nonlinear mixed effects modeling, covariance analysis, network phase analysis