

Keshav B. Patel

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Education

University of Utah

Expected May 2025

- Ph.D. in Mathematics
- Advisor: Aaron L. Fogelson
- Tentative Committee: James P. Keener, Fred R. Adler, Wolfgang Bergmeier, Jian Du

University of North Carolina at Chapel Hill

May 2019

- B.S. in Biomedical and Health Sciences Engineering
– UNC/NC State University Joint Department
- B.S. with Highest Honors in Mathematics: Applied Option
- Minor in Chemistry
- Graduated with Highest Distinction

North Carolina School of Science and Mathematics

June 2015

Publications and Presentations

Publications

- **Patel, K. B.**, Mao, S., Forest, M. G., Lai, S. K., Newby, J. M. 2019. Limited Processivity of Single Motors Improves Motor Transport Through Enhanced Loading of Multi-Motor-Cargo Complexes on Microtubules. *Physical Review E*. 100 (2).
- **Patel, K. B.** 2019. (Undergraduate Honors Thesis). Optimization of Crosslinker Efficiencies Through Asymptotic Approximation and Simulation of Fick's Law Systems. *University of North Carolina at Chapel Hill*

Publications (under review)

- **Patel, K. B.**, Bergmeier, W., Fogelson, A. L. 2024. Modeling Platelet P2Y1/12 Pathway to Integrin Activation. *In Review at Biophysical Journal*. arXiv:2410.13015

Upcoming Oral Presentations

- **Patel, K. B.** (January 2025). Stabilization of Platelet Aggregates in High Shear Rate Flows by Von Willebrand Factor. In Cruz, D. and Nelson, A. C. (Chairs). *Joint Mathematics Meetings*, Seattle, Washington

Oral Presentations

- **Patel, K. B.** (November 2024). Stabilization of Platelet Aggregates in High Shear Rate Flows by Von Willebrand Factor. *Division of Fluid Dynamics*, Salt Lake City, Utah
- **Patel, K. B.** (November 2024). Understanding the Biochemical Determinants of Platelet Activation and Aggregation. *University of Utah Mathematical Biology Seminar*, Salt Lake City, Utah
- **Patel, K. B.** (July 2024). The Role of Von Willebrand Factor in Platelet Aggregation Under High Shear Rate Flows. In Lu, W. (Chair). *Society for Mathematical Biology*, Seoul, Republic of Korea
- **Patel, K. B.** (June 2024). Towards a Mathematical Model of Aggregate Growth Mediated by Vwf In **Patel, K. B.** and Ginsberg, A. (Chairs). *SIAM Life Sciences 2024*. Conducted from Portland, Oregon
- **Patel, K. B.** (January 2024). A Spatially Averaged Model for Platelet Cohesion by Von Willebrand Factor and Fibrinogen. *Joint Mathematics Meeting*. Conducted from San Francisco, California
- **Patel, K. B.** (August 2023). A Spatially Averaged Model for Platelet Cohesion by Von Willebrand Factor and Fibrinogen. In **Patel, K. B.** and Nelson, A. C. (Chairs). *International Congress on Industrial and Applied Mathematics*. Conducted from Tokyo, Japan
- **Patel, K. B.** (July 2023). A Spatially Averaged Model for Platelet Cohesion by Von Willebrand Factor and Fibrinogen. *Society for Mathematical Biology*. Conducted from Columbus, Ohio

Poster Presentations

- **Patel, K. B.** (July 2022). Modeling Platelet P2Y1/12 Pathway Within Near-membrane Nanodomains. *Gordon Research Conference – Hemostasis*, Waterville Valley, NH

Past Research Experiences

- Dr. Nancy Rodriguez Lab Summer 2018 - Fall 2019
 - Finite element-based simulations of nonlinear PDEs and parameter estimation
 - Fitted PDE model of gentrification in Cook County to Census data
- Dr. Wesley Legant Lab Summer 2018 - Summer 2019
 - Data processing and inverse problems
 - Computed cell traction forces using light-sheet microscopy data on cell displacement

Teaching Experience

- MATH 1310 — Engineering Calculus I Fall 2024
- MATH 1050 — College Algebra Spring 2023
- MATH 1310 — Engineering Calculus I Fall 2022

Awards and Honors

- University of Utah Center for Quantitative Biology Fellowship Recipient August 2019
- Honors Carolina Graduate May 2019
- National Science Foundation Graduate Research Fellow Recipient April 2019
- Univ. North Carolina Chancellor's Science Scholars Distinguished Scholar August 2018

Service and Outreach

- Conference Co-organizer — Computational Biofluids in Physiology May 2025
 - Invite speakers from mathematics and experimental fields
 - Prepare and write NSF funding proposal
 - Reserve and prepare venue for events
- Co-chair — Graduate Student Advisory Committee Colloquium Aug 2023 - May 2024
 - Presided over weekly graduate student colloquium
 - Invited graduate students, faculty, and professional development professionals to speak
- Chair — Association for Women in Mathematics Speaker Series Aug 2021 - May 2024
 - Invited and hosted mathematicians from underrepresented backgrounds to department
 - Organized department colloquium research talk and graduate student colloquium career path talk
- Co-organizer — High School Mathematical Modeling Workshop Series Sept 2022 - Nov 2022
- Co-chair — Graduate Student Advisory Committee Aug 2021 - Aug 2022
 - Liason between graduate students and department
- Chair — Graduate Student Recruitment Weekend Committee Mar 2022
 - Organized and presided over virtual and in-person visits for prospective graduate students
- Co-organizer — Essentials of Math Modeling Workshop Series Jan 2022 - Feb 2022
 - In partnership with SIAM and Mathworks
- Co-organizer — High School Mathematical Modeling Workshop Series Sept 2021 - Nov 2021
- Co-chair — Graduate Student Recruitment Weekend Committee Mar 2021

Mentorship

- Directed Reading Program Aug 2021 - May 2022
 - Finite Difference Methods for Ordinary and Partial Differential Equations (LeVeque 2007)

Programming Skills

- Programming/Markup: C, Python, Java, Matlab, R, LaTeX (IDE and UNIX environment experience)
- Manufacturing and Electronics: Solidworks, Labview, Multisim