Stanford

Abrar Bhat

Postdoctoral Scholar, Chemical Engineering

Bio

BIO

Abrar Bhat is a postdoctoral researcher in the Dunn Research Group within the Chemical Engineering department. His research focuses on understanding the mechanisms of mechanosensing and mechanosignaling by sarcomeric components of human heart muscle cells that drive their hypertrophic cardiomyopathy. By integrating biophysical, biochemical, and cell-biological approaches, he aims to elucidate the precise role of Z-disc proteins in connecting altered levels of mechanical load to aberrant signaling and gene expression.

During his Ph.D. at NCBS, TIFR, Bangalore, Abrar applied a multidisciplinary approach to investigate the organization of the cell membrane using principles drawn from active matter physics.

PROFESSIONAL EDUCATION

- Ph.D., NCBS (TIFR) Bangalore, India , Cell biology and biophysics (2023)
- M.Sc., University of Kashmir, Srinagar , Biochemistry (2012)
- B.Sc., S.P. College, University of Kashmir, Srinagar , Biochemistry, Chemistry, Zoology (2009)

STANFORD ADVISORS

- Alexander Dunn, Postdoctoral Faculty Sponsor

LINKS

- Dunn group webpage: https://dunngroup.stanford.edu
- LinkedIn Profile: https://www.linkedin.com/in/abrarab/
- Google Scholar: https://scholar.google.com/citations?hl=en&user=GBuOksoAAAAJ

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

By integrating single-molecule biophysics, biochemical assays, cell-biological approaches, and advanced imaging, he is investigating the precise mechanisms that elucidate the precise role of Z-disc proteins in connecting altered levels of mechanical load to aberrant signaling and gene expression in human heart cells.

LAB AFFILIATIONS

- Alexander Dunn, Dunn Research Group (10/4/2023)

Publications

PUBLICATIONS

- **Mechanisms of mechanosensing by MLP and α-actinin-2 in cardiac hypertrophy**
  Bhat, A., Vera, C., Marang, C., Giri, P., Bernstein, D., Dunn, A.
  CELL PRESS.2026: 327a

- **Contractile actin flows drive patterning of membrane components with differential actin-binding affinities**
  Bhat, A. A., Das, A., Koester, D. V., Rao, M., Mayor, S.
  CELL PRESS.2023: 263A

- **Reconstitution of Membrane-tethered Minimal Actin Cortices on Supported Lipid Bilayers** *JOVE-JOURNAL OF VISUALIZED EXPERIMENTS*
  Koster, D., Bhat, A., Talluri, S., Mayor, S.
  2022

- **Evolutionarily related small viral fusogens hijack distinct but modular actin nucleation pathways to drive cell-cell fusion** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Chan, K., Arthur, A. L., Morstein, J., Jin, M., Bhat, A., Schlesinger, D., Son, S., Stevens, D. A., Drubin, D. G., Fletcher, D. A.
  2021; 118 (1)

- **Stratification relieves constraints from steric hindrance in the generation of compact actomyosin asters at the membrane cortex** *SCIENCE ADVANCES*
  Das, A., Bhat, A., Sknepnek, R., Koster, D., Mayor, S., Rao, M.
  2020; 6 (11): eaay6093

- **Actomyosin dynamics drive local membrane component organization in an in vitro active composite layer** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Koester, D., Husain, K., Iljazi, E., Bhat, A., Bieling, P., Mullins, R., Rao, M., Mayor, S.
  2016; 113 (12): E1645-E1654