

Himani Khurana

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Educational Qualifications

2018 - present Ph.D. (Biochemistry & Cell Biology) Pucadyil Lab, Department of Biology, IISER Pune, India
2016 - 2018 MS (Biology), IISER Pune, India
2012 - 2015 B.Sc. (Zoology - Honours), First Class, Daulat Ram College, University of Delhi, Delhi, India

Research Articles

1. Pande V., **Khurana H.**, Pucadyil T.J., Gayathri P. 2023. Analysis of nucleotide-dependent membrane remodelling activity of bacterial cell shape determining protein MreB. (Manuscript in preparation)
2. **Khurana H.**, Baratham K., Bhattacharyya S., Srivastava A., Pucadyil T.J. 2023. Mechanistic analysis of a novel membrane interacting variable loop in the pleckstrin-homology domain critical for dynamin function. *PNAS* (doi: 10.1073/pnas.2215250120)
3. Andhare D.S.*, **Khurana H.***, Pucadyil T.J. 2022. (*equal authorship) Protein-protein interactions on membrane surfaces analysed using pull downs with supported bilayers on silica beads. *Journal of Membrane Biology* (doi: 10.1007/s00232-022-00222-4)

Review Articles

1. **Khurana H.** and Pucadyil T.J. 2023. 'Gearing' up for dynamin-catalyzed membrane fission. *Current Opinions in Cell Biology* (under review)

Meetings and Workshops

Invited talks

2023 EMBO Workshop: Cell Polarity and Membrane Dynamics, Sant Feliu de Guixols, Spain
EMBO [May 21-25]

Paper presentation

2023 45th All India Cell Biology Conference, BHU, Varanasi, India
IndiaBioscience [January 20-22]

2022 EMBO Workshop: Birth and fission of cellular compartments, Bilbao, Spain
EMBO [July 25-29]

2021 Cell Bio Virtual 2021, International online ASCB/EMBO meeting
ASCB/EMBO [Dec 1-10]

2020 International Symposium on Cell Surface Macromolecules, Pune, India
IISER Pune [Feb 17-21]

2020 International Conference on Autophagy and Lysosomes, IISc, Bangalore, India
IndiaBioscience [Jan 16-18]

2019 National Workshop on Fluorescence and Raman Spectroscopy, TIFR Hyderabad, India
Fluorescence Society [Dec 16-21]

2018 Dynamics within and across the confined cellular space, IISER Pune, India
ICCB/IISER Pune [Feb 2-3]

2018 The Dynamic Cell: From molecules & networks to form and function, Hyderabad, India
ICCB/CCMB Hyderabad [Jan 27-31]

Participation

2023 EMBO training in Research communication and Research Integrity, IISER Pune, India
EMBO | India Research Partnership, Course by Karin Dumstrei [March 1]

2021 Molecular Biology of the Cell, HHMI virtual meetings
HHMI [Dec 7-8]

2021 Cell and Developmental Biology, HHMI virtual meetings
HHMI [Sep 28-29]

2021 Online Membrane Meeting (virtual): Molecular Membrane Biology meeting
MMB [July 19-20]

Accolades and Positions of Responsibility

Academic

- 2023 Travel Award by EMBO for - EMBO Workshop: Cell Polarity and Membrane Dynamics, Spain
- 2020 Senior Research Fellow, IISER Pune, India
- 2018 Junior Research Fellow, IISER Pune, India
- 2015 JGEEBILS qualification (Life Sciences)
- 2014 Summer Research Fellow (IAS - INSA Fellow at Department of Endocrinology, AIIMS, New Delhi)

Extra-curricular

- 2014 Treasurer, Zoological Society, Daulat Ram College, University of Delhi, New Delhi
(Fund raising, management and allocation; organization of Annual Zoological Fest 2013-14 'Elysium')
- 2013 Awarded grade A in a UN sponsored certificate program in Water Cooperation
(Conducted by IARC Centre for Science Culture under Rio+21 IYWC INDIA PROGRAM)
- 2010 Director, Rotary Club, Rohtak, Haryana
- 2010 Cultural Captain, Indus Public School, Rohtak, Haryana
- 2010 Award holder for excellent academic and all-round performance, Indus Public School, Rohtak, Haryana
- 2009 Winner of state-wide competitions as Keyboard lead in orchestra, Choir group, Indus Public School, Rohtak, Haryana
- 2009 Scholarship in Arts and Craft by All India Citizen Development Centre, Aurangabad, Maharashtra

Teaching Experience

- 2018 Introductory Biology III: Ecology and Evolution (3 credit undergraduate course)
(Led interactive tutorials, demonstrations, set papers & evaluated grades, with **Prof. Sutirth Dey**)
- 2018 Introductory Biology II: Cellular & Molecular Biology (3 credit undergraduate course)
(Led interactive tutorials, demonstrations, set papers & evaluated grades, with **Dr. MS Madhusudhan & Dr. Nagaraj Balasubramanian**)

Research Experience

- 2018 Deciphering the molecular basis of dynamin functions during clathrin-mediated endocytosis
(Ongoing, doctoral thesis project under supervision of **Prof. Thomas Pucadyil**, IISER Pune, India)
- 2017 Screening for polarity protein knockdown associated defects in drosophila embryos
(Summer training under supervision of **Prof. Richa Rikhy**, IISER Pune, India)
- 2017 Characterizing response of SATB1 protein to Wnt signaling in mouse embryonic stem cells
(Spring semester project under supervision of **Prof. Sanjeev Galande**, IISER Pune, India)
- 2016 Biochemical characterization of EHD4, an Eps15 homology domain containing protein
(Fall semester project under supervision of **Prof. Thomas Pucadyil**, IISER Pune, India)
- 2014 Standardisation of PCR-amplification of PTH2 (TIP39) gene using isolated cDNA from patient tissues
(Summer Research Fellowship under supervision of **Prof. Ravinder Goswami**, AIIMS New Delhi, India)

Laboratory Experience

Cell & Molecular Biology: DNA isolation, PCR based restriction-free cloning, Experience with culturing embryonic stem cells on feeder cells & various secondary cells, Transfections, Transductions, Examining organellar morphology & physiology, CRISPR, FACS

Biochemistry: Protein purification, Spectrophotometry & Colorimetry, Lipid-protein biochemistry, Protein labelling, Western Blotting, Immunoprecipitation, Chromatography (Affinity, size-exclusion, ion-exchange, FPLC, TLC), Tissue lysate preparation & biochemical fractionation, Organelle isolation from cultured cells

Membrane Biochemistry: Model membranes - GUVs, SUVs, Proteo-liposomes, Supported lipid bilayers & nanotubes, Dot-blot, Emulsions

Proteomics: Sample preparation for qualitative mass spectrometry, quantitative proteomic analysis using reductive demethylation - ReDiMe

Microscopy: Live- & fixed-cell imaging using bright field, DIC, epifluorescence (Olympus IX 71 & IX 83) and confocal microscopy (Zeiss LSM 710, Leica SP8); FCS (Fluorescence Correlation Spectroscopy); Sample preparation for FE-SEM (Zeiss) and TEM.

Model systems: Basic maintenance of bacteria, yeast, insect cells, *C. elegans* & *D. melanogaster* (genetic crosses, embryo immunolabelling)

Data Analysis: Image analysis - ImageJ/Fiji, Data analysis - GraphPad Prism, Basic structural analysis - ChimeraX & PyMol, Beginner-level programming - Python, RStudio & ImageJ Macros, Proteomic analysis - Gene Ontology (GO), Protein Pilot & MaxQuant

Bioinformatics: AlphaFold, UniProt, NCBI, SnapGene and Expasy

Technical Aptitude: MacOS and Windows; Proficient in - Microsoft Office and iWork, BioRender, Mendeley, Zotero, Papers, Zoom, Google Meet

Communication: Scientific writing and illustration, Collaborative and interactive work ethic, Languages - English, Hindi, Punjabi, German (A1)

Coursework background

Credited Courses: Introductory Biology, Basic & Advanced Cell Biology, Basic & Advanced Molecular Biology, Basic & Advanced Biochemistry, Neurobiology, Genetics & Genomics, Epigenetics, Immunology, Microbiology, Developmental Biology, Animal physiology & Histology, Ecology & Evolution, Separation principles & techniques, Biotechnology, Biodiversity, Applied Zoology, Environmental Studies, Basic Chemistry, Mathematics and Statistics, Technical Writing & Communication in English, Computational skills, Scientific writing and literature review

Audited Courses: Biophysics, Biostatistics, Bioinformatics, German Language A1
