

# Himani Khurana

Senior Research Fellow  
Pucadyil Lab  
IISER, Pune

## Indian Institute of Science Education and Research

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### Educational Qualifications

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| 2018 - present | Ph.D. in Life Sciences, IISER Pune, India  |
| 2016 - 2018    | MS in Life Sciences, IISER Pune, India   |
| 2012 - 2015    | B.Sc. (Honours) in Zoology, First Class, Daulat Ram College, University of Delhi, Delhi, India |

### Research Articles

1. 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)
2. **Khurana H.**, Bhattacharyya S., Pucadyil T.J. 2022 Mechanistic analysis of a novel membrane interacting variable loop in the pleckstrin-homology domain critical for dynamin function. *Manuscript submitted; Preprint published* (doi: 10.1101/2022.09.03.506501)
3. Pande V., **Khurana H.**, Pucadyil T.J., Pananghat G. 2022. Analysis of nucleotide-dependent membrane remodelling activity of bacterial cell shape determining protein MreB. *Manuscript in preparation*

### Meetings and Workshops (paper presentation)

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| 2022 | EMBO Workshop: Birth and fission of cellular compartments, Bilbao, Spain<br>EMBO (July 25-29)  |
| 2021 | Cell Bio Virtual 2021, An online ASCB/EMBO meeting<br>ASCB/EMBO (Dec 1-10)   |
| 2020 | International Symposium on Cell Surface Macromolecules, Pune, India<br>IISER Pune (Feb 17-21)  |
| 2020 | International Conference on Autophagy and Lysosomes, IISc, Bangalore, India<br>IndiaBioscience (Jan 16-18)   |
| 2019 | National Workshop on Fluorescence and Raman Spectroscopy, TIFR Hyderabad, India<br>Fluorescence Society (Dec 16-21)                                  |
| 2018 | Dynamics within and across the confined cellular space, IISER-Pune, Pune, India<br>ICCB satellite meeting (Feb 2-3)                                  |
| 2018 | The Dynamic Cell: From molecules & networks to form and function, CCMB Hyderabad, India<br>ICCB: International Congress for Cell Biology (Jan 27-31) |

### Meetings and Workshops (participation)

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| 2021 | Molecular Biology of the Cell, HHMI virtual meetings<br>Howard Hughes Medical Institute (Dec 7-8)    |
| 2021 | Cell and Developmental Biology, HHMI virtual meetings<br>Howard Hughes Medical Institute (Sep 28-29) |
| 2021 | MMB (virtual): Molecular Membrane Biology meeting<br>Online Membrane Meeting (July 19-20)            |

### Teaching Experience

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| 2018 | Introductory Biology III: Ecology and Evolution<br>(3 credit undergraduate course, with Prof. Sutirth Dey)  |
| 2018 | Introductory Biology II: Cellular & Molecular Biology<br>(3 credit undergraduate course, with Dr. M.S. Madhusudhan & Dr. Nagaraj Balasubramanian) |

## Research Experience

- 2019 Deciphering the molecular basis of dynamin functions during clathrin-mediated endocytosis  
(Ongoing, PhD 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 Dr. 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 tissues  
(Summer Research Fellowship under supervision of Prof. Ravinder Goswami, AIIMS New Delhi, India)

## Accolades and Positions of Responsibility

- 2020 Senior Research Fellow, IISER Pune, India
- 2018 Junior Research Fellow, IISER Pune, India
- 2015 JGEEBILS qualifier (Life Sciences)
- 2014 Summer Research Fellow, Indian Academy of Sciences  
(Fellowship at Department of Endocrinology, AIIMS, New Delhi)
- 2014 Treasurer, Zoological Society, Daulat Ram College  
(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 Cultural Captain, Indus Public School, Rohtak
- 2010 Director, Rotary Club, Rohtak
- 2009 Scholarship in Arts and Craft  
(All India Citizen Development Centre, Aurangabad, Maharashtra)

## Laboratory Experience

- **Molecular Biology:** PCR based cloning, DNA isolation and sequence analysis using **BLAST**, **SnapGene** and **Expasy** tools
- **Cell Biology:** Mammalian cell-culture (HeLa, HEK, MEFs, Cos7, BSC1, FR-AGS, SH-SY5Y); Stem cell culture; Transient transfections; Lentiviral/retroviral transduction; Fluorescence-based assays to monitor vesicle trafficking; Live- & fixed-cell imaging using bright field, differential interference contrast, epifluorescence & confocal microscopy; Sample preparation for mass spectrometry (quantitative proteomics using reductive demethylation); CRISPR; Fluorescence-assisted cell sorting and Fluorescence Correlation Spectroscopy
- **Biochemistry:** Protein expression & purification from recombinant and native sources; Western Blotting; Affinity-, size-exclusion, anion-exchange and thin-layer chromatography; Immunoprecipitation; Assays monitoring lipid-protein biochemistry in purified systems
- **Membrane Biology:** Preparation of - giant & small unilamellar vesicles by extrusion/sonication, proteo-liposomes, PEG-cushioned supported lipid bilayers (SLB) & membrane nanotubes, SLBs by vesicle fusion, SLBs on silica beads for facile pull-downs; Sample preparation for scanning and transmission electron microscopy, Liposome sedimentation/floatation, Dot-blots, Water-in-oil emulsions
- **Instrument Training:** Epifluorescence microscope (Olympus IX 71 & IX 83), FPLC (AKTAprime), Gel Doc (iBright imager & G-box), Microplate reader, UV-Vis Spectrophotometer, Ultracentrifuge (Beckman Coulter), Confocal microscope (Zeiss LSM 710, Leica SP8)
- **Data Analysis:** Image analysis - **ImageJ/Fiji**, data plotting - **GraphPad Prism**; beginner-level programming - **Python**, **RStudio** & **ImageJ Macros**; Protein structure analysis - **ChimeraX** & **PyMol**; Proteomic analysis - Gene Ontology (GO), Protein Pilot & MaxQuant
- **Technical Aptitude:** Proficient in BioRender; Microsoft Office (Word, PowerPoint, Excel, Teams, Outlook); Google Meet; Zoom

## Coursework background

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