

Sunita Sharma
Postdoctoral Research Associate
Department of Cellular Biology
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Education

Doctoral Research (Ph.D.) - Biotechnology **Aug 2018 - July 2023**
Jawaharlal Nehru University, New Delhi, India
Ph.D. Supervisor: Prof. Suneel Kateriya
Thesis title: Biochemical, cellular, and physiological characterization of LOV domain-containing proteins in *Chlamydomonas reinhardtii* and *Klebsormidium nitens*.

Bachelor of Education (B.Ed.) - Life Sciences **Jun 2015 - July 2017**
Chaudhary Devi Lal University, Sirsa, India
GPA: 69.5 percentile

Master of Science (M.Sc.) - Botany **May 2013 - Jun 2015**
Kurukshetra University, Kurukshetra, India
GPA: 79.2 percentile
Specialization: Plant pathology and the industrial importance of fungi.

Achievements:

- Qualified CSIR-NET (Life Sciences), ICAR-NET (Plant Biotechnology), and GATE (Life Sciences).
- Awarded with the University Gold Medal and the University Merit Award.

Bachelor of Science (B.Sc.) - Biotechnology **May 2010 - Jun 2013**
Kurukshetra University, Kurukshetra, India
GPA: 87.2 percentile
Specialization: Plant tissue culture.

Achievements: Awarded with PoSE Fellowship, Department of Science & Technology, India, for academic excellence.

Academic Employment

Post-Doctoral Research Associate - Cell Biology **Aug 2023 - Present**
University of Georgia, Athens, GA, USA

Currently focused on advancing postdoctoral research at the University of Georgia, exploring innovative approaches like Next-generation sequencing and CRISPR-CAS9 to study gene regulation in cilia.

- Conducted experiments on cell signaling pathways and genetic expression to develop new biotechnological methods.
- Presented research findings at various international conferences, contributing to the scientific community's understanding of biotechnological advancements.

Doctoral Research – Cell & Molecular Biology **Aug 2018 - July 2023**
Jawaharlal Nehru University, New Delhi, India

Led interdisciplinary research on ciliary signaling and photoreceptor biology using *Chlamydomonas reinhardtii* as a model. Investigated gene expression regulation, optogenetic control, and light-mediated cellular responses through a combination of molecular, genetic, and computational techniques. My work resulted in multiple high-impact publications and cultivated strong skills in scientific writing, collaboration, and peer review.

- Designed and executed complex molecular biology, protein chemistry, qPCR, protein purification, and live-cell imaging experiments.
- Conducted large-scale transcriptomic and genome-wide data analysis to identify regulatory pathways and gene function.
- Authored and revised manuscripts for peer-reviewed journals, collaborated on multi-author papers, and created high-quality scientific figures and graphics.
- Presented research findings at over 10 international and national conferences, including invited talks and poster sessions.
- Regularly contributed to journal clubs, internal seminars, and interdisciplinary project meetings.
- Actively engaged in **peer review activities** and contributed to public science communication.
- Mentored master's students, graduate researchers, and even faculty collaborators; provided guidance on grant writing, experimental planning, and manuscript development.

Assistant Professor - Botany
GDC Memorial College, Haryana, India

Aug 2015 – July 2016

Led undergraduate teaching and departmental responsibilities in Botany, combining classroom instruction with academic mentorship, student welfare, and institutional coordination. This multifaceted role developed my communication, leadership, and organizational abilities in both academic and administrative contexts.

- Taught undergraduate courses in plant biology; supervised laboratory practicals and assessments.
- Served as **class in-charge** and **hostel warden**, managing academic advising and student welfare.
- Led cultural activities and coordinated college events, fostering community building and student engagement.
- Took on administrative responsibilities including curriculum coordination and departmental reporting.
- Developed strong communication, mentoring, and leadership skills through close interaction with students and staff.

Science Communication & Peer Review Experience

2025 – Present

- **Review Editor** for Frontiers in Cell Death.
- **Peer Reviewer** for journals including Scientific Reports, Scientifica, *FEBS Letters*, *FEBS OpenBio*, *Journal of Biological Physics* (Springer), *British Journal of Biomedical Science*.
- **Reviewer**, IEEE CONECCT 2025 (International Conference on Electronics, Computing and Communication Technologies), 2025.
- **Reviewer**, ICRACS 2026 (International Conference on Recent Advances in Computer Science), 2026.
- **Reviewer**, ETAACT 2026 (International Conference on Emerging Trends in AI and Communication Technologies), 2026.
- **Contributing Writer**, *The POSTDOCKET*, National Postdoctoral Association
Upcoming article on “Scientific Storytelling” scheduled for the **November 2025 edition**.
- **Judge – Student Research Showcase Reviewer**, Sigma Xi, The Scientific Research Honor Society.
- **Reviewer**, Sigma Xi IFoRE 2025: Volunteering for asynchronous review of student abstract submissions.
- Contributed to **public-facing science writing**, transforming complex biological themes into accessible articles for diverse audiences.
- Regularly collaborate on **manuscripts, figure design, and publication strategy** with interdisciplinary research teams.
- Active member of science and postdoctoral communities advancing reviewer education, science policy, and visibility of underrepresented scientists:
 - *Sigma Xi – The Scientific Research Honor Society*
 - *National Postdoctoral Association (NPA)*
 - *Biophysical Society*
 - *American Society of Cell Biology*
 - *The Node Network*
 - *American Society of Microbiology*
 - *American Association for the Advancement of Science (AAAS)*

- *Cilia Group*

Honors and Awards

- **RayBiotech Innovative Research Grant Award (2025)** – Selected for funding through the 2025 Innovative Research Grant Program.
- **Travel Award**, Galaxy & Bioconductor Conference, Cold Spring Harbor Laboratory, USA (2025)
- **Best Researcher Award** (Academic/Industry), Fusion Awards 2025 (Certificate of Excellence), 2025.
- **HealthTech & Well-being Award**, IDEATHON 2025 – Florida International University, USA
- **Travel Award**, Federation of European Microbiological Societies (FEMS), Germany (2023)
- **Travel Award**, Science and Engineering Research Board (SERB), India – Biophysical Society, USA (2023)
- **Travel Award**, Council of Scientific and Industrial Research (CSIR), India – Biophysical Society, USA (2023)
- **Travel Award**, Chlamydomonas Meeting, USA (2023)
- **Best Poster Award**, SABCD International Conference, Jaipur, India (2022)
- **Best Poster Award**, INDO-US Flow Cytometry Workshop, Chandigarh, India (2020)
- **Gold Medal**, Late Dr. M.L. Bhambie Memorial Award, Kurukshetra University (2018)
- **University Merit Award**, Kurukshetra University (2015)
- **PoSE Fellowship**, Department of Science & Technology, India – Awarded for academic excellence during B.Sc. (2010–2013)

Other National or International Professional Experience

Conferences and workshops attended:

- ASCB 2025 (American Society for Cell Biology Annual Meeting), Philadelphia, USA (Poster Presentation).
- IDEATHON 2025 organized by SCRS USA Center at Florida International University (FIU), USA.
- GBCC 2025 (**Galaxy & Bioconductor Conference**), **Cold Spring Harbor Laboratory, USA** (Poster Presentation and Light talk presented).
- 67th Annual Meeting of the Biophysical Society, San Diego, USA, February 2023.
- Federation of European Microbiological Society (FEMS 2023), Europe, July 2023.
- STREE 2020 National Conference & Expo, Jawaharlal Nehru University, New Delhi, India, November, 2022 (Poster Presentation).
- Analysis and Interpretation of NGS data in Clinic, GeneSpectrum Life Sciences, February 2025.
- 44th Indian Biophysical Society Meeting (IBS 2022), Navi Mumbai, March 2022 (Poster Presentation).
- GEM Biological TEM Workshop, Georgia Electron Microscopy, University of Georgia, USA (January 2026)
- Introduction to RNA-seq and Functional Interpretation Workshop, EMBL & European Bioinformatics Institute, UK, February 2024.
- International Conference on Advances in Smart Agriculture and Biodiversity Conservation (SABCD-2022), Jaipur, , India, March 2022.
- Understanding of Light Microscopy for Biological Applications and Advances in Confocal Microscopy, workshop organized by Jawaharlal Nehru University, New Delhi, India.
- Basics of Image Analysis with NIS Elements, one-day workshop organized by Jawaharlal Nehru University, New Delhi.
- Basics of Combined Confocal Raman-AFM System and Its Research, workshop organized by Jawaharlal Nehru University, New Delhi, India.
- Time Resolved Fluorescence Spectroscopy and Its Applications, workshop organized by Jawaharlal Nehru University, New Delhi, India.
- Flow Cytometry Workshop, Live Education Task Force, International Society for Advancement of Cytometry, Panjab University, Punjab, India, February 2020 (Poster Presentation and scientific training).
- Molecular Breeding and Plant Tissue Culture Approaches for Crop Improvement, Haryana Agriculture University, Haryana, India, 2018 (Poster Presentation).
- Molecular Docking & Biomolecular Interactions, Pathfinder Research and Training Foundation, New Delhi, India, 2018.

- Advanced Confocal Microscopy & Its Applications, Jawaharlal Nehru University, New Delhi, India, 2018.

Professional Memberships & Service:

- **Associate Member, Science Communication, Outreach, and Public Engagement (SCOPE) Committee**, American Society for Cell Biology (ASCB), 2025-present.
- **Member, Public Policy Committee**, American Society for Cell Biology (ASCB), 2025-present.
- **Member, LGBTQ+ STEM Community** (engaged in diversity and inclusion initiatives in science), American Society for Cell Biology (ASCB), 2025-present.
- **National Postdoctoral Association Research and Development Committee Member**, (2025–Present) Contribute to initiatives supporting postdoctoral career development, training resources, and professional growth opportunities.
- **National Postdoctoral Association Advocacy Committee Member**, (2025–Present) Engage in advocacy efforts to improve postdoctoral policies, promote community engagement, and advance institutional and federal support for postdoctoral scholars.
- **Postdoctoral Association Member**, University of Georgia (2024–Present) Active participant in postdoctoral career development, advocacy, and community engagement events.
- **Project SHORT Mentor, 2025–Present** – Provide career guidance, application support, and mentorship to undergraduate and graduate students pursuing higher education and research opportunities in microbiology and related life sciences. Support includes CV review, interview preparation, and professional development advice, with an emphasis on equitable access for underrepresented students.
- **Member, Women's Harassment Cell**, Jawaharlal Nehru University (2019–2023) Contributed to campus initiatives promoting gender safety, awareness campaigns, and policy discussions on equity and harassment prevention.
- **Volunteer Member**, National Service Scheme (NSS), Kurukshetra University (2011–2013) Engaged in rural outreach, health awareness programs, and community service activities.
- **Member, Life Sciences Society & Chemical Society**, Kurukshetra University (2010–2013) Participated in student-led academic and scientific events, symposiums, and science outreach programs.

Publications

- Deraniyagala A., **Sharma S.** et al. Importin-9 and a TPR domain protein Mph drive periodic patterning of ciliary arrays in Tetrahymena. *J Cell Biol.*, 2025.
- Manisha, **Sharma, S.** et al. Ancient intraflagellar transport machinery controls unique spatial distribution of phototropin in an evolutionary important non-flagellated vegetative stage of terrestrial alga. *bioRxiv* 2026.02.05.698958 (2026) doi:10.64898/2026.02.05.698958.
- Sushmita, K., **Sharma, S.**, Singh, R. & Kateriya, S. The protein turnover and trafficking of Chlamyopsin6 is regulated by IFT88 and IFT52 in the Chlamydomonas reinhardtii. *bioRxiv* 2025.12.11.693822 (2025) doi:10.64898/2025.12.11.693822.
- **Sharma S.** et al. Phototropin localization and interactions regulate photophysiological processes in Chlamydomonas reinhardtii. *Biochimie* (2025).
- **Sharma S.** et al. Unusual photodynamic characteristics of the light-oxygen-voltage domain of phototropin linked to terrestrial adaptation of Klebsormidium nitens. *FEBS J* 291, 5156-5176, 2024.
- **Sharma S.** et al. Modulation of Phototropin Signalosome with Artificial Illumination Holds Great Potential in the Development of Climate-Smart Crops. *Curr. Genomics*, 2021.
- Sanyal S. K., **Sharma S.** et al. Characterization of Chlamydomonas voltage-gated calcium channel and its interaction with photoreceptor support VGCC modulated photobehavioral response in the green alga. *Int. J. Biol. Macromol.*, 2023. s
- Sushmita K., **Sharma S.** et al. Algal rhodopsins encoding diverse signal sequences holds potential for expansion of organelle optogenetics. *Biophys. Physicobiology*, e201008, 2023.
- Sanyal S. K., **Sharma S.** et al. Role of calcium sensor protein module CBL-CIPK in abiotic stress and light signaling responses in green algae. *Int. J. Biol. Macromol.*, 2023.
- Tashiro R., **Sharma S.** et al. Specific residues in the cytoplasmic domain modulate photocurrent kinetics of channelrhodopsin from Klebsormidium nitens. *Commun. Biol.*, 2021.

- Sharma H., **Sharma S.** et al. Medicinal Plants Are a Role in Human Health Diseases and the Isolation of Phytochemicals Through Various Methods. *Int. J. Agric. Sci. Res.*, 2022.
- **Sharma S.** et al. Molecular characterization of phototropin signalosome regulating photophysiological processes in green algae. *Biophys J*, 2023.
- Pandey, H., **Sharma S.** et al. Interventions of plant tissue culture techniques and genome editing in medicinally important spice crops. *Medicinal Plant Biology* 4, (2025).
- Jha R., **Sharma S.** et al. Unlocking the Potential of Composting: Strategies for Organic Waste Management and Soil Health Enhancement. 2026 [cited 2026 Jan 22];347–70. Available from: https://link.springer.com/chapter/10.1007/978-3-032-05302-2_14
- Dutta P., **Sharma S.** et al. Cart KNN: A hybrid distance-based pre-pruned classification and regression method for the early diagnosis of Alzheimer’s disease. *Sigma Journal of Engineering and Natural Sciences* 43, 1484–1494 (2025).

Patents and Books

- Book published in 2025- “Precision Cilia Biology - Merging Artificial Intelligence and Genome Editing”
- UK design patent (Design No. 6438412, April 2025) for gene-editing laboratory equipment aimed at advancing cilia-related disorder research