

**PROFESSIONAL RESEARCH EXPERIENCES:**

- **Postdoctoral Scholar** (06/2020- Present), *Chemical and Systems Biology, School of Medicine, Stanford University, Stanford, CA, US*
- **Junior Research Fellow** (09/2020 –08/2021), *Shiv Nadar Institution of Eminence, Delhi-NCR, India*
- **Junior Research Fellow** (03/2016 – 07/2019), *National Centre for Cell Science, Pune, India*
- **Project Assistant** (08/2014 – 08/2015), *National Brain Research Centre, Manesar, India*

**EDUCATION:**

- **PhD in Life Sciences** (08/2021 – 03/2025), 'Deciphering the Functional Dichotomy of Glucose-6-phosphate Dehydrogenase in Neuroinflammation for Therapeutics Development', *Shiv Nadar Institution of Eminence, Delhi-NCR, India*
- **M.Sc. in Biophysics and Molecular Biology** (08/2012 – 08/2014), *University of Calcutta, Kolkata, India*
- **B.Sc. Honours in Physiology** (07/2009 – 07/2012), *Presidency college, University of Calcutta, Kolkata, India*

**POSTGRADUATE PROJECTS:**

- **M.Sc Term paper** (04/2014 – 06/2014), 'Neural Stem Cells are the potential target for the recovery of neurodegenerative disease and CNS injury', *Department of Biophysics and Molecular Biology, University of Calcutta*
- **Summer Research** (06/2013 – 08/2013), 'Characterization of the efficacy of RNAi against XRN1 and MOV10, involve in miRNA function in neurons', *National Brain Research Centre, India*
- **M.Sc short term project** (04/2013 – 05/2013), 'Identification of sequence homology in different antitoxin molecules across the bacterial species', *Department of Biophysics and Molecular Biology, University of Calcutta*

**RESEARCH SKILLS AND EXPERTISE:****Cell cultures and assays**

- Establishment of Glioma Stem Cell cultures (GSCs) and primary cultures from patients. Neural stem cells (NSCs), 3D neurosphere culture, microglia culture and other cell lines culture and maintenance.
- Primary neuron and glia culture from E18 pup's (Rat/Mice) hippocampus and cortex respectively.
- PBMC isolation from blood.
- Live cell imaging, cell proliferation, phagocytosis and migration assay.
- Flow cytometry cells and exosomes (Dual Color).

**Microscopy**

- Confocal Imaging (Nikon, Leica and Zeiss), Super-resolution microscopy (dSTORM ONI), and Exosome preparation for TEM.

**In-silico analysis**

- ImageJ; Promoter mapping; Enrich KG; Graphical representation and statistical analysis by GraphPad.

**Molecular Biology techniques**

- Synaptoneurosome preparation; Polyribosome fractionation; shRNA cloning and RNAi; gRNA cloning and CRISPRcas9-mediated indel mutation; Immunocytochemistry of Cell and Tissue; Fluorescence In-Situ Hybridization (FISH) and Immuno-FISH; Exosome isolation and characterization; Developed a novel labelling method for Extracellular vesicles (EVs) for the visualization and tracking of EVs in recipient cells; Western blotting and ELISA; RNA isolation, cDNA synthesis and Real-time PCR.

## Animal work

- Xenograft transplantation in SCID mice brain for *in-vivo* luciferase imaging and Tumorigenicity assay; Stereotaxic intracerebral cannula implantation; Matrigel plug angiogenesis assay in SCID mice.

## AWARDS:

- 2023- Young Researcher Award for best oral presentation at NBRCOM 2023, Society of Young Biomedical Scientists (SYBS), India
- 2018- EMBO travel grant for attending “Extracellular vesicles: from biology to biomedical applications”, EMBL Heidelberg, Germany
- 2018- EMBO best poster presentation award (April 2018), EMBL Heidelberg, Germany
- 2014- All India rank 29 in Council of Scientific & Industrial Research (CSIR) National eligibility test for Lectureship.

## ORGANIZATIONS:

- 2024- Volunteer for ‘Genomic India Conference’, Shiv Nadar Institution of Eminence, Delhi-NCR, India
- 2013- Organizer and volunteer, ‘Alumni meeting, Department of Biophysics and Molecular Biology’, University of Calcutta, Kolkata, India
- 2013- Volunteer for ‘UGC-DSA funded National Seminar on “Advances in Molecular Regulation’, Kolkata, India.
- 2010-2011- Volunteer for ‘National Service Scheme’, Presidency College, Kolkata, India

## PUBLICATIONS AND PATENT:

- **Mondal A**, Mukherjee S, Upadhyay P, Saxena I, Pati S, Singh S, “Enhancing NADPH to Restore Redox Homeostasis and Lysosomal Function in G6PD-Deficient Microglia”. Heliyon, 2025 Feb 15; DOI: 10.1016/j.heliyon.2025.e42735
- **Mondal A**, Munan S, Saxena I, Mukherjee S, Upadhyay P, Gupta N, Dar W, Samanta A, Singh S, Pati S. G6PD deficiency mediated impairment of iNOS and lysosomal acidification affecting phagocytotic clearance in microglia in response to SARS-CoV-2. Biochim Biophys Acta Mol Basis Dis. 2024 Jul 27;1870(7):167444. doi: 10.1016/j.bbadis.2024.167444
- Munan S, **Mondal A**, Singh S, Pati S, Samanta A. A Unique strategy for probing in-situ NO for screening the neuroinflammatory phenotypes against SARS-CoV-2 RNA in phagocytotic microglia. Analytical Chemistry 2024 96 (19), 7479-7486 DOI: 10.1021/acs.analchem.3c05981.
- Chakrabarti A, Bansal R, **Mondal A**, Upadhyay P, Gupta A, Verma P, Garg S, Pati S & Singh S (2023), Epithelial Homelessness: An Atypical form of Anoikis Triggered by Leishmania Interaction with Epithelial Cells, Future Microbiology, 19:1, 33-49, DOI: 10.2217/fmb-2023-0004.
- “A Unique Development Strategy for Lysosome Specific Nitric Oxide Probe for Neuroinflammation and Application thereof”, Animesh Samanta, Subrata Munan, Soumya Pati, **Abir Mondal**, and Shailja Singh; Patent filed; Application number: 202311040064 dt. June 12, 2023.
- **Mondal A**, Mukherjee S, Dar W, Upadhyay P, Ranganathan A, Pati S, Singh S. G6PD deficiency: imbalance of functional dichotomy contributing to the severity of COVID-19. Future Microbiol. 2022 Jul 26. doi: 10.2217/fmb-2021-0299. PMID: 35880537.
- Singh DK, Shivalingappa PKM, Sharma A, **Mondal A**, Muzumdar D, Shiras A, Bapat SA. NSG-70, a new glioblastoma cell line with mixed proneural-mesenchymal features, associates NOTCH1-WNT5A signaling with stem cell maintenance and angiogenesis. J Neurooncol. 2022 May;157(3):575-591. doi: 10.1007/s11060-022-04002-x. Epub 2022 Apr 17. PMID: 35430703.

- **Mondal A**, Mukherjee S, Dar W, Singh S, Pati S. Role of glucose 6-phosphate dehydrogenase (G6PD) deficiency and its association to Autism Spectrum Disorders. *Biochim Biophys Acta Mol Basis Dis.* 2021 Jun 1:166185. doi: 10.1016/j.bbadis.2021.166185.
- Shiras A, **Mondal A\***. Extrachromosomal DNA: Redefining the pathogenesis of glioblastoma. *Biochim Biophys Acta Rev Cancer.* 2021 Apr 20; 1876(1):188551. doi: 10.1016/j.bbcan.2021.188551.
- **Mondal A**, Ashiq KA, Phulpagar P, Singh D K and Shiras A, "Effective Visualization and Easy Tracking of Extracellular Vesicles in Glioma Cells", *Biological Procedure Online*, 2019, DOI: 10.1186/s12575-019-0092-2. •
- Panda S, Setia M, Kaur N, Shepal V, Aurora V, Singh D K, **Mondal A**, Teli A, Tathode M, Gajula R, Padhy L C and Shiras A, "Noncoding RNA Glnr Functions as an Oncogene by Associating with Centrosomal Proteins", *Plos Biology*, 2018, <https://doi.org/10.1371/journal.pbio.2004204> .
- Singh D K, **Mondal A** and Shiras A "Challenges In Glioblastoma Biology And Implications In Personalized Therapy"; Review, *International Journal of Neurooncology*, 2018, Volume 1, Issue 1, Page:17-24, DOI:10.4103/IJNO.IJNO\_7\_18.
- Sharma A, Bendre A, **Mondal A**, Muzumdar D, Goel N and Shiras A "Angiogenic Gene Signature derived from Subtype Specific Cell Models Segregate Pro-neural and Mesenchymal Glioblastoma", *Frontiers in Oncology*, 2017, doi: 10.3389/fonc.2017.00146.
- **Mondal A**, Singh D K, Panda S and Shiras A, "Extracellular Vesicles as modulators of Tumour Microenvironment and Disease Progression in Glioma"; Review, *Frontiers in Oncology*, 2017, doi: 10.3389/fonc.2017.00144