

## Sharath Mohan Bhat

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### Summary

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As a PhD-trained researcher, I bring over five years of hands-on academic experience at the intersection of cancer biology, medical biochemistry, and systems-level approaches to biochemical research. My work spans both discovery and application, with practical expertise in 3D cell culture models, gene transfer technologies, fluorescent imaging and more. I am well versed with multi omics-based workflows including RNA sequencing, mass spectrometry and bioinformatics. Whether engineering cell lines or interpreting complex datasets, I'm driven by the challenge of translating science into solutions.



### Skills

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- **Biochemistry:** Thin layer chromatography, spectrophotometry and fluorometry, enzyme kinetic assay, **biochemical assays**, Quality control, inborn errors in metabolism, laboratory management.
- **Cell Biology:** Bacterial culture, mammalian cell-culture (**primary endothelial cells**, MCF-7, MDA-MB-231, MCF-10A, HepG2, HUVEC, Hek293T, HaCaT), 3D **spheroids** and **organoids** (monocellular and multicellular), **transfection** (viral and non-viral), transduction, transformation, proliferation, migration and cell-cycle analysis.
- **Molecular Biology:** Haematoxylin and Eosin staining, PCR, **Immunocytochemistry**, **immunoblotting**, flow-cytometry, **fluorescent microscopy**, **confocal microscopy**, Luciferase reporter assay, **gene cloning**, bisulphite conversion and sequencing, **RNA sequencing**, Illumina hi-Seq, sanger sequencing, **Mass spectrometry-based metabolomics**, HPLC, cryo-sectioning, laser based micro-dissection, metabolic analysis using Seahorse.
- **Animal Handling:** Disease model development (Alzheimer's disease, type-II diabetes, type-I diabetes), **Intra-cerebro-ventricular-** (stereotaxic apparatus), intravenous-, intra-peritoneal- and oral- injection, **organ retrieval**, sepsis induction by caecal ligation, **behavioural tests** in rats.
- **Bioinformatics:** Primer designing, **R programming**, **transcriptomics** analysis, **metabolomics** analysis, pathway enrichment analysis, **network** analysis, statistical analysis using GraphPad, **CellProfiler**, **ImageJ**.

## Additional Skills

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- **Teaching and Mentorship:** Conducted practical sessions for MBBS and BDS students. Guided 7 undergraduates and post graduate student research projects focusing on cell and molecular biology, systems biology and 3D bioprinting.
- **Scientific committee member:** Actively participated in organizing and hosting national and international conferences on diverse themes of biology.
- **Laboratory management:** Well trained in maintaining research laboratory records, ensuring documentation of records and maintenance of monthly and yearly reports.
- **Grant Writing:** Experienced in drafting and submitting grant proposals for funding agencies.
- **Ethical proposal and Patent filing:** Well trained in drafting ethical forms to obtain clearance for animal and human ethics. Experienced with Intellectual property filing and have already filed an IP.
- **Collaborative research:** Highly motivated to conduct interdisciplinary research and collaborated various medical colleges and life science institutions and secured publications.



## Experience

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### PhD Research Scholar

#### Manipal School of Life Sciences – Manipal Academy of Higher Education, Manipal

(December 2019-Present)

- Conceived and developed a novel approach to **DNA data storage and DNA computing**, integrating synthetic biology with digital information systems.
- Isolated and characterized **endothelial cells from breast tumor and normal tissues** using **MACS and FACS**, contributing to personalized profiling of tumor microenvironments.
- Established primary **endothelial cell lines from human umbilical cords** for use in vascular biology and drug response studies.
- Conducted **metabolomics profiling** of tumor vs. normal endothelial cells to identify differentially regulated metabolites and pathways.

- Collaborated on a clinical study investigating **cytokine signaling cascades** in breast cancer patients, linking biomarker levels to downstream translational changes in protein expression.
- Supervised and guided **7 undergraduate and 2 postgraduate research projects** focused on molecular and cell biology techniques.
- Conducted **biochemistry laboratory sessions** for MBBS and BDS students, enhancing student understanding of core biochemical principles.
- Partnered with engineering teams to prototype **bio-integrated solar panels** using photosynthetic materials.



## Education

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| Degree         | Year | University                          | Subject                                     | Grade   |
|----------------|------|-------------------------------------|---------------------------------------------|---------|
| PhD            | 2025 | Manipal Academy of Higher Education | Ageing research                             | ongoing |
| Master's       | 2019 | Manipal Academy of Higher Education | Medical Biochemistry                        | 8.15/10 |
| Bachelor's     | 2017 | Bangalore University                | Chemistry, Botany and Zoology               | 8.37/10 |
| Pre-University | 2014 | Pre-University Education, Karnataka | Physics, Chemistry, Mathematics and Biology | 84%     |



## Publications

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- Bhat, S.M., Simha, N.L., Hegde, S., Joshi, M.B. (2025). Chromatin Remodeling in Cervical Tumor Cells Regulates Proangiogenic Genes. *Epigenetics of Cervical Cancer*. Springer, [https://doi.org/10.1007/978-981-96-3985-4\\_6](https://doi.org/10.1007/978-981-96-3985-4_6).
- Bhat, S. M., Prasad, P. R., & Joshi, M. B. (2023). Novel insights into DNA methylation-based epigenetic regulation of breast tumor angiogenesis. *International review of cell and molecular biology*, 380, 63–96. <https://doi.org/10.1016/bs.ircmb.2023.04.002>.
- Hegde, M., Bhat, S. M., Guruprasad, K. P., Moka, R., Ramachandra, L., Satyamoorthy, K., & Joshi, M. B. (2022). Human breast tumor derived endothelial cells exhibit distinct

biological properties. *Biology of the cell*, 114(2), 73–85.  
<https://doi.org/10.1111/boc.202100015>.

- Bhat, S. M., Badiger, V. A., Vasishta, S., Chakraborty, J., Prasad, S., Ghosh, S., & Joshi, M. B. (2021). 3D tumor angiogenesis models: recent advances and challenges. *Journal of cancer research and clinical oncology*, 147(12), 3477–3494.  
<https://doi.org/10.1007/s00432-021-03814-0>.



## References

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