Litralson Eluvathingal

litralsoner@gmail.com

❖ Education:

Graduated with first class from **Indian Institute of Science (IISc), Bengaluru, India**

- Master of Science Biology (2019-2020)
- Bachelor of Science (Research) Biology (2015-2019)

❖ Work Experience:

1. Science Gallery Bengaluru - Mediator for CARBON season

- Part-time from June 2023 – 15th June 2024
- Full-time from 15th June 2024 – 14th July 2024
- **Researching and learning** about 36 different exhibits that cover various disciplines like social science, ecology, material science, biology, particle physics, mining, meteorology, and more.
- Gained experience in communicating diverse scientific topics related to carbon with visitors of different age categories and backgrounds.
- **Managing, planning, and conducting walk-throughs** for large groups of people from school/college students to working professionals/executives.

❖ Research Experience:

1. Physics of Life & Microbiology (August 2023 – August 2024):

TIFR-NCBS, Bengaluru: Research Intern | Advisor: Dr Shashi Thutupalli

- Studied how cells optimise energy expenditure while exploring for resources in a nutrient deficient environment.
- **Developed liquid cultures** of Slime Mold (*Physarum polycephalum*). Studied how to monitor different parameters like extracellular pH, optical density, absorption spectra, and membrane integrity to optimise cell growth.
- Conducted a **training session** for the Science Gallery mediators on 10th August 2024, where I explained the experiment, the biology and physics behind how Slime Molds form optimised networks without a central planning system.

2. Biophysics & Molecular Dynamics Simulations (May 2022 - March 2023)

CSIR-IGIB, New Delhi: Project Associate (JRF) | Advisor: Dr Lipi Thukral

- Worked on **large-scale molecular dynamics simulations** of protein-membrane systems that aimed to improve our understanding of macroautophagy, a process that helps to remove waste materials from cells.
- **Developed Python scripts** to generate different membrane structures and scripts to **analyse the simulation results**.

3. Simulations, Cell Biology, & Super-resolution Microscopy (2019-2020)

Centre for Neuroscience (CNS), IISc: Master's Thesis | Advisor: Dr Deepak Nair

"Analysing Notch1 Distribution in Heterologous Cell lines using Super-Resolution Microscopy and Monte Carlo Simulations"

- Used **Super-Resolution Microscopy (STORM)** to map out the Notch-1 distribution on a cell membrane and quantified its properties. Then simulated the Notch-1 distribution on a cell membrane using a **reaction-diffusion model** and analysed how that affected the signalling dynamics.

4. Cell Biology & Super-resolution Microscopy (2018-19)

CNS, IISc: Bachelor's Thesis| Advisor: Dr Deepak Nair

"Nanoscale Mapping of Mitochondrial Topography in Heterologous Cell Lines".

- Quantifying mitochondrial volume in Neuro-2a cells using **Super-resolution microscopy (SRRF) and 3-D rendering** at different levels of expression of SIRT3.
- This project involved designing primers, plasmid cloning, CRISPRi, plasmid transfection, immunocytochemistry, and image processing.

5. Cell Biology & Super-resolution Microscopy (2018-21)

CNS & Department of Microbiology and Cell Biology (MCB), IISc | Advisors: Dr Deepak Nair, Dr Subba Rao
Collaborator: Dr Sarmistha Mahanty

- *Mahanty, S., Bergam, P., Belapurkar, V., Eluvathingal, L., Gupta, N., Goud, B., ... & Setty, S. R. G. (2024). Biogenesis of specialized lysosomes in differentiated keratinocytes relies on close apposition with the Golgi apparatus. Cell Death & Disease, 15(7), 496.*
- **DOI: https://doi.org/10.1038/s41419-024-06710-w**
- Involved in image acquisition and 3D rendering of organelles. This involved microscopy techniques like SRRF (Super Resolution and Radial Fluctuations) and SIM (Structured Illumination Microscopy).

❖ Skills & Tools:

- **Public Engagement**: Public Lecturing & Mediation
- **Microsoft Office:** Word, PowerPoint, Excel.
- **Google Workspace:** Docs, Slides, Sheets, Forms.
- **Microscopy**: Super-resolution microscopy (SRRF, SIM, STORM), Confocal Imaging, Widefield Microscopy.
- **Image analysis***:* Using FIJI (ImageJ), Metamorph
- **Programming**: Python, R
- **Machine Learning** and **Deep Learning**
- **Scientific computational Tools**: R, Cell Blender, GROMACS (Molecular Dynamics Simulations).
- **Microbiology:** Culturing bacteria, slime molds
- **Molecular Biology:** PCR, Cloning, CRISPRi, Western Blot, Protein Purification
- **Mathematical Modelling:** Population Dynamics, Reaction-diffusion systems.

❖ Fellowships:

- Graduate Aptitude Test in Engineering (**GATE 2022**), Ecology and Evolution (EY) - qualified with **rank 6**.
- Joint **CSIR-UGC** National Eligibility Test (**NET**) for **Junior Research Fellowship** in Life Sciences - qualified in 2020 with **rank 71**.
- Kishore Vaigyanik Protsahan Yojana (**KVPY - SB**) Fellow - qualified with **rank 6** in the nationwide exam, a fellow from 2014 – 2020.

❖ Additional Information

Languages **:** English, Malayalam, Hindi

Hobbies : Football, Reading, Birding, Photography