



DHEERAJ SONAGARA

Research Scholar

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Interest

To explore the neural basis of memory formation and engram theory through an integrative approach combining electrophysiology, transcriptomics, and behavioral neuroscience.

WORK EXPERIENCE

- **Research Scholar (*September 2021– Present*)**
National Centre for Biological Sciences, Bangalore
 - Investigating pyramidal neuron subtypes in the adult mouse hippocampus.
 - Combining electrophysiology (patch clamp), single-cell RNA sequencing, and behavioral assays to study neuronal subtypes.
 - Using chemogenetics and viral injections for targeted neuronal manipulation.
- **Research Scholar (*December 2018 – September 2021*)**
National Centre for Biological Sciences, Bengaluru, India
 - Studied amygdalar dysfunction in Fragile X Syndrome and the role of astrocytic glutamate uptake in stress.
 - Conducted patch-clamp recordings, auditory fear conditioning, and chronic stress paradigms in rodent models.
- **Industry Experience (*July 2014 – December 2014*)**
CIPLA, Pithampur, India

Education

- Bachelor of Science –Biotechnology (*July 2015 - 2018*)
Choithram College of Professional Studies, Indore

TECHNICAL SKILLS

- Electrophysiology & Imaging
 - Whole-cell patch clamp (brain slices & cultured neurons)
 - In vitro calcium imaging
 - Confocal & fluorescence microscopy
 - Morphological analysis (Sholl's analysis using Neurolucida)
- Molecular & Cellular Biology
 - Immunofluorescence, western blotting, qPCR
 - FACS & MACS for cell sorting
 - Neuronal & HEK cell culture, viral production, transfection
- Animal Handling & Behavioral Neuroscience
 - Mouse & rat handling, breeding, genotyping (PCR, gel electrophoresis)
 - Stereotaxic viral injections, perfusion, brain slicing
 - Behavioral assays: **OFT, EPM, Y-maze, NOR, NLR, contextual & auditory fear conditioning**
- Genomics & Bioinformatics
 - Single-cell RNA sequencing, bulk RNA sequencing
- Computational & Data Analysis
 - Python, including **electrophysiology, single-cell analysis**
 - Software: **ImageJ, Imaris, FlowJo, Leica SP8, AnyMaze, BD FACSDiva**

PUBLICATIONS

- **Fernandes et al., 2021** – Correction of Amygdalar Dysfunction in a Rat Model of Fragile X Syndrome. *Cell Reports*, 37, 109805
[DOI Link](#)

TEACHING & PRESENTATIONS

- Teaching Assistant, 2 Years, Neuroscience Course, NCBS
- Presented at **NGN25 (No Garland Neuroscience), IISER TVM**