CURRICULUM VITAE

Meenakshi Prabod Kumar

PhD

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Academics:

2015 – 2022	PhD in Neuroscience at Indian Institute of Science, Bangalore - 560012. Advisor: Prof. Balaji Jayaprakash (Neurodynamics Lab, Centre for Neuroscience) Thesis title: Optical and behavioural tools to investigate the neural correlates of learning and memory.
2012 – 2015	MS in Biological Science at Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore – 560054. Advisor: Prof. MRS Rao (Chromatin Biology Lab, Molecular Biology and Genetics Unit) MS thesis title: Regulation of SOX8 gene by mrhl RNA in mouse spermatogonial cells.
2009 – 2012	BSc in Biotechnology, Chemistry, Botany at Christ University, Bangalore – 560029. Secured 86.5% and graduated with first-class with distinction.

Technical expertise:

Basic molecular biology techniques: Cloning, gel electrophoresis, SDS-PAGE, western blot, DNA/RNA isolation, PCR, immunofluorescence.

Tissue culture: Mammalian cell culture (N2a, HEK293T, GC1-spg cell lines), virus production (adeno-associated virus, gamma-retrovirus).

Craniotomy: Cranial window implantation for *in vivo* imaging.

Small animal care and behaviour: Transgenic mouse colony maintenance, mouse handling, training mice in contextual fear conditioning, and Morris water maze.

Imaging: Fluorescence microscopy, *in vivo* two-photon microscopy.

Coding: Java (Image J) and Labtalk (Origin) for image and data analysis

GitHub link: https://github.com/meenakshiprabodkumar

Instrumentation: FreeCAD, Arduino based controllers, Stepper motor-based positioning stages, custom built two photon microscopy setup, optical instrumentation, and setup.

Publications:

1. **P. Meenakshi** and J. Balaji. "Neural Circuits of Memory Consolidation and Generalisation." *Journal of the Indian Institute of Science* (2017): 1-9.

2. **P. Meenakshi,** Kumar S. and J. Balaji. “In vivo imaging of immediate early gene expression dynamics segregates neuronal ensemble of memories of dual events.” *Mol Brain* 14, 102 (2021). https://doi.org/10.1186/s13041-021-00798-3

3. **P. Meenakshi**, Mehrotra D., Nruthyathi, Almeida-Filho D., Lee Y. S., Silva A. and Balaji J. “Novel measures of Morris water maze performance that use vector field maps to assess accuracy, uncertainty, and intention of navigational searches.” *Hippocampus* (2022). https://doi.org/10.1002/hipo.23404

Talks:

1. “Novel measures of Morris water maze performance that uses vector field maps to assess accuracy, uncertainty, and intention of navigational searches” - 5-minute short talk at the 2021 MCCS Virtual Symposium.

2. “In vivo imaging of immediate early gene expression dynamics identifies and segregates neuronal ensembles of multiple memories” - Poster shortlisted for a long form presentation at FCS 2021 hosted by IISER Thiruvananthapuram and RGCB, Thiruvananthapuram.
3. “In vivo imaging of immediate early gene expression dynamics segregates neuronal ensemble of memories of dual events” - Lightning talks at Synapse 2021: Neuroscience Symposium conducted by IISER Tirupati and IISER Thiruvananthapuram.

Poster presentations:

1. [P. Meenakshi, D. Mehrotra, N. Nruthyathi, Y.S. Lee and J. Balaji]. [Vector maps of flow is sensitive in determining the centre of intended search, uncertainty surrounding the search and the absolute error associated with the spatial memory in water maze]. 2019 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2019. Online. (As first and presenting author.)

2. [P. Meenakshi, S. Kumar, and J. Balaji]. [An In vivo approach to identify and segregate neuronal ensembles of multiple memories using temporal expression dynamics of a single immediate early gene]. Program No. 709.20. 2017 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2017. Online. (As first and presenting author.)

3. [S. Kumar, P. Meenakshi and J. Balaji]. [Beta imaging: Fluorescence Saturation dynamics-based parameter generates contrast within dendrites in vivo]. Program No. 709.23. 2017 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2017. Online.

4. P. Meenakshi, S. Kumar, A. Dutta, Y. Kaushik, J. Balaji. Spatially correlated spine loss during subsequent memory acquisition with spines gained during novel learning encodes related information. Poster session presented at: Neuronal Circuits. 2022, 16-19 March; Cold Spring Harbor, NY.

Awards:

1. Mihir Chowdhary Student Fellowship: Won joint first prize of Rs.1-lakh travel grant for a 5-min short talk among 81 participants.

2. First prize winner in Lightning Talks at Synapse 2021: Neuroscience Symposium. Won first prize in 5-minute short talk among 20 presentations.

3. CSIR-JRF-NET (Junior Research Fellowship/Lectureship): June 2014. Secured a rank of 27 in Life Science, through a nationwide test organized by Council of Scientific and Industrial Research in India.

4. GATE (Graduate Aptitude Test in Engineering): 2015. Secured a rank of 222 in Life Science, through a nationwide test organized by Ministry of Human Resource Development in India.

Teaching experience:

1. Teaching assistant for two lab practical undergraduate courses on "Neuroanatomy" and "Microscopy".

2. Teaching assistant for the online courses "Learning about learning" and "Optical Spectroscopy and Microscopy" taught by Dr. Balaji Jayaprakash as part SWAYAM programme initiative by the Government of India, through the national coordinator National Programme on Technology Enhanced Learning (NPTEL).

3. Supervised project-assistants and interns carrying out short-term projects in the lab.

Referees:

1. Prof. Balaji Jayaprakash, Associate Professor, Centre for Neuroscience, Indian Institute of Science, Bangalore; Contact: jbalaji@iisc.ac.in, Office: (+91)-80-2293-3049.

2. Prof. Rishikesh Narayanan, Professor, Molecular Biophysics Unit, Indian Institute of Science, Bangalore; Contact: rishi@iisc.ac.in, Office: (+91)-80-2293-3372.