

Tapping into worm conversations; How Extracellular vesicles aid in the transfer of long-term associative memory between *Caenorhabditis elegans*

Native preference and behaviour in organisms can be modified through learning. *Caenorhabditis elegans* has been proven to be an extremely important model system to study behavioural plasticity. In this study, we have looked at long-term associative memory (LTAM) in *C. elegans* by training them using two cues – the chemoattractant isoamyl alcohol (IAA) and heat as the repulsive cue. This training method results in LTAM formation, observed in the form of loss of attraction from IAA, lasting for up to 24 hours. This talk will propose a novel mechanism by which memory from one *C. elegans* is taken up by other animals through environmentally released extracellular vesicles (EVs). This uptake of EVs induces aversive learning in worms without any prior training. Hence, in this study, we challenge the existing dogma that memory is internal and report that LTAM may be released by trained *C. elegans* and taken up by untrained animals.

Recent Publications:

1. Hilal Ahmad Reshi, Raghavender Medishetti, Aishwarya Ahuja, Deepa Balasubramanian, **Kavita Babu**, Manish Jaiswal, Kiranam Chatti, and Subbareddy Maddika ©; EYA protein complex is required for Wntless retrograde trafficking from endosomes to golgi. *Developmental Cell* 2024 Sep 23; 59(18): 2443-59. [https://www.cell.com/developmental-cell/fulltext/S1534-5807\(24\)00339-3](https://www.cell.com/developmental-cell/fulltext/S1534-5807(24)00339-3)
2. Pratima Pandey*©, Anuradha Singh*, Harjot Kaur, Anindya Ghosh-Roy and **Kavita Babu**©; Increased dopaminergic neurotransmission results in ethanol dependent sedative behaviors in *Caenorhabditis elegans*. *PLoS Genetics* 2021 Feb 01; 17(2):e1009346. <https://journals.plos.org/plosgenetics/article?id=10.1371/journal.pgen.1009346>
3. Yogesh Dahiya©, Saloni Rose, Shruti Thapliyal, Shivam Bhardwaj, Maruthi Prasad and **Kavita Babu**©; Differential regulation of innate and learned behavior by CREB1/CRH-1 in *Caenorhabditis elegans*. *The Journal of Neuroscience* 2019 Oct 02; 39(40): 7934-46. <https://www.jneurosci.org/content/39/40/7934.long>

Hosted by Dr Yu Fengwei



All are Welcome!

17 MAR 25 MONDAY 4PM

AUDITORIUM LEVEL 1

Our Speaker



Associate Professor Kavita completed her undergraduate education from India and her PhD with Bill Chia at IMCB, Singapore. Her postdoctoral research was with Josh Kaplan at Massachusetts General Hospital, Boston where she developed an interest in neuropeptidergic signaling in the free-living nematode, *Caenorhabditis elegans*. She currently works at Indian Institute of Science, Bangalore as an Associate Professor at the Centre for Neuroscience.

Associate Professor Kavita Babu
Indian Institute of Science, Bangalore, India

TEMASEK
LIFESCIENCES
LABORATORY

Scan for
Address

