

# Unlocking the lncRNA Functions at the Synapse

**April 2**

**Wednesday, 12:30 pm**

**Billings Building—Rosedale Room**

**SPEAKER:**



**Sathya Puthanveetil, Ph.D.**

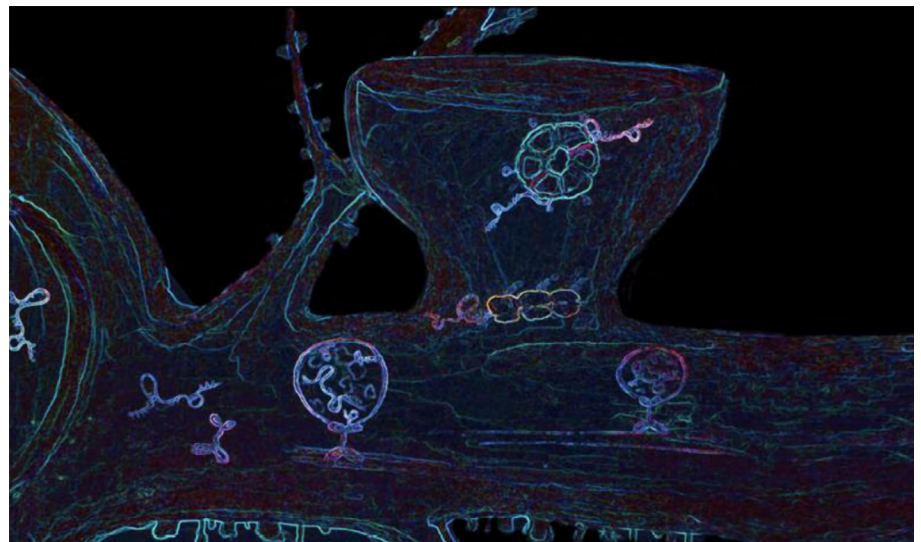
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**Host: Abid Hussaini, Ph.D.**

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## Abstract

Long non-coding RNAs (lncRNAs) have emerged as pivotal regulators in the formation of long-term memories (LTM). While nuclear-enriched lncRNAs are well known for their roles in transcriptional and epigenetic regulation, much less is understood about the functions and mechanisms of cytoplasmic lncRNAs in neurons. Our recent findings reveal that lncRNAs are actively transported to dendrites, where they serve as scaffolds for a wide array of coding and non-coding RNAs, as well as proteins. In this talk, I will explore the mechanisms that drive lncRNA transport from the soma to dendrites, the dynamics of this transport, the key regulatory elements that mediate their functions, their molecular interactions, and how they influence activity-dependent synaptic remodelling and long-term memory formation.



## Publications

1. Espadas I, Wingfield JL, Nakahata Y, Chanda K, Grinman E, Ghosh I, Bauer KE, Raveendra B, Kiebler MA, Yasuda R, Rangaraju V, Puthanveetil S. *Synaptically-targeted long non-coding RNA SLAMR promotes structural plasticity by increasing translation and CaMKII activity*. Nat Commun. 2024 Mar 27;15(1):2694. PMID: 38538603; PMCID: PMC10973417.
2. Grinman E, Nakahata Y, Avchalumov Y, Espadas I, Swarnkar S, Yasuda R, Puthanveetil SV. *Activity-regulated synaptic targeting of lncRNA ADEPTR mediates structural plasticity by localizing Sptn1 and AnkB in dendrites*. Sci Adv. 2021 Apr 16;7(16):eabf0605. PMID: 33863727; PMCID: PMC8051873.
3. Raveendra BL, Swarnkar S, Avchalumov Y, Liu XA, Grinman E, Badal K, Reich A, Pascal BD, Puthanveetil SV. *Long noncoding RNA GM12371 acts as a transcriptional regulator of synapse function*. Proc Natl Acad Sci U S A. 2018 Oct 23;115(43):E10197-E10205. Epub 2018 Oct 8. PMID: 30297415; PMCID: PMC6205475.