

# NEUROSCIENCE AND PHYSIOLOGY SEMINAR SERIES

## AXONAL CYTOSKELETAL BULK FLOW *IN VIVO* DURING EARLY ZEBRAFISH DEVELOPMENT

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Axonal cytoskeletal bulk flow is a relatively recently discovered transport mechanism for cytoskeletal structures in neurons. This process has been mainly studied in cultured neurons; however, the extent to which it occurs in living organisms and whether there are differences in bulk flow between peripheral (PNS) and central nervous system (CNS) is unclear. Previous findings by us and others showed that in cell culture, neurite extension correlates with anterograde microtubule (MT) bulk flow in PNS and retrograde flow in CNS neurites. Here, we used zebrafish larvae expressing various fluorescent cytoskeletal marker proteins in specific zebrafish neurons, such as Rohon Beard (RB) and dorsal root ganglion (DRG) neurons. We were able to detect bulk flow of MTs in both directions for both cell types. F-actin bulk flow was also detected in both directions but only for RB cells. In future studies, we will also investigate CNS neurons to determine whether there are systematic differences in bulk flow behavior between PNS and CNS neurons, which might explain differences in elongation rates not only during normal development but also during regeneration after injury.



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**TUESDAY, APRIL 29TH, 2025**

**12:00 PM, LILY 1-117**

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