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Tuning Cargo Travel via Single Motor Velocity JING XU, University of California, Merced, ZHANYONG SHU, University of California, Irvine, STEPHEN KING, University of Central Florida, STEVEN GROSS, University of California, Irvine — Active intracellular transport is crucial for cell function, and defects are linked to diseases including neurodegeneration. Single molecule biophysical studies have revealed a great deal about the function of individual motors in vitro. However, it remains challenging to use single molecule properties of molecular motors to explain the complex range of cargo motions observed in vivo, in particular how motors work together in small ensembles. Recent reports have highlighted the sensitivity of ensemble transport to the single motor properties of processivity and force production. Here we investigate the previously unexplored role of motor velocity, and report a combined experimental and theoretical demonstration that single motor velocity crucially controls the ensemble function of two-motor transport.

Jing Xu
University of California, Merced

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