A mechanochemical model for myosin VI

RIINA TEHVER, AMANDA JACK, Denison University, IAN LOWE, University of Pennsylvania — Myosin VI is a motor protein that transports cellular cargo along actin filaments. This transport takes place as a result of a coordinated mechano-chemical cycle that is controlled by external variables including imposed force and nucleotide concentrations. We present a model that captures the different dynamic pathways that myosin VI can take in response to these variables. The results of our model for experimentally observable quantities, such as the motor velocity or run length, agree with available experimental data, and we can also make predictions beyond the tested regimes. Using the model, we study how myosin VI reacts to its environment and test its operational efficiency.

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