



Figure S2. **Characteristic run length and velocity data of kinesin on GMPCPP-microtubules copolymerized with either 3RS-tau or 4RL-tau.** Qdot-kinesin complexes were tracked on unlabeled GMPCPP-microtubules that were formed by the addition of Alexa-488 labeled 3RS-tau or 4RL-tau (1:5 tau:tubulin ratio) to free tubulin prior to polymerization. Processive run length (plotted in $0.5 \mu\text{m}$ bins) and velocity (plotted in $0.1 \mu\text{m/s}$ bins) values were determined in the presence of Alexa-488 3RS-tau (A,B) or the presence of Alexa-488 4RL-tau (C,D). The resulting processive run length histograms were fit by a single exponential decay function describing the characteristic run length \pm standard error of the fit, while the Gaussian frequency distributions of the velocity data were used to calculate the mean velocity \pm standard deviation.