

## Supplementary Movie Figure Legends

Supplementary Movie 1. **Qdot-kinesin complex moving processively on rhodamine-labeled GMPCPP stabilized microtubules.** Rhodamine labeled microtubules are displayed in red, and the Qdot-kinesin complex is displayed in green. Brightness and contrast have been adjusted for visualization purposes only. The imaged was cropped from a larger field of view and was rotated for consistent microtubule orientation.

Supplementary Movie 2. **Qdot-kinesin complex moving processively on unlabeled GMPCPP stabilized microtubules in the presence of Alexa 488-labeled 3RS-tau.** Alexa 488-labeled 3RS-tau decorated microtubules (1:5 tau:tubulin ratio) are displayed in red, and the Qdot-kinesin complex is displayed in green. Brightness and contrast have been adjusted for visualization purposes only. The imaged was cropped from a larger field of view and was rotated for consistent microtubule orientation.

Supplementary Movie 3. **Qdot-kinesin complex moving processively on unlabeled GMPCPP stabilized microtubules in the presence of Alexa 488-labeled 4RL-tau.** Alexa 488-labeled 4RL-tau decorated microtubules (1:5 tau:tubulin ratio) are displayed in red, and the Qdot-kinesin complex is displayed in green. Brightness and contrast have been adjusted for visualization purposes only. The imaged was cropped from a larger field of view and was rotated for consistent microtubule orientation.

Supplementary Movie 4. **Qdot-kinesin complex moving processively on rhodamine labeled microtubules in the presence of 10% glycerol and 10%DMSO.** Rhodamine labeled microtubules are displayed in red, and the Qdot-kinesin complex is displayed in green. Brightness and contrast have been adjusted for visualization purposes only. The imaged was cropped from a larger field of view and was rotated for consistent microtubule orientation.