## **Description of Additional Supplementary Files**

File Name: Supplementary Movie 1

Description: Chinese hamster ovary cell after mPEG quantum dot delivery. Representative still image shows brightfield micrograph with nuclear stain overlay (blue). The corresponding real-time HILO movie shows mPEG-coated quantum dots delivered by osmotic pinosome lysis. High levels of clustering and a large immobile fraction are apparent.

File Name: Supplementary Movie 2

Description: Chinese hamster ovary cell after aCOOH quantum dot delivery. Representative still image shows brightfield micrograph with nuclear stain overlay (blue). The corresponding real-time HILO movie shows aCOOH-coated quantum dots delivered by osmotic pinosome lysis. High levels of clustering and a large immobile fraction are apparent.

File Name: Supplementary Movie 3

Description: Chinese hamster ovary cell after pCOOH quantum dot delivery. Representative still image shows brightfield micrograph with nuclear stain overlay (blue). The corresponding real-time HILO movie shows pCOOH-coated quantum dots delivered by osmotic pinosome lysis. Lower levels of clustering with a large immobile fraction are apparent.

File Name: Supplementary Movie 4

Description: Chinese hamster ovary cell after pPEG quantum dot delivery. Representative still image shows brightfield micrograph with nuclear stain overlay (blue). The corresponding real-time HILO movie shows pPEG-coated quantum dots delivered by osmotic pinosome lysis. Low levels of clustering and a high mobile fraction are apparent.

File Name: Supplementary Movie 5

Description: Chinese hamster ovary cell after pZW quantum dot delivery. Representative still image shows brightfield micrograph with nuclear stain overlay (blue). The corresponding real-time HILO movie shows pZW-coated quantum dots delivered by osmotic pinosome lysis. Low levels of clustering and a large mobile fraction are apparent.

File Name: Supplementary Movie 6

Description: HeLa cell after mPEG quantum dot delivery. Representative still image shows brightfield micrograph with nuclear stain overlay (blue). The corresponding real-time HILO movie shows mPEG-coated quantum dots delivered by osmotic pinosome lysis without blocking. Higher levels of QD clustering and a small fraction of mobile quantum dots are apparent compared with those delivered with blocking in Supplementary Movie 7.

File Name: Supplementary Movie 7

Description: HeLa cell after mPEG quantum dot delivery. Representative still image shows brightfield micrograph with nuclear stain overlay (blue). The corresponding real-time HILO movie shows mPEG-coated quantum dots delivered by osmotic pinosome lysis with blocking. Lower levels of QD clustering and a high fraction of mobile quantum dots are apparent compared with those delivered without blocking in Supplementary Movie 6.