Supporting Information

Dynamic cell entry pathway of respiratory syncytial virus revealed by tracking the quantum dots-labeled single virus

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Movie S1. Tracking QD-RSV (red) entry into HEp-2 cells. The cell was stained with the lipophilic membrane dye DiO (green).

Movie S2. Tracking the intercellular trafficking of QD-RSV in HEp-2 cells.

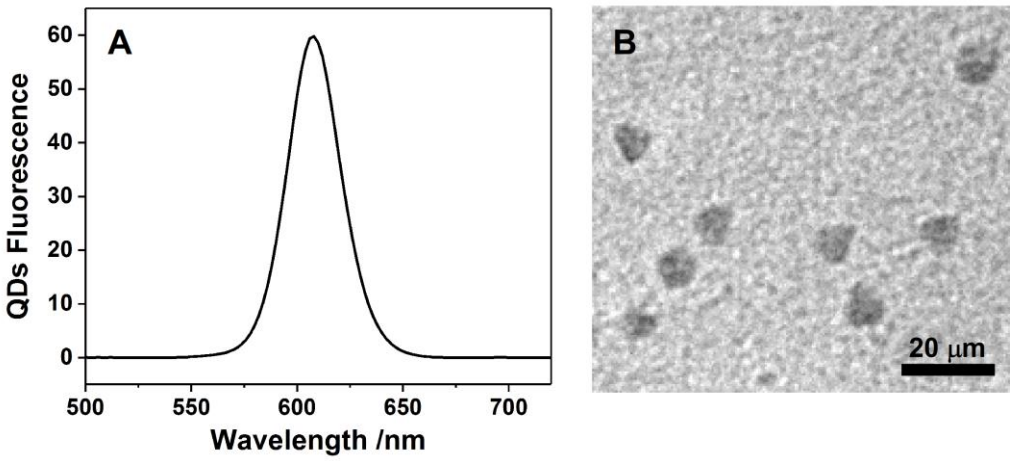

Fig. S1 Characterization of SA-QD. (A) Fluorescence spectra of SA-QD. (B) TEM images of SA-QD.

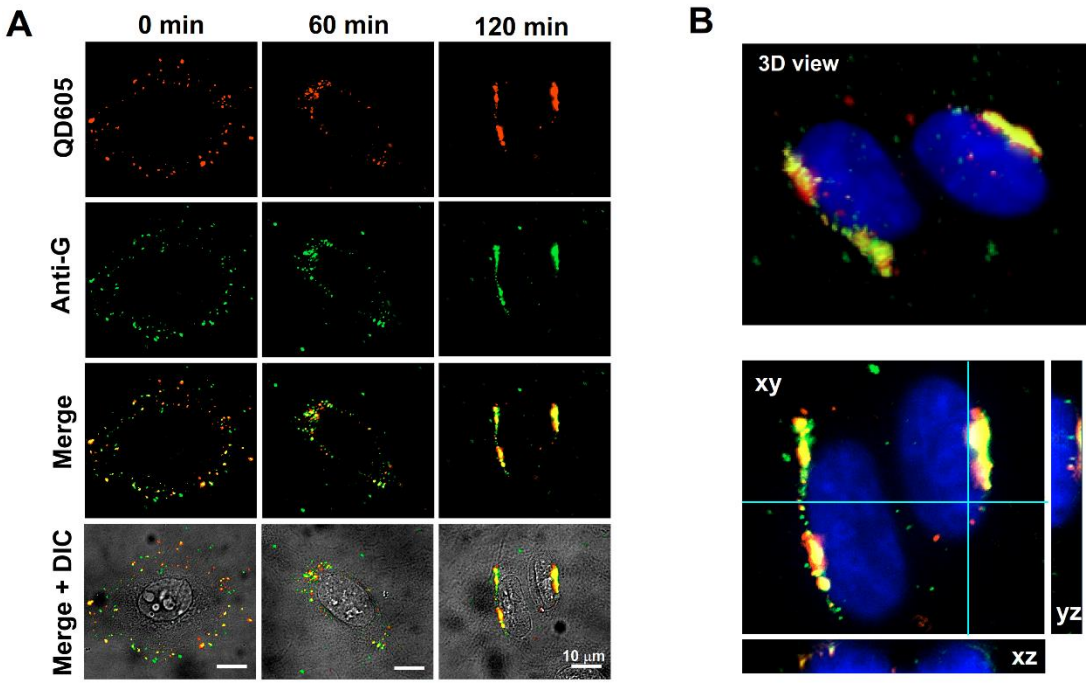

Fig. S2 Fluorescence colocalization imaging between immunofluorescence of RSV G protein and QD fluorescence. (A) Fluorescence imaging of QD-RSV infected cells at 0 min, 60 min and 120 min post-infection. Cells were inoculated with biotin-RSV and SA-QD (red) at 4 ^{o}C, then shifted to 37 ^{o}C for different time. After being fixed and permeabilized, the cells were stained with mouse monoclonal antibody against RSV G protein (Anti-G) and DyLight 488-conjugated goat anti-mouse IgG (green). (B) Three-dimension view and orthogonal slice views of QD-RSV infected cells at 120 min p. i.. The nucleuses of cells were stained with Hoechst 33258.

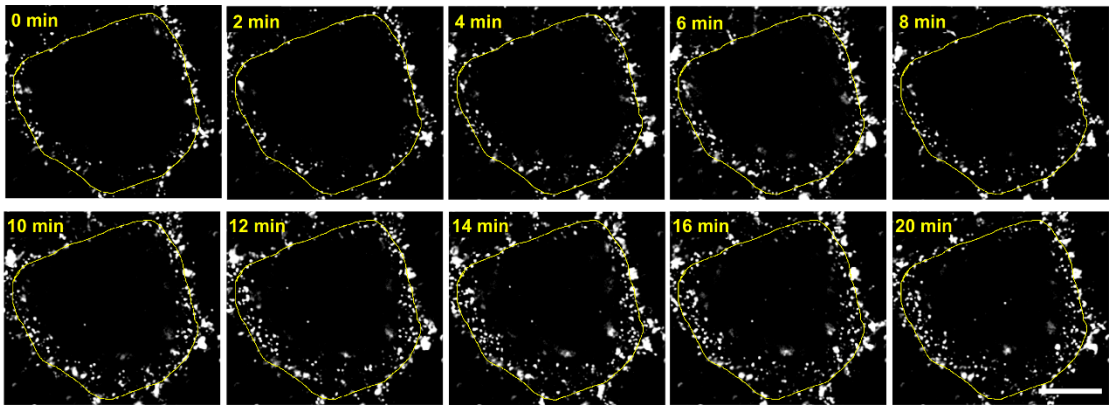

Fig. S3 Snapshots of time-lapse imaging of QD-RSV entry. HEp-2 cell were infected with QD-RSV and imaged from 0 to 20 min with time interval of 2 min. Yellow line shows the cell boundary. Scale bar, 10 μm.

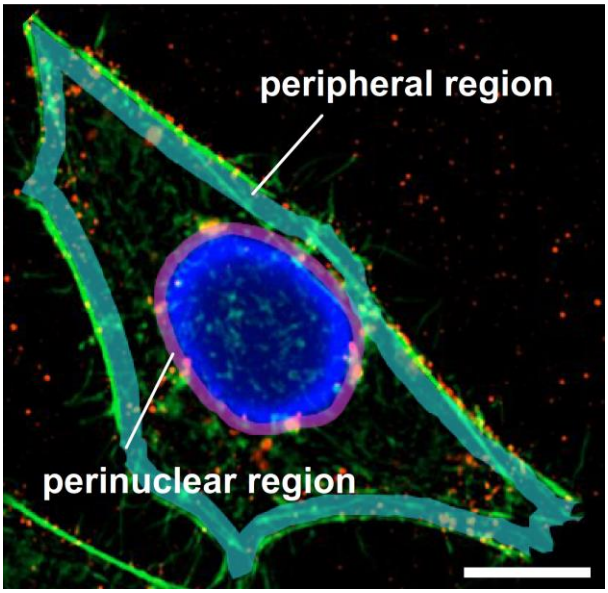

Fig. S4 Definition of the region of interest. The cell peripheral region was defined as the region inside the cell extending for approximately 2 μm from the inner side of the plasma membrane. The perinuclear region was referred to the region just around the nucleus with an average band width of 1 μm. Cytoplasmic region was between the peripheral and perinuclear region. Scale bar, 10 μm.

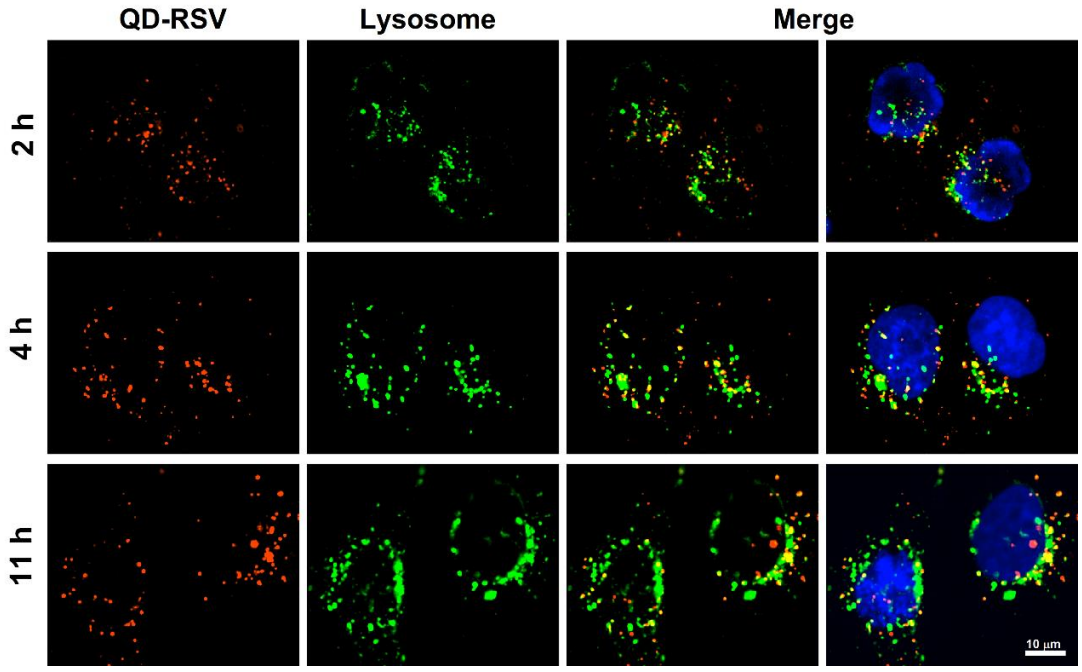

Fig. S5 Colocalization of QDs-RSV (red) and lysosome (green) at 2 h, 4 h and 11 h p. i.. HEp-2 cells were infected with biotin-RSV at 4 ^{o}C for 30 min and incubated with SA-QD at 4 ^{o}C for 10 min. The cells were then shifted to 37 ^{o}C for 2 h, 4 h and 11 h. Cells were treated with BODIPY® FL Histamine for labeling lysosome. The nucleuses of cells were stained with Hoechst 33258.

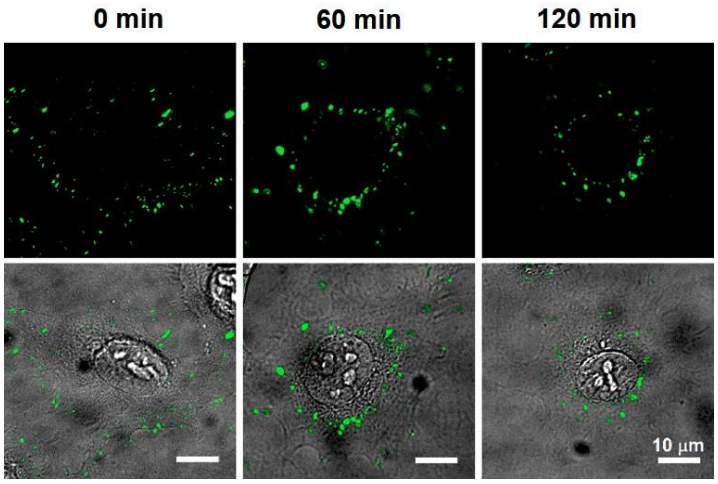

Fig. S6 Immunofluorescence imaging of unlabeled RSV in infected cells at 0 min, 60 min and 120 min post-infection. Cells were inoculated with RSV at 4 ^{o}C, then shifted to 37 ^{o}C for different time. After being fixed and permeabilized, the cells were stained with mouse monoclonal antibody against RSV G protein and DyLight 488-conjugated goat anti-mouse IgG (green).

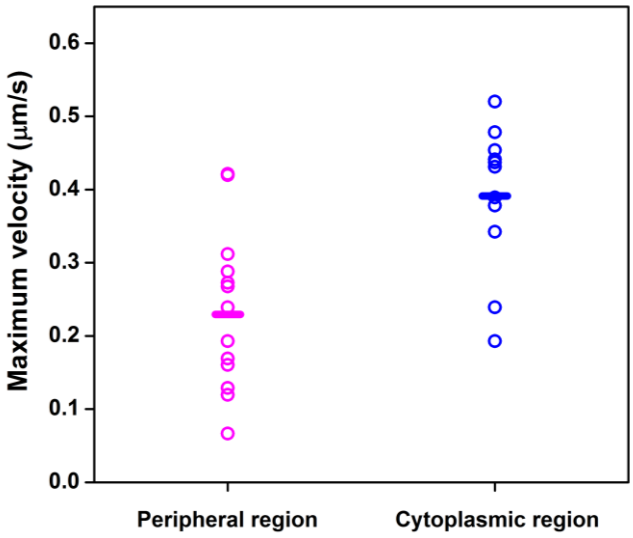

Fig. S7 Maximum instantaneous velocity of QD-RSV traveling in the peripheral region (n=17) and in the cytoplasmic region (n=11). Thick bars represent the mean values.