

Description of Additional Supplementary Files

File name: Supplementary Movie 1

Description: Two-photon z-stack of **LUXendin645**-labeled islets (147 μm).

File name: Supplementary Movie 2

Description: Single-molecule localization microscopy in **LUXendin645**-labeled CHO-K1-SNAP_GLP1R cells (95 nm per pixel) (20 frames per second).

File name: Supplementary Movie 3

Description: Single-molecule localization microscopy in **LUXendin651**-labeled CHO-K1-SNAP_GLP1R cells (95 nm per pixel) (20 frames per second).

File name: Supplementary Movie 4

Description: Single particle tracking in **LUXendin651**-labeled CHO-K1-SNAP_GLP1R cells (47.5 nm per pixel) (20 frames per second).