**Video 1: Intraperitoneal injection of zebrafish larva.** To confirm the intraperitoneal injection of the zebrafish larva, glucose was co-injected with Rhodamine B isothiocyanate-Dextran, and was re-injected without moving the needle, after Ca2+ imaging was taken. Time lapse was taken using Leica DM6000B microscope, 5X dry objective. Scale bar indicates 10 μm.

**Video 2**: **D-Glucose response of pancreatic islet in living zebrafish larva.** Time lapse of the islet *in vivo* showing β-cell specific, immediate GCaMP6 signal alteration after intravenous injection of D-glucose (˜10-20 mM final concentration) in 5 dpf larva. Time lapse was taken using Leica DM6000B microscope, 40X water objective. Scale bar indicates 10 μm.

**Video 3 and 4**: ***In vivo* fluorescence recordings of unstimulated *CaV1.2/islm458* mutant and wild-type larvae.** *CaV1.2/islm458* mutant (Video 3) showed significantly higher basal islet Cai dynamics than in control animal (Video 4). Scale bars indicate 10 μm.