**Supplementary Figure Legends**

**Sup Figure 1. Full-length adiponectin (fAd) conjugated with VivoTag750 had 3 different forms by adiponectin oligomerization (LMW, MMW and HMW) and gave a linear slope of signal intensity depending on concentration of fAd.** (A) To confirm the labeled adiponectin, non-labeled fAd and VT750-conjugated fAd were separated side by side in a SDS-PAGE gel and scanned by Li-Cor image scanner. Then, the both separated fAds were transferred from the SDS-PAGE gel into PVDF membrane to be detected by adiponectin antibody via immunoblotting. It was confirmed that the labeled fAd had 3 different forms as same as non-labeled fAd. (HMW >250 kDa, MMW ~180 kDa and LMW ~90 kDa) (B) To assess the meaning of signal intensity with labeled adiponectin from the field of view under FMT system, fluorochrome concentration was measured in dose dependent conditions. It showed linear regression with R2=0.991 of the trendline. (C) FMT imaging was taken using a pin-channel imaging block and VT750-conjugated fAd was diluted serially in the range of 0 to 160 µg.

**Sup Figure 2. Equal amount of VT750-conjugated fAd was infused into mice via jugular vein cannula.** Serum samples were collected before adiponectin infusion (0min) as well as right after within 2 min. (A) The serum samples were separated in SDS-PAGE gel and scanned it with LiCor imager. 3 forms of labeled adiponectin were only detected from 2min samples with no different level of fluorescence intensity from control vs STZD animals. (B) Before labeled-adiponectin infusion, basal level of circulatory adiponectin amount was compared from control and diabetic, 4 days post induced from 150μg/g STZ injection by i.p., individuals (n>3). Serum level of adiponectin was measured by ELISA. At the same time, the total adiponectin level from the serum showed no changes in STZD mice comparing to control after labeled adiponectin infusion (at 2min).

**Sup Figure 3. FMT 2500 system could monitor biodistribution of VT750 over time in a mouse.** To validate feasibility of biodistribution monitoring with NIR probe, 2 nmol of protein free VT750 only was infused into mouse via tail vein and imaging with FMT was taken at 0, 10, 30, 60, and 90 min. The pattern of VT750’s circulation and accumulation was observed.

**Sup Figure 4. Hyperglycemia did not change adiponectin receptors.** In mouse hearts, STZ-induced hyperglycemina did not change AdipoR1 and AdipoR2 (A) mRNA and (B) protein expression. **(C)** As same as HDMEC, expression of adiponectin receptors (AdipoR1 and AdipoR2) were not changed in between hyperglycemia and control. (n=4)

**Sup Figure 5. Vasculature of HUVECs on a chip.** VE-Cadherin(red) was stained with DAPI(blue) after 96hr cell culture (at D4) with 50 ng/mL VEGF. During 4 days vasculature formation in hyperglycemia, the integrity of VE-C did not change when it compared to control in 2D endothelial monolayer of HUVECs as well as 3D perfusable vessels of HUVECs. All scale bars indicate 200 μm.

**Sup Video 1. 3D reconstruction of FMT/CT co-registration for control mouse.** Vehicle only infused animal was used. FMT data from Infused VT-750 labeled fAd indicated in color, and computed tomography (CT) data shown in white/grey.

**Sup Video 2. 3D reconstruction of FMT/CT co-registration for STZD mouse.** Rotated movie showed higher intensity of VT-750 labeled fAd (color) than control animal from FMT data. White/grey scale indicates CT data.

**Sup Video 3. 3D perfusable vasculature of HUVECs.** The confocal reconstruction showed 3D microvasculature with VE-Cadherin (Red) and nucleus (DAPI, blue) staining, which has a perfusable lumen aligned with interconnected endothelial cells.

**Sup Video 4. Perfusion of 5μm beads conjugated with FITC in microvascular network.** FITC polystyrene particles flow through the continuous 3D microvasculature.