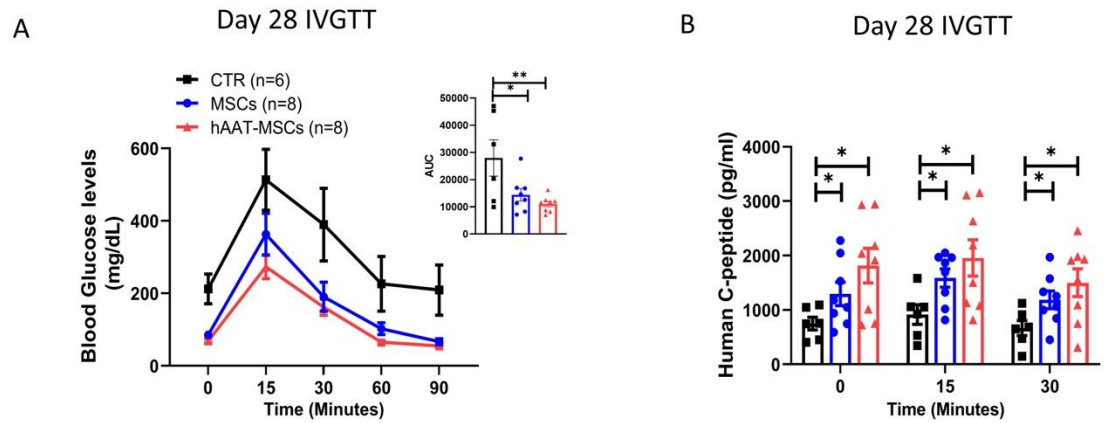
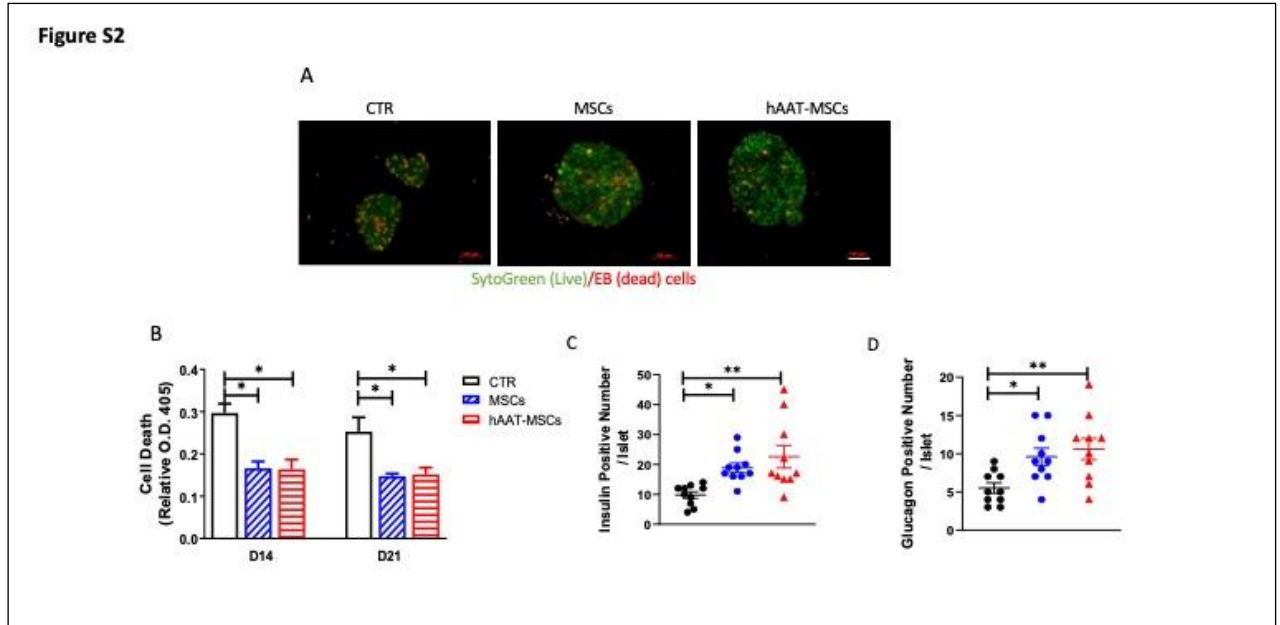


## Online Supplemental material:

Figure S1

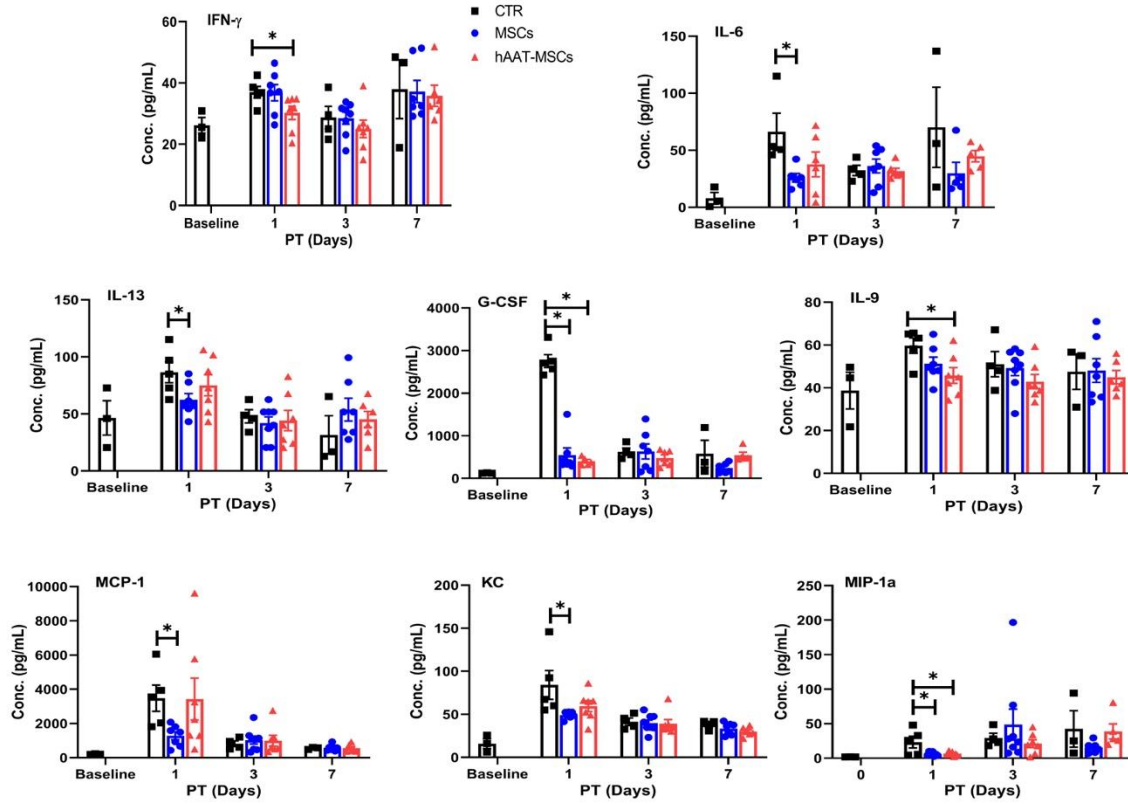


**Figure S1. Islet function measured at day 28 PT. (A) Blood glucose levels and area under the curve (insets) during an IVGTT in mice at day 28 PT. (B) Stimulated human C-peptide levels before and at 15 and 30 mins after IVGTT initiation. n=6 in CTR, n=8 in MSCs, and n=8 in hAAT-MSCs. Data are shown as mean  $\pm$  SEM. \* $p$ <0.05, \*\* $p$ <0.01, by ANOVA with Tukey post hoc test.**



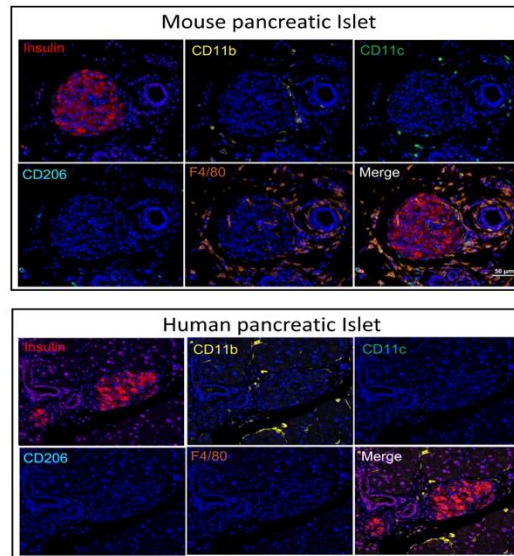
**Figure S2.** (A). Representative SytoGreen staining of viable human islet cells (green) and ethidium bromide staining of dead islet cells (red) cultured alone or with MSCs or hAAT-MSCs, Scale bar = 100um. Cell death (OD value) of dead cells per islet in human islets cultured alone or with MSCs or hAAT-MSCs (n >20 in each group measured by the cell death ELISA. C. Insulin positive cell number and (D) Glucagon + cell number among each islet in CTR, MSCs or hAAT-MSCs islets at day 3 PT. Ten representative islets from each group were counted.

**Figure S3**



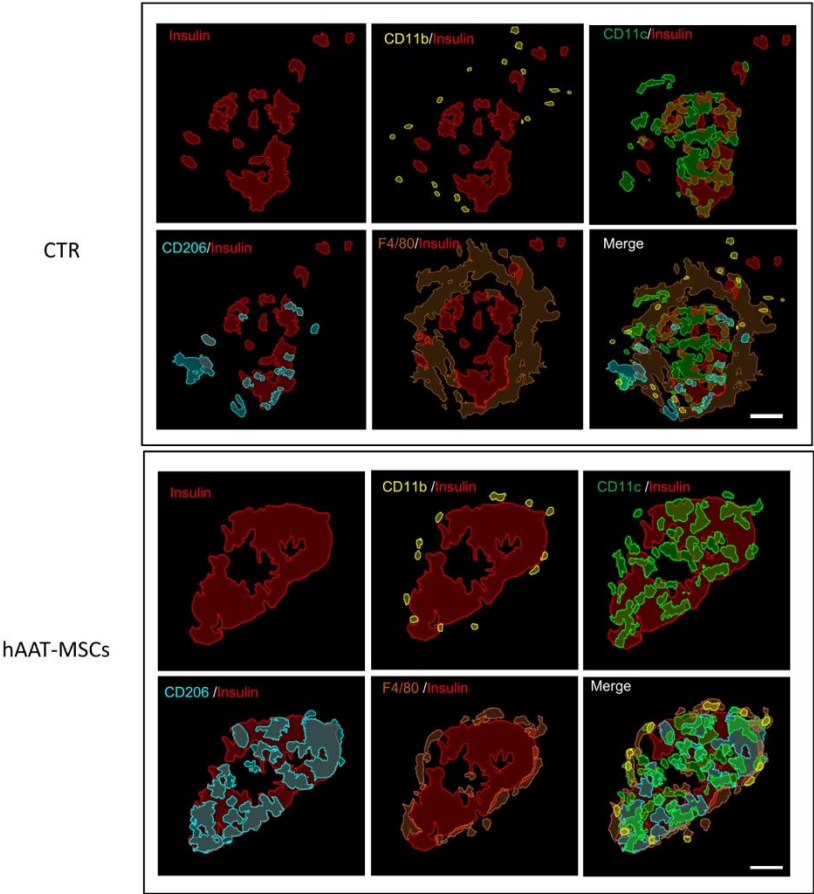
**Figure S3. Serum cytokine levels in NOD-SCID recipients at 1, 3, and 7 days PT.** Serum cytokines in mice receiving islet alone (CTR), MSC and islet co-transplantation (MSCs) and hAAT-MSCs (hAAT-MSCs) were measured by the Bio-Plex Pro Cytokine 23-Plex Assay kit at baseline, 1, 3, and 7 days PT. Data are shown as mean  $\pm$  SEM. \*  $p < 0.05$  by ANOVA test.

**Figure S4**



**Figure S4. Multiplex immunofluorescence staining of mouse and human pancreatic islets using the anti-mouse insulin, CD11b, CD11c, CD206, and F4/80 antibodies. Red: insulin, yellow: CD11b, green: CD11c, cyan: CD206, brown: F4/80, blue: nuclei. Scale bar = 50μm.**

Figure S5



**Figure S5. Highlight, annotate, and overlap of each marker with insulin to generate annotation images using QuPath software.** Samples were from CTR and hAAT-MSC islet. Scale bar = 50µm.