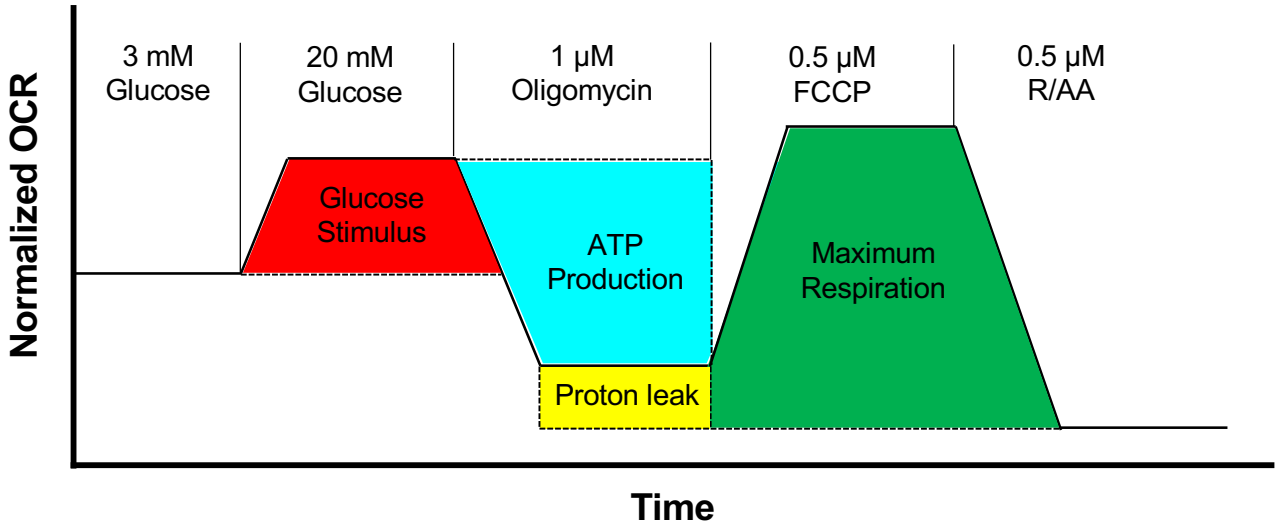
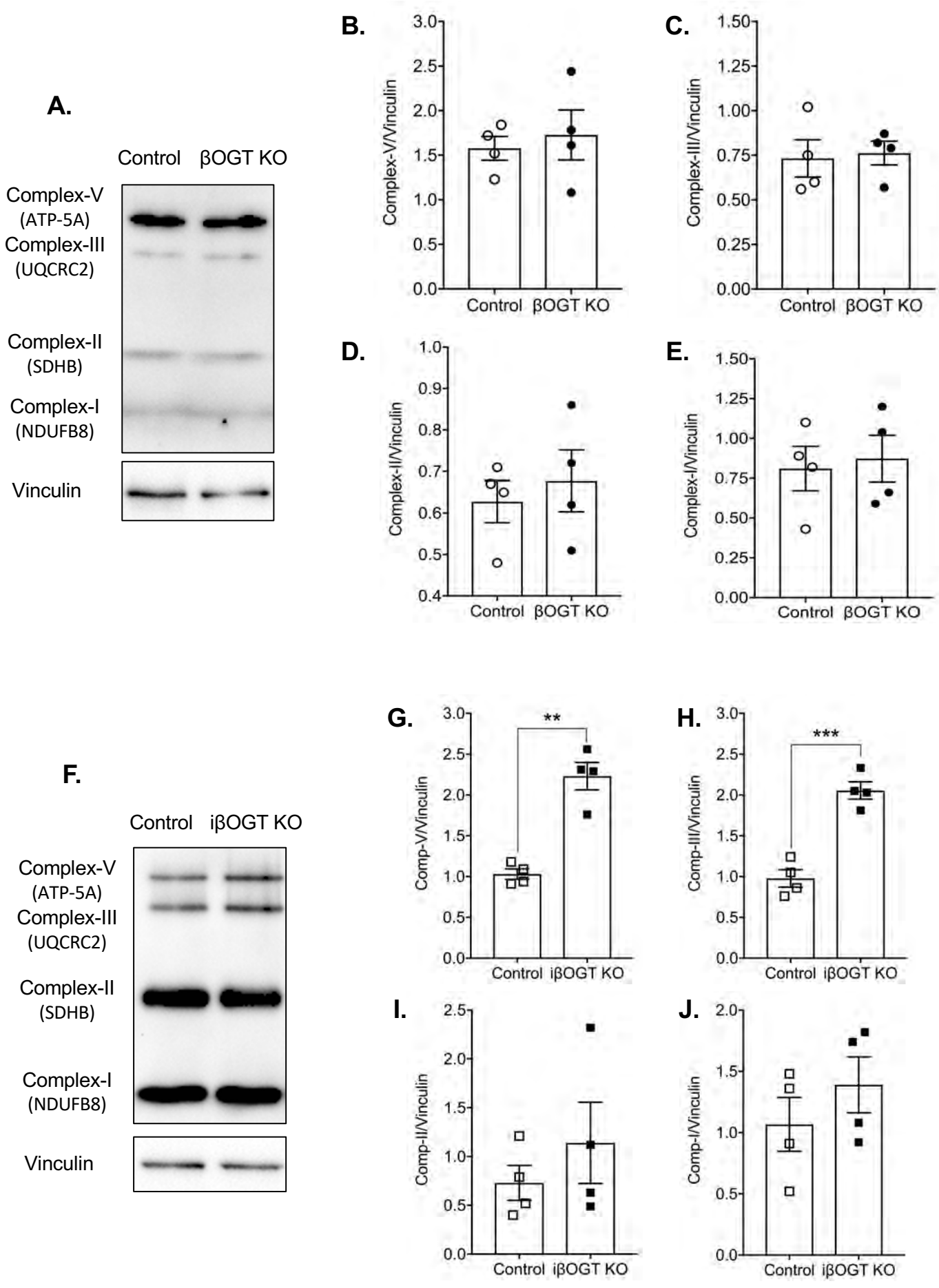
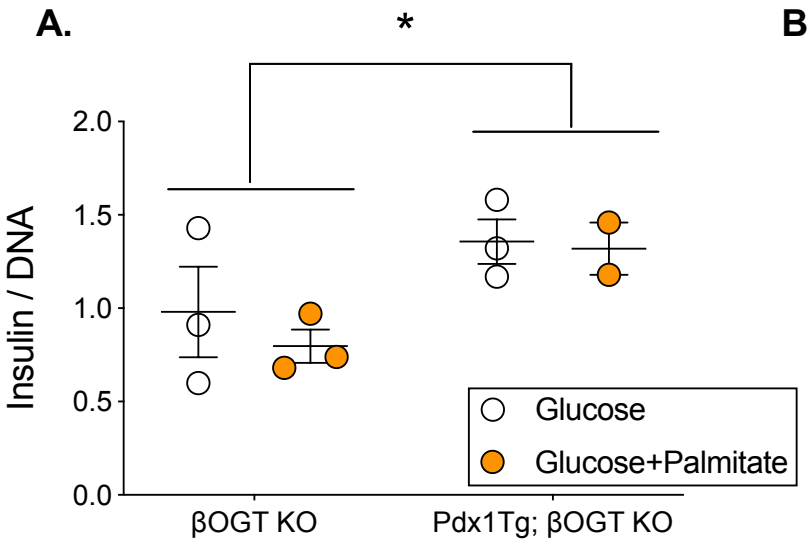
Supplementary Figure: 1

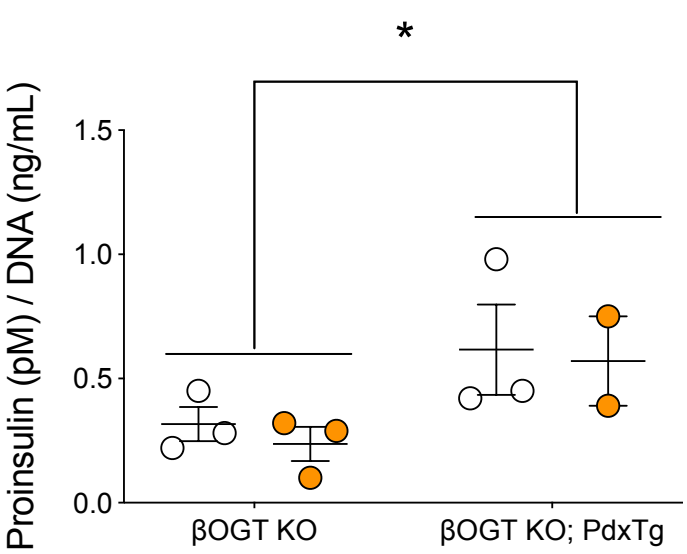


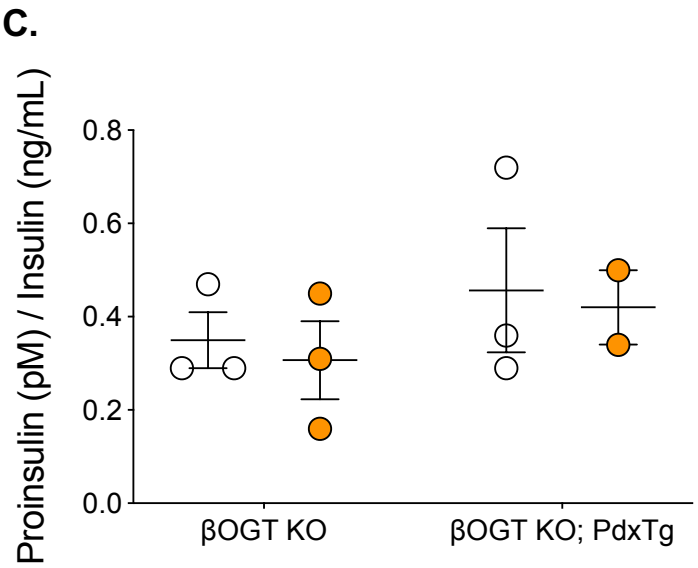
Supplementary Figure: 2



Supplementary Figure: 3







Supplementary Figure 1

(**A**) The schematic diagram for analyzing glucose stimulation, ATP production, proton leak and maximum respiration, spare capacitance, basal respiration.

Supplementary Figure 2

(A-J). Western blot analysis for Complex-V, IV,III and II between islet lysates from βOGTKO (**A**) iβOGTKO (**F**) and respective littermate controls. Quantification of the blots are shown in **B-E** for βOGTKO and **G-J** for iβOGTKO, n=4 and *, p-value $\leq$ 0.05 vs. βOGTKO and control.

Supplementary Figure 3

(**A**) Islet insulin content, normalized to DNA, is shown for both post-GSIS (glucose) and post-FASIS (glucose + palmitate) treated islets from βOGTKO mice (n=3 glucose,3 glucose + palmitate) and Pdx1Tg; βOGTKO (n=3, 2). Data from the same islets was used for islet proinsulin content (**B**) and proinsulin/insulin ratio (**C**) as a measure of insulin processing capacity.