

This Supplemental Information file includes:

SUPPLEMENTAL DATA:

SUPPLEMENTAL FIGURES S1-S4

SUPPLEMENTAL REFERENCES

SUPPLEMENTAL DATA

SUPPLEMENTAL FIGURE S1

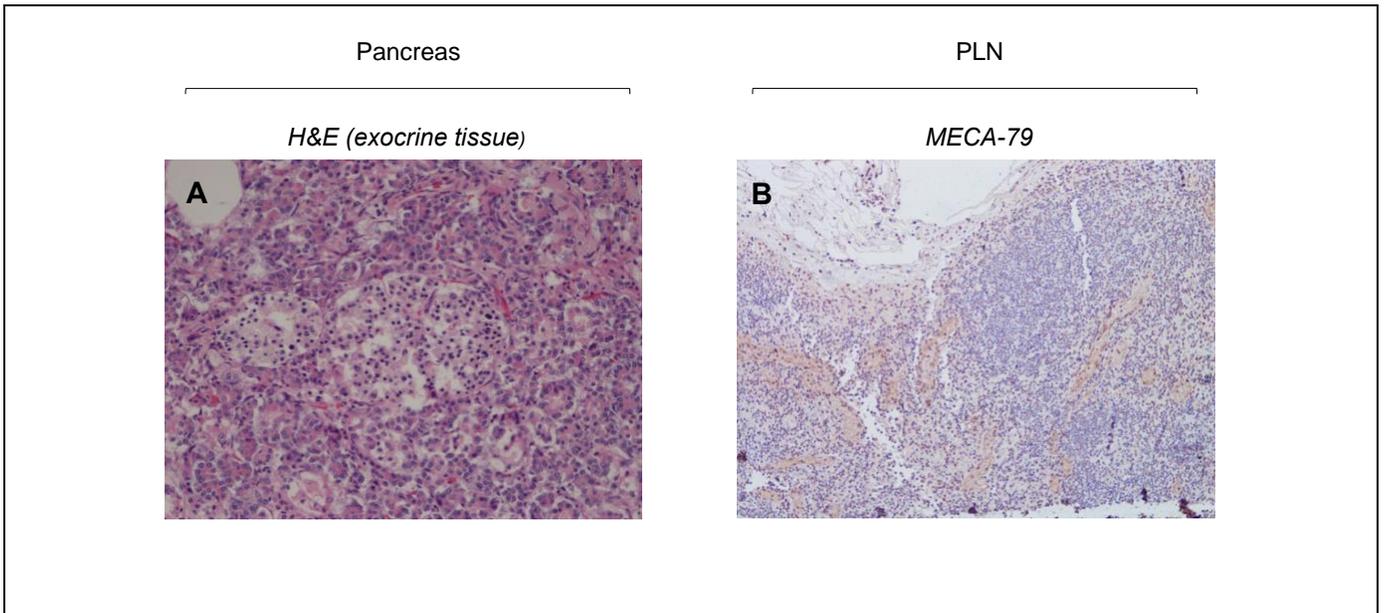


Figure S1. (A) Representative histological section of one pancreas from a patient with COVID-19 stained with hematoxylin & eosin (H&E) and showing lymphocytic infiltration in the exocrine pancreas. (B) MECA-79 staining of one pancreatic lymph node (PLN) from a patient with COVID-19.

Abbreviations. COVID-19, coronavirus disease 2019; H&E, hematoxylin & eosin; PLN; pancreatic lymph nodes.

SUPPLEMENTAL FIGURE S2

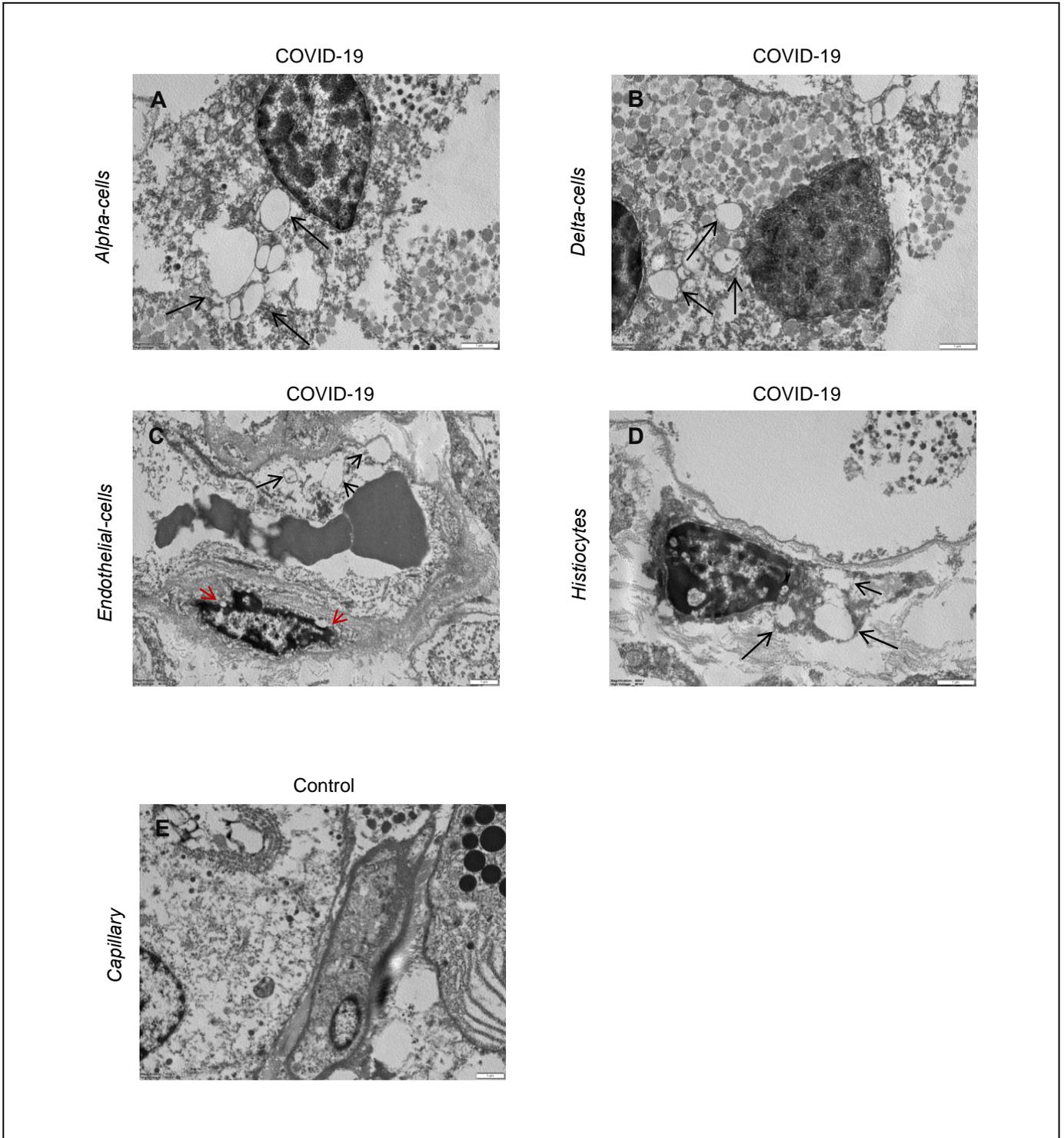


Figure S2. (A-D) Transmission electron microscopy analysis of pancreatic tissue from a patient with COVID-19 depicting the presence of several vacuoles (shown by the black arrows) in the vicinity of alpha-

cells, delta-cells, endothelial-cells (vacuoles are shown by the red arrows) and in histocytes. (E) Representative section of capillary from a healthy control subject showing the absence of vacuolization as compared to (A-D). Scale bars in (A-E): 1 μm .

Abbreviations. COVID-19, coronavirus disease 2019.

SUPPLEMENTAL FIGURE S3

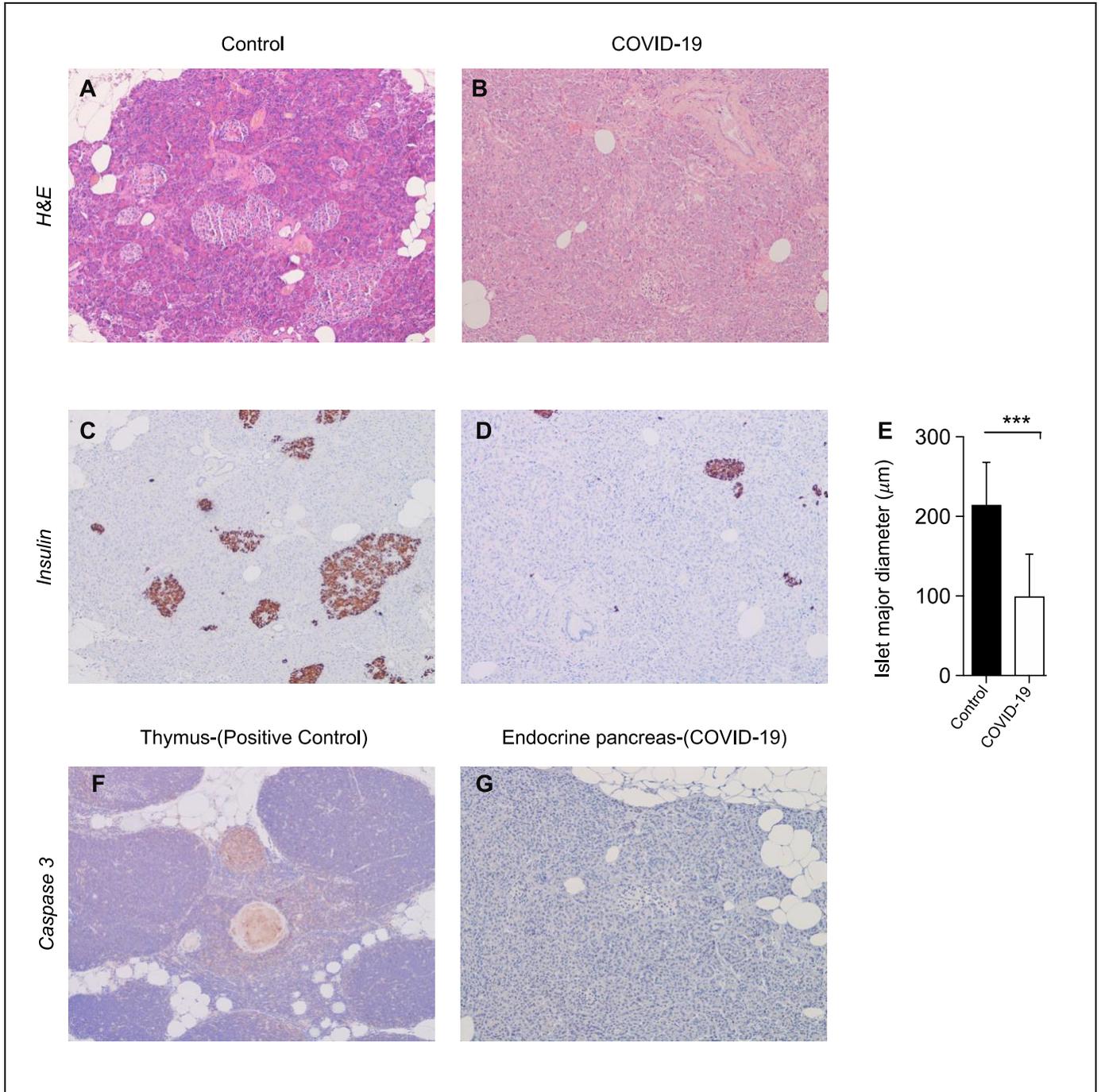


Figure S3. Detrimental effects of SARS-CoV-2 infection on human β -cells. (A-D) An estimation of insulin positive cells in post-mortem pancreatic sections from patients with COVID-19 as compared to those obtained from control (non-diabetic subjects) is shown in (C-D) and H&E is provided as well. (E) A quantification of the islet area in pancreatic section from a control subject as compared to that obtained

from a patient with COVID-19 is shown as well. (F-G) The negative staining for Caspase 3 (a marker of apoptosis) on endocrine pancreatic cells from post-mortem pancreatic section from a patient with COVID-19 (G); a positive staining for caspase 3 is shown in a thymic section and considered as a positive control (F).

Abbreviations. COVID-19, coronavirus disease 2019; H&E, hematoxylin & eosin.

SUPPLEMENTAL FIGURE S4

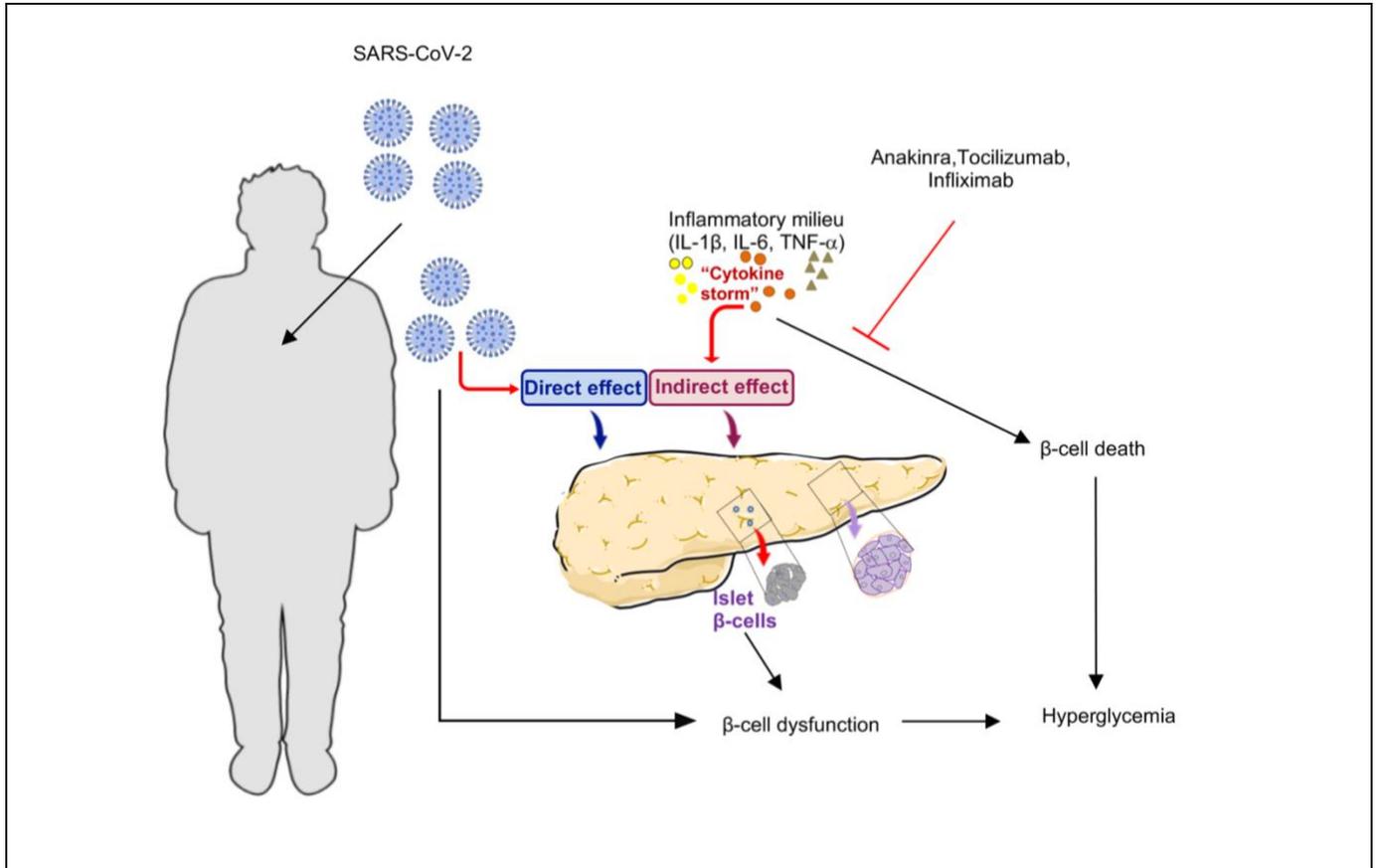


Figure S4. Working hypothesis of the effects of SARS-CoV-2 infection on β -cell function, whereby the release of proinflammatory cytokines and pancreatic tropism of the virus leads to β -cell dysfunction and onset of hyperglycemia.

SUPPLEMENTAL REFERENCES

1. Cheng, C.W., *et al.* Fasting-Mimicking Diet Promotes Ngn3-Driven beta-Cell Regeneration to Reverse Diabetes. *Cell* **168**, 775-788 e712 (2017).
2. Tezza, S., *et al.* Islet-Derived eATP Fuels Autoreactive CD8(+) T Cells and Facilitates the Onset of Type 1 Diabetes. *Diabetes* **67**, 2038-2053 (2018).
3. Li, X., *et al.* Immune heterogeneity of head and tail pancreatic lymph nodes in non-obese diabetic mice. *Sci Rep* **9**, 9778 (2019).
4. Bahmani, B., *et al.* Ectopic high endothelial venules in pancreatic ductal adenocarcinoma: A unique site for targeted delivery. *EBioMedicine* **38**, 79-88 (2018).
5. Herold, K.C., *et al.* beta cell death and dysfunction during type 1 diabetes development in at-risk individuals. *J Clin Invest* **125**, 1163-1173 (2015).