

Supplemental information

**SARS-CoV-2 infects an *in vitro* model of the human
developing pancreas through endocytosis**

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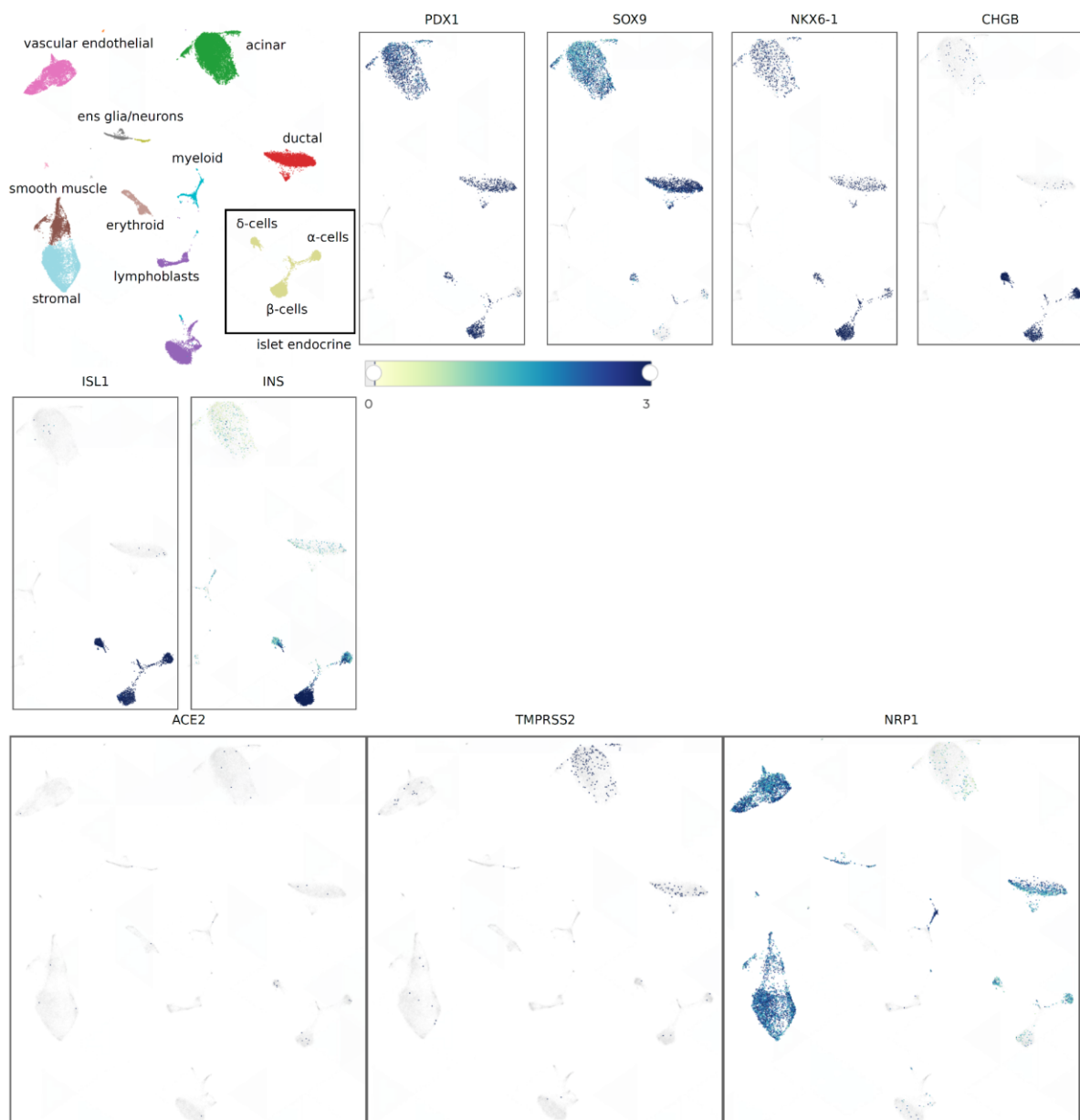
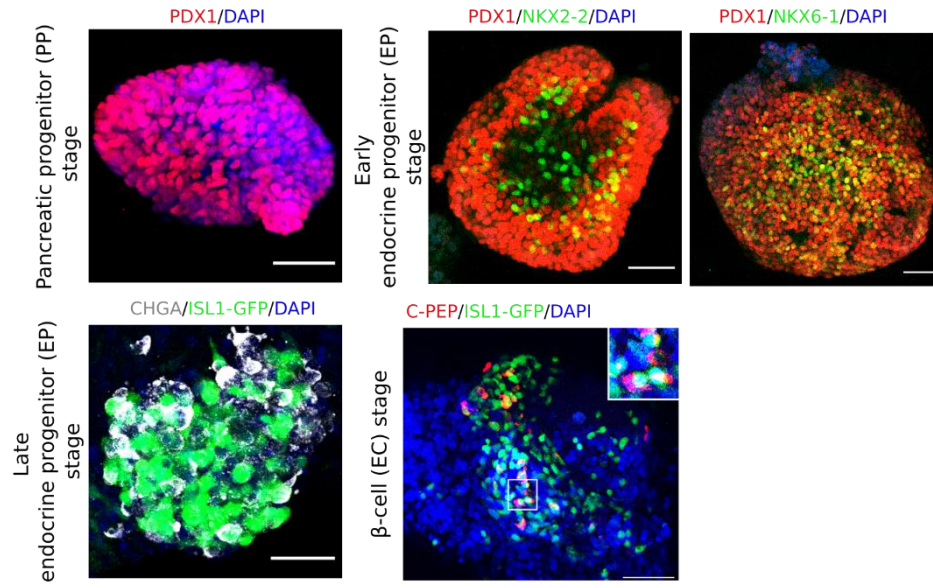
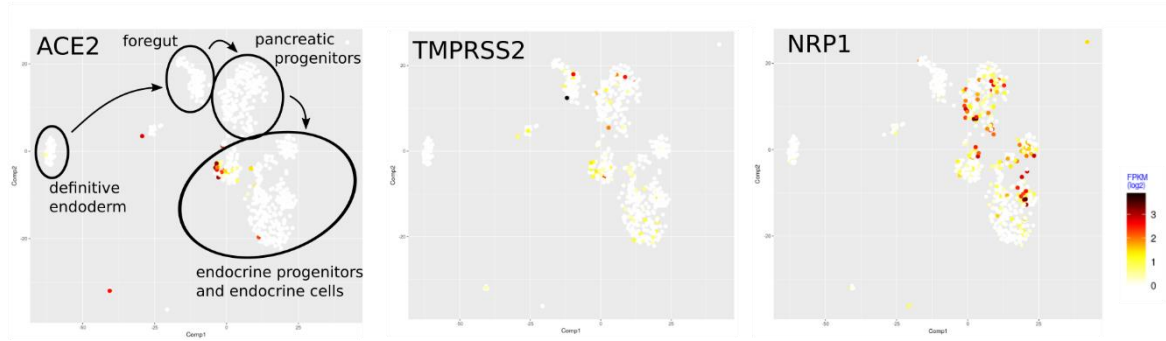


Figure S1. Transcripts encoding SARS-CoV-2 receptors are expressed in developing human pancreas, Related to Figure 1. Single cell RNA-sequencing analysis of pancreatic markers and SARS-CoV-2 receptors (ACE2, TMPRSS2, NRP1) expression in human fetal pancreas at 16-17 weeks of estimated post conceptual age (Cao et al., 2020; extracted from: <https://descartes.brotmanbaty.org/bbi/human-gene-expression-during-development/dataset/pancreas>)

a.



b.



c.

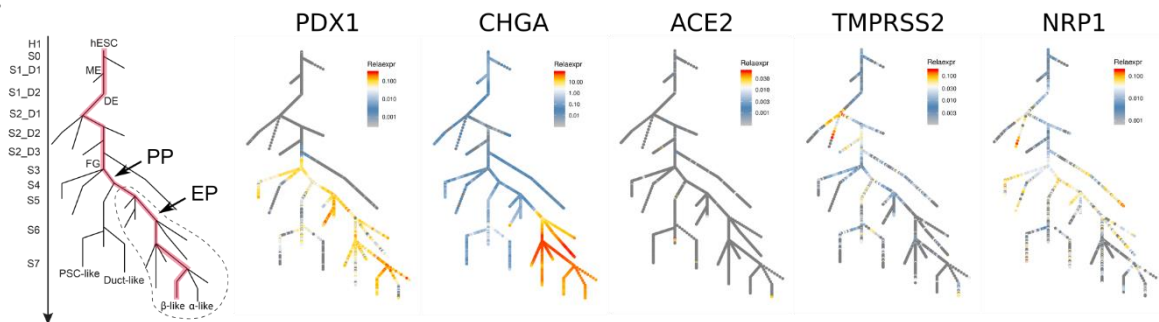


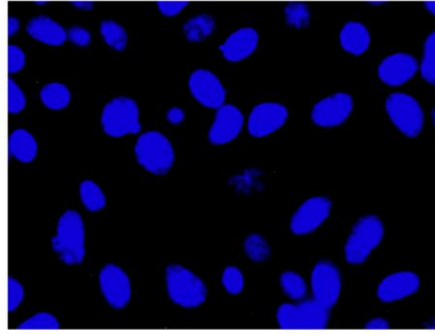
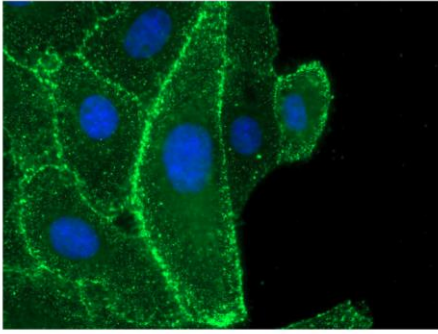
Figure S2. Transcripts encoding SARS-CoV-2 receptors are expressed during *in vitro* differentiation of hPSC into pancreatic endocrine cells, Related to Figure 1.

- a. The induction of different pancreatic progenitors during the hPSC *in vitro* differentiation. Top panel: pancreatic progenitors are marked by expression of PDX1 (in red), NKX2.2 (in green) and NKX6.1 (in green). Scale bar = 100 μ m. Bottom panel: endocrine progenitors are marked by expression of CHGA (in white) and ISL1-GFP (in green). Scale bar = 50 μ m. At the final stage of pancreatic differentiation, β -like cells express C-Peptide (shown in red) and ISL1-GFP (in green). DAPI marks nuclei in blue. Scale bar = 100 μ m.
- b. Single cell RNA-sequencing analysis of SARS-CoV-2 receptors (ACE2, TMPRSS2, NRP1) expression during 3D pancreatic differentiation of hPSCs (Sharon et al., 2019; extracted from: <https://ifx.rc.fas.harvard.edu/invitrobetacells/>)
- c. Single cell RNA-sequencing analysis of SARS-CoV-2 receptors (ACE2, TMPRSS2, NRP1) expression during 3D pancreatic differentiation of hPSCs (Weng et al., 2019; extracted from: <http://hiview.case.edu/public/BetaCellHub/differentiation.php>)

a.

SARS-CoV-2

Mock

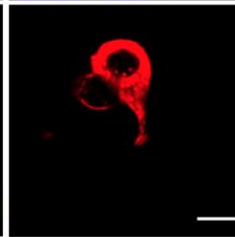
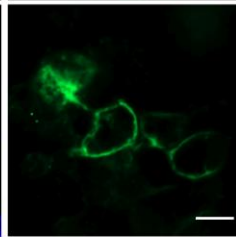
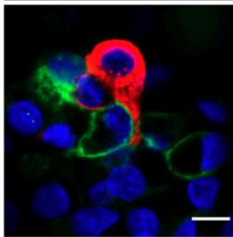
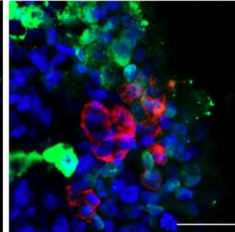
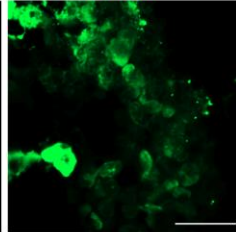
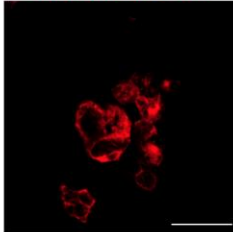


b.

SARS-CoV-2 Nc

CHGA

Merge/DAPI



SARS-CoV-2 Nc

ISL1-GFP

Merge/DAPI

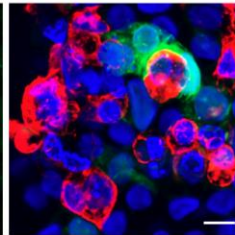
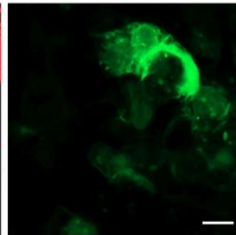
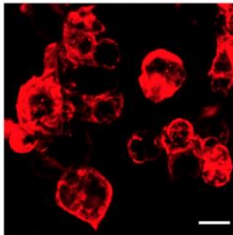


Figure S3. SARS-CoV-2 infects pancreatic endocrine progenitors *in vitro*, Related to Table 1 and Figure 2.

- a. Validation of anti SARS-Cov-2 Nucleocapsid antibody. Detection of SARS-CoV-2 infection in kidney epithelial cells from an African green monkey (Vero E6). Cells were infected with SARS-CoV-2 (TCID₅₀=400/mL), or mock-infected, and fixed in 4% PFA at 48 hpi. SARS- CoV-2 Nc protein was detected with anti-Nc antibodies (1:1000 dilution), followed by secondary antibodies labeled with Alexa Fluor 488. SARS-CoV-2 Nc protein is presented in green, while the blue denotes cellular DNA. Nc = nucleocapsid protein
- b. Colocalization of lineage markers CHGA (green) and ISL1-GFP (green) with SARS-CoV-2 nucleocapsid (red) in hPSC-derived late EP spheroids infected with SARS-CoV-2. DAPI, in blue, marks nuclei. Scale bar = 25 μ m (top) or 10 μ m (middle and bottom).