



Extended Data Fig. 3 | Stage-6 SC- β -cells express characteristic β -cell markers. **a**, **b**, t -SNE projection of stage-6 time-course data shaded by sampling time (**a**) and by representative marker genes (**b**). Expression is normalized relative to maximum value and smoothed over neighbouring cells. **c**, Expression profiles for key genes necessary for β -cell function. Shading displays mean expression (TPM, log-scaled) and diameter denotes fractional expression. **d**, **e**, Comparison of global expression between human islet β -cells and in vitro progenitors (**d**) and SC- β -cells (**e**).

Note the shift in gene expression from progenitors to SC- β -cells. All genes shown in all panels from **c** are circled in red. **f**, Results from GSEA show that gene sets from **c** are significantly upregulated during differentiation. Value plotted is $-\log_{10}$ of the GSEA-reported FDR q -value (capped at 10), with sign (positive or negative) showing the direction of the effect (that is, purple positive values are upregulated in SC- β -cells compared to NKX6.1 progenitors).