

**ESM Fig. 1:** (a) Expression of PW1 (red) and NGN3 (green) in E14.5 mouse pancreas. Only very rare cells co-express both proteins (yellow arrow). Scale bar: 100μm. (b) Far most NGN3<sup>+</sup> cells are hormone and PW1<sup>-</sup> while most of PW1<sup>+</sup> cells are hormone (here GCG in blue). Scale bars: 50μm. (c) At E15.5, E-cadherin expression decreases in PW1<sup>+</sup> cells (red) near ducts during endocrine cell specification (dashed yellow line). Scale bars: 100μm. (d) PW1 (red) is detected in NGN3 (green) null mouse at E11 and E14.5 but not at E17. Scale bars: 100μm.