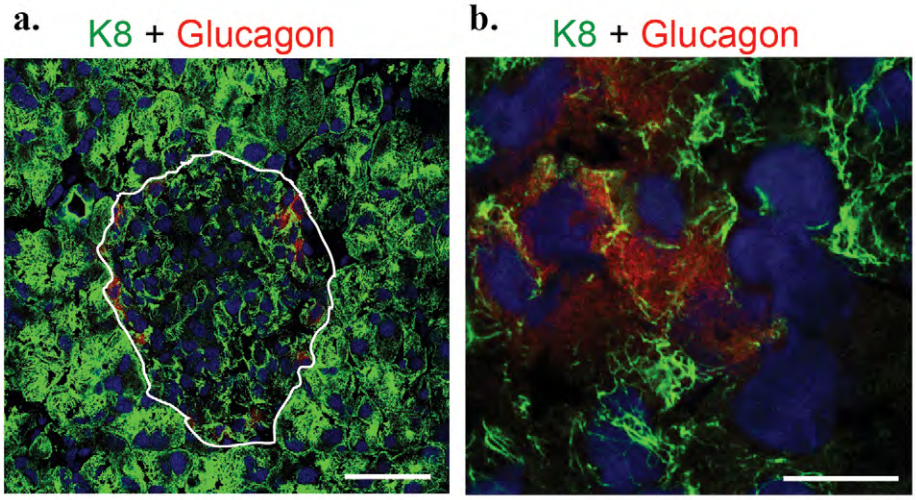

Figure S1. K8 is expressed in glucagon-positive α-cells. Untreated $K8^{+/+}$ mouse pancreas was stained for K8 (green), glucagon (red) and nuclei (blue). a) The white line marks the islet outline, bar = 50μm. b) High magnification of islet cells show that K8 is expressed in glucagon-positive α-cells. Bar = 10μm.

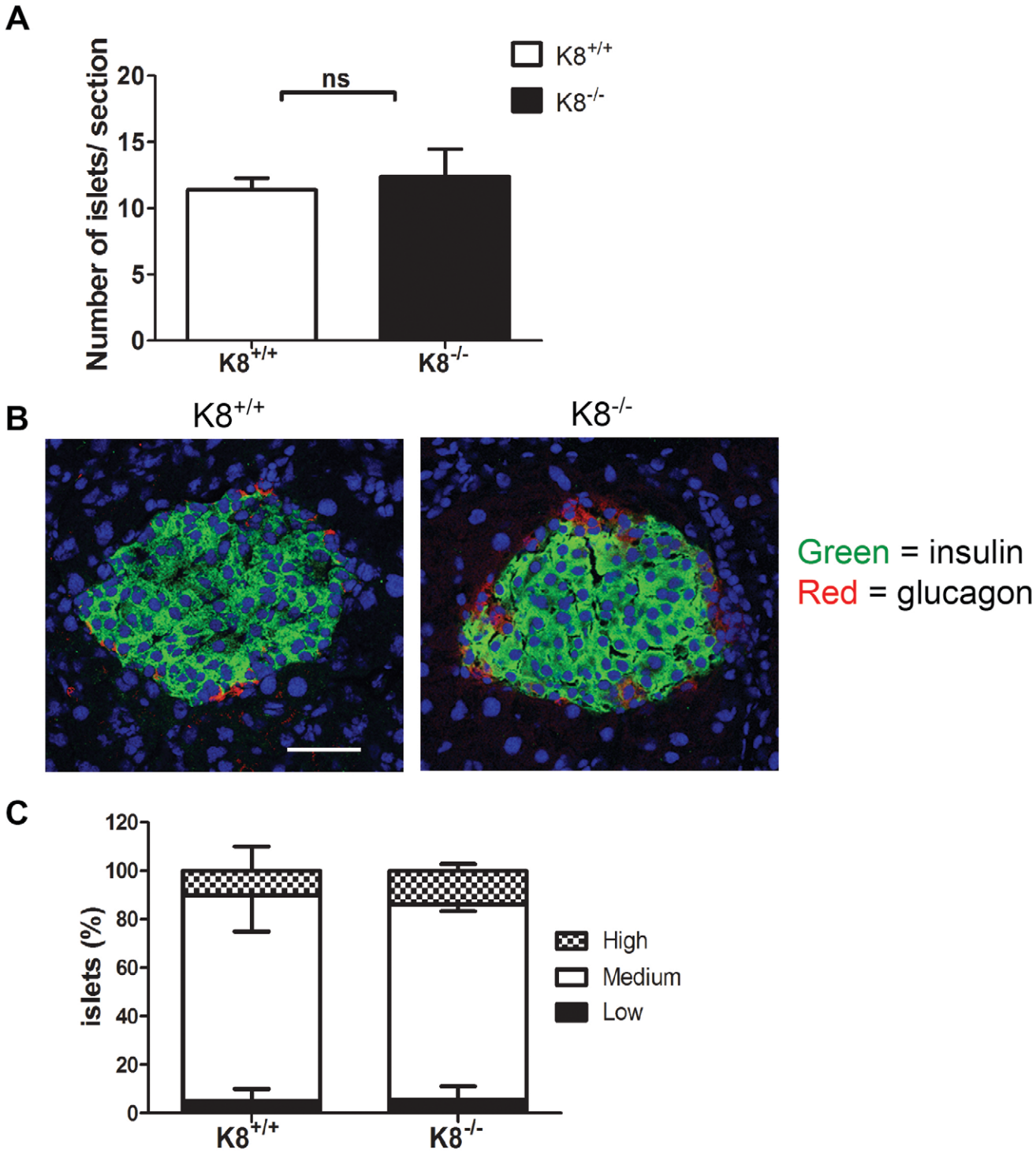

Figure S2. Unaltered number of islets and distribution of α / β-cells after K8 inactivation. A. Islets were counted from 6 longi tudinal sections, 150 µm apart, from roughly the middle thrid of the pancreas obtained from $K8^{+/+}$ and $K8^{-/-}$ mice. Bars represent mean number of islets / section ± SEM. N = 3 mice /groupd, ns = not significant. B. Representative staining for insulin (green), glucagon (red) and nuclei (blue) from pancreatic sections from untreated $K8^{+/+}$ and $K8^{-/-}$ mouse. Bar = 50 µm. C. A semiquantitative estimate of α/β cell ratio in untreated $K8^{+/+}$ and $K8^{-/-}$ mice was acquired by scoring the ratio of glucagon to insulin in immunostained pancreatic sections. A 'low' score = < 10%, 'medium' = 10-20% and 'high' = > 20% glucagon positive cells in the islet. The bar graph shows the average per cent islet sections in $K8^{+/+}$ and $K8^{-/-}$ mice with low (black bars), intermediate (white bars) or high (checked bars) glucagon/insulin ratio. N = 2 mice/ group. No significant difference was seen in α/β-cell ratios in $K8^{-/-}$ islets.

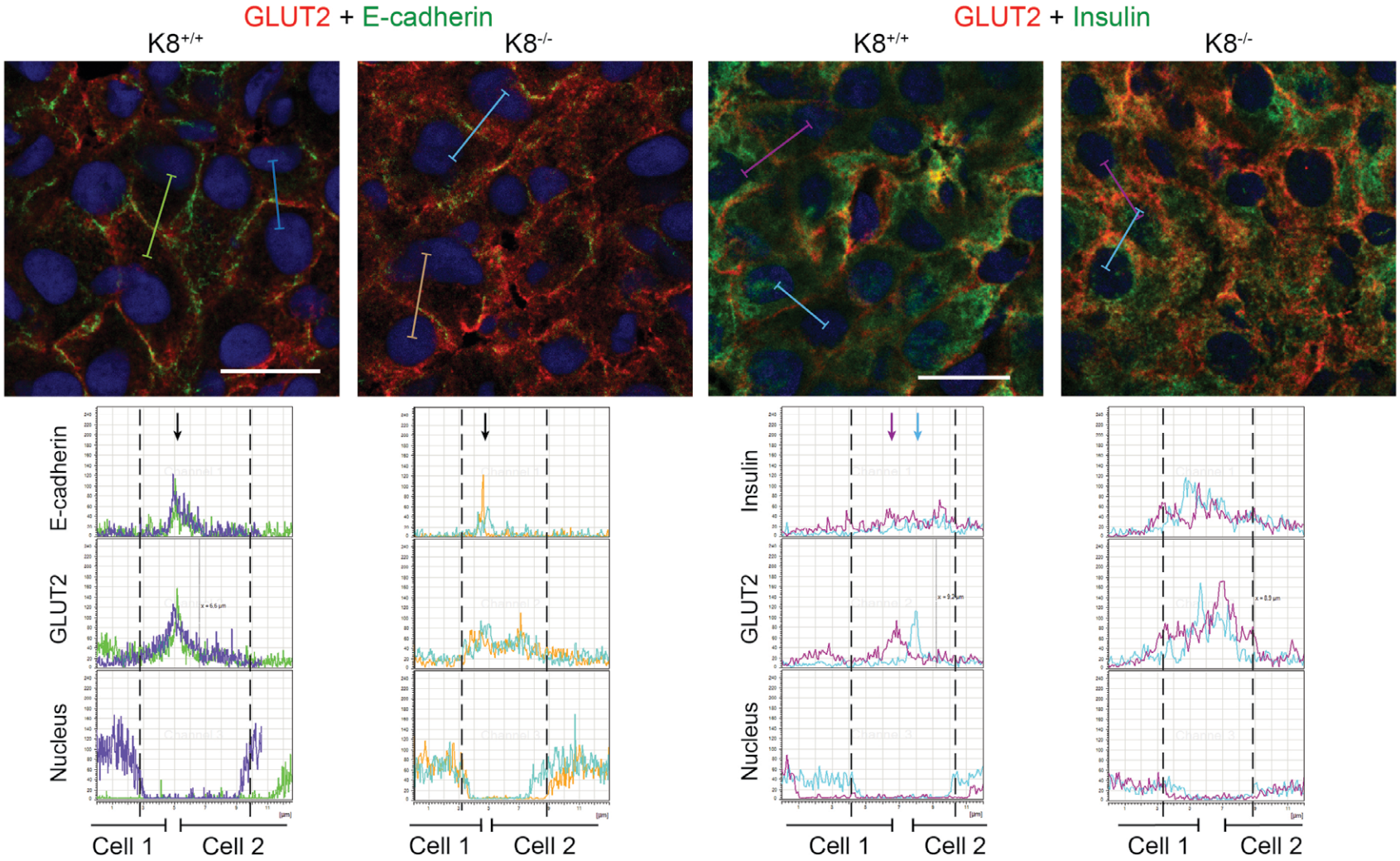

Figure S3. Figure S3. GLUT2 co-localises exclusively with the plasma membrane marker, E-cadherin in $K8^{+/+}$ but not $K8^{-/-}$ β-cells. The figure shows representative immunostainings for GLUT2 (red) with E-cadherin (green) and GLUT2 (red) with insulin (green) from $K8^{+/+}$ and $K8^{-/-}$ pancreatic sections. Nuclei are stained blue, scale bars = 15µm. The histograms below demonstrate co-localisation of GLUT2 and E-cadherin in $K8^{+/+}$ but not in $K8^{-/-}$ β-cells. The histogram y-axes present immunofluorescence intensity and x-axes show the distance of the analysed line. Insulin, was used as a cytosolic marker and co-localised almost entirely with GLUT2 in $K8^{-/-}$ but not in $K8^{+/+}$ β-cells, where GLUT2 shows a narrow fluorescence peak. Arrows above histograms indicate the location of the plasma membrane and the space between the dotted lines indicates roughly the area between nuclei of two adjacent cells (cell1 and cell 2). The histograms are colour-coded to identify the analysed area (same colour in the confocal image as in the histogram below).

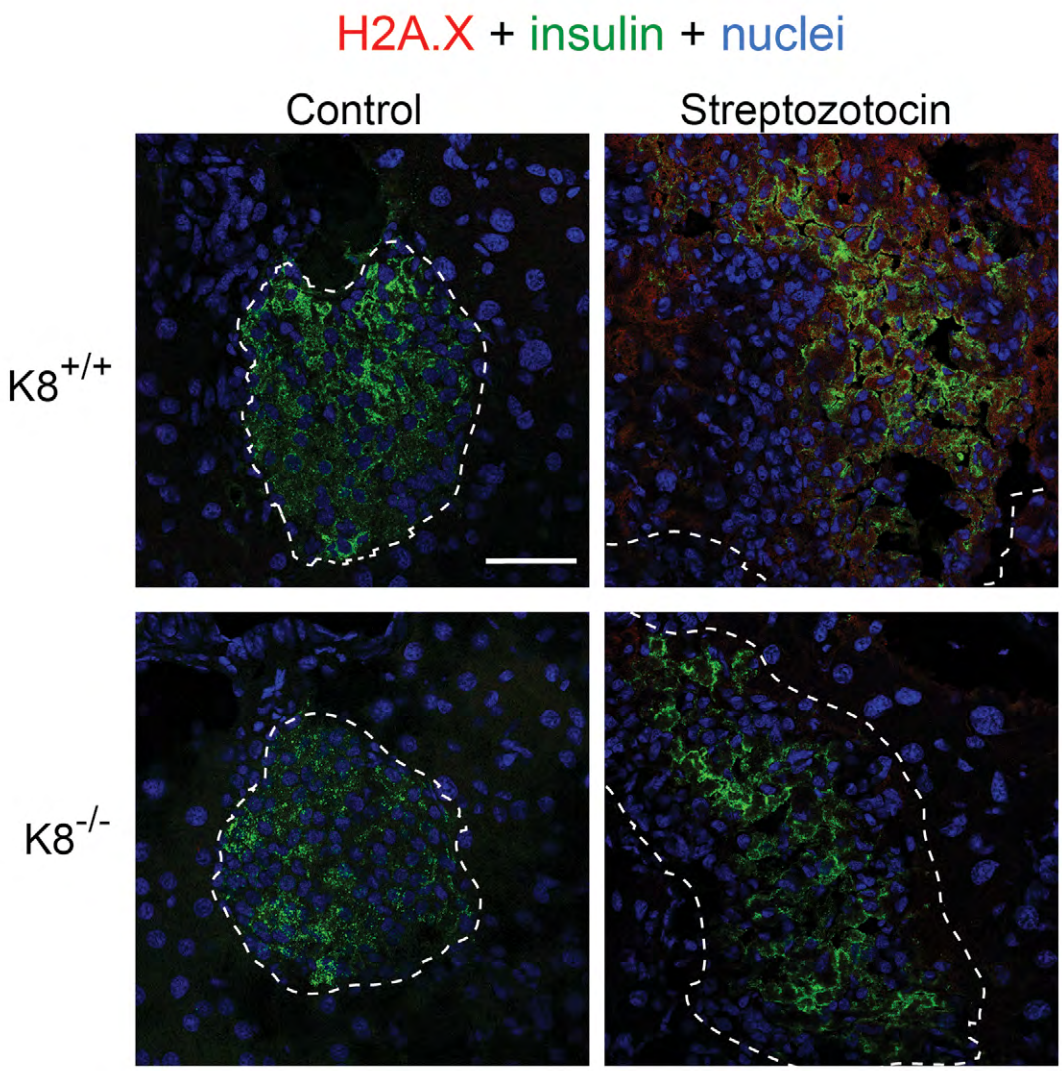

Figure S4. Increased phosphorylated H2A.X in high-dose streptozotocin treated $K8^{+/+}$ compared with $K8^{-/-}$ pancreatic islets. Pancreatic sections from untreated $K8^{+/+}$ and $K8^{-/-}$ mice and streptozotocin (200 mg / kg, i.p.) treated mice were stained for phospho- H2A.X (red), insulin (green) and nuclei (blue). The endocrine islets are indicated with white broken lines. Phosphorylated H2A.X, which is induced in apoptotic cells, was readily observed in the islets of $K8^{+/+}$ mice, but was barely detectable in the $K8^{-/-}$ islets. Untreated control $K8^{+/+}$ and $K8^{-/-}$ pancreas sections were negative for phosphorylated H2A.X. Scale bar = 50 μm.