

**Title: Supplementary Data 1.**

**Description: Gene regulation under acute and chronic ER stress.**

Ovs1 RNA-up, upregulation of transcriptome in CPA1/CON; Ovs1 RNA-down, downregulation of transcriptome in CPA1/CON; Ovs1 tl-up, upregulation of translome in CPA1/CON; Ovs1 tl-down, downregulation of translome in CPA1/CON; Ov18 RNA-up, upregulation of transcriptome in CPA18/CON; Ov18 RNA-down, downregulation of transcriptome in CPA18/CON; Ov18 tl-up, upregulation of translome in CPA18/CON; Ov18 tl-down, downregulation of translome in CPA18/CON; 1v18 RNA-up, upregulation of transcriptome in CPA18/CPA1; 1v18 RNA-down, downregulation of transcriptome in CPA18/CPA1; 1v18 tl-up, upregulation of translome in CPA18/CPA1; 1v18 tl-down, downregulation of translome in CPA18/CPA1. Ovs1 mRNA, ratio of mRNA-seq in CPA1/CON; Ovs1 RP, ratio of Ribo-seq in CPA1/CON; Ov18 mRNA, ratio of mRNA-seq in CPA18/CON; Ov18 RP, ratio of Ribo-seq in CPA18/CON; 1v18 mRNA, ratio of mRNA-seq in CPA18/CPA1; 1v18 RP, ratio of Ribo-seq in CPA18/CPA1.

**Title: Supplementary Data 2.**

**Description: UPR signature (GO:0030968) used in this study.**

MIN6 Ovs1 mRNA, ratio of mRNA-seq in CPA1/CON; MIN6 Ovs1 RP, ratio of Ribo-seq in CPA1/CON; MIN6 Ov18 mRNA, ratio of mRNA-seq in CPA18/CON; MIN6 Ov18 RP, ratio of Ribo-seq in CPA18/CON. #N/A, genes not identified in this study.

**Title: Supplementary Data 3.**

**Description: Summary of  $\beta$ EAR gene expression in MIN6, scRNA-seq and microarray in this study.**

MIN6-18v0-mRNA, gene expression in mRNA-seq in MIN6 cells in CPA18/CON; MIN6-18v0-RP, gene expression in Ribo-seq in MIN6 cells in CPA18/CON; scRNA-T1D/CON, gene expression in scRNA-seq in T1D/healthy; microarray-T1D/CON, gene expression in microarray in T1D/healthy. L.Q., low quality or missing data; N.D., not detected.

**Title: Supplementary Data 4.**

**Description: List of existing microarray data from human subjects used in this study.**

**Title: Supplementary Data 5.**

**Description: DNA oligos used in this study.**