

Expanded View Figures

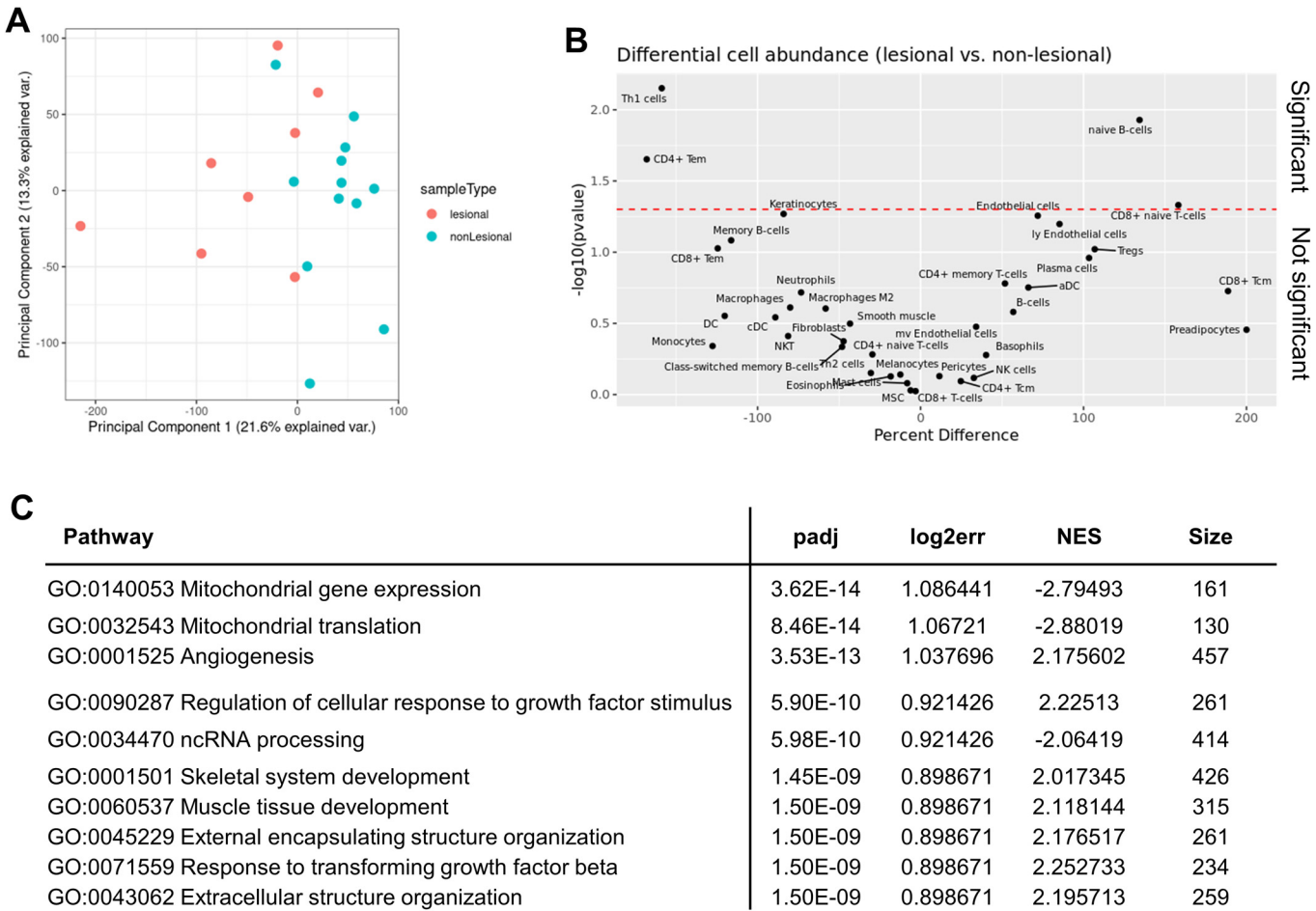
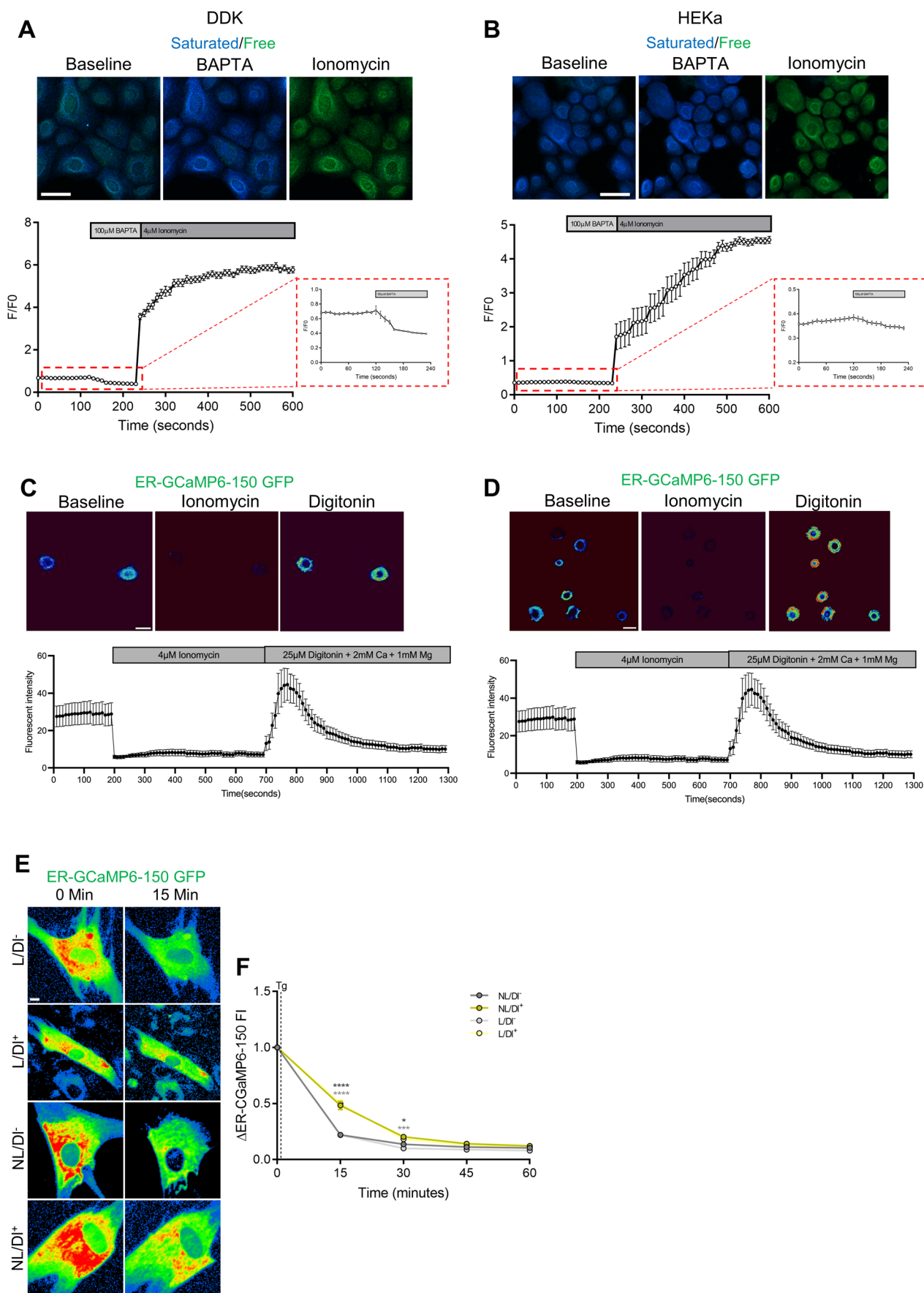


Figure EV1. RNAseq analysis of lesional and non-lesional DD skin biopsies. (A) Principal component analysis (PCA) plots based on mRNA expression profiles. Each dot represents an individual patient. Red = lesional skin; blue = non-lesional skin. (B) Table of the top ten most significantly differently expressed Gene Ontology (GO) pathways in lesional vs non-lesional skin. NES = normalized enrichment score; size = number of genes in each respective pathway. (C) Volcano plot showing differential cell abundance of cell types between lesional and non-lesional biopsies derived from deconvolution analysis. Statistical significance determined through paired *t* tests.



**Figure EV2. Ca^{2+} live cell imaging calibration.**

(A, B) Graph and representative images of Fura Red cytosolic Ca^{2+} calibration in (A) DDK and (B) Tg HEKa. Scale bars = 25 μm . (C, D) Graph and representative images of ER- Ca^{2+} calibration in (C) DDK and (D) Tg HEKa. Scale bar = 25 μm . (E) Representative pseudocoloured images of ER- Ca^{2+} imaging in DDF. Colors are adjusted in the same manner. Scale bar = 10 μm . (F) Graph (mean $\pm$ SEM) of ER- Ca^{2+} fluorescence in DDF. Two-way ANOVA; **** $P < 0.0001$; *** $P \leq 0.001$; * $P \leq 0.05$. Source data are available online for this figure.

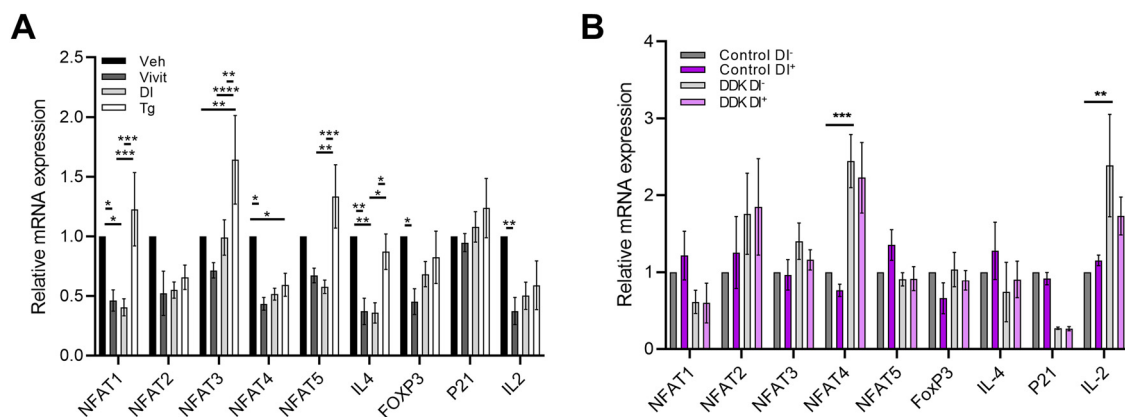


Figure EV3. Gene expression analysis of NFAT markers.

(A, B) RT-qPCR quantification (mean $\pm$ SEM) of relative mRNA gene expression of different NFAT markers in (A) HEKa cells and (B) DDK cells. Vivit was used as a negative control to inhibit NFAT marker expression. *P* values were calculated by two-way ANOVA; *****P* $\leq$ 0.0001; ****P* $\leq$ 0.001; ***P* $\leq$ 0.01; **P* $\leq$ 0.05; *N* = 3 biological replicates containing 3 technical replicates for all conditions. Source data are available online for this figure.

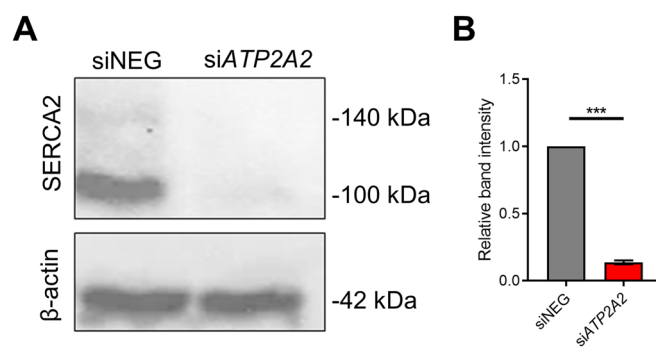


Figure EV4. Optimization of ATP2A2 knockdown.

(A) Representative immunoblots depicting SERCA2 downregulation in HEK293 cells transfected with either siNEG or siATP2A2. (B) Relative band intensity quantification (mean $\pm$ SEM) of SERCA2 protein expression after normalization to β -actin. *P* values two-way ANOVA; ****P* $\leq$ 0.001. *N* = 3 biological replicates.