SUPPLEMENTARY INFORMATION

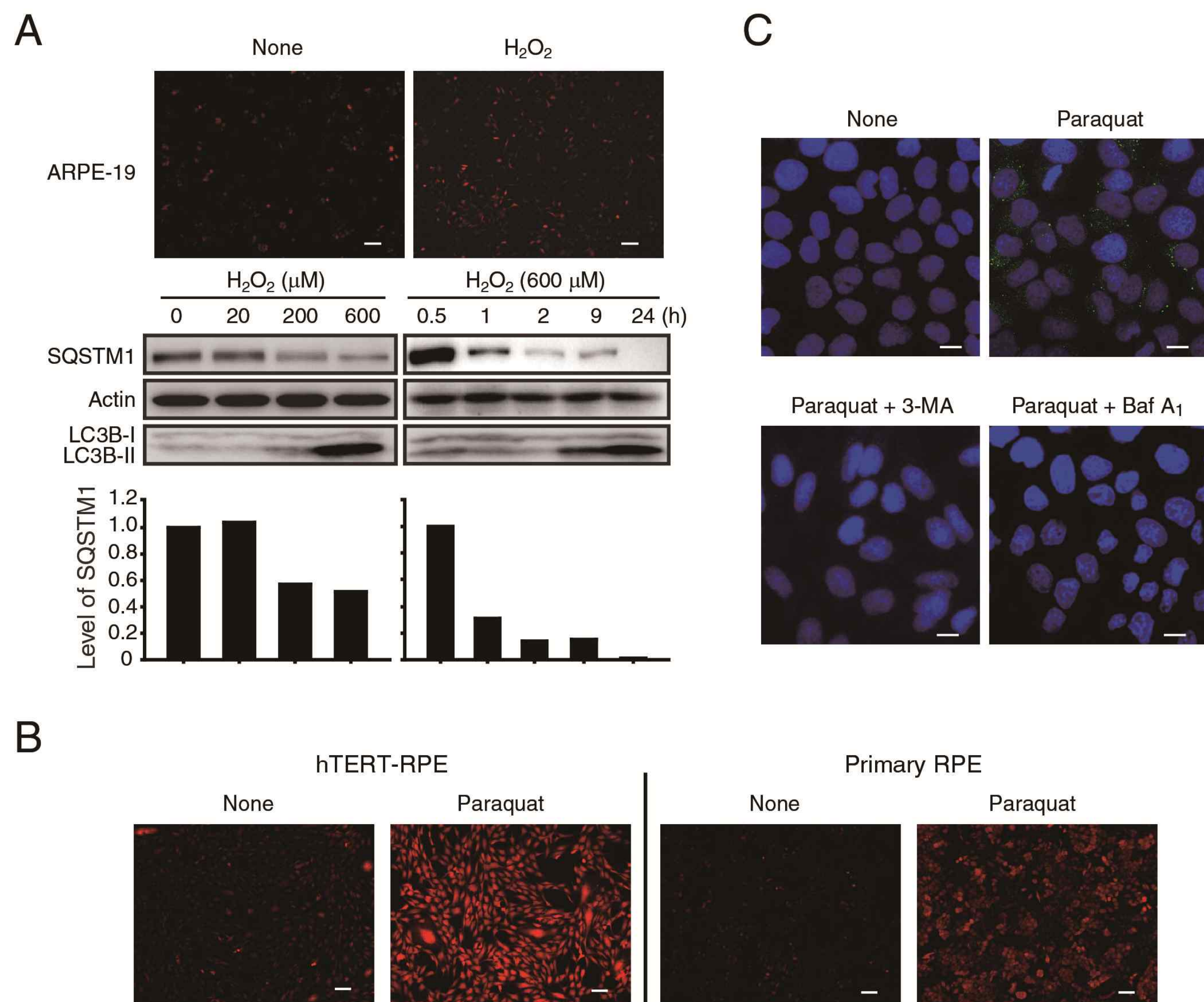


Figure S1. Reactive oxygen species induce autophagy in RPE cells. (**A**) Fluorescence microscopy images and western blot analysis of ARPE-19 cells exposed to H_2O_2. Fluorescence microscopy images of DCFDA-stained ARPE-19 cells exposed to H_2O_2 (600 μM) for 24 h (top panel). Western blot analysis of autophagy markers such as SQSTM1 and LC3-I, -II in ARPE-19 cells (bottom panel). Cells were exposed to various concentrations of H_2O_2 for 24 h or fixed concentration of H_2O_2 for various times. (**B**) Fluorescence microscopy images of DCFDA-stained hTERT-RPE and human primary RPE cells exposed to paraquat (400 μM) for 24 h. (**C**) ARPE-19 cells were treated with 400 μM paraquat in the absence or presence of either 10 mM 3-MA or 50 nM Baf A_1 for 24 h. Fluorescence microscopy images show autophagic vacuoles formed in ARPE-19 cells, which are stained as green puncta. Nuclei are represented with blue fluorescence (TOPRO-3 staining).

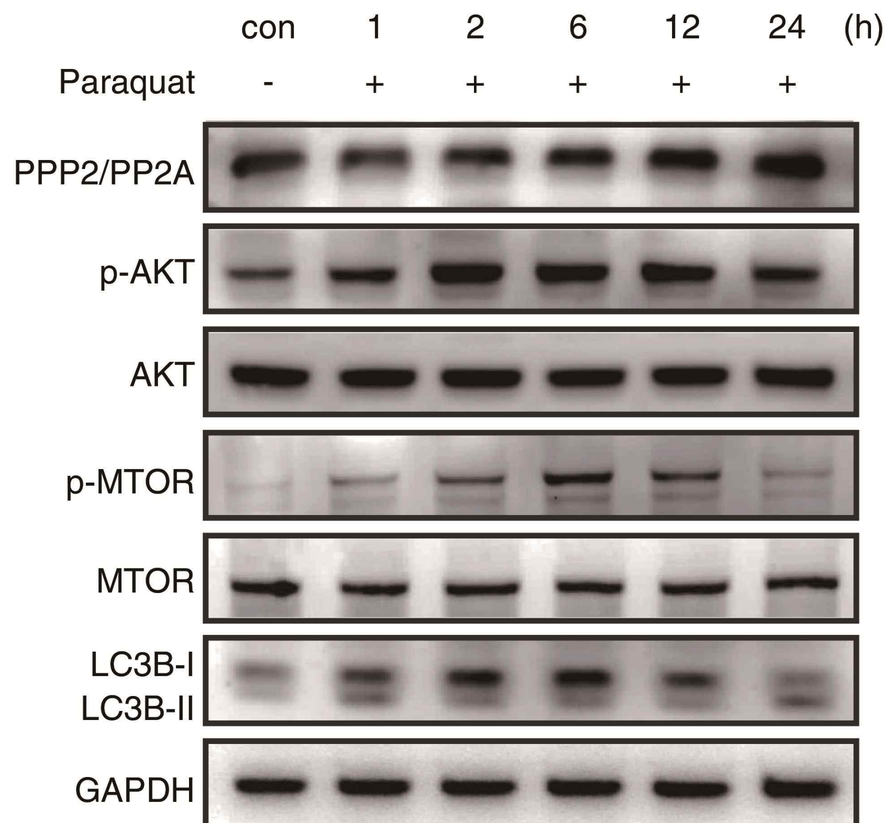


Figure S2. Oxidative stress-induced autophagy is mediated by the AKT-MTOR pathway in RPE cells. Western blot analysis of PPP2/PP2A, AKT and its phosphorylated form (p-AKT), MTOR and its phosphorylated form (p-MTOR), and LC3-I, -II in ARPE-19 cells. Cells were exposed to 400 μM paraquat for various times (1 to 24 h).

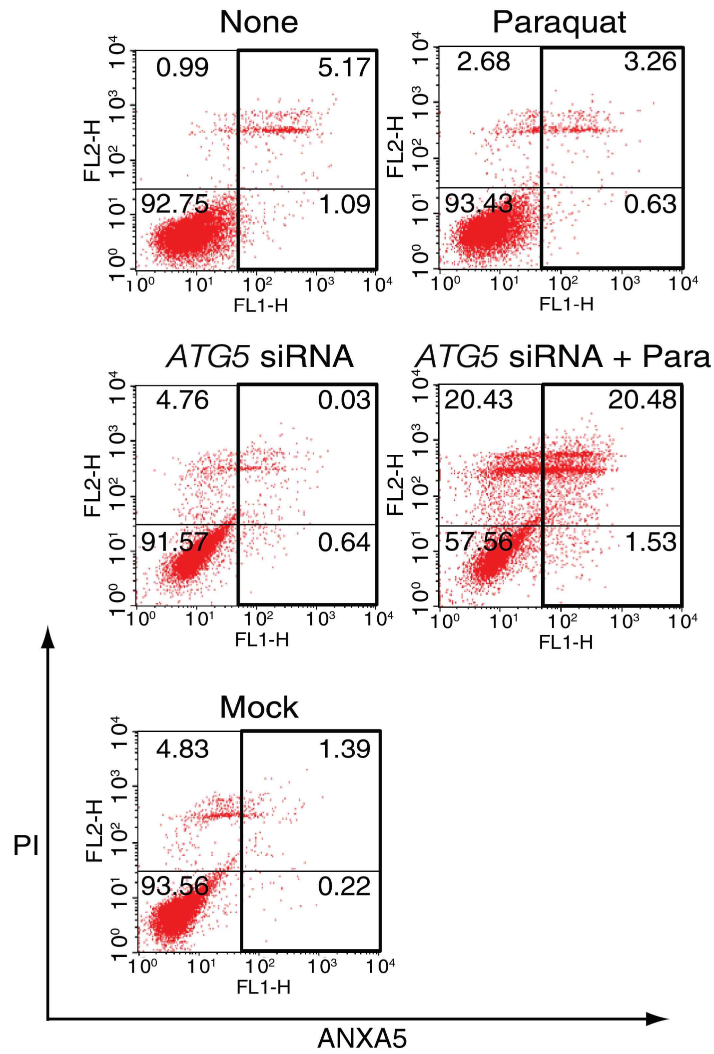


Figure S3. Inhibition of autophagy increases apoptotic cell death in RPE cells under oxidative stress. ARPE-19 cells were transfected with *ATG5* siRNA in the absence or presence of paraquat (400 μM) for 24 h. Cells were stained with FITC conjugated ANXA5 and propidium iodide (PI) and analyzed by FACS.

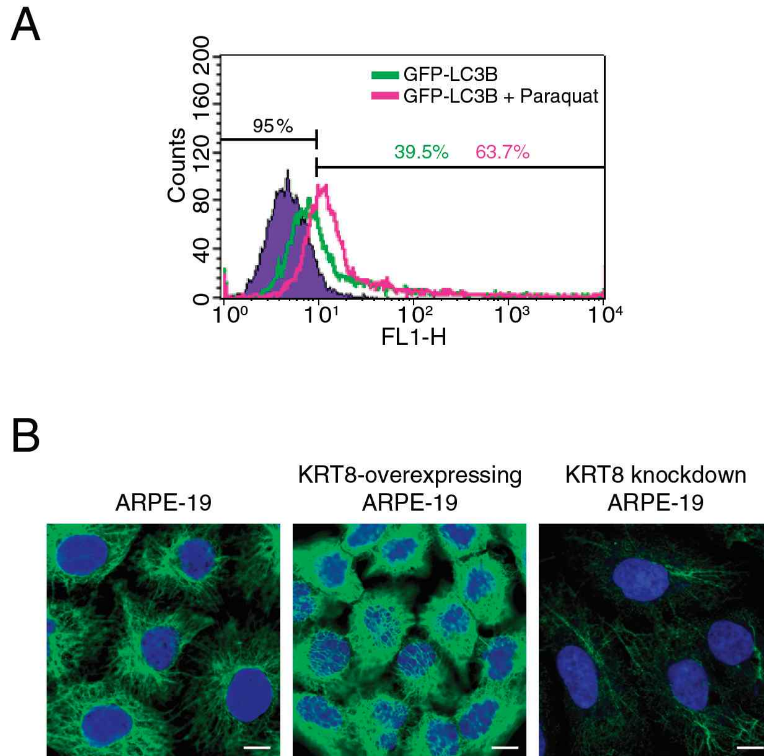
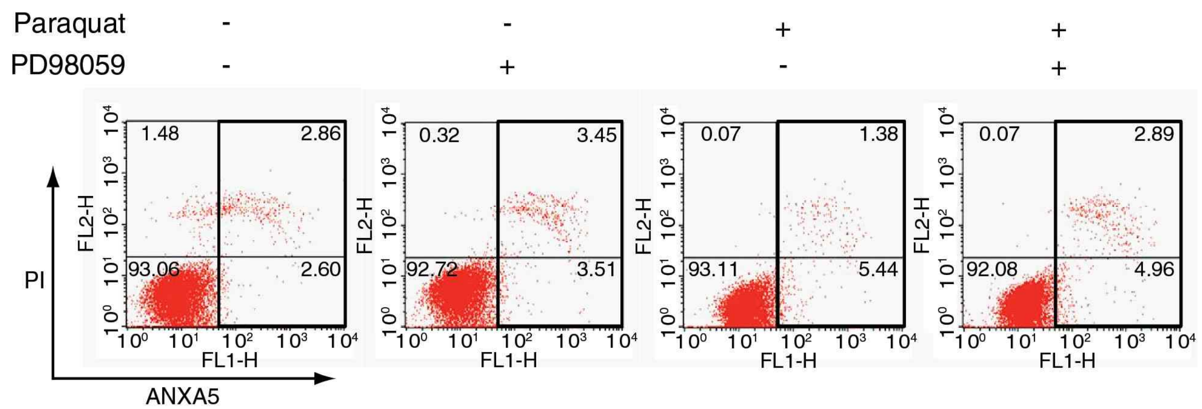


Figure S4. Transfection efficiency of GFP-LC3B plasmid DNA into ARPE-19 cells and different KRT8 expression in ARPE-19 cells by either plasmid DNA or anti-*KRT8* siRNA transfection. (**A**) ARPE-19 cells were transfected with GFP-LC3B-encoding plasmid DNA. Transfection efficiency was measured by measurement of GFP fluorescence using flow cytometer in the absence or presence of paraquat (400 μM). (**B**) Fluorescence microscopy images of ARPE-19 cells for KRT8 expression, which were differently prepared by either *KRT8* plasmid DNA or anti-*KRT8* siRNA transfection. Cells were immunostained for KRT8 (green fluorescence) and nuclei (blue fluorescence). Scale bar: 5 μm.



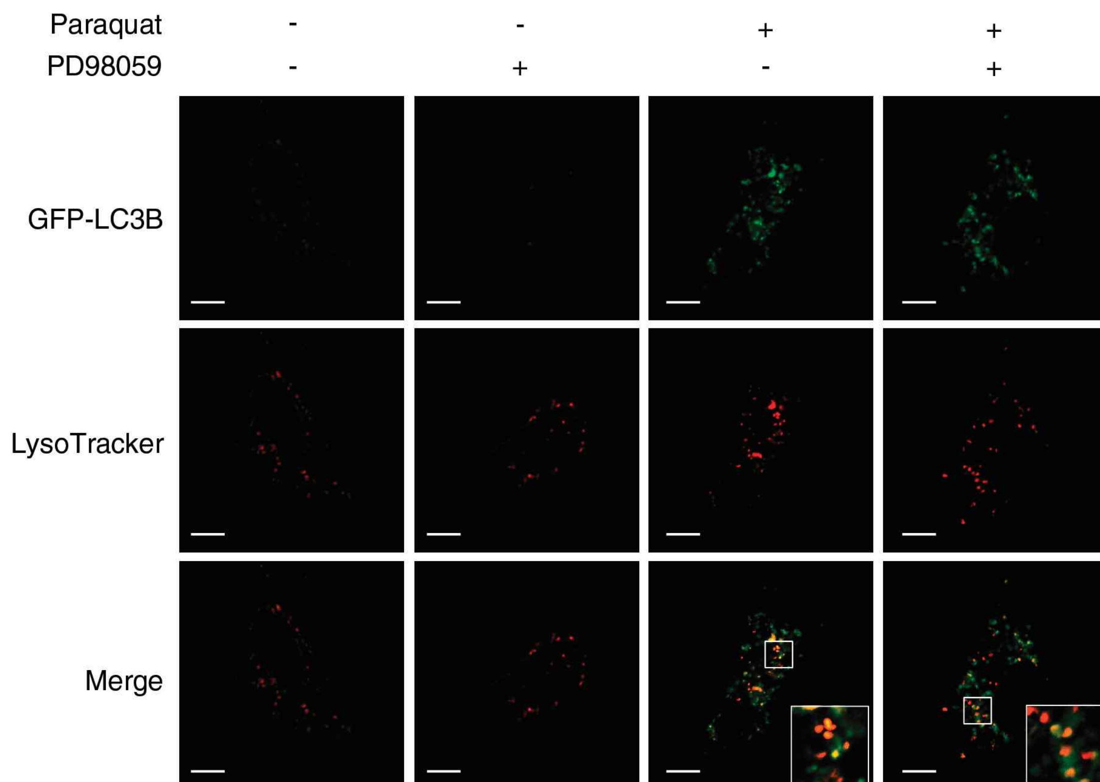


Figure S5. Apoptotic cell death and inhibition of autophagy are not affected by PD98059 in RPE cells under oxidative stress. (**A**) FACS analysis of ARPE-19 cells exposed to paraquat (400 μM) for 24 h in the absence or presence of PD98059 (20 μM). (**B**) ARPE-19 cells transfected with GFP-LC3B were treated with paraquat (400 μM) in the absence or presence of PD98059 (20 μM) for 24 h. Fluorescence microscopy images of the cells were obtained by monitoring GFP-LC3B puncta (green fluorescence) and the lysosomes were stained with LysoTracker Red DND-99 (red fluorescence). Scale bar: 10 μm. Enlarged and merged fluorescence images show the detection of GFP-LC3B puncta and lysosomes.