Supplementary Material

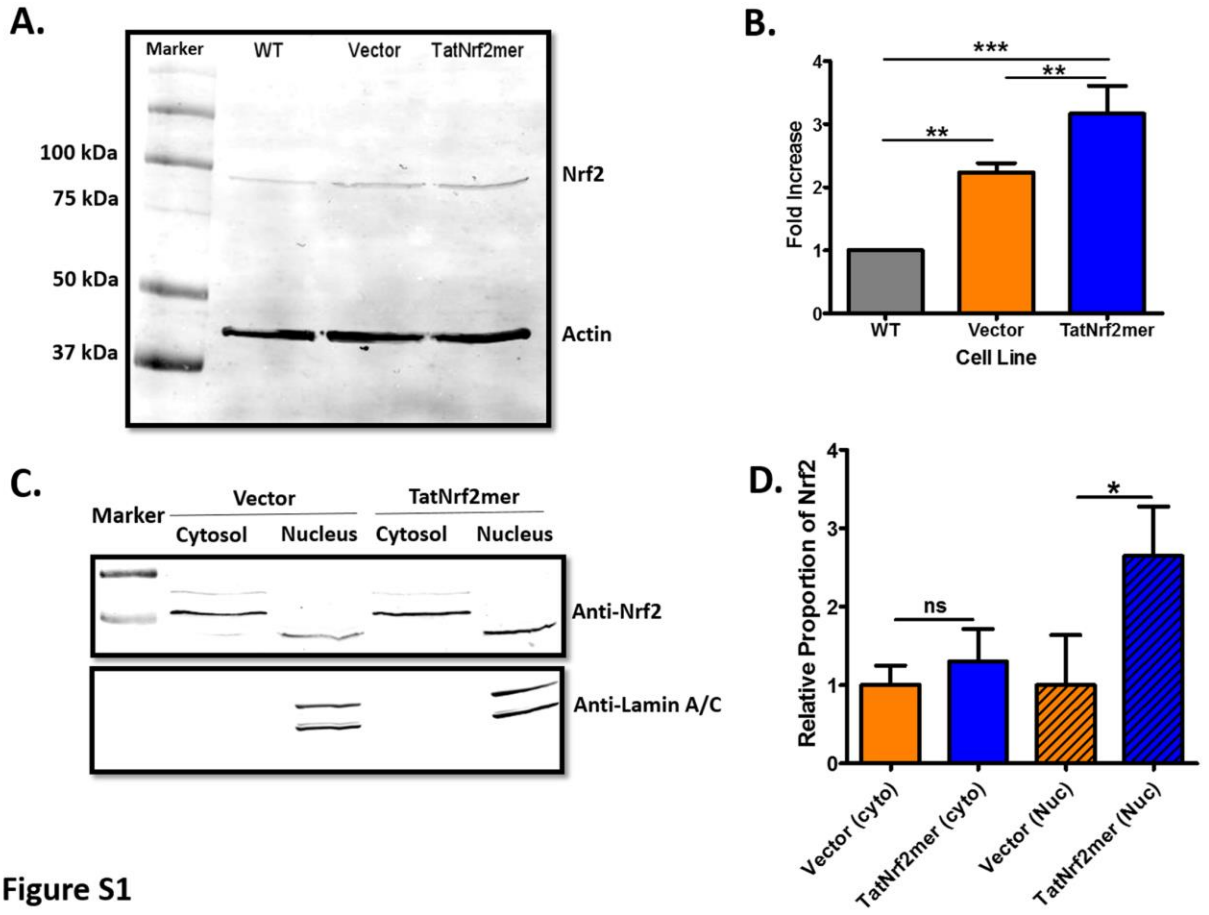

Figure S1

Fig S1. TatNrf2mer stabilizes the expression and induces the nuclear translocation of endogenous Nrf2. A. ARPE-19 cells transduced with lentiviral vector delivering the PuroR (vector) or the TatNRf2mer fused to the PuroR were selected in puromycin. Cells were lysed and cleared lysates were loaded on a 10% SDS-PAGE. Expression of Nrf2 was determined by western blot while actin levels were measured as a loading control. **B.** The intensity of the Nrf2 and actin bands in each lane as quantified by ImageJ software and the ratio of Nrf2 to actin was determine to compare lanes. Statistical analysis shows a significant increase of Nrf2 in vector cells and TatNrf2mer cells, with the latter showing a higher increase over wild type (WT) ARPE-19 cells. **C.** To determine the cellular localization of Nrf2, cells were fractionated and the cytoplasmic and nuclear fractions were separated on an SDS-PAGE. The band corresponding to

Nrf2 was significantly stronger in the nuclear fraction of cells expressing TatNrf2mer when compared to vector nuclear fraction. These nuclear fraction bands of Nrf2 migrated more quickly in the electrical field than the bands detected in the cytosolic fraction. Fractions were probed with anti-Lamin A/C antibody to validate the presence of Nrf2 within the nuclear fraction. **D.** The density of the bands was quantified using imageJ software to determine statistical significance. Values are reported as average +/- stdev (n=3 western blot images).

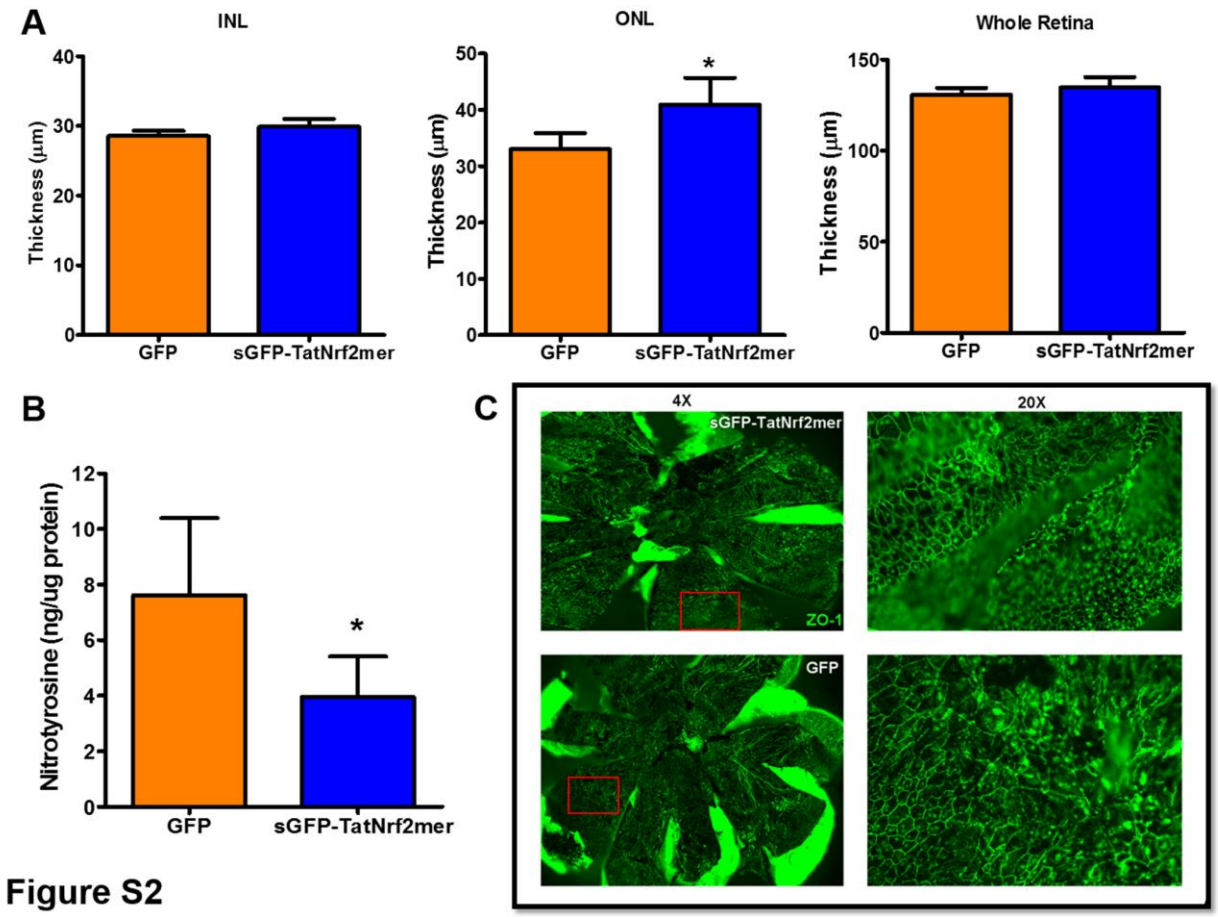

Figure S2

Figure S2. Expression of sGFP-TatNrf2mer partially protects the structure of the retina from $NaIO_3$ by decreasing oxidative stress. Mice treated with 25 mg/kg $NaIO_3$ were evaluated by SD-OCT nine days after $NaIO_3$. **A.** The thickness of the inner nuclear layer (INL), the outer

nuclear layer (ONL) and the whole retina were measured from the OCT images. The ONL thickness of the eyes treated with sGFP-TatNrf2mer vector was significantly greater when compared to eyes treated with the GFP vector. **B.** Retinas and RPE were harvested from 6 of these mice and protein were extracted in PBS containing protease inhibitors. The amount of nitrotyrosine in 10 µg of protein lysate was quantified by ELISA. Values are reported as average +/- SEM (n= 9 animals in A, and n= 6 retina lysates in B). **C.** RPE flatmounts were prepared from mouse eyes. To detect morphological alterations of the RPE layer, tissue samples were stained with an antibody against ZO-1. Images show damage to the cobblestone morphology of the RPE in both interventions, with better integrity of the monolayer in the peripheral RPE layer of the sGFP-TatNrf2mer expressing eyes.