

## **ABSTRACT**

The invention provides compositions and kits including at least one nucleic acid or polypeptide molecule encoding for a mutant CoChop protein. Methods of the invention include administering a composition comprising a mutant CoChop to a subject to preserve, improve, or restore phototransduction. Preferably, the compositions and methods of the invention are provided to a subject having impaired vision, thereby restoring vision to normal levels.

[Figure 1]