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(54) Title: REGENERATION OF RETINAL GANGLION CELLS

(57) Abstract: Provided herein are compositions and methods for regenerating retinal ganglion cells (RGCs) from retinal neuron cells by activating transcription factors such as one or more of Atoh7, Brn3B, Sox4, Sox11, or Ils1. The retinal neuron cells may be interneuron cells such as amacrine cells, horizontal cells, and bipolar cell. The regenerated RGCs can project axons into discrete subcortical brain regions and establish retina-brain connections. They can respond to visual stimulation and transmit electrical signals into the brain. Therefore, the regenerated RGCs can replace damaged or degenerated RGCs, thereby treating vision impairment or blindness. The methods are likewise applicable to degenerated, damaged, or aged RGCs to stimulate them to regrow functional axons, thereby rejuvenating these RGCs.

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