Docket #: S20-457

Method of gene delivery to retinal astrocytes for the treatment of glaucoma and other optic neuropathies

Stanford researchers in the Goldberg lab have developed a novel method for targeted gene therapy delivery to retinal astrocytes for the treatment of glaucoma and other optic neuropathies. Glaucoma is the leading cause of irreversible blindness world-wide, affecting millions of adults in the United States alone. The disease is characterized by the degeneration and loss of retinal ganglion cells (RGCs), a type of neuron that functions in transmitting visual signals from the retina to the optic nerve. Glaucoma is also characterized by functional changes in the astrocytes of the retina and optic nerve head (ONH), which function to support and protect RGCs. Current eyedrop treatments for glaucoma are aimed at reducing elevated intraocular pressure (IOP) and slowing progression of the disease. Unfortunately, these treatments lose effectiveness at the later stages of the disease and fail to directly target the role retinal and ONH astrocytes play in glaucoma progression. This new methodology allows for highly specific targeting of viral vector gene therapies to retinal and ONH astrocytes, facilitating novel and desperately needed modalities for the treatment of glaucoma and other optic neuropathies.

Applications

- Targeted gene therapy delivery to retinal/optic nerve head astrocytes
- Glaucoma
- Optic neuropathies

Advantages

- No existing gene therapies for glaucoma and other optic neuropathies
- No existing methods for targeting gene therapy to retinal/optic nerve head astrocytes

Patents

- Published Application: WO2022169863
- Published Application: 20240075167

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