

Novel methods to treat glaucoma

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Glaucoma is characterized by degeneration of retinal ganglion cells, leading to irreversible vision loss. Currently, the only treatable glaucoma risk factor is increased intraocular pressure. While lowering this pressure can slow vision loss, it does not completely halt progression of the disease. Therefore, determining more direct mechanisms to prevent retinal cell degeneration are essential.

Rebecca Sappington, Ph.D., and colleagues show that increasing cGMP—part of a signaling pathway that was previously found to regulate [intraocular pressure](#)—protects retinal ganglion [cells](#).

The investigators used mouse models of glaucoma, isolated mouse retinas, and cultured [retinal ganglion cells](#) to explore cGMP action. In the mouse models, they found that inhibiting the enzyme that breaks down cGMP prevented retinal ganglion cell degeneration without altering intraocular pressure. In cultured cells, addition of a cGMP-like compound blocked cell death pathways.

Reporting in *Neurobiology of Disease*, this study suggests a novel glaucoma treatment that utilizes a direct cellular target and is independent of intraocular pressure.

More information: Lauren K. Wareham et al. Increased bioavailability of cyclic guanylate monophosphate prevents retinal ganglion cell degeneration, *Neurobiology of Disease* (2018). [DOI: 10.1016/j.nbd.2018.09.002](#)

Provided by Vanderbilt University

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