

Retinal Astrocytes and GABAergic Wide-Field Amacrine Cells Express PDGFR β : Connection to Retinal Ganglion Cell Neuroprotection

Takahama S (1) , Adetunji MO (1) , Zhao T (2) , Chen S2, Li W (2) , Tomarev SI (1)

1 Section on Retinal Ganglion Cell Biology, Laboratory of Retinal Cell and Molecular Biology, National Institutes of Health, Bethesda, Maryland, United States.

2 Retinal Neurophysiology Section, National Eye Institute, National Institutes of Health, Bethesda, Maryland, United States.

PURPOSE: Our previous experiments demonstrated that intravitreal injection of platelet-derived growth factor-AA (PDGF-AA) provides retinal ganglion cell (RGC) neuroprotection in a rodent model of glaucoma. Here we used PDGFR β -enhanced green fluorescent protein (EGFP) mice to identify retinal cells that may be essential for RGC neuroprotection.

METHODS: PDGFR β -EGFP mice expressing nuclear-targeted EGFP under the control of the PDGFR β promoter were used to identify retinal cells that express PDGFR β .

RESULTS: In the mouse neural retina, PDGFR β was preferentially localized in the ganglion cell and inner nuclear layer.

CONCLUSIONS: These data indicate that the neuroprotective effect of PDGF-AA in a rodent model of glaucoma could be mediated by astrocytes and/or a subpopulation of amacrine cells. We suggest that after intravitreal injection of PDGF-AA, these cells secrete factors protecting RGCs.

Invest Ophthalmol Vis Sci. 2017 Sep 1;58(11):4703-4711. doi: 10.1167/iovs.21783.

PMID: 28910446

<http://www.ncbi.nlm.nih.gov/pubmed/28910446>