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### Multiple targets of a single molecule: A new strategy for glaucoma treatment

#### Abstract:

Glaucoma is an important cause of irreversible blindness, which is characterized by the loss of retinal ganglion cells and their axons. The current treatment methods cannot cure glaucoma and can only delay the course of the disease. Therefore, there is an urgent need to understand the pathogenesis of glaucoma and search for potential therapeutic targets. Rho small G protein Rac1 is an important intracellular signal transduction molecule that functions in a cell-type specific manner during physiological and pathological processes. Our work has revealed that Rac1 knockout in RGC can inhibit RGC apoptosis and alleviate axonal dysfunction in an experimental glaucoma model; Rac1 knockout in astrocytes increases the survival of RGCs; Inhibition of Rac1 activity promotes ATP release from astrocytes through connexin 43 and protects RGCs from injury by adenosine receptor 3 in glaucoma. Moreover, the specific inhibition of Rac1 in microglial cells also contributes to block the damage of glaucomatous RGCs. The combined inhibition of Rac1 in glial cells and RGCs showed a more effective neuroprotection in glaucoma. Our work suggests that Rac1, as signal hub molecule with multiple targets, may be a new potential neuroprotective candidate molecule for glaucoma treatment.

#### Biography

**Yanying Miao** received her Ph.D. degree from Peking University in 2007. She visited the University of Chicago as a scholar from 2012 to 2013. She serves as a director member of Shanghai Physiological Society. She has published more than 40 papers in reputed journals.