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Pharmacology & Neuroscience
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Area of Expertise

My laboratory works on the development of endothelin receptor antagonists as neuroprotective agents for the treatment of glaucoma. Glaucoma is often referred to as the “sneak thief of sight” since the disease generally produces minimal pain or discomfort. Glaucoma is an optic neuropathy, commonly associated with an elevation of intraocular pressure, resulting in the degeneration of the optic nerve and loss of retinal ganglion cells, which could lead to loss of vision. Currently, the mainstay of glaucoma treatment is reduction in intraocular pressure, however, neurodegenerative effects persist in some patients. Hence, there is an unmet need for neuroprotective treatments for glaucoma.

Our prior studies have shown that endothelin receptors are increased in a rodent model of glaucoma and contribute to damage to the optic nerve and death of retinal ganglion cells. We are currently testing endothelin receptor antagonists for their ability to promote neuroprotection, following elevation of intraocular pressure in rats. The long term goal is to understand mechanisms by which a blockade of the endothelin receptor could promote neuroprotection and develop neuroprotective treatments for glaucoma patients.

Qualifications

PhD in Biochemistry, University of Bombay
MS in Biochemistry, University of Bombay
BS in Chemistry, University of Bombay

Recent Publications

Correction: Systemically administered peptain-1 inhibits retinal ganglion cell death in animal models: implications for neuroprotection in glaucoma (Cell Death Discovery, (2019), 5, 1, (112), 10.1038/s41420-019-0194-2)

Stankowska, D. L., Nam, M. H., Nahomi, R. B., Chaphalkar, R. M., Nandi, S. K., Fudala, R., Krishnamoorthy, R. & Nagaraj, R. H., 1 Dec 2019, In : Cell Death Discovery. 5, 1, 122.

Targets of neuroprotection in glaucoma

He, S., Stankowska, D. L., Ellis, D. Z., Krishnamoorthy, R. & Yorio, T., 1 Jan 2018, In : Journal of Ocular Pharmacology and Therapeutics. 34, 1-2, p. 85-106 22 p.

A feed-forward regulation of endothelin receptors by c-Jun in human non-pigmented ciliary epithelial cells and retinal ganglion cells

Wang, J., Ma, H. Y., Krishnamoorthy, R., Yorio, T. & He, S., 1 Sep 2017, In : PLoS ONE. 12, 9, e0185390.

Neuroprotective effects of curcumin on endothelin-1 mediated cell death in hippocampal neurons

Stankowska, D. L., Krishnamoorthy, V. R., Ellis, D. Z. & Krishnamoorthy, R., 28 May 2017, In : Nutritional Neuroscience. 20, 5, p. 273-283 11 p.

Upregulation of the endothelin A (ET_A) receptor and its association with neurodegeneration in a rodent model of glaucoma

McGrady, N. R., Minton, A. Z., Stankowska, D. L., He, S., Jefferies, H. B. & Krishnamoorthy, R., 1 Mar 2017, In : BMC Neuroscience. 18, 1, 27.

Bcl-2, Bcl-xL, and p-AKT are involved in neuroprotective effects of transcription factor Brn3b in an ocular hypertension rat model of glaucoma

Phatak, N. R., Stankowska, D. L. & Krishnamoorthy, R., 16 Aug 2016, In : Molecular Vision. 22, p. 1048-1061 14 p.

Design and synthesis of novel hybrid sydnonimine and prodrug useful for glaucomatous optic neuropathy

Acharya, S., Rogers, P., Krishnamoorthy, R., Stankowska, D. L., Dias, H. V. R. & Yorio, T., 1 Mar 2016, In : Bioorganic and Medicinal Chemistry Letters. 26, 5, p. 1490-1494 5 p.

Transcription Factor Brn-3b Overexpression Enhances Neurite Outgrowth in PC12 Cells Under Condition of Hypoxia
Phatak, N. R., Stankowska, D. L. & Krishnamoorthy, R., 24 Aug 2015, In : Cellular and Molecular Neurobiology. 35, 6, p. 769-783 15 p.

Continuous non-cell autonomous reprogramming to generate retinal ganglion cells for glaucomatous neuropathy
Parameswaran, S., Dravid, S. M., Teotia, P., Krishnamoorthy, R., Qiu, F., Toris, C., Morrison, J. & Ahmad, I., 1 Jan 2015, In : Stem Cells. 33, 6, p. 1743-1758 16 p.

Endothelin-mediated changes in gene expression in isolated purified rat retinal ganglion cells
He, S., Park, Y. H., Yorio, T. & Krishnamoorthy, R., 1 Jan 2015, In : Investigative Ophthalmology and Visual Science. 56, 10, p. 6144-6161 18 p.

Sponsored Projects

europrotection by Endothelin Antagonists in a Rodent Model of Glaucoma

Krishnamoorthy, R.
Intramural Research(UNTHSC)
1/05/16 → 31/08/17

Mechanisms Underlying Endothelin Mediated Neurodegeneration in Glaucoma

Krishnamoorthy, R., He, S. & Stankowska, D.
NEI: National Eye Institute
1/09/17 → 31/08/20

Role of Endothelin Receptors in Glaucomatous Optic Neuropathy

Krishnamoorthy, R.
Intramural Research(UNTHSC)
1/05/15 → 31/08/16

Role of Endothelin Receptors in Glaucomatous Optic Neuropathy

Krishnamoorthy, R.
NEI: National Eye Institute
1/01/10 → 31/12/14

Texas Center of Minority Health, Education, Research and Outreach - Admin/Development Core

Vishwanatha, J., Jones, H., He, J., Basha, R., Nandy, K., Mallet, R., Krishnamoorthy, R. & Simecka, J.
NIMHD: Natl Institute on Minority Health
23/09/17 → 31/05/22

Texas Center of Minority Health, Education, Research and Outreach - Admin/Development Core

Vishwanatha, J., Mallet, R., Krishnamoorthy, R., Jones, H., Fulda, K., He, J., Basha, R. & Nandy, K.
NIMHD: Natl Institute on Minority Health
23/09/17 → 31/05/22

Vision Integrating Strategies in Ophthalmology and Neurochemistry (VISION) - Project 4

Krishnamoorthy, R., Yorio, T. & Clark, A.
Department of the Army
22/01/10 → 21/02/15