

Raghu Krishnamoorthy, PhD
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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

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

Recent Publications

Involvement of c-Jun N-terminal kinase 2 (JNK2) in endothelin-1 (ET-1) mediated neurodegeneration of retinal ganglion cells

Kodati, B., Stankowska, D. L., Krishnamoorthy, V. R. & Krishnamoorthy, R. R., May 2021, In: Investigative Ophthalmology and Visual Science. 62, 6, 13.

Nanoencapsulated hybrid compound sa-2 with long-lasting intraocular pressure-lowering activity in rodent eyes

Stankowska, D. L., Millar, J. C., Kodati, B., Behera, S., Chaphalkar, R. M., Nguyen, T., Nguyen, K. T., Krishnamoorthy, R. R., Ellis, D. Z. & Acharya, S., 2021, In: Molecular vision. 27, p. 37-49 13 p.

Endothelin-1 Mediated Decrease in Mitochondrial Gene Expression and Bioenergetics Contribute to Neurodegeneration of Retinal Ganglion Cells

Chaphalkar, R. M., Stankowska, D. L., He, S., Kodati, B., Phillips, N., Prah, J., Yang, S. & Krishnamoorthy, R. R., 1 Dec 2020, In: Scientific Reports. 10, 1, 3571.

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. R. & Nagaraj, R. H., 1 Dec 2019, In: Cell Death Discovery. 5, 1, 122.

Systemically administered peptain-1 inhibits retinal ganglion cell death in animal models: Implications for neuroprotection in glaucoma

Stankowska, D. L., Nam, M. H., Nahomi, R. B., Chaphalkar, R. M., Nandi, S. K., Fudala, R., Krishnamoorthy, R. R. & Nagaraj, R. H., 2019, In: Cell Death Discovery. 5, 1, 112.

Targets of neuroprotection in glaucoma

He, S., Stankowska, D. L., Ellis, D. Z., Krishnamoorthy, R. 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. R., Yorio, T. & He, S., 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. 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. 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. R., 16 Aug 2016, In: Molecular vision. 22, p. 1048-1061 14 p.

Sponsored Projects

A Novel Neuroprotective Approach for Glaucoma

Krishnamoorthy, R.

NEI: National Eye Institute

1/08/16 → 31/07/21

neuroprotection by Endothelin Antagonists in a Rodent Model of Glaucoma

Krishnamoorthy, R.

Intramural Research(UNTHSC)

1/05/16 → 28/02/18

Mechanisms underlying endothelin mediated neurodegeneration in glaucoma

Krishnamoorthy, R.

National Eye Institute

30/09/17 → 31/08/21

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Mechanisms Underlying Endothelin Mediated Neurodegeneration in Glaucoma

Krishnamoorthy, R., He, S. & Stankowska, D.

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1/09/17 → 31/08/20

Role of endothelin receptors in glaucomatous optic neuropathy

Krishnamoorthy, R., KRISHNAMOORTHY, R., KRISHNAMOORTHY, R. R., KRISHNAMOORTHY, R. R. & KRISHNAMOORTHY, R. R.

National Eye Institute

1/01/10 → 31/12/15

Role of endothelin receptors in glaucomatous optic neuropathy

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1/01/10 → 31/12/15

Role of Endothelin Receptors in Glaucomatous Optic Neuropathy

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Intramural Research(UNTHSC)

1/05/15 → 30/09/17

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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 → 27/02/15