Supplementary Information:

ES cell derived neural progenitors improves visual functions in retinal ganglion cells - depleted mouse models

Mundackal Sivaraman Divya ^{1,3}, Vazhanthodi Abdul Rasheed ^{1,4}, Tiffany Schmidt ^{2,5}, Soundararajan Lalitha ¹, Samer Hattar ^{2,6} and Jackson James ^{1*}

¹Neuro-Stem Cell Biology Laboratory, Neurobiology Division, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram, Kerala-695014, India

²Department of Biology, Johns Hopkins University, Baltimore, MD-21210, USA

³Present address: Cell Conversion Technology Unit, RIKEN Center for Life Science Technologies, Yokohama-2300045, Japan

⁴Present address: Department of Zoology, Government College Chittur, Palakkad, Kerala-678104, India

⁵Present address: Department of Neurobiology, Northwestern University, Evanston, IL 60053, USA

⁶Present address: Section on Light and Circadian Rhythms, National Institute of Mental Health, John Edward Porter Neuroscience Research Center, Bethesda, MD- 20892, USA

^{*}Corresponding author:

Jackson James, Ph.D. Neuro Stem Cell Biology Laboratory, Neurobiology Division, Rajiv Gandhi Centre for Biotechnology, Thycaud PO, Thiruvananthapuram, Kerala-695014, India Ph: 91-471- 2529480, FAX: 91-471- 2529480 E-mail: jjames@rgcb.res.in

Supplementary figure legend

Figure S1. Degeneration of RGC layer after 40 days post NMDA injection. NMDA effectively reduced the thickness of retinal layers with significant loss of RGCs in NMDA treated group (B) than compared to controls (A). Graph represents the percentage of time spent by the animals in the light chamber (C). NMDA injected animals spent more time in the light chamber than the controls as obtained from light avoidance behavioral experiments. Data are expressed as Mean \pm SD from triplicates of three different experiments. Number of animals used, Control = 6, NMDA injected = 6. Scale = 50 μ m.

Figure S2: GFP-expressing ES cell line (CE3 ES cells, ATCC SCRC-1039) and its differentiation into RGC lineage. Stable GFP-expressing ES cells (A) and ES-NPs generated from those ES cells (B). GFP-expressing ES-NPs differentiated into RGC-like cells as evidenced by the co-expression of RGC markers Brn3a, Calretinin and SMI-31 with GFP (C-N). Scale = 50μ m.



