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Guiding Donor Cell to Their Fate: The Role of the Microenvironment Engineering in Retinal Ganglion Cell Transplantation

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## DATE: 12 June 2025 TIME: 02:30 p.m. - 04:00 p.m. VENUE: P4703, 4/F, Yeung Kin Man Acad Building, CityU HK

## ABSTRACT

The retina of the eye provides a unique setting to study and control donor cell fate on a single level. Our lab focuses on cell and organoid transplantation, emphasizing the microenvironment and its role in donor cell maturation and integration. I will describe computational and wet lab approaches to identify cell-specific factors, capable of improving transplantation outcome.

## **ABOUT THE SPEAKER**

My lab is committed to the development of cell replacement therapies for optic neuropathies, including glaucoma, optic pathway glioma, traumatic or inherited retinal ganglion cell loss and other age-related sensory disorders. To achieve this audacious goal of functional restoration of vision, we combine the advancements in regenerative medicine, retinal cell biology, deep learning, automation, transplantation, and functional imaging of the retinal neurons on a single-cell level. We have pioneered the automated production of stem-cell derived retinal organoids and their use for drug discovery and cell production for transplantation.

I believe that the successful optic nerve regeneration and ganglion cell replacement therapy would require a highly collaborative effort to address multiple aspects of cell integration. My work on RGC production from stem cells, and methods to improve neuron survival and maturation in transplantation setting is supported by the National Eye Institute, Department of Defense, BrightFocus and Gilbert Family Foundation. I have extensive experience with small and large animal models of retinal disease, stem cell differentiation, imaging and automation, transplantation, and cell therapy development. To address the significant steps of the bench to bedside translation, I rely on productive collaborations with academia (advanced imaging, bioinformatics, and deep learning, genetic engineering) and industry (scaled up cell manufacture, cell isolation, and characterization).

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## ALL ARE WELCOME!