

Krembil research prompts rethink on established vision recovery theory

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A team of researchers at the Krembil Research Institute has published a paper that is expected to change the way scientists think about vision recovery after retinal cell transplantation.

The findings challenge the prevailing view of research over the past decade concerning transplantation of healthy [photoreceptors](#) into blind animal models. The Krembil paper "A re-interpretation of cell transplantation: GFP transfer from donor to host Photoreceptors" was published today in the prestigious journal *Stem Cells*.

"The interpretation of the data in those studies was that vision rescue associated with transplanted photoreceptor [cells](#) was caused by the migration of donor cells into the recipient retinas," said principal investigator Dr. Valerie Wallace, Co-Director of the Donald K. Johnson Eye Institute at Krembil.

"What we discovered is that this interpretation is not accurate."

Over the past decade, researchers have used a Green Fluorescent Protein (GFP) to tag photoreceptor cells and have transplanted those cells into blind animal models. They then reported that a structure typical of photoreceptors had developed in the recipient retina, and that some vision function had been restored.

"What those researchers were actually seeing was a transfer of GFP material from donor to recipient retinas," said Dr. Wallace. "The

technology has changed in the last 10 years and we've developed new tools and approaches to assess what happens to transplanted photoreceptors. What we've found is that the transplanted cells are positioned next to the recipient retina, but they do not enter it and do not establish connections within the tissue."

Photoreceptors are light-sensitive cells in the retina. Degeneration of these cells results in significant visual impairment and can cause conditions such as [age-related macular degeneration](#) (AMD), which is estimated to affect more than one million Canadians.

Dr. Wallace said that while publication of the new findings could be viewed as controversial by some, it does not mean that [cell transplantation](#) should not be studied, but rather that researchers should look at this discovery as an opportunity to improve the approach.

"This is in no way a setback for the field. In fact, this represents a better understanding of how these transplants work," said Dr. Wallace.

"This is going to improve the research direction and help advance this field to develop more effective and safe therapies."

Provided by University Health Network

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