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Singapore-Sweden research reveals promising stem cell approach for restoring vision in blindness

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Achieve promising results towards restoring vision in blindness caused by cellular degeneration in the eye



A preclinical study using stem cells to produce progenitor photoreceptor cells—light-detecting cells found in the eye—and then transplanting these into experimental models of damaged retinas has resulted in significant vision recovery.

This finding, by scientists at Duke-NUS Medical School, the Singapore Eye Research Institute and the Karolinska Institute in Sweden, marks a first step towards potentially restoring vision in eye diseases characterised by photoreceptor loss.

The degeneration of photoreceptors in the eye is a significant cause of declining vision that can eventually lead to blindness and for which there is currently no effective treatment. Photoreceptor degeneration occurs in a variety of inherited retinal diseases, such as retinitis pigmentosa—a rare eye disease that breaks down cells in the retina over time and eventually causes vision loss—and age-related macular degeneration, a leading cause of vision impairment worldwide.

Moving forward, the team hopes to refine their method to make it simpler and achieve more consistent results than earlier attempts to explore stem cell therapy for photoreceptor cell replacement.

“If we get promising results in our future studies, we hope to move to clinical trials in patients,” said Professor Karl Tryggvason, from Duke-NUS’ Cardiovascular and Metabolic Disorders Programme, and the corresponding author of the study. “That would be an important step towards for being able to reverse damage of the retina and restore vision.