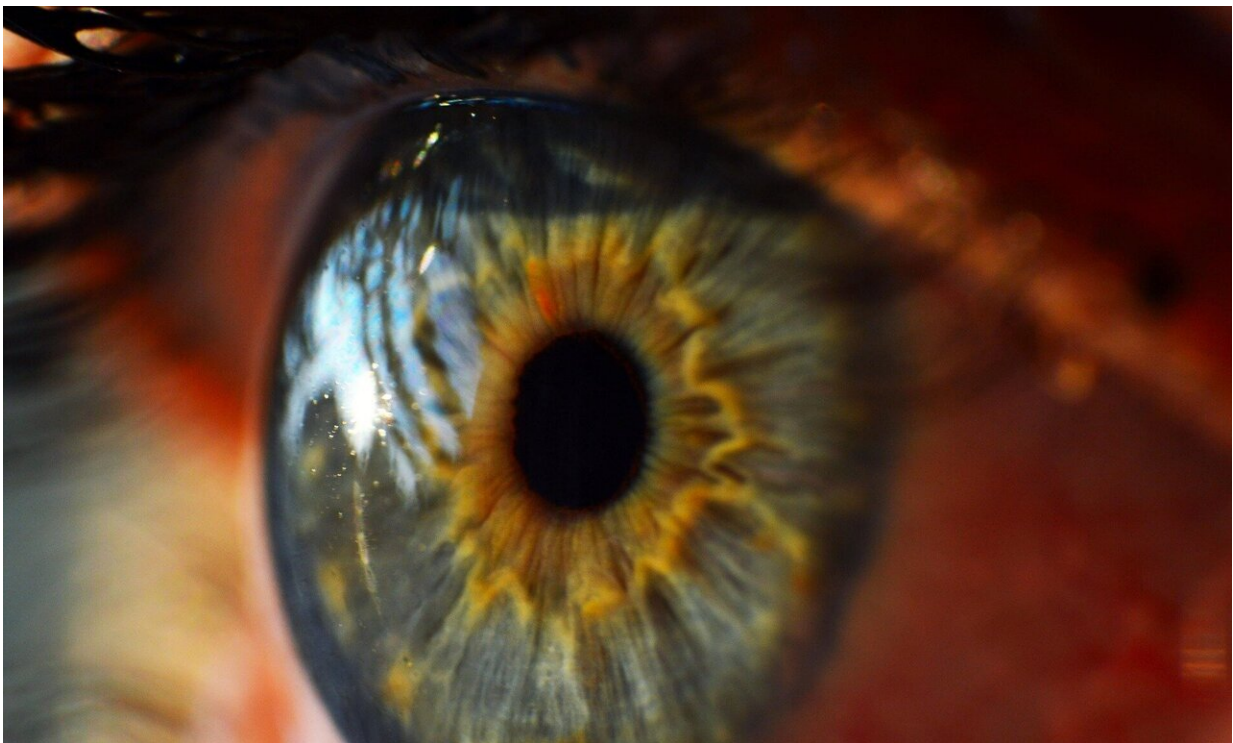


Stem-cell-derived corneal endothelial cells represent a possible alternative to donor tissue in transplant surgeries

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Corneal endothelial cells (CECs) are essential for corneal transparency and proper vision. Loss of CEC function, due to corneal diseases or surgical trauma can lead to corneal swelling with severe visual

impairment. Corneal endothelial dysfunction is responsible for a large proportion of transplantation surgeries performed in the United States each year. However, due to the shortage of transplantable-grade donor tissue in many parts of the world, alternative treatment modalities are needed to address cornea-related blindness.

Recent work from The Johns Hopkins University School of Medicine, published by Ali and colleagues in *Stem Cell Reports*, found that a sustainable source of CECs can be made from [pluripotent stem cells](#). Importantly, when the researchers injected pluripotent stem cell-derived CECs into the eyes of rabbits and monkeys after inducing corneal endothelial failure, the endothelium regenerated.

In the treated animals, loss of corneal transparency was reversed, and the corneas remained transparent over the 9–18 months of follow-up period without adverse effects. This work suggests that stem cell-derived CECs may be a viable treatment option for patients with corneal endothelial dysfunction.

However, additional follow-up studies are required to examine the efficacy and safety before this approach could be routinely used in human patients.

More information: Pluripotent stem cell-derived corneal endothelial cells as an alternative to donor corneal endothelium in keratoplasty, *Stem Cell Reports* (2021). [DOI: 10.1016/j.stemcr.2021.07.008](https://doi.org/10.1016/j.stemcr.2021.07.008) , [www.cell.com/stem-cell-reports ... 2213-6711\(21\)00374-X](https://www.cell.com/stem-cell-reports/issue/2213-6711(21)00374-X)

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