

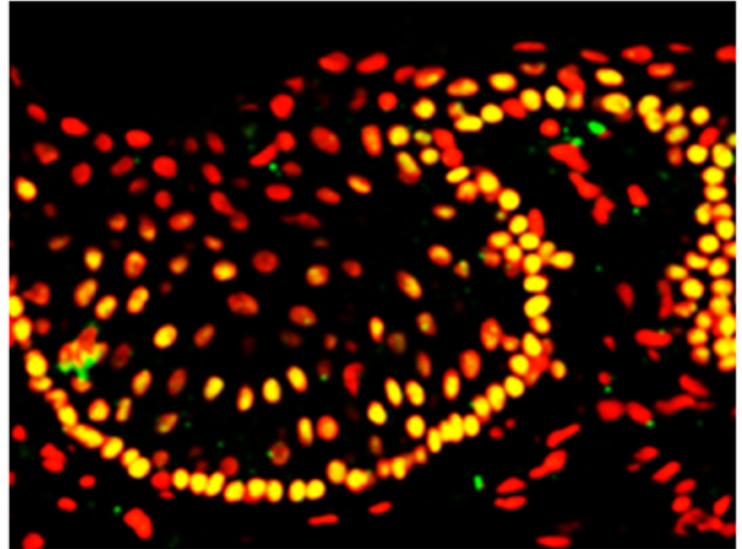
The eye and stem cells: the path to treating blindness

What do we know?

Treatments for most disorders that cause vision loss are difficult or not yet possible.

Specialised cells in the eye serve specific functions to focus light and turn what is being seen into signals sent to the brain. The eye contains several types of stem cells that constantly replace specialised cells that become worn out or damaged.

Holoclar® is currently the only clinically approved stem cell treatment for the eye. This treatment restores vision to patients with damaged corneas (the clear outermost part of the eye) by transplanting lab-grown limbal stem cells into areas of the eye lacking these cells.



Limbal stem cells from the human cornea, with a protein known as p63 stained yellow. Cell nuclei (which hold the DNA) are stained red.

Photo: Dr Hannah Levis, UCL Institute of Ophthalmology

What are researchers investigating?

Holoclar® only works if people have some limbal stem cells left in their eyes for clinical labs to grow. New methods of making limbal cells with pluripotent stem cells are being developed for people without any limbal stem cells left.

Researchers are studying how transplants of retinal pigment epithelial cells made with pluripotent stem cells might prevent vision loss in patients with diseases such as age-related macular degeneration.

Researchers are also using stem cells to study many different aspects of the eye, from how the eye is made to what causes eye diseases and how to treat them.

What are the challenges?

Many diseases that cause blindness are still not treatable. Researchers are working to understand what causes these diseases, what other types of stem cells reside in the eye and how stem cells might be used to repair or even restore vision to patients. Many of these studies are still in the early years. Just as Holoclar® took more than twenty years to develop into a safe and successful treatment, today's research and discoveries will take time to develop into safe and reliable treatments for other types of blindness.