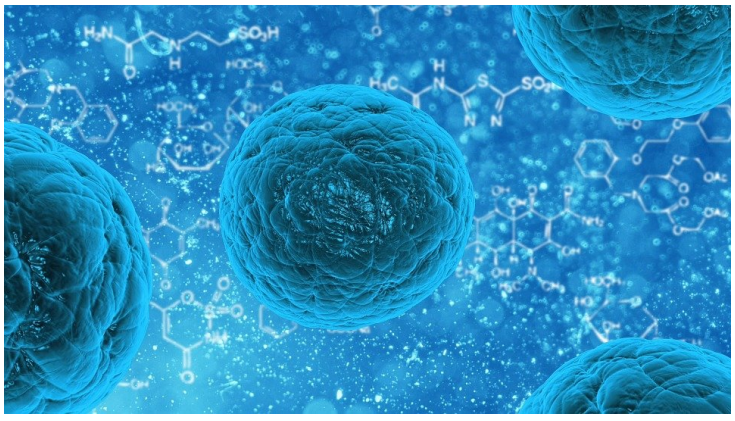
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# LVPEI develops mini human eyes with the help of stem cells

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Hyderabad-based LV Prasad Eye Institute has developed mini human eyes in test tube with the help of stem cells.

The Institute has exclusive laboratory for developing human eye with stem cells and has been conducting research on stem cells to develop human eye for around fifteen years. It has now succeeded in developing complex 3D corneal organoids which are miniature versions of a larger organ developed in the test tube. These organoids developed by the institute are capable of recapitulating steps of normal corneal development.

Dr. Indumathi Mariappan, a research scientist at Sudhakar and Sreekanth Ravi Stem Cell Biology Laboratory at LV Prasad Eye Institute (LVPEI), is involved in basic and translational research towards addressing problems of retinal and corneal diseases using different sources of adult and pluripotent stem cells.

Researchers from the LV Prasad Eye Institute for the first time has showed that complex 3D corneal organoids can be generated from pluripotent stem cells and mini corneas undergo maturation in test tube (in vitro) and recapitulate steps of normal corneal development.

"Availability of such mini corneas at 10 weeks of maturation circumvents the need for complicated cell enrichment protocols and offers a simpler method of establishing enriched cultures of corneal epithelial cell sheets for basic research and for regenerative applications," Dr Indumathi said in her presentation at the International Congress of Cell Biology- 2018.

The research study said pluripotent stem cells are being explored as alternative stem cell sources to generate cell types of the body. Recent reports demonstrated the possibility of generating complex, three dimensional tissues in test tube.

Researchers said "We generated three-dimensional retinal and corneal organoids from human pluripotent stem cells. Eye field primordial clusters that emerged from differentiating pluripotent stem cells developed into whole eye ball-like, self-organized, three-dimensional, miniature structures consisting of retinal primordia, corneal primordia, primitive eye lid-like outer covering and ciliary margin zone-like adnexal tissues in a step-wise maturation process within 15 weeks. These organoids recapitulate early developmental events in vitro and displayed similar anatomical features and marker expression profiles as that of adult tissues. They offer an alternative tissue source for regenerating different tissues of eye and eliminate the need for complicated cell enrichment procedures," reported Times of India.