

# Novel Method for Performing Corneal Implant

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## OTHER INFORMATION

### CATEGORIZED AS

- ▶ **Optics and Photonics**
  - ▶ All Optics and Photonics
- ▶ **Biotechnology**
  - ▶ Health
- ▶ **Medical**
  - ▶ Disease: Ophthalmology and Optometry
  - ▶ Therapeutics

### RELATED CASES

2011-613-0

ABSTRACT

Researchers at the University of California, Davis have developed a novel method for inserting an annular cornea implant into a cornea pocked of the human eye.

FULL DESCRIPTION

The basic optical apparatus of the human eye consists of the retina, the cornea and the lens which is positioned behind the iris. Changes in the radius of curvature of the cornea can change in the optical power of the eye. Eye surgeons use this physical property to perform surgery for the correction of shortsightedness. By increasing the radius of curvature of the cornea, the optical power decreases.

The surgical techniques using lasers remove more corneal tissue from the central parts than from the peripheral parts of the cornea, so as to alter the radius and improve one’s eyesight. Unfortunately this technique can significantly impair the bio-mechanical stability of the corneal tissue, and can only be used for treatment of the myopic eye.

Researchers at University of California, Davis have developed a soft, deformable corneal lenticule for implantation into a prepared corneal wound bed. This annular cornea implant can be inserted via a narrow tunnel-shaped access. The shape of the cornea implant can be different depending on the shortsightedness or astigmatism to be corrected. Transplantation of the lenticule in a prepared cornea is a simpler procedure than current surgeries and allows an optimum positioning of the lenticules.

APPLICATIONS

- ▶ Deep anterior lamellar graft, wherein the great majority of a recipient’s corneal stroma has been removed
- ▶ Full thickness penetrating keratoplasty, wherein the entire thickness of a recipient’s cornea is removed prior to graft placement
- ▶ Lenticule (design, instruments and procedures) enable placement of a graft that exceeds the diameter of the recipient bed and will minimize or obviate the need for sutures
- ▶ The insertion of the lenticule for drug delivery, or transplantation of cells integrated onto the surface or embedded within a deformable matrix
- ▶ The deformable matrix is exemplified by but not limited to biologic, biosynthetic and synthetic polymeric materials

FEATURES/BENEFITS

- ▶ Composition of the lenticule can be autograft, allograft, xenograft, biosynthetic or synthetic
- ▶ Sutureless integration of corneal tissue or biosynthetic corneal constructs into the surgical bed of a recipient

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,724,234	08/08/2017	2011-613

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Glaucoma Blockbuster](#)

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