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## Integrated 3D bioprinting-based geometry-control strategy for fabricating corneal substitutes

Key words: 3D bioprinting, Corneal alternative, Digital light processing (DLP), Extrusion, Geometry-control

## **Research Summary**



This article present a novel integrated 3D bioprinting-based cornea substitute fabrication strategy to realize design, customized fabrication and evaluation of multi-layer hollow structures with complicated surfaces.

## Innovation points



The integrated 3D bioprinting method we propose combining extrusion printing and DLP can significantly improve manufacturing accuracy.

## Innovation points

- 1) An integrated 3D-cornea-bioprinting system providing a novel fabrication method for 3D corneal scaffold.
- 2) The relationship between corneal optical properties and the geometric features of the corneal scaffold is proposed, and the relevant influencing factors are analyzed.
- 3) According to the data of scanning, corneal scaffolds with natural corneal geometry and scale can be quickly constructed with this method.
- 4) A cell-laden complex curved structure with high cell viability is available using this method.
- 5) This manufacturing process, with a low manufacturing cost and high repeatability, is an effective method for rapid construction of corneal pre-substitutes on demand.