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Granada-Based Scientists Make The First Artificial Cornea Model Using Rabbit Stem Cells

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Scientists of the research group called 'Ingeniería Tisular' of the University of Granada have made the first artificial cornea model using stem cells of rabbit's sclerocorneal limbus.

This result is a great advance due to the shortage of donors of this transparent epithelium located in the anterior segment of the eyeball that refracts the incoming light onto the retina. Moreover, these artificial corneas can be a tool for in vitro research into medicine permeability.

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Experts have obtained a complete replacement of the cornea using cell cultures and different tissue-engineering protocols. In order to do so, they have used small biopsies of sclerocorneal limbus taken from rabbits' eyeballs.

Scientists separate the existing stem cells and isolate them. A biopsy is a diagnostic procedure consisting of taking a sample of tissue to analyse it under a microscope. They also prepare a support with different components including polymers to reconstruct the cornea layers.

Scientists admit that more time is still necessary before these corneas can be applied to humans. However, in their effort to make artificial tissues with a therapeutic use they are expanding their research scope so as to obtain artificial mouth mucous membranes. In the case of this

material, highly demanded for odontological and maxillofacial surgery, a similar methodology consisting of biopsies of the mouth is being used.

The tissues obtained pass strict viability tests, that is, quality controls which certify that constructs will not degenerate in the future. In order to do so, experts put the new biological materials to analytic electronic microscopy and genetic analysis tests.

In order to develop their research work, experts of the Histology Department of the University of Granada are closely working with the Ophthalmology services of the Granada hospitals Virgen de las Nieves and San Cecilio, as well as the Maxillofacial Surgery service, the Regional blood transfusion centre, and the Bank of tissues.

Ismael Gaona | Quelle: alphagalileo

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