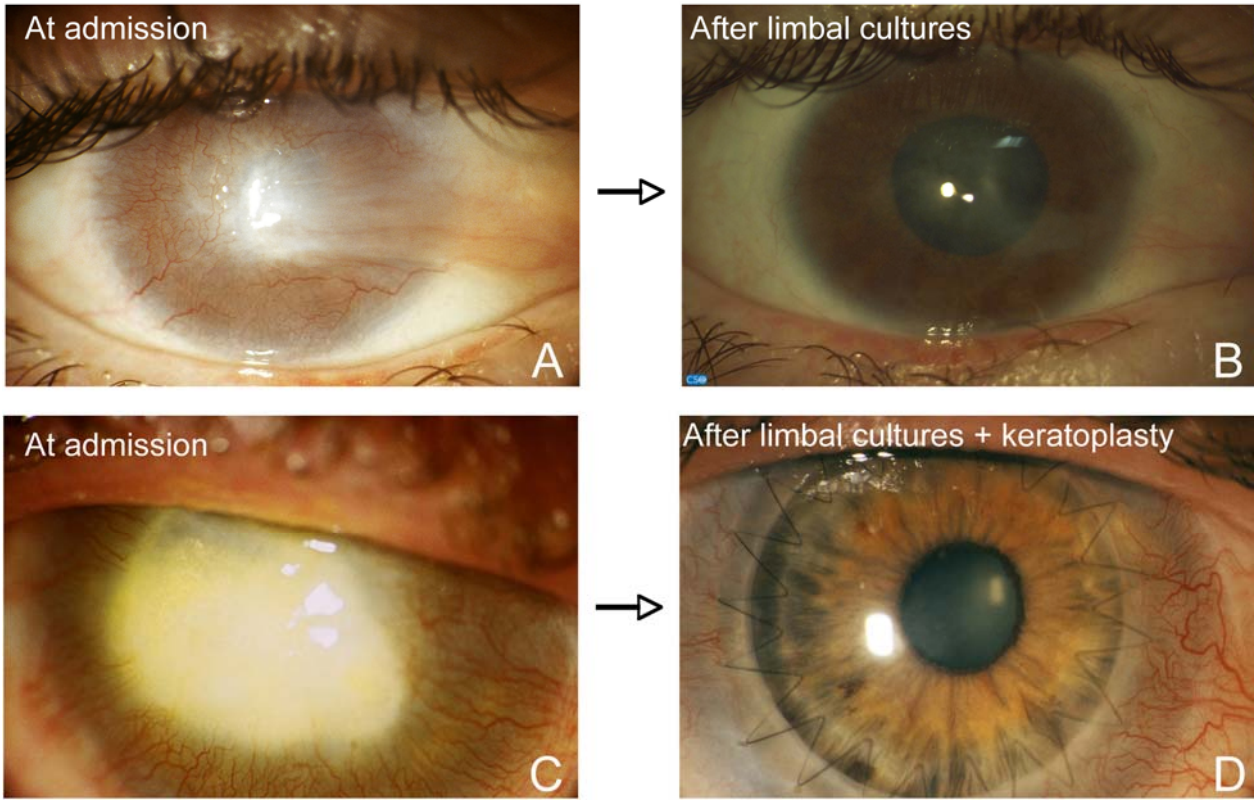
Clinical applications of epithelial tissue regeneration: skin and cornea

Prof. Michele De Luca - University of Modena e Reggio Emilia

Regenerative medicine refers to innovative therapies aimed at the permanent restoration of diseased tissues and organs. Regeneration of self-renewing tissues requires specific adult stem cells, which are, in this case, epithelial stem cells for corneal and epidermal regeneration.
Centre for Regenerative Medicine, University of Modena and Reggio Emilia, is able to develop, produce and distribute several types of epithelial stem cells for advanced therapies in regenerative medicine.



1. Description of the product

The Centre for Regenerative Medicine, University of Modena and Reggio Emilia, has developed standard GMP methodologies for isolation and production of cells suitable for human therapy. The expertise of this Centre is on:

- human epithelial stem cells for epidermal regeneration to permanently restore severe skin damages due to serious skin burns;
- human limbal stem cells for regeneration of the ocular surface and the recovery of the visual ability in patients not otherwise curable.

- Other types of epithelial stem cells to regenerate other stratified epithelia such as urethra, oral mucosa, conjunctiva.

2. Innovative aspects of the product

Human epithelial stem cells are isolated to start tissue cultures. After a period of in vitro expansion (in GMP) the cohesive epithelial sheet is transplanted into patients with serious epithelial defects.
This technique is now currently applied as save-life therapy on patients with massive skin burns or to regenerate a normal corneal surface in patients with limbal stem cell deficiency due to chemical insults. Up to date, approximately 250 patients suffering from severe corneal chemical burns have been treated with a complete corneal restoration in 70% of the patients

3. Main advantages of the offer

Blindness due to trauma and chemicals burn has been considered an orphan pathology, now with corneal regeneration many patients are returned to see with a 70-80% of success. This advanced cellular therapy is now recognized as an Orphan Drug by EMEA.

4. Technology keywords

Human limbal stem cells, human epithelial stem cells, cell therapy, clinical application

5. Current stage of development

Clinical Application

Technical and scientific publications

Pellegrini G., Traverso C., Franzi A.T., Zingirian M., Cancedda R. and De Luca M. (1997) Long term restoration of damaged corneal surfaces with autologous cultivated corneal epithelium. *The Lancet.* 349:990-993.
Pellegrini G., Rama P., Mavilio F. and De Luca M. (2009) Epithelial stem cells in corneal regeneration and epidermal gene therapy. *J. Pathol.* 217:217-228

CONTACT

info@biopharmanet.eu
Tel.: +39 0521 905073 - Fax: +39 0521 905006