

## Artificial Skin Grown from Umbilical Cord Stem Cells



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The University of Granada has developed a major scientific breakthrough which will aid the immediate use of artificially-grown skin for major burn patients, as the skin could be stored in tissue banks and made available when needed.

Up to now, one of the major challenges faced in the treatment of major burn victims is a long wait. As per current protocols for artificial skin, a patient's own healthy skin is used for the growth, which takes several weeks.

A Spanish Tissue Engineering Research Group from the department of Histology at the University of Granada, has for the first time ever, managed to develop artificial skin from stem cells derived from the umbilical cord. The scientists' study, published in the journal *Stem Cells Translational Medicine*, shows the ability of Wharton jelly mesenchymal stem cells to turn to oral-mucosa or skin-regeneration epithelia.

In addition to this new type of epithelia covering, the researchers have used a biomaterial made of fibrin and agarose in their efforts to grow artificial skin. This had previously been designed and developed by the University of Granada research team. The laboratories of the Faculty of Medicine, alongside the Experimental Unit of the Granada "Virgen de las Nieves" University Hospital Complex was used for the team's work.

Previous studies conducted by the same research team had received recognition in the World Congress on Tissue Engineering held a few months ago in Seoul, South Korea. At the time, these findings had already pointed to the possibility that Wharton stem cells could be turned into epithelia cells, and the team's current work is the confirmation of those initial studies and its application to two regeneration structures: skin and oral mucosa, increasingly needed in injuries in these parts of the body.

A major obstacle in the speedy treatment of major-burn victims is the long timeframe of a number of weeks required to apply the current techniques of artificial skin, the growth of which is based on parts of the patient's healthy skin. Antonio Campos, Professor of Histology at the University of Granada and one of the authors of this study explains that by creating this new type of skin using stem cells, it can be stored in tissue banks and used instantly when injuries are caused, shortening considerably the previous waiting times.

Collaborating with the researchers from the Dept. of Histology at the University of Granada (Ingrid Garzón, Miguel González Andrades, M<sup>ª</sup> Carmen Sánchez Quevedo, Miguel Alaminos and Antonio Campos), were researchers from the Dept. of Cellular Biology at the University of Granada (Ramón Carmona), from the University of Valencia (Carmen Carda) and from the University of Florianopolis, Brazil (Juliano Miyake).

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