

Scientists create biodegradable membrane that accelerates burn healing

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Treatments to regenerate skin from burns are lengthy; however, Mexican researchers have developed a biodegradable membrane that transfers skin cells (keratinocytes) to burn wounds, when placed on the wound. The method reduces healing time by 50 percent.

Researchers from the Autonomous University of the State of Morelos (UAEM), south of Mexico City, and the Scientific Research Centre of Yucatan (CICY), southeast of the country, developed the processes (synthesis and cell culture) for the development of a cellular dressing in

the treatment of people with burn wounds, which involves attaching keratinocytes (predominant cells of the epidermis) to the lesion in order to release proteins (growth factors) and accelerate the healing process.

Functionality and cost of manufacture of this biomaterial opened the possibility of transferring the technology to two institutions: the Hospital for Children and Teenagers in the State of Morelos and the company Rubio Pharma and Associates. The first is interested in caring for the children of the hospital, while the pharmaceutical will focus on developing a product for adults under the name Epiderm-pro.

Jesús Santa-Olalla Tapia, UAEM professor and leader of the research group, said Epiderm-pro is similar to a gauze that will be placed over the wound, and degrade naturally without removing it, unlike similar products, which come with a matrix and require detachment and reattachment several times, a situation that alters the [healing process](#).

For now, the [biodegradable material](#) is under biological studies in cultured cells, rabbits and mice, to which small lesions are administered to evaluate the effectiveness of the prototype. The next step, with the aid of the pharmaceutical and medical institution, will begin testing on larger animals in preclinical models to demonstrate its utility in humans, said the specialist in pharmacology.

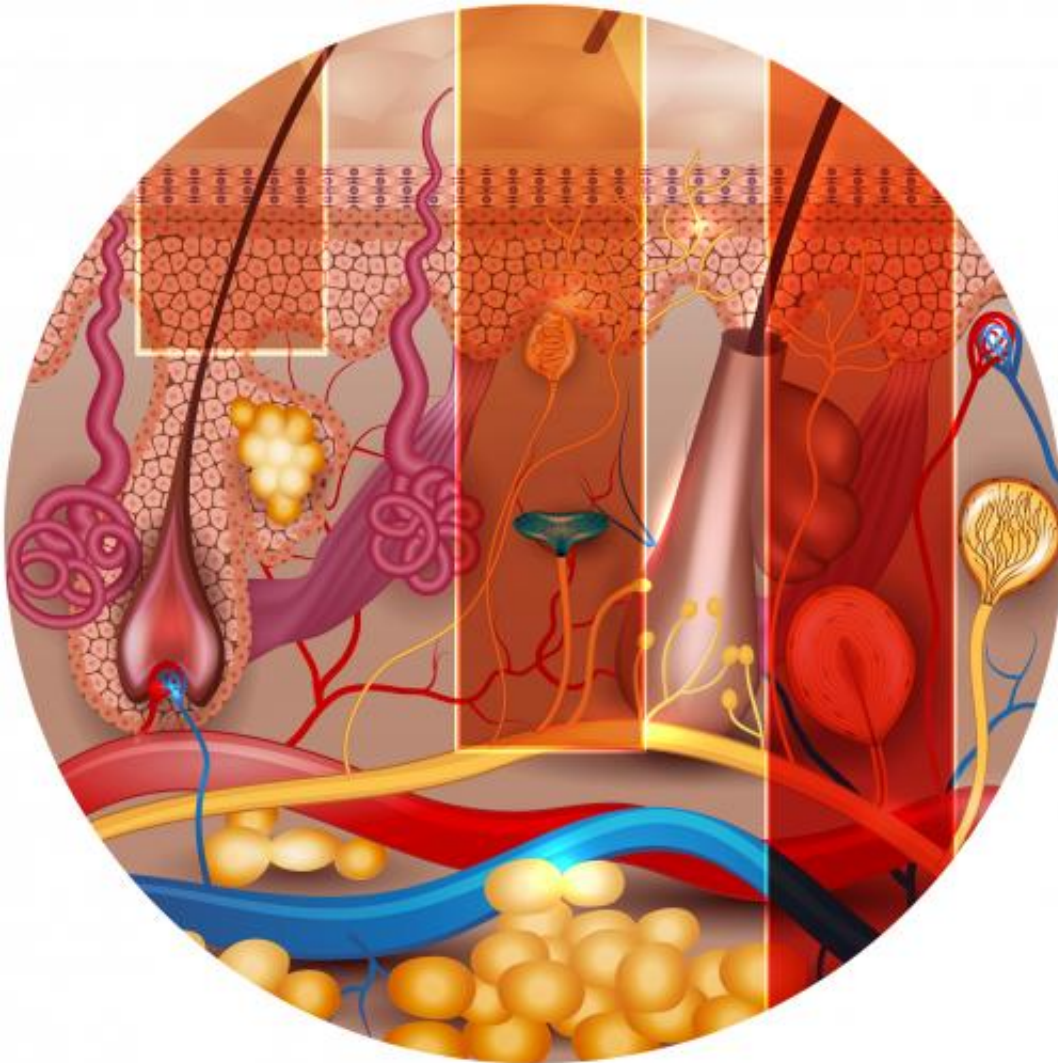


Part of the agreement with the hospital provides facilities where the Diagnosis and Molecular Medicine unit was installed in order to conduct the initial studies for the biomaterial and standardize culture procedures for development of the cell dressing and applying it to murine models.

In this case the UAEM and CICY will carry the infrastructure, staff and biodegradable material; the hospital will collaborate with a space that has the necessary conditions to produce and apply the dressing cell, which will be able to meet the requirements of [good manufacturing practices](#), particularly air quality with a purity grade of 100, ensuring a bacteria-free environment.

In parallel, the team is seeking a patent to protect the intellectual property of the absorbable material (membrane) that was manufactured by Dr. Juan Valerio Cauich Rodríguez at the Scientific Research Centre of Yucatan (CICY).

Regarding the partnership with Rubio Pharma and associates, the aim is to transfer the technology development for the production of the cell dressing to achieve marketing Epiderm-pro in adults.



"The idea with the pharmaceutical is to continue with other applications that will be developed jointly, such as the generation of [pancreatic beta cells](#) and neural precursors from the skin, in order to develop new

treatments for diabetes or neurodegenerative diseases such as Alzheimer's or Parkinson's, which is in the development phase and concept proof," said the specialist.

To apply the Epiderm-pro product, the patient should go to the hospital Cell Therapy unit where a surgical scrub will be performed, and subsequently the cell dressing is placed in a controlled and sterile environment.

"We have more than half path covered for this technological development, we have succeeded in isolating [skin cells](#) efficiently, we have standardized conditions for the generation of the biomaterial, have established toxicity tests in vitro, besides standardize the cryopreservation spread and characterization of keratinocytes, so that in a month is possible from one square centimeter of skin to get three thousand 125 million cells, enough cells to cover the whole body surface of a person," said the academic at the UAEM.

Provided by Investigación y Desarrollo

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