

DEVELOPMENT OF AN IMPROVED HUMAN ARTIFICIAL SKIN MODEL (UGRSKIN) AS ADVANCED THERAPIES MEDICINAL PRODUCT.

The treatment of patients with severe and extensive burn injuries (major burn victims) remains a significant therapeutic challenge, requiring the development of new strategies to improve outcomes. Current treatments are primarily based on autografts, which have limitations, especially in patients with insufficient healthy skin for grafting. The research group leading this project is an internationally recognized reference in tissue engineering and has successfully developed various artificial tissues, including the cornea, palatal mucosa, and skin. Among these, the UGRSKIN artificial skin has already been transferred to clinical use, demonstrating significant improvements in patient survival.

Over 20 major burn patients have received UGRSKIN implants, and preliminary biosafety analyses confirm its high biocompatibility and rapid integration into the wound bed. This success led to authorization by the Spanish Agency for Medicines and Medical Devices (AEMPS), making UGRSKIN the only tissue-engineered product approved for burn treatment in Spain. However, despite its promise, UGRSKIN still presents some limitations regarding the full biomimicry of normal adult skin and the long manufacturing time (~28 days).

This project aims to improve UGRSKIN by developing a more biomimetic version that closely resembles native skin and can be fabricated in a shorter time, enhancing clinical outcomes for burn patients and potentially benefiting other conditions requiring skin grafts.

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Proposed collaboration within ArchiFun network (not mandatory at this stage):

Proposed list of secondments (not mandatory, but recommended if known already):

Main ArchiFun theme involved:

- Host-pathogen interactions;
- Mechanisms of bacterial resistance and cancer onsets;
- Neurodegenerative and autoimmune diseases;
- Translational research in prevalent diseases;
- Physiology and ecology;
- Neurosciences and cognition.