



MÁSTER EN INVESTIGACIÓN BIOMÉDICA

Research Project Proposal

Academic year 2022-2023

Project Nº 40

Title: *Optimization of autologous customized engineering auricula reconstruction for the treatment of microtia*

Department/ Laboratory *Cell Therapy and Regenerative Medicine Department, Experimental Orthopaedics Laboratory, CIMA*

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Summary

Microtia is a congenital malformation of the external and middle ear affecting infants. Surgical correction of microtia is complex. The evolution of tissue engineering using scaffolds and composite materials is allowing a new time for these patients. The idea of this project is to evaluate the feasibility of developing an autologous cellularised scaffold constituted by a combination of a 3D Poly(lactide-b-ethylene glycol) (PLA-PEG), as the main structure for the auricula pavilion, and the alginate contained human nasal chondrocytes, as the cellularised part. The possible maturation and viability of the scaffold will be tested *in vitro* and *in vivo*. The *in vivo* model will be developed as an ectopic subcutaneous model using immunodeficient mice (Rag2). The main objective will be the evaluation of the chondrogenic phenotype maintenance on the chondrocytes the synthesis of the matrix and the morphology of the new synthesized tissue in the scaffold *in vitro* and *in vivo* by molecular biology techniques as qPCR as well as by histological and immunohistological analysis.

yes	x
no	

Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?