Research Project Proposal
Academic year 2019-2020

Project Nº 08

Title: *Role of Cxcl12 in bone regeneration*

Department/ Laboratory
Cell Therapy-Regenerative Medicine/Experimental Orthopaedics, CIMA

Director 1 *Froilán Granero Moltó*
Contact: *fgranero@unav.es*
Codirector:
Contact

Summary *Short summary of the project with a **maximum extension of 250 words**, including the goals and the methodology that will be used.*

In this project we want to determine the mechanisms that participate in bone regeneration initiation and its progression. We hypothesize that there are two critical points during the process of fracture healing. The first one is located around the inflammation phase and allows the expression of *Bmp2*/*BMP2,* while the second one is located around the resorption of the cartilaginous callus and allows revascularization and ossification of the callus.
In the repair of bone tissue, the migration of mesenchymal and haematopoietic progenitors is capital and required during inflammation and resorption phases respectively. A well-known factor mediating cell migration is the chemokine CXCL-12/SDF-1. The role of CXCL-12 in bone fracture has been suggested through the use of CXCR4 agonists, CXCR4 is the receptor of CXCL-12, although the exact role of CXCL-12 and the cell types that participate in its secretion are not yet been stablished.
We will use genetically modified mice, where Cxcl12 can be silenced selectively, to determine the role of Cxcl12 in fracture healing progression. Cxcl12 will be deleted in mesenchymal and haematopoietic progenitors as well as in chondrocytes of animals subjected to a bone fracture, the progression of fracture healing will be analysed by radiological and histological techniques and compared with littermate controls.

yes	**X**
no	

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