FUNDED PHD POSITION

Generation of iChondrocytes to regenerate articular cartilage

Host laboratory: Institute for Regenerative Medicine & Biotherapies (IRMB) / CARTIGEN Platform
Danièle NOEL's team – Tissue Engineering & Extracellular Vesicles applied to Rheumatic diseases
Doctoral school: CBS2 (Chemical and Biological Sciences for Health) University of Montpellier
Direction**:** Emeline Perrier-Groult, IRMB Montpellier

Thesis project:

Articular cartilage can be the target of multiple traumatic or age-related injuries. Because of the limited regenerative capacity of this tissue, these injuries, which lead to permanent destruction of the extracellular matrix, are one of the most difficult problems to resolve in musculoskeletal medicine. Articular cartilage regenerative medicine based on the use of mesenchymal stromal cells (MSC) has produced encouraging results for trauma- or age-related changes in articular cartilage that may contribute to the development of osteoarthritis, but has not produced sufficient results for the long-term regeneration of joint tissue. To overcome this lack of regeneration, the iCHONDRO project (https://pepr-biotherapies.fr/2023/12/08/ichondro/) proposes to use neural crest-derived cells (NCC), which are involved in most, if not all, spontaneous regeneration processes in species capable of regeneration.

In this context, the iCHONDRO project ambitions to develop a new cell therapy drug product based on the generation of universal allogeneic NCC that will be encapsulated in an injectable hydrogel. The articular cartilage regeneration potential of the iCHONDRO-fibrin gel product will be evaluated in preclinical models to design a phase 1 multicenter, prospective trial in subjects with cartilage defects on the femoral condyle.

Role of the PhD student:

He/she will be in charge of hydrogels selection for encapsulation of iCHONDRO with the objective to develop 3D-bioprinting protocols. He/she will also evaluate the cartilage regeneration potential of this constructs in vitro and in vivo (murine model). Level required: Master 2 or equivalent validated before October 2024

Prerequisites:

1. Technical Skills:

- Solid experimental knowledge and skills in cell biology, imaging and biophysical analyses.
- Experience or academic knowledge in hydrogel formulation for bio-applications
- Familiarity or keen interest in bioprinting processes and technology

2. Soft Skills:

- Strong organizational abilities
- Autonomy in executing tasks and projects
- Dynamic and proactive approach to problem-solving
- Proficiency in English with good verbal and written communication skills

Application Process:

1. Submission of CV: Candidates should submit their CV highlighting relevant experience and academic achievements and a cover letter with the names of 3 referees who could provide recommendation letters to Dr Emeline PERRIER-GROULT (emeline.groult@inserm.fr).

2. **Interview:** Shortlisted candidates will be interviewed, which may include a short presentation.

For any inquiries or further clarification, please contact Emeline PERRIER-GROULT (emeline.groult@inserm.fr).