



## INTERNSHIP PROPOSAL

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**Institute:** Institute for Regenerative Medicine & Biotherapies (IRMB) / CARTIGEN Platform

**Team:** *Team Danièle NOEL* – Tissue Engineering & Extracellular Vesicles applied to Rheumatic diseases

**Position:** Assistant engineer Intern in 3D Bioprinting

**Duration:** 6 months

**Start Date:** 08/01/2024

**Location:** Montpellier, France

### **Objective of the Internship:**

The intern will partake in groundbreaking research focusing on the extrusion-based 3D bioprinting of a natural composite bioink loaded with mesenchymal stromal cells (MSCs). Based on the preliminary work of Marjorie DUFAUD (PhD Student), this bioink has been geared towards advancements in osteochondral repair by developing an innovative *in vitro* bipartite model to repair focal lesions. Preliminary work include assessment of (i) cell viability in both chondrogenic and osteogenic conditions, (ii) cell proliferation and (iii) cell differentiation both at the RNA and protein levels. Lastly, proof of concept of the feasibility of 3D bioprinting an *all-in-one* bipartite construct was validated. As such, the internship will focus on optimizing the culture conditions of the bipartite model. Bibliographic review will allow to choose the best strategy to integrate in this project. This internship offers a chance to be at the forefront of bioengineering technology and directly contribute to the evolution of regenerative medicine.

### **Key Responsibilities:**

1. Assist in the formulation of hydrogel composites tailored for 3D bioprinting
2. Culture and maintain mesenchymal stromal cells for integration with bioinks
3. Operate 3D bioprinting equipment to produce osteochondral structures
4. Collaborate with the team to refine bioprinting processes and outcomes
5. Analyze results, document findings, and suggest improvements
6. Attend team meetings and present updates in a clear and concise manner, ensuring effective communication with both technical and non-technical audiences
7. Interact and collaborate with partners and experts, necessitating proficient communication in English



## **Prerequisites:**

### **1. Technical Skills:**

- Experience in cell culture techniques
- 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

## **Learning Opportunities:**

- Gain hands-on experience in the rapidly advancing domain of 3D bioprinting
- Collaborate with experts in the field of bioengineering and regenerative medicine
- Develop a deep understanding of the challenges and solutions in osteochondral repair
- Enhance soft skills, particularly in the realm of professional communication and collaboration

## **Evaluation and Feedback:**

The intern will be trained by the onsite team and will receive regular feedback on their performance and contributions in order to assess the achievement of objectives and discuss areas of improvement or further development.

## **Application Process:**

**1. Submission of CV:** Candidates should submit their CV highlighting relevant experience and academic achievements to Dr Emeline PERRIER-GROULT ([emeline.groult@inserm.fr](mailto:emeline.groult@inserm.fr)) by 03/11/2023.

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

**3. Offer:** Successful candidates will be extended an offer detailing the terms of the internship. Possibility to pursue with a PhD will be discussed.

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

*Endorsed by:* Emeline PERRIER-GROULT – Researcher (CNRS)