

Internship proposition
(One-page max)
Master 2 GP Medicine 4R (Repair, Replace, Regenerate, Reprogram)



Lab: UMR_S 1229-RMeS

Team: Regos/Epigen group

Name and position of the supervisor: Valérie Geoffroy DR2 Inserm

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Candidate (if internship filled):

Title of the internship: New in vivo strategy for bone regeneration based on Bone-derived extracellular vesicles

Summary of the internship proposal:

We propose to use a method based on the mobilization and activation of the healing potential of the host tissue. Proof-of-concept of the osteogenic potential of bone-derived extracellular vesicles (EVs) prepared from mice long bone tissues will be evaluated in the classical model of critical bone defect in mouse calvaria, obtained by mechanical drilling in parietal bones. To implant and maintain EV in specific loci, a composite biomaterial containing injectable polysaccharide hydrogel will be used to control the delayed delivery of EVs to the tissue and Biphasic Calcium Phosphate (BCP) to allow cell adhesion. BMP2 will be associated to these combined biomaterials as positive control, and implants without EVs will serve as a negative control. Each animal will receive two randomly assigned implants and will be sacrificed at 4 or 8 weeks after surgery. The bone ingrowth will be easily assessed with microCT, histomorphometry analyses and backscattered electron scanning electron microscopy.

Profile(s) linked to the project:

- Experimental Biology (*Recherche expérimentale*)
- Clinical Research (*Recherche clinique*)