

EXCELLENCE
 INNOVATION
 SUSTAINABLE
 SELF-ASSEMBLY
 VIRTUAL
 METAMATERIALS
 ORGANIC ELECTRONICS
 MATERIALS
 BIO RESEARCH
 TRAINING
 TRANSFER

AMADEUS

Advanced MAterials by DEsign



Inserm U1026

Tissue Bioengineering

PERMANENT STAFF

↘ Nine permanent researchers and 5 engineers are involved in AMADEus-relevant projects



Joëlle Amédée
 Senior Res.
 Team leader



Laurence Bordenave
 Res Prof.



Olivier Chassande
 Junior res.



Fabien Guillemot
 Junior Res.



Jean Christophe Fricain
 Res. prof.



Damien Le Nihouannen
 Ass. Prof.

MOBILIZED COMPETENCES

- ↘ Tissue engineering
- + Biomaterial science
- + Laser assisted bioprinting
- + Human stem cell biology sciences
- + Cell / biomaterial interfaces
- + Experimental models (tissue / biomaterial interfaces and bioimaging)

- Bone and vascular tissue engineering
- Human adult stem cell cultures and their cell biology
- Laser interactions with biomaterials and biological tissues / biofabrication
- Local micro-environments modifications through laser interaction (mechanical and biochemical gradients)
- Cell interfaces with 2D functionalized surfaces
- Cell fate within a 3D (functionalized) scaffold (polymer, composite biomaterials...)
- Mechanical stress (flow chambers, bioreactor)
- Host tissue / tissue engineered constructs – Preclinical models and bioimaging

MAIN FACILITIES

- Conventional facilities for human stem cell cultures and characterization (cell and molecular biology)
- Flow cytometry and confocal microscopy
- 2 workstations dedicated to Laser Assisted Bioprinting Specific
- Facilities for biomaterial characterization (SEM, profilometry...)
- Facilities for experimental models, surgery and bio-imaging.

CURRENT AND FUTURE PROJECTS WITHIN AMADEus FRAMEWORK

- Design and produce appropriate biocompatible and bioresorbable materials
- Understand the interaction between material surface and stem cells by integration of a set of skills and tools, such as targeting and signaling components.
- Create local mechanical and biochemical environments able to drive stem cell differentiation.
- Biofabrication on demand of 3D complex tissues and organs.
- Multifunctional large micro/nanopatterned matrices for tissue reconstruction
- Evaluate *in vivo* these tissue-engineered constructs using animal models for bone and vascular reconstruction, with the know-how of the technology transfert unit : CIC-IT Biomaterials.

