



## LMS Seminar

21 March 2024 at 2:00 pm - Room Jean Mandel

### Defining a scaffold for anterior cruciate ligament: What has been done, and what still needs to be done?

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#### ABSTRACT

Tissue engineering is a promising alternative to current surgical methods for the repair of ligaments, and in particular the anterior cruciate ligament (ACL) which is associated with extremely frequent injuries. However, despite the wide variety of scaffolds that have been proposed for ligaments since the 2000s, tissue engineered solutions have never reached the stage of clinical application. The question of how to propose a scaffold that meets the many requirements of tissue engineering of ligaments is still largely open. In this presentation, the synthesis of several years of research carried out in Nancy on ACL tissue engineering is proposed, with emphasis on the development, fabrication, characterisation, simulation and then optimisation of a fibrous scaffold. The interest of extending the characterization to the evolution of scaffold properties after implantation will also be emphasized, as well as the need to consider the future anchoring of the scaffold within the bone tunnels from the beginning of the procedure. In particular, computational simulation will be used as a systematic tool to avoid a trial-and-error approach and predict the properties of the proposed scaffolds. In conclusion, a non-exhaustive list of the challenges that remain to bring these developments to clinics will be proposed.

#### BIOGRAPHY

Cédric Laurent is professor at Université de Lorraine, researcher in biomechanics in LEM3 and teacher in solid mechanics in ENSEM. He conducts researches on soft tissue mechanics, subject-specific finite element modelling, mechanobiology and microstructure design for biomedical applications.

#### REFERENCES

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