UNIVERSITÉ DE TECHNOLOGIE DE COMPIÈGNE

UTC

Mentoring program

Biomechanical approaches and tissue engineering

In recent years, different tissue engineering approaches have emerged to propose relevant 3D in vitro models able to mimic the structure of living tissues/organs. During the mentoring program, the student will be exposed to several methods combining biological and engineering sciences guiding cell maturation in dedicated scaffolds. In the lab, we specifically pay attention on characterizing both the functions and the mechanical properties of the biohybrid constructs.

Subjects

- Skin, liver and tendon
- Organ on chip
- Electrospinning
- Regulatory issues

Mentors

Dr Cécile Legallais (CNRS Senior Researcher) is Head of the CNRS/UTC joint laboratory Biomechanics & Bioengineering (BMBI). She coordinates research on bioartificial liver and tissue engineering for the musculo-skeletal system. Her group possesses a large experience on cells culture on different 3D scaffolds in dynamic conditions. The multidisciplinary nature of her work reveals her expertise in biomedical engineering and tissue engineering for the design of bio-artificial organs, fluid mechanics and microfluidics, transport phenomena, and the interactions between cells and tissues with the biomaterials. Bronze Medal of CNRS in 2003, she published more than 110 papers in peer-reviewed journals. She has supervised 25 PhD thesis. She is Past-President of the European Society of Artificial Organs.

Muriel Vayssade is full Professor and the head of the “Cells Biomaterials Bioreactors, CBB” group at BMBI laboratory (Compiègne, France). She works on the development of complex three-dimensional models for in vitro studies and tissue engineering. She is an expert in the biocompatibility evaluation of therapeutic medical devices. She is also the head of the “Biomaterials and Biomechanic” division at the université de technologie de Compiègne. The CBB research group (15 persons) is composed of cell biologists working on the development and biological validation of biomaterials and tissue engineering models (bone, skin, muscle, tendon, lung, cancer models…): for this purpose, we use different methods of static or dynamic culture (microfluidic approach).

Student profile

Master in biomechanical engineering, or final undergraduate in biomechanical engineering