

## JOB DESCRIPTION

### Job Title: Research Engineer (IgR) in Biomaterials / Tissue Engineering

#### Position Summary:

The IgR will work in the frame of a research project led by two laboratories of the University of Lille, "**Advanced Drug Delivery Systems and Biomaterials**" (*INSERM U1008*) and "**Materials and Transformations Unit**" (UMET-CNRS 8207) and by the company **Cousin Surgery**, industrial manufacturer of implantable medical devices. This project called REGFI (**acronym for "REGenerating Fiber"**), has recently received support from the European Metropolis of Lille (MEL) and the *French Excellence Initiative* label of the University of Lille as part of the 2023 Industrial Chair call for proposals.

The project consists of developing new concepts of implantable reinforcement textile meshes for the surgical treatment of complex abdominal hernias in patients with comorbidities. These concepts will be developed not only on the basis of their technological innovation, but also on the basis of their clinical and industrial interest. The first strategy will be to functionalize wall reinforcement implants with a bioactive absorbable coating that will contribute to the activation and/or acceleration of biological processes of parietal tissue regeneration by targeting the inflammation underlying the wound healing process. At the same time, prospective research will be carried out on the choice of absorbable polymers that will be used in the composition of the textile used in the manufacture of prosthetic implant for hernia surgery and that will be more suitable not only in terms of their contribution to tissue hernia repair (bioactivity), but also in terms of biomechanics compared to conventional meshes.

#### Detailed Job Description:

##### Position in the organization

The IgR recruited for 3 years from January, 2024, will work in parallel in two laboratories of the University of Lille, the INSERM U1008 (located at UFR 3S in Lille) for the biological assessment part, in the UMET-CNRS 8207 (located at the Faculty of Science and Technology in Villeneuve d'Ascq) for the functionalization part, and in the company Cousin Surgery (located in Wervicq-Sud) for the industrialization part.

##### Profile and Missions

The recruited IgR must hold a PhD in a specialty in the field of biomaterials with priority skills in biological assessment of biomaterials. He/she will ensure: the operational part in the laboratory, project management (programming of studies, meetings, etc.), technology watch on advanced biomaterials for soft tissues repair. At the experimental level, his/her missions will be 1) Assess the cyto- and bio-compatibility of modified meshes developed in REGFI and develop *in vitro* biological models to evaluate their biomechanical behaviour and the biological response of tissues. 2) Functionalize, modify Cousin Surgery's implantable medical devices to control parameters such as their resorption, their mechanical performance, etc...;3) Identify and experimentally evaluate new synthetic degradable biomaterials for the conception of resorbable meshes for tackling the key parameter of their resorption kinetic.

The candidate must be able to demonstrate good interpersonal skills, and be able to work in an academic and industrial team as part of an interdisciplinary research project including polymer chemistry, materials engineering, cell and molecular biology. He/she will also need to possess a good sense of organization to meet the calendar constraints of the REGFI program.

Send cover letter + CV to [Nicolas.blanchemain@univ-lille.fr](mailto:Nicolas.blanchemain@univ-lille.fr); [bernard.martel@univ-lille.fr](mailto:bernard.martel@univ-lille.fr); [f.aubert@cousin-surgery.com](mailto:f.aubert@cousin-surgery.com)

Fixed-term contract (CDD) - 13-month renewable term from January 2024 - Research Engineer position – Salary 2400-2600€ (net before taxes).

Recruitment will be subject to the candidate's prior admission to the Restrictive Regime Zone (ZRR) by the Senior Defence and Security Official (HFDS)