

Post-doctoral position – CEA - PARIS – FRANCE (1 year renewable 6 Mo)
Engineer position in esophageal tissue engineering using bioprinting techniques

Duration: 1 year (renewable 6 months)

> 25 et < 35 K€ per year

Period: As soon as possible

Location: Hôpital St Louis, Paris 10e, France (Cell Therapy Unit headed by Pr. Jérôme Larghero)

Context

Due to disease such as cancer or accidents such as caustic burns, the esophagus is sometimes irreversibly damaged and the only option is to remove it and replace it by using the stomach and part of the digestive tract, which often leads to serious complications and even in the best cases to poor functional results and poor quality of life. The most advanced current developments in tissue engineering for the esophagus is the use of decellularized donor tissue and clinical trials are ongoing at St Louis Hospital in this area. This approach however still presents some limitations, in particular related to donor shortage and inflammatory response. In order to prepare the next generation approach, the lab initiated a project funded by MSD Avenir to build an esophagus substitute using 3D printing. This bottom-up approach which uses bioinks as a starting material allows full control over 3D architecture and the construct can be thus personalized to the patient's morphology and pathology, including smaller sizes for pediatric patients, in unlimited supply which is a great advantage over donor tissue. We have patented a formulation based on both natural and synthetic polymers which shows similar mechanical properties when compared to native esophagi, good suturability as well as high porosity to allow cell colonization. It also presents slow degradation as the ultimate aim is that it be replaced with native regenerated tissue over time.

Profile

We are seeking a highly motivated and autonomous post-doctoral fellow or research engineer to continue this project and characterize long term culture on this scaffold by re-epithelializing the interior of the tube and seeding primary endothelial and muscular cells on the outer part. Characterizations will include both material mechanical testing and long term cell behavior, morphology and analysis of any toxicity.

The ideal candidate would possess:

- 2-3 year experience/PhD or research activities in 2D and 3D epithelial/endothelial/muscular cell culture with indepth experience in immunolabelling and confocal microscopy
- Previous experience with stem cells, pluripotent cells or primary cells would be a plus.
- A demonstrated success in working in a multidisciplinary environment on a project at the interface between technology/polymer science and biology (cell and tissue applications)
- Excellent English, both written and spoken.

Contact : Alexandra.FUCHS@cea.fr