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Unique opportunity to develop a team for an experienced scientist in stem cells biology in the field of liver bioengineering for the construction of liver organoids

Key words: *stem cells, human induced pluripotent stem cells, differentiation, 3D cell culture, liver organoids, tissue bioengineering*

Project description:

The rapid advent of in vitro organoid development has opened countless new opportunities in understanding the developmental biology of human organs and has very strong potentials in many fields.
The liver is a vital organ involved in a wide range of processes such as detoxification, protein synthesis, metabolism, homeostasis and hormone production. Despite an astounding regenerative capacity in vivo, expansion of liver cells in vitro has remained a challenge. Growth of the hepatic epithelium as organoids provides researchers with a stable population of liver cells for research in a variety of fields including liver biology, disease modeling and toxicity screening.

We are now seeking a very talented and motivated scientist interested in getting involved in a major collaborative project iLite, for "innovation in Liver tissue engineering", a University Hospital Research Program subsidized by the ANR for 8.5 M€ and dedicated to the fabrication of a functional liver tissue as liver organoids to be used in microfluidized liver-on-chip, in the bioreactor of an extracorporeal bioartificial liver device and, associated with biliary and vascular trees, for the bioconstruction of a transplantable liver (https://ifbf-institute.org). The candidate should be specialized in human pluripotent stem cell (PSC) culture and differentiation to undertake, pursue and develop our program of PSC differentiation into liver cells to produce functional liver organoids[1-10].

The candidate will be hosted in spacious and fully equipped premises at Inserm Unit 1193 at hôpital Paul Brousse settled in the Centre Hépato-Biliaire (first European center for liver transplantation) ensuring interactions with highly competent clinician and surgeons and easy access to an important and diversified biological collection. Next to U1193's own facilities, the candidate will benefit from UMS33 platforms (imaging, animal facility, cytometry …). The project itself will be conducted in a highly interdisciplinary environment, with academic and industrial partners. It involves 3D culture technology, light-sheet microscopy, microfabrication, stereolithography and 3D bioimpression. Consequently, the candidate will develop strong collaborations with partners involved in the construction of a biliary and of vascular networks and with other partners who are experts in 3D liver imaging.

The candidate will be supported to form an Inserm research team in the Atip –Avenir Program (https://www.inserm.fr/en/professional-area/requests-for-proposals-and-funding/atip-avenir-program) or in the "Amorçage Jeunes équipes" program from the Fondation pour la Recherche Médicale (FRM).

Partners: APHP, INRIA, ENS-Paris Saclay, CEA, UTC Compiègne, Meary, Biopredic, Cellenion, Aenitis, Institut Français de BioFabrication (IFBF)

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