CDD job offer – 1-year postdoctoral researcher in extracellular vesicle analytics (renewable contract)

Environment

MSC-Med laboratory UMR7057 (CNRS and Université de Paris) has renowned expertise in translational nanomedicine approaches for cancer therapy and regenerative medicine [1-4]. MSC-Med is an interdisciplinary laboratory gathering physicists, biologists, pharmacists, engineers, entrepreneurs, etc. MSC-Med has pioneered breakthrough technologies that overcome current limitations in the bioproduction and engineering of extracellular vesicles (EVs) for large scale and cost effective clinical use. Particularly, technologies based on turbulence-induced mechanical stress in scalable bioreactors were patented for high yield/high throughput EV production from different adherent and non-adherent cell sources including stromal cells. A 10-fold higher EV yield in a 10-fold faster production time can be achieved with the turbulence technology, compatible with good manufacturing practice (GMP) procedures. A spin-off (EVerZom) was launched to develop large-scale GMP production of on-demand clinical grade EVs based on MSC-Med patented technologies. Another spin-off (Evora Biosciences) was launched to develop EV-based biotherapies combined with a thermoresponsive hydrogel to treat digestive fistulas. MSC-Med team is also developing an EV facility and center of expertise (IVETh) based on innovative and high-throughput analytic methods for EV quantification (Nanoparticle tracking analysis -NTA, Exoview), EV molecular characterization (Raman imaging) and EV isolation/analytics (Asymmetric Flow Field-Flow Fractionation-A4F coupled to Multi Angle Light scattering - MALS analysis) to define quality control for standardized EV in a production flow for industrialization.

Mission: We are seeking an **extremely motivated rigorous postdoctoral researcher** to integrate an ambitious translational project aiming to optimize the manufacturing process and engineering of EVs from stromal cells to transfer the obtained protein-loaded EVs to the development steps just before a clinical trial. The project goes from the design of high-performant immortalized expression system to the scale-up and technology transfer for a batch production in GMP environment to carry out regulatory safety testing. The project will be carried out by a public/private multidisciplinary consortium including the MSC-Med lab.

In this project, the role of the post-doc to be recruited is to implement a characterization toolbox that will be used to analyze protein-loaded EVs by a combination of analytical approaches: NTA, Exoview, nanoflow cytometry and A4F-MALS for investigating EV size, immunophenotype, purity, loading and sub-populations, etc. The post-doc will be in charge of **developing protocols, standardizing methods, performing analytical validation and analyzing/comparing EV samples in a comprehensive way**.

Profile: Background on biochemistry, biophysics, biology or pharmacy is preferred. **Consolidated expertise (≥3 years) in extracellular vesicles is absolutely required. In particular, consolidated expertise on EV characterization is requested.**

Starting date: January 2022

Type of contract: 1-year CDD (renewable), the contract for this academic job offer will prepared via the Université de Paris.

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References:

[1] Pinto, A. et al.: Immune Reprogramming Precision Photodynamic Therapy of Peritoneal Metastasis by Scalable Stem-Cell-Derived Extracellular Vesicles. *ACS Nano*, **15** (2), 2021, p. 3251–3263.
[2] Coffin, Elise, et al. "Extracellular vesicles from adipose stromal cells combined with a thermoresponsive hydrogel prevent esophageal stricture after extensive endoscopic submucosal dissection in a porcine model." Nanoscale (2021) In Press.
[3] Piffoux, M. et al.: Modification of Extracellular Vesicles by Fusion with Liposomes for the Design of Personalized Biogenic Drug Delivery Systems. *ACS Nano*, **12** (7), 2018, p. 6830–6842.
[4] Berger, Arthur, et al. "Local administration of stem cell-derived extracellular vesicles in a thermoresponsive hydrogel promotes a pro-healing effect in a rat model of colo-cutaneous post-surgical fistula." Nanoscale 13.1 (2021): 218-232