

EVERZOM signed a licensing agreement with Université de Paris covering an innovative extracellular vesicle bioproduction process.

EVERZOM, a biotechnology company creating a new bioproduction platform of large-scale cGMP grade extracellular vesicles for research purposes and clinical studies, is pleased to announce that the company signed a key intellectual property license with Université de Paris and CNRS (mediated by the technology transfer office Erganeo) for a disruptive extracellular vesicle production process.

Despite a huge therapeutic potential, the lack of EV production method is one of the main technological bottlenecks hampering the progress of EV based therapies. Current production methods (using a chemical or biological stress) require a large quantity of cells, have a low yield, require complex treatments for purification and come with contamination problems from animal proteins for the cell culture.

EVERZOM is addressing this challenge with this game changing EV production technology invented by the BioTher Team (Amanda Silva, Florence Gazeau and Claire Wilhelm), from a CNRS – Université de Paris laboratory Matière et Systèmes Complexes. This process consists in applying a turbulence stimulation on cells to trigger massive EV release. It is fully integrated to a GMP compliant cell culture in bioreactors for a large scale, cost effective and high yield EV production with minor impact on cells viability.

Dr Amanda Silva, Matière et Systèmes Complexes laboratory completed: "This unprecedented approach is diametrically opposed to the current upscaling trend based on spontaneous EV release from cells cultured. We realized several proofs of concept on different cell lines showing that our method allows in average a 10-fold higher and a 10-fold faster increase in EV production per cell compared to starvation method".

Importantly, the mechanically induced EVs from mesenchymal stems cells (MSCs) conserved their physical features, biological markers and regenerative properties when compared to classical EVs. Proteomic, lipidomic and transcriptomic analyses demonstrated a high degree of structural similarity when comparing turbulence and starvation EVs. The pro-angiogenic, pro-survival (anti-apoptotic) and immunomodulatory effect of turbulence EVs was demonstrated in *in vitro* potency tests. The *in vivo* efficacy of these EVs is supported by preclinical studies in three models: a murine model of chronic heart failure, a rat model of digestive fistula and clinically relevant model of esophageal stenosis in pigs. At the same dose, turbulence EVs from MSCs presented equivalent potency when compared to classical EVs and to producer cells.

Dr Jeanne Volatron, EVerZom president and CEO commented: "This license acquisition is an important milestone for the creation of the EVerZom clinical-grade EV bio-production platform and provides significant protection in the US, Asia and Europe. Several ongoing low scale co-development programs have already validated the platform. Our focus is now on scaling this process to reach the 10L scale by September 2020 to reinforce our EV manufacturer position and to launch other co-development studies."

About Université de Paris: Located at the heart of a world capital city, Université de Paris is one of the top five French universities. Particularly renowned for its health and earth sciences, it benefits from a very rich disciplinary background, from sciences to humanities, supported by a very high level of research. With its 61 000 students, (including 30 000 postgraduates, and more than 10 000 foreign students), 140 laboratories and 7500 staff, its ambition is to lead and develop an exceptional potential to meet the challenges of tomorrow's society and promote French excellence in Europe and the world.

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