Organization

Name of Organization / 会社名

TreeFrog Therapeutics

URL

https://treefrog.fr/

Brief Descriptions of Organization / 会社概要

TreeFrog Therapeutics has developped and patented C-Stem™, a high-throughput stem cell encapsulation technology allowing the mass-production of stem cells and their differentiation in conventional bioreactors. A first batch of human iPSCs was delivered to European cell and gene therapy leader Imagine Institute in April 2019, with best-in-class quality check (100% genomic integrity). TreeFrog Therapeutics is currently validating its technology for human use (cGMP compliance) and is now looking to partner with international cell therapy initiatives with the aim of a first-in-man.
In 2019, TreeFrog Therapeutic raised over €7M in equity, as well as €3M in grants from the French government and the European Commission, thus being recognized as one of the top 1% innovative companies in EU.

Oral Presentation

Title of Presentation / 講演タイトル

iPSC-derived cell therapy manufacturing scale-up

Abstract / 要旨

Pluripotent stem cells represent a challenge for the bioproduction industry. For years, cells have been cultured as a platform to produce drugs such as CHO for vaccines. In the context of stem cell-derived cell therapies, cells themselves are the drug. Ensuring the bioproduction of large batches of stem and differentiated cells with clinical-grade quality therefore calls for new manufacturing technologies and processes.
Based on high-throughput cell encapsulation, the C-Stem™ technology protects a small sized culture niche allowing large-scale culture of pluripotent stem cells-based therapies in conventional liquid bioreactors. C-Stem™ shields the cells from shear stress while allowing diffusive equilibrium between the bioreactor medium and the cells microenvironment. At the pluripotent stage, this results in a more physiological organization of cells into an empty 3D cyst-conformation that promotes pluripotency and significantly diminishes cellular death, increasing cell yields per volume of medium used and limiting the total number of cell divisions required during amplification. Beyond this, the microenvironment is conducive to cell differentiation further expanding the benefit of C-Stem™ to the PSC progenies and ultimately to the cell therapy product itself.
The Goal of Treefrog is to cut the production costs of cells 100-fold, by increasing yield, allowing larger batches, diminishing workforce and production time requirements.

Objectives and/or Motives / 目的

Working hand in hand with one or two major Japanese stakeholders to promote industrialization of pluripotent stem cell derived therapies production in order to cut costs and increase efficacy and safety for the patients.