CHEMICAL ENGINEERING

MUR DM 118 - Lyophilization of biological liquids for preclinical testing in the treatment of rare diseases

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] Politecnico di TORINO [P.iva/CF:00518460019]
Supervisor	PISANO ROBERTO - roberto.pisano@polito.it
Contact	LIMONGI TANIA - tania.limongi@polito.it
Context of the research activity	This PhD project focuses on lyophilizing selectively conditioned secretomes for in vitro testing on cellular models of rare diseases like neuroendocrine tumors. It aims to enhance competitiveness in the pharmaceutical industry, where Italy holds a leadership position, and strengthen biomedical research within the National Health Service. Progetto finanziato nell'ambito del PNRR – DM 118/2023 - CUP E14D23001680006
Objectives	This doctoral research project focuses on the production of a specific category of cell-based products for personalized medicine. Our main objective is to investigate the lyophilization process of selectively conditioned secretomes obtained from various sources. These secretomes will be carefully selected and processed to conduct in vitro testing on cellular models of rare diseases, such as neuroendocrine tumors (NETs). These tumors originate from the malignant transformation of cells in the neuroendocrine system and predominantly affect the gastroenteropancreatic tract. However, they also occur in smaller percentages in other organs like the lungs, thymus, gallbladder, kidneys, ovaries, bladder, prostate, and testicles. This project aims to enhance the competitiveness of various industrial sectors, particularly the pharmaceutical industry, which is of strategic importance to the Italian economy. It's worth noting that the Italian pharmaceutical industry holds a prominent position in Europe, ranking first with a turnover of 32 billion euros and experiencing consistent growth in exports. Moreover, this research aligns with the goal of strengthening and advancing biomedical research within the National Health Service.
Skills and competencies	The candidates should possess strong analytical and problem-solving skills. They need a solid foundation in biotechnology, chemistry, and engineering

| **competencies for the development of the activity** | principles. Proficiency in data analysis is essential. Excellent communication and technical writing skills are necessary for publishing research findings. Collaboration, adaptability, and a curiosity for innovation are important traits for success in this field. |