

Plenary Speakers



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BIOGRAPHY

Chantal PICHON is Professor at the University of Orleans (France), senior member of the Institut Universitaire de France as Innovation chair laureate. She carries out her research activities at the Centre de Biophysique Moléculaire (Orléans) and coordinates the team Cellular Signaling, Molecular Targets and Innovative Therapies. C. Pichon is conducting interdisciplinary projects based on chemistry and molecular and cell biology with a crosstalk between basic and applied researches. Her main research activities are dedicated to the use of nucleic acids as therapeutics, especially messenger RNAs as vaccines and therapeutics. Her lab is developing innovative formulations for their delivery for various applications: mucosal vaccination, immune cell-based therapies and protein replacement therapy. She is also developing a challenging project to build an economically sustainable biotechnology process for production of high-quality mRNA therapeutics opening their use in different applications. C. Pichon has a track-record of 170 articles and 12 filled patents. She obtained 26 academic and private grants (Horizon Europe, FP7, ANR, Région, Ligue Nationale contre le cancer...).

MESSENGER RNA, A GAME CHANGER IN BIOMEDICINE: CURRENTS STATUS, OPPORTUNITIES AND CHALLENGES

The perspective of using messenger RNA (mRNA) as a therapeutic molecule has first faced some uncertainties due to concerns about its instability and the feasibility of large-scale production. The potential of messenger RNA (mRNA)-based vaccines has been revealed by the success of rapid and adaptable vaccination strategies to fight against COVID-19 pandemic. The achievement of those mRNA vaccines has been made possible through advances in the design of mRNA structure, manufacturing and delivery systems. This success opens up an avenue for the development of innovative mRNA-based therapeutics and vaccines envisioning different applications in immunotherapy, regenerative medicine and gene editing. I will present the key milestones that have led to the production of these vaccines. Current knowledge regarding crucial aspects-structure, stability, formulations, cellular delivery and translation- and in vivo applications of mRNA will be summarized. Last, I will also present challenges that have to be tackled to fully prove its mettle and to potentiate mRNA therapeutic applications.

KEYWORDS:

Messenger RNA; mRNA formulations; Lipid nanoparticles; mRNA-based vaccine; Protein therapy

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