Cincinnati Children's | Innovation Ventures

Drug Discovery and Development

Comprehensive Method to Package mRNA Gene Therapies, Vaccines and Protein Replacement Therapies

Brief Description of Technology

Comprehensive method to package mRNA gene therapies, vaccines and protein replacement therapies

TECHNOLOGY ID

2020-0601

BUSINESS OPPORTUNITY

Exclusive License or Sponsored Research

TECHNOLOGY TYPE

Nucleic Acid/Gene

PATENT INFORMATION

PCT Filed

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Technology Overview

Gene therapy research and the use of nucleic acid-based therapies, particularly in vaccines, holds great potential in the prevention and treatment of chronic diseases like cancer, in rare diseases, and in the prevention of infectious disease pandemics. The key to implementing these therapies, especially mRNA-based therapies, in clinical practices relies on a robust delivery system. Currently, there are two major in vivo gene delivery systems, viral-based and nanoparticle-based gene delivery systems. However, both these systems have unsolved safety issues or problems of low expression efficiency. Additionally, reports show that unwanted immune responses can be triggered by these gene delivery methods. Therefore, there is a lasting need for alternative methods of delivering biological material, such as nucleic acids and proteins, to humans and animals in a clinical setting. This technology provides a safe, comprehensive method to package mRNA or other genetic materials into platelets which are natural cells that circulate throughout the body.

Applications

This technology is useful method for delivering mRNA-based gene therapies, vaccines, and protein replacement therapies without unwanted immune responses.

Advantages

This delivery system alleviates adverse immune responses, is readily internalized by a variety of cell types, has high delivery and efficient expression.

Market Overview

The market for mRNA-based vaccines for infectious disease prevention and nucleic acid-based therapeutics market is expected to grow to $68.1 Billion by 2030. This market was valued at $34.7 Billion in 2022 with a CAGR of 8.8% between 2023 and 2030. Over the forecast period, the rising prevalence of chronic and infectious diseases will increase global demand for mRNA vaccines and RNAi therapies.

Investigator Overview

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