Methods To Modulate Size, Malleability, And Biodistribution Of Cell-Based Therapeutics

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BACKGROUND

While some cell therapies have experienced success, many current cell therapies fall short in that enough cells do not reach the target tissue and/or the cells are incapable of producing clinically relevant thresholds of desired products sufficient to impact the disease state. Consequently, there is a major fundamental need to genetically engineer therapeutic cells to be more effective and robust using integrating viruses and powerful gene editing technologies like CRISPR, which can target ten to hundreds of genes simultaneously. However, this is highly problematic because the process of genetic engineering introduces dangerous unwanted mutations into the genome that can lead to cancer and other life-threatening diseases, especially if such cells permanently engraft into the body or fuse with host cells, which is common with stem cells. Therefore, the FDA does not readily permit the introduction of new genetic material or the extensive alteration of endogenous genes in cell-based therapies with the exception of CAR-T cells. For this reason, there is a major underlying need in the cell therapy sector to genetically enhance therapeutic cells to express gene products encoding biologics and then render them safe prior to clinical use.

TECHNOLOGY DESCRIPTION

Researchers at UC San Diego have developed a new cell therapy delivery platform which offers a number of advantages over the current state of the art for this type of clinically important procedure. Utilizing this platform renders therapeutic cells undeniably safe, even after virus integration, extensive genetic engineering, and/or genome editing. It also provides a robust vehicle to deliver a wide range of clinically important therapeutic products, such as genetically engineered-enhanced cytokines, plasmids, gene therapy constructs, oncolytic viruses, small therapeutic RNAs, and peptides.

ADVANTAGES

This new delivery platform offers an added convenience as a cellular vehicle to deliver therapeutically important biomolecules that potentially be used to treat a broad spectrum of diseases in a safe manner.

INTELLECTUAL PROPERTY INFO

A provisional patent has been submitted and the technology is available for licensing.

RELATED MATERIALS

PATENT STATUS

Patent Pending

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OTHER INFORMATION

CATEGORIZED AS

- **Nanotechnology**
  - NanoBio

RELATED CASES

2020-288-0, 2020-289-0, 2020-358-0, 2020-365-0