OPTIMIZED VIRUS-LIKE PARTICLES FOR CAS9 RNPS & TRANSGENE/HDR TEMPLATE DELIVERY

Tech ID: 32400 / UC Case 2021-177-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

The inventors have developed optimized methods for using virus-like particles for the co-delivery of Cas9 ribonucleoprotein complexes and:

- a lentiviral genome that encodes a large transgene, such as a chimeric antigen receptor (CAR) transgene
- a lentiviral genome that does not encode a sgRNA expression cassette
- a method for nucleofecting VLPs + homology directed repair (HDR) donor template together to enhance HDR in treated cells

SUGGESTED USES

In vivo/ex vivo generation of CRISPR-Cas9 gene edited CAR T cells.

Any application where a simultaneous gene knockout and transgene introduction/expression is desired.

ADVANTAGES

This technology offers a one-step strategy using engineered lentiviral particles to introduce Cas9 RNPs and a CAR transgene into primary human T cells without electroporation. Furthermore, programming particle tropism allowed the inventors to target a specific cell type within a mixed cell population. This adaptable approach to immune cell engineering ex vivo provides a strategy applicable to genetic modification of targeted somatic cells in vivo.

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Methods and Compositions for Using Argonaute to Modify a Single-Stranded Target Nucleic Acid
- COMPOSITIONS AND METHODS FOR IDENTIFYING HOST CELL TARGET PROTEINS FOR TREATING RNA VIRUS INFECTIONS
- Lentivirus-like Particle Delivery of CRISPR-Cas9 & Guide RNA for Gene Editing
- Cas12-mediated DNA Detection Reporter Molecules
- Improved guide RNA and Protein Design for CasX-based Gene Editing Platform
- Cas13a/C2c2 - A Dual Function Programmable RNA Endoribonuclease
- Miniature Type VI CRISPR-Cas Systems and Methods of Use
- CasX Nuclease Designs, Tans Cleavage Designs & Structure
- A Dual-RNA Guided Cas2 Gene Editing Technology
- CRISPR-CAS EFFECTOR POLYPEPTIDES AND METHODS OF USE THEREOF ("Cas-VarPhi")
- Modifications To Cas9 For Passive-Delivery Into Cells
- A Protein Inhibitor Of Cas9
- Split-Cas9 For Regulatable Genome Engineering
- NANOPORE MEMBRANE DEVICE AND METHODS OF USE THEREOF
- Protein Inhibitor of Type VI-B CRISPR-Cas System
- COMPOSITIONS AND METHODS FOR INCREASING HOMOLOGY-DIRECTED REPAIR
- CRISPR CASY COMPOSITIONS AND METHODS OF USE
- Single Conjugative Vector for Genome Editing by RNA-guided Transposition
- Improved Cas12a Proteins for Accurate and Efficient Genome Editing
- Protein Inhibitor of Type II-A CRISPR-Cas System
- CRISPR-CAS EFFECTOR POLYPEPTIDES AND METHODS OF USE THEREOF
- Engineered/Variant Hyperactive CRISPR CasPN Enzymes And Methods Of Use Thereof

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

» Biotechnology
» Genomics
» Health
» Medical
» Delivery Systems
» Disease: Cancer
» Research Tools

RELATED CASES

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