LENTIVIRUS-LIKE PARTICLE DELIVERY OF CRISPR-CAS9 & GUIDE RNA FOR GENE EDITING

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PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20230193255	06/22/2023	2019-024
Hong Kong	Published Application	40049034	12/10/2021	2019-024
European Patent Office	Published Application	3880717 A0	09/22/2021	2019-024

BRIEF DESCRIPTION

CRISPR-Cas9 is revolutionizing the field of gene editing and genome engineering. Efficient methods for delivering CRISPR-Cas9 genome editing components into target cells must be developed, both for ex vivo and in vivo applications. Current delivery strategies have drawbacks: genetically encoding Cas9 into viruses (ex. adeno-associated virus, adenovirus, retrovirus) leads to prolonged Cas9 expression in target cells, thus increasing the likelihood for off-target gene editing events. This problem can be mitigated by complexing ribonucleoprotein (RNP) Cas9 and guide RNA (gRNA) in vitro prior to administration – however, additional strategies for trafficking RNPs into target cells must additionally be employed.

To address this challenge, UC Berkeley researchers have discovered lentivirus-like particles that deliver Cas9/gRNA RNP complexes into target cells with high efficiency. This delivery strategy combines the ability of viruses to deliver cargo intracellularly with the transient nature of Cas9 RNP complexes.

SUGGESTED USES

- Delivering gene editing components into cells

ADVANTAGES

- High efficiency delivery

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INVENTORS

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OTHER INFORMATION

KEYWORDS

Delivery, CRISPR, guide RNA, RNP

CATEGORIZED AS

- **Agriculture & Animal Science**
  - Transgenics
- **Biotechnology**
  - Genomics
- **Imaging**
  - Medical
- **Medical**
  - Delivery Systems
  - Research Tools
- **Research Tools**
  - Nucleic Acids/DNA/RNA

RELATED CASES

2019-024-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- COMPOSITIONS AND METHODS FOR IDENTIFYING HOST CELL TARGET PROTEINS FOR TREATING RNA VIRUS INFECTIONS
- Genome Editing via LNP-Based Delivery of Efficient and Stable CRISPR-Cas Editors
- Type III CRISPR-Cas System for Robust RNA Knockdown and Imaging in Eukaryotes
- 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
- RNA-directed Cleavage and Modification of DNA using CasY (CRISPR-CasY)
- CasX Nickase Designs, Tans Cleavage Designs & Structure
- A Dual-RNA Guided CasZ Gene Editing Technology
- CRISPR-CAS EFFECTOR POLYPEPTIDES AND METHODS OF USE THEREOF (“Cas-VariPhi”)
- Modifications To Cas9 For Passive-Delivery Into Cells
- A Protein Inhibitor Of Cas9
- RNA-directed Cleavage and Modification of DNA using CasX (CRISPR-CasX)
- Compositions and Methods for Genome Editing
- Split-Cas9 For Regulatable Genome Engineering
- NANOPORE MEMBRANE DEVICE AND METHODS OF USE THEREOF
- 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
- CRISPR-CAS EFFECTOR POLYPEPTIDES AND METHODS OF USE THEREOF
- Engineered/Variant Hyperactive CRISPR CasPhi Enzymes And Methods Of Use Thereof
- Engineering Cas12a Genome Editors with Minimized Trans-Activity
- Methods Of Use Of Cas12L/CasLambda In Plants
- Type V CRISPR/CAS Effector Proteins for Cleaving ssDNA and Detecting Target DNA
- THERMOSTABLE RNA-GUIDED ENDONUCLEASES AND METHODS OF USE THEREOF (GeoCas9)
- Structure-Guided Methods Of Cas9-Mediated Genome Engineering
- Endoribonucleases For Rna Detection And Analysis
- Efficient Site-Specific Integration Of New Genetic Information Into Human Cells
- CRISPR-Cas Effector Polypeptides and Methods of Use Thereof
- Class 2 CRISPR/Cas COMPOSITIONS AND METHODS OF USE
- Compositions and Methods of Use for Variant Csy4 Endoribonucleases
- Identification Of Sites For Internal Insertions Into Cas9
- Small Molecule Assisted Cell Penetrating Cas9 RNP Delivery
- Methods and Compositions for Controlling Gene Expression by RNA Processing

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