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

Tech ID: 29747 / UC Case 2019-024-0

**PATENT STATUS**

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<td>Published Application</td>
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<td>3880717 A0</td>
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**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

**INVENTORS**

- Doudna, Jennifer A.

**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
In Vivo Gene Editing Of Tau Locus Via Liponanoparticle Delivery
A Dual-RNA Guided Cas2 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
Methods to Interfere with Prokaryotic and Phage Translation and Noncoding RNA
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 Cas4 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