NEXT-GENERATION LIPID NANOPARTICLES FOR PRECISION NUCLEIC ACID DELIVERY

Tech ID: 33310 / UC Case 2024-026-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Lipid nanoparticle (LNP) technology offers a powerful solution to the challenges of delivering free nucleic acids, providing protection against degradation, enhanced cellular uptake, and efficient intracellular delivery.

Researchers at UC Berkeley have developed a novel LNP platform capable of delivering multiple types of nucleic acids across different tissues, with demonstrated efficacy in *in vivo* mouse models. Its versatility, modularity, and gene-editing compatibility offer exciting potential for RNA therapeutics, vaccines, and next-generation genetic medicines.

The technology has been validated using CRISPR-Cas9 and guide RNA targeting the endogenous *Tau* locus. Given the role of Tau dysregulation and aggregation in Alzheimer's disease, this platform offers a promising new approach for investigating and potentially intervening in disease-associated pathways.

Combining versatile cargo delivery, tissue accessibility, and demonstrated in vivo performance, this technology has the potential to become a powerful platform for precision gene editing and therapeutic development.

SUGGESTED USES

» therapeutic applications, particularly ones targeting the Tau locus (e.g., Alzheimers disease)

ADVANTAGES

» novel lipid formulation

» demonstrated ability to deliver diverse nucleic acids across different tissues

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
- Tissue-Specific Genome Engineering Using CRISPR-Cas9
- Type III CRISPR-Cas System for Robust RNA Knockdown and Imaging in Eukaryotes
- Targeted Nucleic Acid Editing via Cas9-Deaminase Fusion Proteins

CONTACT

Ellen S. Kats
ellenkats@berkeley.edu
tel: .



INVENTORS

» Doudna, Jennifer A.

OTHER INFORMATION

CATEGORIZED AS

» **Biotechnology**

» Genomics

» **Medical**

» Disease: Central Nervous System

» Therapeutics

RELATED CASES

2024-026-0

- Cas9 Variants With Altered DNA Cleaving Activity
- Cas12-mediated DNA Detection Reporter Molecules
- Improved guide RNA and Protein Design for CasX-based Gene Editing Platform
- Compositions and Methods for Delivering Molecular Cargo to Cells
- Cas13a/C2c2 - A Dual Function Programmable RNA Endoribonuclease
- Miniature Type VI CRISPR-Cas Systems and Methods of Use
- RNA-directed Cleavage and Modification of DNA using CasY (CRISPR-CasY)
- Generation of Chimeric RNA with Type III CRISPR-Cas
- CasX Nickase Designs, Tans Cleavage Designs & Structure
- Methods and Compositions for Modifying a single stranded Target Nucleic Acid
- Genetically Encoded, Biologically Responsive, And Programmable Bispecific Aptames As Therapeutic Protein Degraders
- A Dual-RNA Guided CasZ Gene Editing Technology
- A Protein Inhibitor Of Cas9
- RNA-directed Cleavage and Modification of DNA using CasX (CRISPR-CasX)
- Compositions and Methods for Genome Editing
- IS110 and IS1111 Family RNA-Guided Transposons
- Variant Cas12a Protein Compositions and Methods of Use
- In Vitro and In Vivo Genome Editing by LNP Delivery of CRISPR Ribonucleoprotein
- CRISPR CASY COMPOSITIONS AND METHODS OF USE
- Single Conjugative Vector for Genome Editing by RNA-guided Transposition
- CRISPR-CAS EFFECTOR POLYPEPTIDES AND METHODS OF USE THEREOF
- Compositions and Methods for VIPR-Based Nucleic Acid Targeting
- Precision-Engineered Cas12a: Eliminating Collateral DNA Cleavage for Next-Generation Genome Editing
- Selective Cell Elimination using RNA-guided Chromatin Shredding
- 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)
- Variant TnpB and wRNA Proteins
- Efficient Site-Specific Integration Of New Genetic Information Into Human Cells
- Class 2 CRISPR/Cas COMPOSITIONS AND METHODS OF USE
- Compositions and Methods of Use for Variant Csy4 Endoribonucleases
- Immune Cell-Mediated Intercellular Delivery Of Biomolecules
- Methods and Compositions for Controlling Gene Expression by RNA Processing

Berkeley
UNIVERSITY OF CALIFORNIA

University of California, Berkeley Office of Technology Licensing
2150 Shattuck Avenue, Suite 510, Berkeley,CA 94704
Tel: 510.643.7201 | Fax: 510.642.4566
https://ipira.berkeley.edu/ | otl-feedback@lists.berkeley.edu
© 2023 - 2026, The Regents of the University of California
Terms of use | Privacy Notice