

NANOPORE MEMBRANE DEVICE AND METHODS OF USE THEREOF

Tech ID: 29572 / UC Case 2019-001-0

PATENT STATUS

Country	Type	Number	Dated	Case
Hong Kong	Published Application	40050923A	12/31/2022	2019-001
United States Of America	Published Application	20220025353	01/27/2022	2019-001
China	Published Application	CN112912132A	06/04/2021	2019-001

BRIEF DESCRIPTION

Several chemical, physical, and biological techniques have been used for delivering macromolecules into living cells. Delivery of biomolecules into living cells is essential for biomedical research and drug development as well as genome editing. However, conventional methods of delivery of biomolecules such as viral vectors, cell penetrating peptides, cationic lipids, positive charged polymers, bulk electroporation, and microinjection pose several challenges. Such challenges include safety concerns, toxicity, damage to the cells, limited loading capacity, low delivery efficiencies, low cell viabilities, low cell throughput, high cellular perturbation, and high costs. Thus, there is a need for delivery devices and methods that allow for permeabilization of the cell membrane to facilitate delivery of biomolecules into cells.

UC Berkeley researchers have developed a universal delivery electroporation system that makes cell transfection very simple for all of types of cells. The technology can be used to replace conventional cellular delivery methods such as cationic lipid, positive charged polymer and bulk electroporation as well as microinjection. The system can deliver biomolecules (e.g., DNA, RNA, proteins, nucleic acid-protein complexes (e.g., RNPs)) or other reagents into all cell types, including T-cells, which cannot be efficiently transfected with conventional approaches.

SUGGESTED USES

- » Intracellular delivery device
- » Transfection of cells
- » Research tool

ADVANTAGES

- » Universal (all cell types) delivery device
- » Highly efficient and simplified transfection

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INVENTORS

- » Doudna, Jennifer A.

OTHER INFORMATION

KEYWORDS

cells, delivery, electroporation, transfection

CATEGORIZED AS

- » **Materials & Chemicals**
- » Biological
- » **Medical**
- » Delivery Systems
- » Research Tools
- » **Research Tools**
- » Nucleic Acids/DNA/RNA

RELATED CASES

2019-001-0

» Non-toxic

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 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
- ▶ 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 Csy4 Endoribonucleases
- ▶ Identification Of Sites For Internal Insertions Into Cas9
- ▶ Methods and Compositions for Controlling Gene Expression by RNA Processing



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