

IMMUNE CELL-MEDIATED INTERCELLULAR DELIVERY OF BIOMOLECULES

Tech ID: 33991 / UC Case 2025-115-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

The targeted intracellular delivery of protein cargos is critical for therapeutic applications such as enzyme inhibition, transcriptional modulation, and genome editing. For most tissues, the delivery of these molecules must occur in-vivo. This has historically been achieved using viral vectors or lipid nanoparticles. While significant progress has been made in engineering the tropisms of these particles towards different tissues, delivery specificity and packaging limits remain challenging.

UC Berkeley researchers have developed engineered immune cells that produce and intercellularly transfer a protein and/or RNA cargo in response to contact with a predetermined antigen. Proof of concept experiments demonstrated that production of EDVs can be induced in a T cell line through either the presence of a small molecule or recognition by the T cells of a specific antigen on co-cultured cells. The researchers showed that delivery can be achieved using multiple strategies and that the system is compatible with multiple cargo proteins of interest, including Cre recombinase and S.pyogenes Cas9.

SUGGESTED USES

- » cell therapies with intracellular delivery of RNA and/or protein
- » cancer therapeutics

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INVENTORS

- » Doudna, Jennifer A.

OTHER INFORMATION

CATEGORIZED AS

- » **Medical**
- » Disease: Cancer
- » Gene Therapy
- » Research Tools
- » Therapeutics
- » **Research Tools**
- » Nucleic Acids/DNA/RNA

RELATED CASES

2025-115-0

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
- Tissue-Specific Genome Engineering Using CRISPR-Cas9
- Type III CRISPR-Cas System for Robust RNA Knockdown and Imaging in Eukaryotes
- 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)
- CasX Nickase Designs, Tans Cleavage Designs & Structure
- In Vivo Gene Editing Of Tau Locus Via Liponanoparticle Delivery

- ▶ [Methods and Compositions for Modifying a single stranded Target Nucleic Acid](#)
- ▶ [A Dual-RNA Guided CasZ Gene Editing Technology](#)
- ▶ [CRISPR-CAS EFFECTOR POLYPEPTIDES AND METHODS OF USE THEREOF \(“Cas-VariPhi”\)](#)
- ▶ [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](#)
- ▶ [Methods to Interfere with Prokaryotic and Phage Translation and Noncoding RNA](#)
- ▶ [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](#)
- ▶ [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](#)
- ▶ [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](#)
- ▶ [Methods and Compositions for Controlling Gene Expression by RNA Processing](#)



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