MINIMAL RNA TARGETING CRISPR CAS SYSTEMS

Tech ID: 33529 / UC Case 2024-121-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

UC Berkeley researchers have indentified and characterized a novel CRISPR Cas13 subtype that exhibits unique and advantageous features for transcriptome editing applications. At approximately half the size of the smallest known Cas13 subtype, this novel subtype is the smallest CRISPR Cas effector identified to date. The compactness of this novel Cas13 subtype facilitates its delivery into a wide array of cell types using various delivery mechanisms, significantly enhancing its utility in genomic research and therapeutic applications. The novel Cas13 subtype retains the hallmark programmable RNA-targeting capability of the Cas13 family, enabling precise and efficient editing of RNA sequences. This feature is particularly valuable in the context of transcriptome engineering, where specific alterations to RNA molecules can modulate gene expression, correct genetic errors, or modulate the function of non-coding RNAs. The discovery of this compact Cas13 subtype opens new avenues for transcriptome editing, offering potential applications in functional genomics, gene therapy, and the development of novel therapeutic strategies targeting RNA. Its ease of delivery and potent RNA-editing capabilities position this novel Cas13 subtype as a valuable tool for both basic research and clinical applications in the field of genetic engineering and precision medicine.

SUGGESTED USES

» Transcriptome editing

» Gene therapy

» Therapeutic strategies targeting RNA

ADVANTAGES

» The small size of this novel subtype does not compromise its efficiency or specificity in targeting RNA, which is a significant advancement over existing Cas13 variants that are larger and more challenging to deliver into target cells.

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

» **Biotechnology**

» Genomics

» **Medical**

» Disease: Genetic Diseases and Dysmorphic Syndromes

» Gene Therapy

» Research Tools

» Therapeutics

» **Research Tools**

» Nucleic Acids/DNA/RNA

RELATED CASES

2024-121-0

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
- Highly Multiplexed Tagging Methods for RNA Imaging and Other Applications
- Improved guide RNA and Protein Design for CasX-based Gene Editing Platform
- 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
- Single-Stranded Nucleic Acid Detection And Imaging System Using Cas9
- 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
- Split-Cas9 For Regulatable Genome Engineering
- Methods to Interfere with Prokaryotic and Phage Translation and Noncoding RNA
- Variant Cas12a Protein Compositions and Methods of Use
- 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)
- Structure-Guided Methods Of Cas9-Mediated Genome Engineering
- Efficient Site-Specific Integration Of New Genetic Information Into Human Cells
- CRISPR-Cas Effector Polypeptides and Methods of Use Thereof
- Virus-encoded DNA-binding Proteins
- 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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