IS110 AND IS1111 FAMILY RNA-GUIDED TRANSPOSONS

Tech ID: 33932 / UC Case 2025-092-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

IS110 family transposons encode a protein component (also referred to as the transposase) and a non coding RNA component (also referred to as the bridgeRNA or bRNA). In its naturally occurring context, a bRNA-bound transposase directs the integration of its cognate transposon (also referred to as the donor) into target DNA sites. The nucleic acid sequence and structure of the bRNA partially determines the sequence identify of the terminal ends of the mobilized donor, and the sequence identify of the target DNA molecule (also referred to as the target or target DNA).

UC Berkeley researchers have developed a programmable gene editing technology based on IS110 family transposons that can be used for targeted insertions, deletions, excisions, inversions, replacements, and capture of DNA in vitro and in vivo. Additionally, this technology can be multiplexed to achieve complex assembles of multiple fragments of DNA.

SUGGESTED USES

- programmable gene editing technology

ADVANTAGES

- can be multiplexed to achieve complex assembles of multiple fragments of DNA.

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

- **Medical**
  - Gene Therapy
  - Research Tools
  - Therapeutics

RELATED CASES

2025-092-0

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
- 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
- Methods and Compositions for Modifying a single stranded Target Nucleic Acid
- 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
- 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
- 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

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