GENETICALLY ENCODED, BIOLOGICALLY RESPONSIVE, AND PROGRAMMABLE BISPECIFIC APTAMES AS THERAPEUTIC PROTEIN DEGRADERS

Tech ID: 34372 / UC Case 2026-067-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Engineered ribonucleic acid aptamers are designed with a modular architecture to target and bind specific proteins. Developed by researchers at UC Berkeley, these molecular tools include a domain A serving as a first target protein binding domain, a domain B functioning as a linker, and a domain C acting as a second target protein binding domain. In certain configurations, the aptamers can incorporate a domain D that undergoes a distinct conformational change when engaged by a specific ligand, enabling precise control over their activity.

SUGGESTED USES

- Development of targeted therapeutics that direct specific disease causing proteins to cellular degradation machinery
- Genomic engineering applications utilizing donor deoxyribonucleic acid to integrate programmable regulatory sequences into safe harbor loci
- High throughput screening assays to identify novel ribonucleic acid aptamers and functional protein binding domains
- Creation of ligand responsive molecular switches for real time control of gene expression in synthetic biology frameworks
- Diagnostic tools configured to detect and bind specific target proteins within complex biological samples

ADVANTAGES

- Offers a highly modular and programmable architecture with multiple distinct domains for multifunctional protein targeting
- Enables precise external control over molecular interactions through ligand induced conformational changes in specific domains

CONTACT

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INVENTORS

- Doudna, Jennifer A.

OTHER INFORMATION

CATEGORIZED AS

- **Medical**
  - Therapeutics

RELATED CASES

2026-067-0

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Provides enhanced molecular stability and diverse structural options through circularization and flanking ribozyme sequences

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Allows for stable and predictable genomic integration by utilizing donor deoxyribonucleic acid targeted to safe harbor loci

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Streamlines the discovery of new targeting tools via integrated methods for screening diverse aptamer sequences

RELATED MATERIALS

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)
- Generation of Chimeric RNA with Type III CRISPR-Cas
- 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
- 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
- Improved Cas12a Proteins for Accurate and Efficient Genome Editing
- CRISPR-CAS EFFECTOR POLYPEPTIDES AND METHODS OF USE THEREOF
- Compositions and Methods for VIPR-Based Nucleic Acid Targeting
- 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

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