METHODS TO INTERFERE WITH PROKARYOTIC AND PHAGE TRANSLATION AND NONCODING RNA

Tech ID: 33251 / UC Case 2024-002-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Classical methodologies for examining phage gene function, including UV/random mutagenesis and amber mutation, are difficult to assay efficiently on a genome-wide scale. Additionally, there are notable challenges in targeting phage genes with Cas9/12, such as epigenetic modifications, physical sequestration in the nucleus, absence of DNA genomes or intermediates in RNA phages, and efficient ligation/recombination processes. The limitation of current tools is also evident in failed attempts to apply transposon libraries in virulent phages, further underscoring the necessity for innovative approaches in phage functional genomics.

UC Berkeley researchers made the surprising discovery that catalytically inactivated Cas13 (dCas13) in complex with a guide RNA can bind to and modulate activity of viral target RNAs. Viruses have evolved numerous and diverse strategies to protect their genomes from host defenses, including encoding their genomes across several Baltimore classes (e.g., dsDNA, dsRNA, ssDNA, and ssRNA), employing diverse genome modification strategies, and employing advanced genome compartmentalization strategies. These protective strategies have severely limited the applicability and effectiveness of previously existing approaches. Thus, this invention provides methods and compositions for modulating the activity of a viral target RNA.

SUGGESTED USES

» research tool

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

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

» **Research Tools**

» Nucleic Acids/DNA/RNA

RELATED CASES

2024-002-0

- 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
- 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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