COMPOSITIONS AND METHODS FOR IDENTIFYING HOST CELL TARGET PROTEINS FOR TREATING RNA VIRUS INFECTIONS

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PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20230082584	03/16/2023	2020-116
European Patent Office	Published Application	4126918 A0	02/08/2023	2020-116

BRIEF DESCRIPTION

Viral infection is a multistep process involving complex interplay between viral life cycle and host immunity. One defense mechanism that hosts use to protect cells against the virus are nucleic-acid-mediated surveillance systems, such as RNA interference-driven gene silencing and CRISPR-Cas mediated gene editing. Another important stage for host cells to combat virus replication is translational regulation, which is particular important for the life cycle of RNA viruses, such as Hepatitis C virus and Coronavirus. While efforts to characterize structural features of viral RNA have led to a better understanding of translational regulation, no systematical approaches to identify important host genes for controlling viral translation have been developed and little is known about how to regulate host-virus translational interaction to prevent and treat infections caused by RNA viruses.

UC Berkeley researchers have developed a high-throughput platform using CRISPR-based target interrogation to identify new therapeutics targets or repurposed drug targets for blocking viral RNA translation. The new kits can also be used to identify important domains within target proteins that are required for regulating (viral RNA translation) and can inform drug design and development for treating RNA viruses.

SUGGESTED USES

- Drug discovery, particularly for RNA viral diseases
- Research tools to identify important domains within target proteins

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INVENTORS

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OTHER INFORMATION

KEYWORDS

RNA virus, drug discovery, Coronaviruses

CATEGORIZED AS

- **Biotechnology**
  - Genomics
  - Proteomics
- **Medical**
  - Disease: Infectious Diseases
  - Research Tools
  - Therapeutics
- **Research Tools**
  - Nucleic Acids/DNA/RNA

RELATED CASES

2020-116-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- 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
- 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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