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

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PATENT STATUS
Patent Pending

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

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

» Methods and Compositions for Using Argonaute to Modify a Single-Stranded Target Nucleic Acid
» 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 Endonuclease
» Methods For High Signal-To-Noise Imaging Of Chromosomal Loci In Cells Using Fluorescent Cas9
» A Dual-RNA Guided CasZ Gene Editing Technology
» MODULATORS OF TYPE VI-D CRISPR-CAS EFFECTOR POLYPEPTIDES AND METHODS OF USE THEREOF
» CRISPR-CAS EFFECTOR POLYPEPTIDES AND METHODS OF USE THEREOF ("Cas-VariPhi")
» A Protein Inhibitor Of Cas9
» Small Cas9 Protein Inhibitor
» Split-Cas9 For Regulatable Genome Engineering
» Decorating Chromatin for Precise Genome Editing Using CRISPR
» Optimized Virus-like Particles for Cas9 RNPs & Transgene/HDR Template Delivery
» CRISPR-CAS EFFECTOR POLYPEPTIDES AND METHODS OF USE THEREOF ("Cas-Theta")
» COMPOSITIONS AND METHODS FOR INCREASING HOMOLOGY-DIRECTED REPAIR
» CRISPR CASY COMPOSITIONS AND METHODS OF USE
Single Conjugative Vector for Genome Editing by RNA-guided Transposition

CRISPR-CAS EFFECTOR POLYPEPTIDES AND METHODS OF USE THEREOF ("Cas-Omega")

CRISPR-CAS EFFECTOR POLYPEPTIDES AND METHODS OF USE THEREOF

Engineered/Variant Hyperactive CRISPR CasPhi Enzymes And Methods Of Use Thereof

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 (CasGamma)

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

Chimeric Cas9 Variants With Novel Engineered Enzymatic Activities

Small Molecule Assisted Cell Penetrating Cas9 RNP Delivery

Methods and Compositions for Controlling Gene Expression by RNA Processing