COMPOSITIONS AND METHODS FOR GENOME EDITING

Tech ID: 33086 / UC Case 2023-104-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

RNA-mediated adaptive immune systems in bacteria and archaea rely on Clustered Regularly Interspaced Short Palindromic Repeat (CRISPR) genomic loci and CRISPR associated (Cas) proteins that function together to provide protection from invading viruses and plasmids. Genome editing can be carried out using a CRISPR-Cas system comprising a CRISPR-Cas effector polypeptide and a guide nucleic acid, such as a guide RNA. However, unintended chromosomal abnormalities following on-target genome editing, such as chromosome loss, are potential concerns for genome editing.

UC Berkeley researchers and others have developed a method to modulate the expression levels of the DNA damage response factor p53 in order to mitigate chromosomal abnormalities that occur after genome editing by nucleases like Cas9. The invention provides treatment methods by generating a modified cell and then administering the modified cell to an individual in need thereof and compositions having a CRISPR-Cas effector polypeptide, a guide nucleic acid, and an agent that increases the level of a p53 polypeptide in a mammalian cell.

SUGGESTED USES

» Genome editing

ADVANTAGES

» Mitigates chromosomal abnormalities after genome editing

CATEGORIZED AS

» Biotechnology
» Health
» Medical
» Gene Therapy
» Research Tools
» Therapeutics
» Research Tools
» Nucleic Acids/DNA/RNA

RELATED CASES

2023-104-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ COMPOSITIONS AND METHODS FOR IDENTIFYING HOST CELL TARGET PROTEINS FOR TREATING RNA VIRUS INFECTIONS
▶ Lentivirus-like Particle Delivery of CRISPR-Cas9 & Guide RNA for Gene Editing
▶ 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 Endonuclease
▶ RNA-directed Cleavage and Modification of DNA using CasY (CRISPR-CasY)
▶ CasX Nickase Designs, Tans Cleavage Designs & Structure
▶ 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
A Protein Inhibitor Of Cas9
RNA-directed Cleavage and Modification of DNA using CasX (CRISPR-CasX)
Split-Cas9 For Regulatable Genome Engineering
NANOPORE MEMBRANE DEVICE AND METHODS OF USE THEREOF
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 Cas4 Endoribonucleases
Identification Of Sites For Internal Insertions Into Cas9
Small Molecule Assisted Cell Penetrating Cas9 RNP Delivery
Methods and Compositions for Controlling Gene Expression by RNA Processing