COMPOSITIONS AND METHODS OF USE FOR VARIANT CSY4 ENDORIBONUCLEASES

Tech ID: 19837 / UC Case 2010-028-0

PATENT STATUS

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BRIEF DESCRIPTION

DNA restriction enzymes transformed molecular biology in the 1970s by making it possible to cleave specific DNA sequences at will. Sequencing of RNA molecules currently entails copying the RNA into a DNA strand that is then sequenced by conventional methods. This approach, also known as RNASeq, is robust and can yield many millions of sequence reads. However, the necessity of generating cDNA introduces inherent bias due to sequence-dependent efficiencies of individual steps.

UC Berkeley researchers discovered variant Csy4 endoribonucleases, nucleic acids encoding the variant Csy4 endoribonucleases, and host cells genetically modified with the nucleic acids that can be used to detect the presence of a particular sequence in a polynucleotide, (e.g., to detect the presence of pathogen in a biological sample). The variant Csy4 endoribonucleases find use in a variety of applications, which are also provided. The present disclosure also provides methods of detecting a specific sequence in a target polynucleotide, and methods of regulating production of a target RNA in a eukaryotic cell.

SUGGESTED USES

» Detect a target nucleotide (e.g., of a pathogen in a biological sample)
» Purify a particular target RNA (or RNA protein complex) from within a complex mixture
» Delivery of modular components (e.g., effector domains) in conjunction with Cas9
» Modulate expression of RNA molecules in eukaryotic cells
» RNA processing enzyme

ADVANTAGES

» Detects as few as a single copy of a target polynucleotide

RELATED MATERIALS

» Sequence- and Structure-Specific RNA Processing by a CRISPR Endonuclease - 07/22/2010

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
- Cas13a/C2c2 - A Dual Function Programmable RNA Endoribonuclease
- RNA-directed Cleavage and Modification of DNA using CasY (CRISPR-CasY)
- Methods For High Signal-To-Noise Imaging Of Chromosomal Loci In Cells Using Fluorescent Cas9
- A Dual-RNA Guided Cas2Z Gene Editing Technology
- RNA-directed Cleavage and Modification of DNA using CasX (CRISPR-CasX)
- Small Cas9 Protein Inhibitor
- Split-Cas9 For Regulatable Genome Engineering
- NANOPORE MEMBRANE DEVICE AND METHODS OF USE THEREOF
- Decorating Chromatin for Precise Genome Editing Using CRISPR
- CRISPR CAS9 COMPOSITIONS AND METHODS OF USE
- Single Conjugative Vector for Genome Editing by RNA-guided Transposition
- Improved Cas12a Proteins for Accurate and Efficient Genome Editing
- 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
- Class 2 CRISPR/Cas COMPOSITIONS AND METHODS OF USE
- Small Molecule Assisted Cell Penetrating Cas9 RNP Delivery
- Methods and Compositions for Controlling Gene Expression by RNA Processing