**COMPOSITIONS AND METHODS OF USE FOR VARIANT CSY4 ENGORIBONUCLEASES**

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 polyribonucleotide, (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 polyribonucleotide; 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 polyribonucleotide

**RELATED MATERIALS**

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

**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
- 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
- Cas9/C2c2 - A Dual Function Programmable RNA Endoribonuclease
- 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-VarPhi")
- Modifications To Cas9 For Passive-Delivery Into Cells
- A Protein Inhibitor Of Cas9
- Split-Cas9 For Regulatable Genome Engineering