METHODS FOR HIGH SIGNAL-TO-NOISE IMAGING OF CHROMOSOMAL LOCI IN CELLS USING FLUORESCENT CAS9

Tech ID: 24759 / UC Case 2015-098-0

PATENT STATUS

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<td>United States Of America</td>
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<td>20180142222</td>
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<td>European Patent Office</td>
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<td>3307762</td>
<td>04/18/2018</td>
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BRIEF DESCRIPTION

Cas9 is an endonuclease that binds complementary target DNA and generates site-specific breaks using two conserved nuclease domains. By inactivating both nuclease domains, dCas9 is produced, which functions as a programmable DNA binding protein. Current methods use dCas9-GFP fusions to image chromosomal loci, but have insufficient signal-to-noise ratio and often misidentify loci.

UC Berkeley researchers have engineered a Cas9 variant that can be labeled with small molecule fluorescent dyes. This variant utilizes a conformational change in Cas9 to provide highly specific identification of chromosomal loci, and has been shown to work in a proof-of-principle experiment using Förster resonance energy transfer (FRET) pairs.

SUGGESTED USES

- Diagnostic tool to detect large-scale chromosomal alterations in vivo
- Identification of target sequence presence and copy number
- Research tool to screen candidate libraries

ADVANTAGES

- High signal-to-noise imaging of chromosomal loci
- Can be used in vivo or in vitro
- Compatible with a variety of standard molecules used in imaging

RELATED MATERIALS

INVENTORS

- Doudna, Jennifer A.

OTHER INFORMATION

CATEGORIZED AS

- Agriculture & Animal Science
- Devices
- Transgenics
- Biotechnology
- Genomics
- Medical
- Diagnostics
- Gene Therapy
- Research Tools
- Screening
- Research Tools
- Nucleic Acids/DNA/RNA

RELATED CASES

- 2015-098-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Methods and Compositions for Using Argonaute to Modify a Single-Stranded Target Nucleic Acid
- COMPOSITIONS AND METHODS FOR IDENTIFYING HOST CELL TARGET PROTEINS FOR TREATING RNA VIRUS INFECTIONS
- 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 Endoribonuclease
- 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-VarPhi")
- 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")