STRUCTURE-GUIDED METHODS OF CAS9-MEDIATED GENOME ENGINEERING

Tech ID: 23719 / UC Case 2014-078-0

PATENT STATUS

<table>
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<tr>
<th>Country</th>
<th>Type</th>
<th>Number</th>
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<td>European Patent Office</td>
<td>Issued Patent</td>
<td>3089989</td>
<td>06/24/2020</td>
<td>2014-078</td>
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<td>United States Of America</td>
<td>Issued Patent</td>
<td>9,963,689</td>
<td>05/08/2018</td>
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<td>Germany</td>
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<td>11/09/2016</td>
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BRIEF DESCRIPTION

The ability to program Cas9 for DNA cleavage at sites defined by guide RNAs has led to its adoption as a robust and versatile platform for genome engineering. Whereas there are a number of ongoing successes with using the CRISPR-Cas9 system for genome engineering, there is a need for understanding the structural basis for guide RNA recognition and DNA targeting by Cas9.

UC Berkeley researchers have developed software and methods for providing the structures of Cas9 with and without the polynucleotides bound thereto, and have developed the crystals comprising the Cas9 polypeptides. Using the atomic coordinates, the software can be used to computationally identify a site for amino acid residue substitution, insertion, or deletion to alter a function or chemical property of a Cas9 polypeptide.

SUGGESTED USES

» Genetic engineering or editing of Cas9 polypeptides
» Controlling of site-specific gene regulation

PUBLICATION

Structures of Cas9 endonucleases reveal RNA-mediated conformational activation

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 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-VanPhi")
- 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