A DUAL-RNA GUIDED CASZ GENE EDITING TECHNOLOGY

Tech ID: 28913 / UC Case 2018-045-0

PATENT STATUS

Country	Type	Number	Dated	Case
United Kingdom	Issued Patent	2582482	05/17/2023	2018-045
United States Of America	Issued Patent	11,453,866	09/27/2022	2018-045
United States Of America	Issued Patent	11,441,137	09/13/2022	2018-045
United States Of America	Issued Patent	11,371,031	06/28/2022	2018-045
United States Of America	Issued Patent	11,180,743	11/23/2021	2018-045
United States Of America	Published Application	20240167009	05/23/2024	2018-045
China	Published Application	CN117487776A	02/02/2024	2018-045
United States Of America	Published Application	20230323319	10/12/2023	2018-045
Hong Kong	Published Application	40036150	05/21/2021	2018-045
Japan	Published Application	2021-503278	02/12/2021	2018-045
Mexico	Published Application	MX/A/2020/00457	12/30/2020	2018-045
China	Published Application	CN111886336A	11/03/2020	2018-045
European Patent Office	Published Application	3704239 A0	09/09/2020	2018-045
India	Published Application	32/2020	08/07/2020	2018-045
Rep Of Korea	Published Application	10-2020-0091858	07/31/2020	2018-045
Australia	Published Application	WO 2019/089820	05/09/2019	2018-045
Canada	Published Application	3080493	05/09/2019	2018-045
Japan	Published Application	WO 2019/089820	05/09/2019	2018-045
New Zealand	Published Application	WO 2019/089820	05/09/2019	2018-045
New Zealand	Published Application	WO/2019/089820	05/09/2019	2018-045
Singapore	Published Application	WO 2019/089820	05/09/2019	2018-045

Additional Patents Pending

BRIEF DESCRIPTION

The CRISPR-Cas system is now understood to confer bacteria and archaea with acquired immunity against phage and viruses. CRISPR-Cas systems consist of Cas proteins, which are involved in acquisition, targeting and cleavage of foreign DNA or RNA, and a CRISPR array, which includes direct repeats flanking short spacer sequences that guide Cas proteins to their targets. Class 2 CRISPR-Cas systems are streamlined versions in which a single Cas protein bound to RNA is responsible for binding to and cleavage of a targeted sequence. The programmable nature of these minimal systems has facilitated their use as a versatile technology that is revolutionizing the field of genome manipulation, so there is a need in the art for additional Class 2 CRISPR/Cas systems (e.g., Cas protein plus guide RNA combinations).

UC Berkeley researchers discovered a new type of Cas protein, CasZ. (CasZ) is short compared to previously identified CRISPR-Cas endonucleases, and thus use of this protein as an alternative provides the advantage that the nucleotide sequence encoding the protein is relatively short. The researchers have shown that the CRISPR CasZ protein and its variants can be used in a complex for specific binding and cleavage of DNA. The CRISPR CasZ complex utilizes a novel RNA and a guide RNA to perform double stranded cleavage of DNA and the complex is expected to have a wide variety of applications in genome editing and nucleic acid manipulation.

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OTHER INFORMATION

KEYWORDS

CRISPR, gene editing, gene therapy, therapeutics,

CATEGORIZED AS

» **Biotechnology**
» Genomics
» **Medical**
» Gene Therapy
» Research Tools
» Therapeutics
» **Research Tools**
» Nucleic Acids/DNA/RNA
» **Veterinary**
» Other
» Therapeutics

RELATED CASES

2018-045-0

SUGGESTED USES

- Genome editing
- Genetic engineering
- Gene therapy
- Research tools (e.g., high-throughput screening of gene functions in cell lines and in vivo)
- Creation of transgenic animal models

ADVANTAGES

- Adds additional versatility because of small size
- Variant PAM

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- COMPOSITIONS AND METHODS FOR IDENTIFYING HOST CELL TARGET PROTEINS FOR TREATING RNA VIRUS INFECTIONS
- 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 Endoribonuclease
- RNA-directed Cleavage and Modification of DNA using CasY (CRISPR-CasY)
- CasX Nickase Designs, Tans Cleavage Designs & Structure
- In Vivo Gene Editing Of Tau Locus Via Liponanoparticle Delivery
- Single-Stranded Nucleic Acid Detection And Imaging System Using Cas9
- 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)
- Compositions and Methods for Genome Editing
- Split-Cas9 For Regulatable Genome Engineering
- Methods to Interfere with Prokaryotic and Phage Translation and Noncoding RNA
- 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
- 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 Csy4 Endoribonucleases
- Identification Of Sites For Internal Insertions Into Cas9
- Methods and Compositions for Controlling Gene Expression by RNA Processing

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