# CRISPR-CAS EFFECTOR POLYPEPTIDES AND METHODS OF USE THEREOF

Tech ID: 30175 / UC Case 2019-102-0

## PATENT STATUS

| Country | Type | Number | Dated | Case |
|---|---|---|---|---|
| China | Issued Patent | ZL202310283408.3 | 11/28/2025 | 2019-102 |
| Australia | Issued Patent | 2020231380 | 10/30/2025 | 2019-102 |
| Mexico | Issued Patent | 428066 | 09/29/2025 | 2019-102 |
| United States Of America | Issued Patent | 12,365,887 | 07/22/2025 | 2019-102 |
| United States Of America | Issued Patent | 12,312,616 | 05/27/2025 | 2019-102 |
| United States Of America | Issued Patent | 12,275,966 | 04/15/2025 | 2019-102 |
| Japan | Issued Patent | 7629474 | 02/04/2025 | 2019-102 |
| Australia | Issued Patent | 2023201675 | 08/22/2024 | 2019-102 |
| United States Of America | Issued Patent | 11,739,309 | 08/29/2023 | 2019-102 |
| United States Of America | Issued Patent | 11,685,909 | 06/27/2023 | 2019-102 |
| Japan | Issued Patent | 7239725 | 03/06/2023 | 2019-102 |
| United States Of America | Issued Patent | 11,578,313 | 02/14/2023 | 2019-102 |
| United States Of America | Issued Patent | 11,530,398 | 12/20/2022 | 2019-102 |
| United Kingdom | Issued Patent | 2595606 | 09/21/2022 | 2019-102 |
| United States Of America | Issued Patent | 11,377,646 | 07/05/2022 | 2019-102 |
| Germany | Issued Patent | 212020000516.8 | 01/17/2022 | 2019-102 |
| United States Of America | Published Application | 20240026321 | 01/25/2024 | 2019-102 |
| United States Of America | Published Application | 20230332123 | 10/19/2023 | 2019-102 |
| United States Of America | Published Application | 20230323321 | 10/12/2023 | 2019-102 |
| European Patent Office | Published Application | 4219700 A1 | 08/02/2023 | 2019-102 |
| Mexico | Published Application | MX/A/23/003255 | 05/15/2023 | 2019-102 |
| Hong Kong | Published Application | 40064319 A | 06/30/2022 | 2019-102 |
| European Patent Office | Published Application | 3935156 A0 | 01/12/2022 | 2019-102 |
| United States Of America | Published Application | 20210324356 | 10/21/2021 | 2019-102 |
| Canada | Published Application | | | 2019-102 |

## 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 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.  Current CRISPR Cas technologies are based on systems from cultured bacteria, leaving untapped the vast majority of organisms that have not been isolated.  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 12 protein, CasPhi.  Site-specific binding and/or cleavage of a target nucleic acid (e.g., genomic DNA, ds DNA, RNA, etc.) can occur at locations (e.g., target sequence of a target locus) determined by base-pairing complementarity between the Cas12 guide RNA (the guide sequence of the Cas12 guide RNA) and the target nucleic acid.  Similar to CRISPR Cas9, Cas12 enzymes are expected to have a wide variety

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## OTHER INFORMATION

### KEYWORDS

CRISPR, Cas 12, Cas12J, CasPhi

### CATEGORIZED AS

» **Agriculture & Animal Science**

» Transgenics

» **Medical**

» Gene Therapy

» Research Tools

» Screening

» Therapeutics

» **Research Tools**

» Nucleic Acids/DNA/RNA

» **Veterinary**

» Diagnostics

» Therapeutics

### RELATED CASES

2019-102-0

of applications in genome editing and nucleic acid manipulation.

## SUGGESTED USES

- Genome editing in plants
- Research tools

## ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Next-Generation Lipid Nanoparticles for Precision Nucleic Acid Delivery
- 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
- Tissue-Specific Genome Engineering Using CRISPR-Cas9
- Type III CRISPR-Cas System for Robust RNA Knockdown and Imaging in Eukaryotes
- Targeted Nucleic Acid Editing via Cas9-Deaminase Fusion Proteins
- 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
- Compositions and Methods for Delivering Molecular Cargo to Cells
- Cas13a/C2c2 - A Dual Function Programmable RNA Endoribonuclease
- Miniature Type VI CRISPR-Cas Systems and Methods of Use
- RNA-directed Cleavage and Modification of DNA using CasY (CRISPR-CasY)
- Generation of Chimeric RNA with Type III CRISPR-Cas
- CasX Nickase Designs, Tans Cleavage Designs & Structure
- Methods and Compositions for Modifying a single stranded Target Nucleic Acid
- Genetically Encoded, Biologically Responsive, And Programmable Bispecific Aptames As Therapeutic Protein Degraders
- A Dual-RNA Guided CasZ Gene Editing Technology
- A Protein Inhibitor Of Cas9
- RNA-directed Cleavage and Modification of DNA using CasX (CRISPR-CasX)
- Compositions and Methods for Genome Editing
- IS110 and IS1111 Family RNA-Guided Transposons
- Variant Cas12a Protein Compositions and Methods of Use
- In Vitro and In Vivo Genome Editing by LNP Delivery of CRISPR Ribonucleoprotein
- CRISPR CASY COMPOSITIONS AND METHODS OF USE
- Single Conjugative Vector for Genome Editing by RNA-guided Transposition
- Compositions and Methods for VIPR-Based Nucleic Acid Targeting
- Precision-Engineered Cas12a: Eliminating Collateral DNA Cleavage for Next-Generation Genome Editing
- Selective Cell Elimination using RNA-guided Chromatin Shredding
- 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)
- Variant TnpB and wRNA Proteins
- Efficient Site-Specific Integration Of New Genetic Information Into Human Cells
- Class 2 CRISPR/Cas COMPOSITIONS AND METHODS OF USE
- Compositions and Methods of Use for Variant Csy4 Endoribonucleases
- Immune Cell-Mediated Intercellular Delivery Of Biomolecules
- Methods and Compositions for Controlling Gene Expression by RNA Processing

**University of California, Berkeley Office of Technology Licensing**
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