FOREIGN DNA INTEGRATION BY CAS1-CAS2

Tech ID: 24622 / UC Case 2015-073-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,053,271	07/06/2021	2015-073

BRIEF DESCRIPTION

Prokaryotic adaptive immunity relies on clustered regularly interspaced short palindromic repeats (CRISPRs) together with CRISPR associated (Cas) proteins to detect and destroy foreign nucleic acids. CRISPR loci contain an A-T-rich leader sequence followed by repetitive sequence elements that flank spacer segments, that are transcribed to produce precursor CRISPR RNAs (pre-crRNAs). Spacers are frequently virus or plasmid-derived, although self-derived spacers from the host chromosome are present in some CRISPR loci. After pre-crRNA processing and assembly with Cas proteins, the resulting surveillance complexes target and cleave foreign nucleic acids bearing sequences complementary to the crRNA spacer sequence.

UC Berkeley researchers have discovered methods and compositions for the integration (insertion) of a donor DNA molecule into a target DNA molecule. The researchers found that an integration host factor (IHF) protein is required for spacer acquisition in vivo and for integration into linear DNA in vitro.

SUGGESTED USES

» Genome editing with a Cas protein for integration of foreign DNA into target DNA

ADVANTAGES

» Highly specific integration of foreign DNA

PUBLICATION

CRISPR Immunological Memory Requires a Host Factor for Specificity

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OTHER INFORMATION

KEYWORDS

Genome engineering, Cas1, Cas2, gene editing, integration host factor

CATEGORIZED AS

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

RELATED CASES

2015-073-0

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