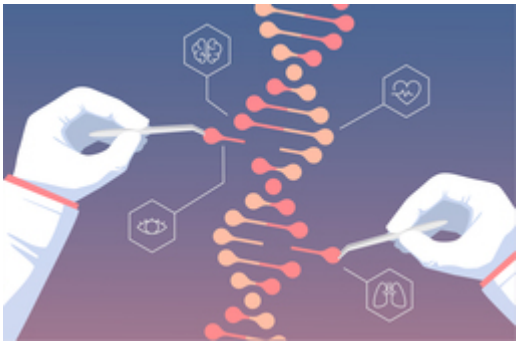
INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

Type I-C CRISPR System from Novel Bacteria as a Tool for Genome Editing in Mammalian Cells

TECHNOLOGY NUMBER: 2020-321



OVERVIEW

Novel source and method for modifying mammalian cells using Type I CRISPR

- Smaller, highly efficient, and easier to purify system than available options
- Highly effective for research of mammalian cells, both in cell lines and in vivo

BACKGROUND

CRISPR genome editing is a widely used tool for gene editing in many organisms including mammals. Traditional CRISPR/Cas9 systems function by targeting a single site on a gene, creating a break, and imperfectly repairing the break, resulting in a missense mutation. Researchers are continuing to find ways to utilize CRISPR to create more targeted and more detrimental mutations. One such system is Type I CRISPR, which causes heterogenous deletions in very large DNA segments. Given the physical size of many CRISPR systems, a need exists for a more space-saving device.

INNOVATION

Researchers have identified a novel Type I CRISPR system from a bacterium source which is more streamlined and compact than currently available tools. The smaller size makes this a more feasible tool for viral-based delivery to mammalian genomes. Additionally, this system exhibits very high genome editing activity in various human cell lines. This CRISPR system is also easier to purify and prepare than other systems. Collectively, these qualities make this an

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attractive tool for genome editing of human cells.