NUCLEAR LOCALIZATION SIGNALS INSIDE CAS9 TO ENHANCE GENOME EDITING

Tech ID: 33637 / UC Case 2024-164-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Optimizing the editing efficiency of CRISPR-mediated enzymes is still needed. This is especially true in therapeutic use cases, when it would be ideal to attain high rates of editing via a low, transient dose of the enzyme in the ribonucleoprotein (RNP) format used for multiple ex vivo clinical trials. Because many CRISPR enzymes are of bacterial origin, fusion to NLS motifs can greatly enhance editing efficiency. However, CRISPR protein yields can decrease – sometimes dramatically – if the construct bears too

many NLSs.

UC Berkeley researchers have developed CRISPR proteins with enhanced editing efficiencies by introducing multiple nuclear localization signal (NLS) fused at rationally selected sites within the backbone of CRISPR-Cas9. These Cas9 variants showed they can improve editing efficiency in T cells compared to constructs with terminally-fused NLS sequences and can be produced with high purity and yield.

SUGGESTED USES

» gene editing

ADVANTAGES

»

improved recombinant yield as compared to engineered proteins bearing NLS on one or both termini of the protein

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INVENTORS

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OTHER INFORMATION

CATEGORIZED AS

» **Medical**

» Gene Therapy

» Research Tools

» Therapeutics

» **Research Tools**

» Nucleic Acids/DNA/RNA

RELATED CASES

2024-164-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ High-Yield Production Of Base Editor Enzymes Via Conjugation