Datasheet for ABIN3188225

# Cas9 Nickase H840A Protein

## Overview

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| Quantity: | 8 µg |
| Application: | Genome Editing with Engineered Nucleases (GEEN) |

## Product Details

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| Characteristics: | The Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR)/Cas9 system is the latest RNA-guided, endonuclease tool in genome editing which allows for very specific genomic disruption and replacement. One concern with the current CRISPR Cas9 technology is the potential off-target effects of the Cas9 nuclease activity. To improve the off-target mutagenic effects of this system, the Cas9 Nickase H840A Protein was developed with a H840A mutation in its HNH-like nuclease domain. This mutant form results in the generation of single strand nick instead of a double stranded break (DSB), like that generated by the Cas9 Nuclease, at the target site. Since a single strand break, or nick, is normally quickly repaired through the homology directed repair pathway using the intact complementary DNA strand as the repair template, off-target effects of the Cas9 Nickase is minimized. To utilize Cas9 Nickase for genome editing, two gRNAs, instead of one is required. The two gRNAs will be designed on opposite DNA strands but with close proximity to ensure that a DSB is induced once the two strands are nicked by the Cas9 Nickase. This paired Cas9 Nickase modification reduces off-target effects because the two gRNAs need to work together to produce a DSB. Once the DSB is created, either the NHEJ or HDR pathway will be activated to complete the genome editing process. The Cas9 Nickase can also be used to create nucleotide modifications by homologous recombination if a repair template DNA containing the desired modification is introduced along with the gRNA and Cas9 nickase. |
| Components: | Enzyme supplied with 10X Reaction Buffer |

## Application Details

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| Restrictions: | For Research Use only |

## Handling

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| Concentration: | 1000 nM |
| Buffer: | 10 mM Tris-HCl ( pH 7.4), 0.1 mM EDTA, 1 mM DTT, 300 mM NaCl, and 50 % (v/v) Glycerol. |
| Storage: | -20 °C |

## Publications

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| Product cited in: | Johnson, Drugan, Miller, Evans: "38" in: , Vol. 1363, Issue Nucleic acids research, pp. 28-39, ( 1991) |