

SPECIFICATION SHEET

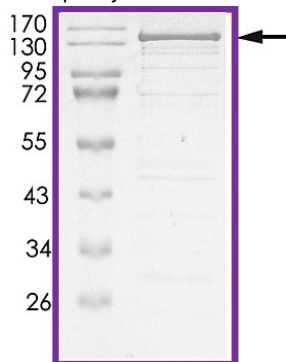
Product Name: SpCas9-NLS
Catalog # CS09N-E312H

Product Description: Recombinant full-length SpCas9 from *S. pyogenes* was expressed in *E. coli* using a C-terminal His tag. Cas9-NLS contains a nuclear localization sequence for optimal activity. Enzyme supplied with 1 mL of Cas9 reaction buffer, 10x (CS09-09).

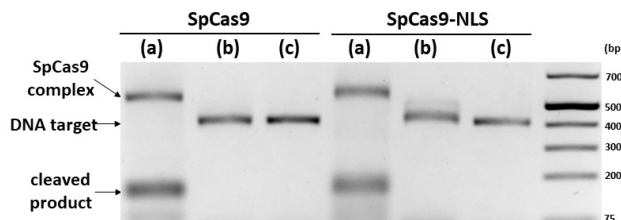
Storage and Stability: Store at -70°C . To avoid repeated handling and multiple freeze/thaw cycles, aliquot product into smaller quantities.

Data for a Sample Lot:

Alternate Names : Csn1, Csx12, Spy_1046, SpyCas9
Source : *Streptococcus pyogenes*
Accession Numbers : Genbank: [AAK33936.1](https://www.ncbi.nlm.nih.gov/nuccore/AAK33936.1)
Host : *E. coli*
Formulation : Protein stored in 50 mM sodium phosphate, pH 7.5, 300 mM NaCl, 150 mM imidazole, 1 mM DTT, 10% glycerol
Molecular Weight : Calculated: ~161 kDa
 Observed: ~160 kDa
Concentration : 0.1 $\mu\text{g}/\mu\text{L}$
 6.26 pmol/ μg
Purity : The purity was determined to be >70% by densitometry
Gel Image



Activity



SpCas9-NLS-mediated specific endogenous DNA cleavage. The reactions consist of (a) target DNA, crRNA, tracrRNA, and SpCas9-NLS; (b) target DNA, crRNA, and SpCas9-NLS; (c) target DNA and crRNA.

Recommendation

: Always include RNase inhibitor at recommended concentrations in Cas enzyme reactions.

Scientific Background

: In bacteria and archaea, CRISPR-Cas systems provide sequence-based adaptive immunity against mobile genetic elements such as phages and plasmids (1). Cas9 is a multidomain nuclease from the bacterium *Streptococcus pyogenes* characteristic of type II CRISPR-Cas systems (2). Guided by a single-guide RNA (sgRNA), Cas9 targets specific genomic loci and generates a blunt-ended double-strand break (3). Cas9 can be used for genetic engineering experiments such as genome editing and generating transgenic models (4).

References

1. Gong T, et al. 2019. CRISPR-Cas Systems in Streptococci. *Curr Issues Mol Biol.* 32:1-38.
2. Nishimasu H, et al. 2014. Crystal structure of Cas9 in complex with guide RNA and target DNA. *Cell.* 156(5):935-49.
3. apranauskas R, et al. 2011. The *Streptococcus thermophilus* CRISPR/Cas system provides immunity in *Escherichia coli*. *Nucleic Acids Res.* 39(21):9275-82.
4. Adli M. 2018 The CRISPR tool kit for genome editing and beyond. *Nat Commun.* 9(1):1911.