

PRODUCT INFORMATION

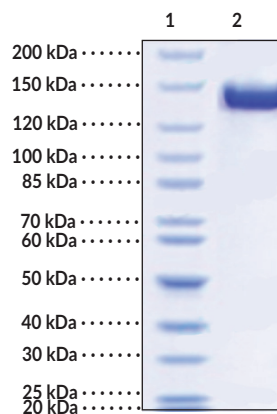
Cas9 (serotype M1) (*S. pyogenes*, recombinant; His-tagged, 3xNLS)
Item No. 44669

Overview and Properties

Synonyms: CRISPR-associated endonuclease Cas9/Csn1, SpCas9, SpyCas9
Source: Active recombinant *S. pyogenes* N-terminal NLS-containing and C-terminal 2xNLS-containing and His-tagged Cas9 expressed in insect cells
Amino Acids: 1-1,368
Uniprot No.: Q99ZW2
Molecular Weight: 163 kDa
Storage: -80°C (as supplied)
Stability: ≥1 year
Purity: ≥90% estimated by SDS-PAGE
Supplied in: 20 mM Tris, pH 8.0, 300 mM sodium, 20% glycerol, 0.5 mM PMSF, 0.1 mM EDTA, and 0.5 mM TCEP
Endotoxin Testing: <1.0 EU/μg, determined by the LAL endotoxin assay
Protein Concentration: *batch specific* mg/ml
Activity: *batch specific* U/ml
Specific Activity: *batch specific* U/mg

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: Cas9 (serotype M1)

SDS-PAGE Analysis of Cas9 (serotype M1) This protein has a calculated molecular weight of 163 kDa. By SDS-PAGE, under reducing conditions, the apparent molecular mass of the protein is approximately 140 kDa, which may be due to faster migration from compact folding or glycosylation effects.

WARNING
 THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

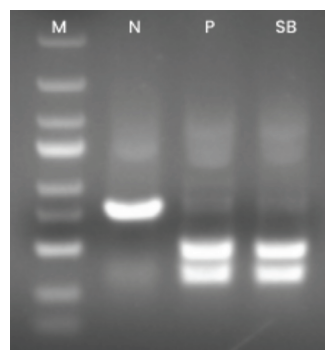
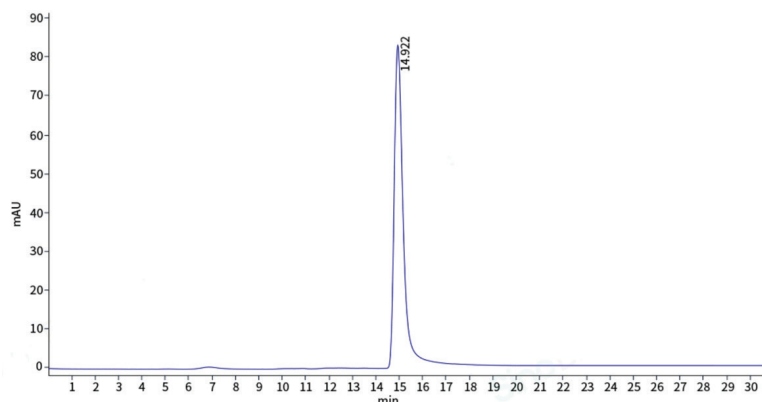
SAFETY DATA
 This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

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Cas9 (serotype M1) achieves $\geq 90\%$ substrate cleavage measured by an *in vitro* DNA cleavage assay.

Description

CRISPR-associated protein 9 (Cas9) is an RNA-guided DNA endonuclease that is part of the bacterial and archaeal CRISPR/CRISPR-Cas system, which provides immune defense against viruses and plasmids.¹ It is composed of nuclease (NUC) and recognition (REC) lobes connected by an arginine-rich bridge helix (BH).² The NUC lobe contains one HNH and three RuvC endonuclease domains and a protospacer-adjacent motif-interacting domain (PAM-interacting domain), while the REC lobe contains three recognition domains involved in Cas9 RNA- and DNA binding. Cas9 is involved in the type II CRISPR/Cas system that uses CRISPR RNA (crRNA) and *trans*-activating crRNA (tracrRNA) to guide Cas9 to foreign DNA, where it introduces double-stranded breaks in a site-specific manner.¹ The CRISPR/Cas9 system, with and without modifications to Cas9, has been harnessed to edit genomes *in vitro* and *in vivo*.^{3,4} Cayman's Cas9 (serotype M1) (*S. pyogenes*, recombinant; His-tagged, 3xNLS) protein contains an N-terminal nuclear localization signal (NLS), two C-terminal NLSs, and a C-terminal His tag, consists of 1,407 amino acids, and has a calculated molecular weight of 163 kDa. By SDS-PAGE, under reducing conditions, the apparent molecular mass of the protein is approximately 140 kDa, which may be due to faster migration from compact folding or glycosylation effects.

References

1. Jinek, M., Chylinski, K., Fonfara, I., *et al.* A programmable dual-RNA-guided DNA endonuclease in adaptive bacterial immunity. *Science* **337**(6096), 816-821 (2012).
2. Babu, K., Kathiresan, V., Kumari, P., *et al.* Coordinated actions of Cas9 HNH and RuvC nuclease domains are regulated by the bridge helix and the target DNA sequence. *Biochemistry* **60**(49), 3783-3800 (2021).
3. Li, T., Yang, Y., Qi, H., *et al.* CRISPR/Cas9 therapeutics: Progress and prospects. *Signal Transduct. Target Ther.* **8**(1), 36 (2023).
4. Karimi, M.A., Paryan, M., Behrouzian Fard, G., *et al.* Challenges and opportunities in the application of CRISPR-Cas9: A review on genomic editing and therapeutic potentials. *Med. Princ. Pract.* **17**, 1-17 (2025).

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