

SPECIFICATION SHEET

Product Name: EiCsm6
Catalog # CS06-E312H

Product Description: Recombinant full-length EiCsm6 from *Enterococcus italicus* was expressed in *E. coli* using a C-terminal His tag.

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 : *Enterococcus italicus* Csm6, CRISPR type III-A associated protein Csm6

Source : *Enterococcus italicus*

Accession Numbers : Genbank: [WP_007208953.1](https://www.ncbi.nlm.nih.gov/nuclot/WP_007208953.1)
 UniProt: [E6LHV2](https://www.uniprot.org/uniprot/E6LHV2)

Host : *E. coli*

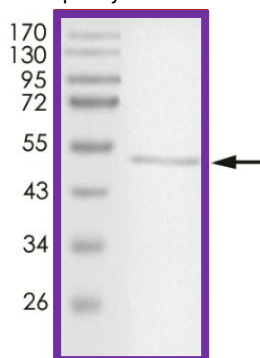
Formulation : Protein stored in 50 mM sodium phosphate, pH 7.5, 300 mM NaCl, 200 mM imidazole, 1 mM DTT, 10% glycerol

Molecular Weight : Calculated: 51.9 kDa
 Observed: ~50 kDa

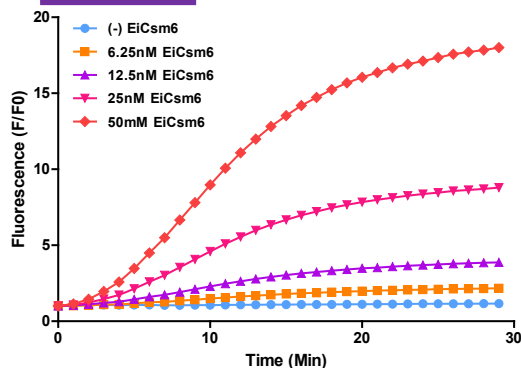
Concentration : 0.5 $\mu\text{g}/\mu\text{L}$
 19.38 pmol/ μg

Purity : The purity was determined to be >95% by densitometry

Gel Image



Activity



EiCsm6 activity was assayed using a fluorogenic substrate. Fluorescence was measured over time using a Tecan plate reader.

Recommendation

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

Scientific Background

: EiCsm6 is an ancillary ribonuclease associated with the type III CRISPR-Cas system of *Enterococcus italicus*. Like other Csm6 family proteins, EiCsm6 consists of a CARF (CRISPR-associated Rossman fold) domain, which binds cyclic oligoadenylate (cOA), and a HEPN (Higher Eukaryotes and Prokaryotes Nucleotide binding) domain, which possesses ribonuclease activity (1). The RNA degradation activity of EiCsm6 is stimulated by cOA and functions to protect the bacterial cell from invasive genetic elements like bacteriophages and plasmids (2, 3).

References

- : 1. Niewoehner O, Jinek M. 2016. Structural basis for the endoribonuclease activity of the type III-A CRISPR-associated protein Csm6. *RNA*. 22(3):318-29.
2. Rostøl, J.T., Marraffini, L.A. 2019. Non-specific degradation of transcripts promotes plasmid clearance during type III-A CRISPR-Cas immunity. *Nat Microbiol* 4:656-662.
3. Niewoehner O, Garcia-Doval C, Rostøl JT, Berk C, Schwede F, Bigler L, Hall J, Marraffini LA, Jinek M. 2017. Type III CRISPR-Cas systems produce cyclic oligoadenylate second messengers. *Nature*. 548(7669):543-548.