

SPECIFICATION SHEET

Product Name: AsCas12a
Catalog # CS12A-E311H

Product Description: Recombinant full-length *Acidaminococcus* sp. protein AsCas12a with a His tag expressed in *E. coli*. Enzyme supplied with 1 mL of Cas12 reaction buffer, 10x (CS12-09).

Storage and Stability: Store at -20°C. To avoid repeated handling and multiple freeze/thaw cycles, aliquot product into smaller quantities.

Data for a Sample Lot:

Alternate Names

: Cpf1, AsCpf1, CRISPR-associated endonuclease Cpf1

Source

 : *Acidaminococcus* sp.

Accession Numbers

 : Genbank: [WP_021736722.1](https://www.ncbi.nlm.nih.gov/nuclot/021736722.1)

 UniProt: [U2UM06](https://www.uniprot.org/uniprot/U2UM06)
Host

 : *E. coli*
Formulation

: Protein stored in 25 mM Tris, 300 mM NaCl, pH 7.5, 0.1 mM TCEP, 50% glycerol

Molecular Weight

: Calculated: 152.5 kDa

Observed: ~130 kDa

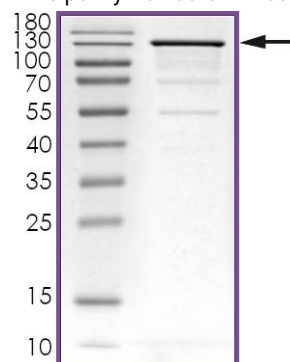
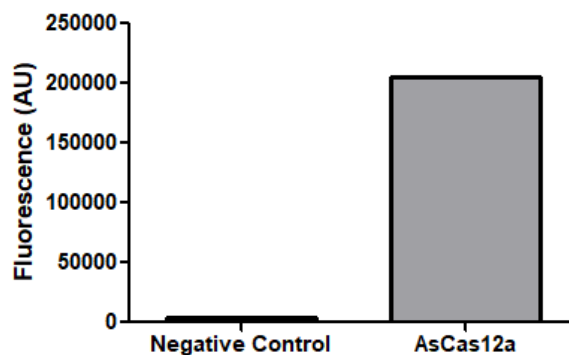
Concentration

: 1.0 µg/µL

6.67 pmol/µg

Purity

: The purity was determined to be >90% by densitometry

Gel Image

Activity


AsCas12a nuclease activity assayed using a fluorogenic substrate and 10 nM enzyme according to the activity assay protocol.

Recommendation

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

Scientific Background

: CRISPR (clustered regularly interspaced short palindromic repeats) and their CRISPR-associated (Cas) proteins constitute the adaptive immune system in bacteria (1-2). This system has been leveraged to create an exemplary genome editing tool with applications in both basic research and therapeutics development (3). AsCas12a is a Cas endonuclease from *Acidaminococcus* sp. Engineered AsCas12a systems can be used for accurate editing in hematopoietic stem cells, induced pluripotent stem (iPS) cells, and natural killer (NK) cells (2-4).

References

- : 1. Horvath, P., et al. 2010. CRISPR/Cas, the immune system of bacteria and archaea. *Science*, 327(5962):167-170.
2. Morange, M. 2015. What history tells us XXXVII. CRISPR-Cas: The discovery of an immune system in prokaryotes. *J. Biosci.* 40(2):221-223.
3. Gier, R.A., et al. 2020. High-performance CRISPR-Cas12a genome editing for combinatorial genetic screening. *Nat. Commun.* 11(1):1-9.
4. DeLong, R. 2021. Ushering in a new era of RNA-based therapies. *Commun Biol.* 4(1):557.