

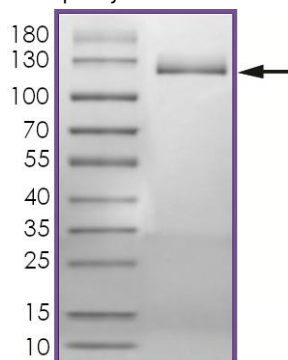
## SPECIFICATION SHEET

**Product Name: EsCas13d**
**Catalog # ES13D-E31H**

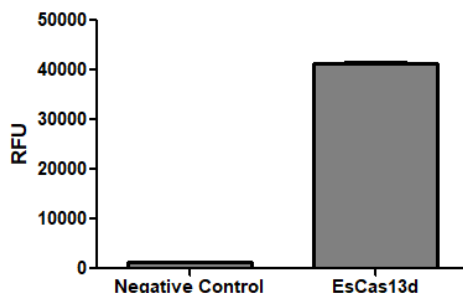
**Product Description:** Recombinant *Eubacterium siraeum* protein, EsCas13d, was expressed in *E. coli* and purified using a His tag.

**Storage and Stability:** Store at  $-20^{\circ}\text{C}$  for short-term storage ( $\leq 2$  months) and  $-70^{\circ}\text{C}$  for long-term storage. To avoid repeated handling and multiple freeze/thaw cycles aliquot product into smaller quantities.

|                          |                                                                                 |
|--------------------------|---------------------------------------------------------------------------------|
| <b>Alternate Names</b>   | : <i>Eubacterium siraeum</i> Cas13d, type VI-D CRISPR-associated RNase (Cas13d) |
| <b>Source</b>            | : <i>Eubacterium siraeum</i>                                                    |
| <b>Accession Numbers</b> | : Genbank: <a href="#">WP26062</a><br>UniProt: <a href="#">B0MS50</a>           |
| <b>Host</b>              | : <i>E. coli</i>                                                                |
| <b>Formulation</b>       | : Protein stored in 25 mM Tris, 300 mM NaCl, pH 7.5, 50% glycerol, 0.1 mM TCEP  |
| <b>Molecular Weight</b>  | : Calculated: 111.9 kDa<br>Observed: ~122 kDa                                   |
| <b>Concentration</b>     | : 1.0 $\mu\text{g}/\mu\text{L}$<br>9.0 pmol/ $\mu\text{g}$                      |
| <b>Purity</b>            | : The purity was determined to be $\geq 90\%$ by densitometry                   |
| <b>Gel Image</b>         |                                                                                 |



### Activity



EsCas13d nuclease activity assayed using a fluorogenic substrate and 5nM of enzyme as per the Cas13 Activity Assay Protocol provided.

### Scientific Background

: EsCas13d is a compact, RNA-guided ribonuclease belonging to the Type VI-D CRISPR-Cas system (2). It features two HEPN domains that dimerize upon target binding to form a catalytic site capable

of both site-specific and collateral cleavage of single-stranded RNA (ssRNA)(1). Structurally, Cas13d is characterized by a bilobed architecture consisting of the REC and NUC lobes (1). Binding of the crRNA triggers a significant conformational change that activates the enzyme (1). Notably, Cas13d orthologs are significantly smaller than Cas13a or Cas13b, making them ideal for viral vector delivery (2). Furthermore, while Cas13d can independently process pre-crRNAs, its ribonuclease activity is significantly enhanced by accessory WYL-domain proteins, which act as positive regulators (2).

## References

1. Zhang C, et al: Structural Basis for the RNA-Guided Ribonuclease Activity of CRISPR-Cas13d. Cell. Sep 20;175(1):212-223.e17, 2018.
2. Yan WX, et al: Cas13d Is a Compact RNA-Targeting Type VI CRISPR Effector Positively Modulated by a WYL-Domain-Containing Accessory Protein. Mol Cell. 2018.