

Bacillus anthracis* Collagen-like Protein BclA (Locus_Tag: BA_1222) with N-terminal Histidine Tag, Recombinant from *Escherichia coli

Catalog No. NR-9577

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Contributor and Manufacturer:

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Product Description:

NR-9577 is a recombinant form of the *Bacillus anthracis* (*B. anthracis*) collagen-like protein BclA (locus_tag: [BA_1222](#)), a major component of the exosporium.¹⁻³ The amino acid sequence includes 1) an N-terminal hexa-histidine tag, 2) a thrombin cleavage site and 3) the complete coding sequence (amino acid residues 1 to 400) of BclA from the Sterne strain (GenPept: AAT53453).⁴ The recombinant protein was expressed in *Escherichia coli* and purified by nickel affinity chromatography. NR-9577 has a theoretical molecular weight of approximately 39 kilodaltons. The structure of BclA has been solved (PDB: 1WCK; 2R6Q).^{5,6} The predicted amino acid sequence of NR-9577 is shown below in Table 1.

Material Provided:

Each vial contains approximately 80 to 120 µg of NR-9577 in PBS containing 2 M urea. The concentration, expressed as mg per mL, is shown on the Certificate of Analysis.

Packaging/Storage:

NR-9577 was packaged aseptically in cryovials. The product is provided frozen on dry ice and should be stored at -80°C or colder immediately upon arrival. Freeze-thaw cycles should be avoided.

Functional Activity:¹

NR-9577 reacts with rabbit polyclonal antibody to *B. anthracis* BclA (BEI Resources NR-9578) as shown by western blot analysis.

Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: *Bacillus anthracis* Collagen-like Protein BclA (Locus_Tag: BA_1222) with N-terminal Histidine Tag, Recombinant from *Escherichia coli*, NR-9577."

Biosafety Level: 1

Appropriate safety procedures should always be used with this material. Laboratory safety is discussed in the following publication: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, and National Institutes of Health. Biosafety in Microbiological and Biomedical Laboratories. 5th ed. Washington, DC: U.S. Government Printing Office, 2009; see www.cdc.gov/biosafety/publications/bmbl5/BMBL.

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References:

1. Sylvestre, P., E. Couture-Tosi and M. Mock. "A Collagen-like Surface Glycoprotein is a Structural Component of the *Bacillus anthracis* Exosporium." Mol. Microbiol. 45 (2002): 169-178. PubMed: 12100557.
2. Brahmabhatt, T. N., et al. "*Bacillus anthracis* Exosporium Protein BclA Affects Spore Germination, Interaction with Extracellular Matrix Proteins, and Hydrophobicity." Infect. Immun. 75 (2007): 5233-5239. PubMed: 17709408.

3. Brahmabhatt, T. N., et al. "Recombinant Exosporium Protein BclA of *Bacillus anthracis* Is Effective as a Booster for Mice Primed with Suboptimal Amounts of Protective Antigen." *Infect. Immun.* 75 (2007): 5240-5247. PubMed: 17785478.
4. Brettin, T. S., et al. "Complete Genome Sequence of *Bacillus anthracis* Sterne." Direct Submission (2004). GenPept: [AAT53453](#).
5. Réty S., et al. "The Crystal Structure of the *Bacillus anthracis* Spore Surface Protein BclA Shows Remarkable Similarity to Mammalian Proteins." *J. Biol. Chem.* 280 (2005): 43073-43078. PubMed: 16249180. PDB: [1WCK](#).
6. Han, B. W., et al. "Crystal Structure of BclA Island Construct." Direct Submission (2007). PDB: [2R6Q](#).

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Table 1 - Predicted Protein Sequence

| | | | | | |
|-----|-------------------|-------------------|------------|------------|-------------|
| 1 | <u>MGSSHHHHHH</u> | <u>SSGLVPRGSH</u> | MSNNNYSNGL | NPDESLSASA | FDPNLVGPTL |
| 51 | PPIPPFTLPT | GPTGPTGPTG | PTGPTGPTGP | TGPTGPTGPT | GPTGPTGPTG |
| 101 | DTGTTGPTGP | TGPTGPTGPT | GDTGTTGPTG | PTGPTGPTGP | TGPTGPTGPT |
| 151 | GPTGPTGDTG | TTGPTGPTGP | TGPTGPTGDT | GTTGPTGPTG | PTGPTGPTGP |
| 201 | TGPTGPTGPT | GPTGPTGPTG | PTGDTGTTGP | TGPTGPTGPT | GPTGDTGTTG |
| 251 | PTGPTGPTGP | TGPTGPTGPT | GATGLTGPTG | PTGPSGLGLP | AGLYAFNSGG |
| 301 | ISLDLGINDP | VPFNTVGSQF | GTAISQLDAD | TFVISETGfY | KITVIA NTAT |
| 351 | ASVLGGLTIQ | VNGVPVPGTG | SSLISLGAPI | VIQAITQITT | TPSLVEVIVT |
| 401 | GLGLSLALGT | SASIIIEKVA | | | |

Non-BclA residues are underlined.