

# Product Information Sheet for NR-15771

## Fraction 1 Capsular Antigen (F1) from *Yersinia pestis* with N-terminal Histidine Tag, Expressed in *Escherichia coli*

### Catalog No. NR-15771

This reagent is the property of the U. S. Government.

### For research use only. Not for human use.

#### Contributor and Manufacturer:

BEI Resources

#### Product Description:

NR-15771 is a recombinant form of the *Yersinia pestis* (*Y. pestis*) fraction 1 capsular antigen (F1). F1 is a plasmid (pFra)-encoded proteinaceous capsule synthesized in large quantities by *Y. pestis* and reported to confer antiphagocytic properties on the pathogen by interfering with complement-mediated opsonization.<sup>1</sup> The protein is highly immunogenic and has been indirectly associated with eliciting a protective immune response in humans.<sup>2</sup> The amino acid sequence is shown in Figure 1. The recombinant protein lacks the native signal sequence but includes an N-terminal hexa-histidine tag, a thrombin cleavage site and amino acid residues 22 to 170 of F1 from *Y. pestis* (GenPept: [AAS58714](#)).<sup>3,4</sup> The protein was expressed in *Escherichia coli* and purified by nickel affinity and ion exchange chromatography. NR-15771 has a theoretical molecular weight of 17,858 daltons.

#### Material Provided:

Each vial contains approximately 300 µL of NR-15771 in phosphate-buffered saline. The concentration, expressed as mg per mL, is shown on the Certificate of Analysis.

#### Packaging/Storage:

NR-15771 was packaged 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:

NR-15771 reacts with a monoclonal antibody to *Y. pestis* F1 antigen in ELISA and Western blot assays.

#### Citation:

Acknowledgment for publications should read "The following reagent was obtained through BEI Resources, NIAID, NIH: Fraction 1 Capsular Antigen (F1) from *Yersinia pestis* with N-terminal Histidine Tag, Expressed in *Escherichia coli*, NR-15771."

#### 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/index.htm](http://www.cdc.gov/biosafety/publications/bmbl5/index.htm).

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#### References:

1. Williams, R. C. Jr., H. Gewurz and P. G. Quie. "Effects of Fraction I from *Yersinia pestis* on Phagocytosis *In Vitro*." *J. Infect. Dis.* 126 (1972): 235-241. PubMed: 4559742.
2. Meyer, K. F., J. A. Hightower and F. R. McCrumb. "Plague Immunization. VI. Vaccination with the Fraction I Antigen of *Yersinia pestis*." *J. Infect. Dis.* 129 (1974): Suppl: S41-S45. PubMed: 4825248.
3. Simpson, W. J., R. E. Thomas and T. G. Schwan. "Recombinant Capsular Antigen (Fraction 1) from *Yersinia pestis* Induces a Protective Antibody Response in BALB/c Mice." *Am. J. Trop. Med. Hyg.* 43 (1990): 389-396. PubMed: 2240367.
4. Andrews, G. P., et al. "Fraction 1 Capsular Antigen (F1) Purification from *Yersinia pestis* CO92 and from an *Escherichia coli* Recombinant Strain and Efficacy against Lethal Plague Challenge." *Infect. Immun.* 64 (1996): 2180-2187. PubMed: 8675324.

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# Figure 1 – Predicted Protein Sequence

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1  MGSSHHHHHH  SSGLVPRGSH  MADLTASTTA  TATLVEPARI  TLTYKEGAPI
51  TIMDNGNIDT  ELLVGTLTLG  GYKTGTTSTS  VNFTDAAGDP  MYLTFTSQDG
101 NNHQFTTKVI  GKDSRDFDIS  PKVNGENLVG  DDVVLATGSQ  DFFVRSIGSK
151 GGKLAAGKYT  DAVTVTVSNQ

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Plasmid-derived amino acids – Residues 1 to 4, 11 to 13, 20, 21

His Tag – Residues 5 to 10

Thrombin cleavage sequence – Residues 14 to 19

F1 protein – **Residues 22 to 170** (represents amino acid residues 22-170)