

## Shiga toxin II subunit B Protein, E. coli, Recombinant (His)

### General Information

Protein Construction:	A DNA sequence encoding the E.Coli STX2B (Q93EY4) (Met 1-Asp 89) was expressed, with a polyhistidine tag at the N-terminus. Predicted N terminal: Met
Species:	E. coli
Expression Host:	E. coli
Accession:	Q93EY4
Molecular Weight:	10.6 kDa (predicted); 16 kDa (reducing conditions)

### QC Testing

Biological Activity:	Activity testing is in progress. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.
Purity:	> 95 % as determined by SDS-PAGE
Endotoxin:	Please contact us for more information.
Formulation:	Lyophilized from a solution filtered through a 0.22 µm filter, containing PBS, pH 7.4. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

### Preparation and Storage

#### Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

#### Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

#### Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

### Protein Background

E. Coli STX2B is a subunit of Stx2. Stx2, together with Stx1, formed a family of related toxins which are known as shiga toxins. Shiga toxins are mainly produced by the bacteria *S. dysenteriae* and the Shigatoxigenic group of *Escherichia coli*, which includes serotypes O157:H7, O104:H4, and other enterohemorrhagic *E. coli* (EHEC). A total of 3222 outbreak cases (including 39 deaths) have been reported in northern Germany in May through June 2011. The outbreak strain was typed as an enteroaggregative Shiga-toxin-producing *E. coli* O104:H4, producing extended-spectrum beta-lactamase. The toxin has two subunits—A and B. *E. Coli* STX2B is the B subunit. It is a

pentamer that binds to specific glycolipids on the host cell, specifically globotriaosylceramide. Following this, the A subunit is internalised and cleaved into two parts. Stx2 has been found to be approximately 400 times more toxic (as quantified by LD50 in mice) than Stx-1. The Stx1 and Stx2 B subunits form a pentameric structure that binds to globotriaosylceramide receptors on eukaryotic cells and promotes endocytosis.

### Reference

Obata F.et al. (2008) Shiga Toxin 2 Affects the Central Nervous System through Receptor Globotriaosylceramide Localized to Neurons. *J Infect Dis.* 198 (9): 1398-406.

Tironi-Farinati C.et al. (2010) Intracerebroventricular Shiga toxin 2 increases the expression of its receptor globotriaosylceramide and causes dendritic abnormalities. *J Neuroimmunol.* 222 (1-2): 48-61.

Asakura H.et al. (2001) Phylogenetic diversity and similarity of active sites of Shiga toxin (stx) in Shiga toxin-producing *Escherichia coli* (STEC) isolates from humans and animals. *Epidemiol Infect.* 127 (1): 27-36.

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