

Recombinant Borrelia Miyamotoi GlpQ Protein, His-tagged

Cat. No. BOR-042 **Lot. No.** (See product label)

SPECIFICATION

Product Overview

This is a recombinant *Borrelia miyamotoi* GlpQ protein with C-terminal 10x His-tag was produced in *E. coli*.

Tag

His

Background

Relapsing Fever is an arthropod-borne infection caused by bacteria of the genus *Borrelia*, and sub-species Relapsing Fever. It can be divided into Louse-borne Relapsing Fever and Tick-borne Relapsing Fever. *Borrelia miyamotoi* is a tick-borne relapsing fever *Borrelia* group spirochete that is transmitted by the same hard-bodied (Ixodid) tick species that transmit the agents of Lyme disease. It was discovered in 1994 in *Ixodes persulcatus* ticks in Japan. *B. miyamotoi* species phylogenetically cluster with the relapsing fever group spirochetes, which usually are transmitted by soft-bodied (argasid) ticks or lice. *B. miyamotoi* infects at least six *Ixodes* tick species in North America and Eurasia that transmit Lyme disease group spirochetes and may use small rodents and birds as reservoirs. Human cases of *B. miyamotoi* infection were first reported in 2011 in Russia and subsequently in the United States, Europe and Japan (Krause et al., 2015). The most common clinical manifestations of *B. miyamotoi* infection are fever, fatigue, headache, chills, myalgia, arthralgia, and nausea. Symptoms of *B. miyamotoi* infection generally resolve within a week of the start of antibiotic therapy. As early as 1985, spirochetes that were likely *B. miyamotoi* were observed in ticks in the United States. However, they were mistakenly thought to be *B. burgdorferi* as a consequence of cross-reactive antibodies that were used in direct immunoassays. Additionally, antigenic cross-reactivities in immunoassays between *Borrelia* species in North America also complicated diagnosis of both Lyme

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disease and relapsing fever (Magnarelli et al., 1987).

In 1996, Schwan et al. reported the identification of an immunodominant enzyme in *Borrelia hermsii* called glycerophosphodiester phosphodiesterase (GlpQ, GDPD). Eight species of relapsing fever group spirochetes were found to contain a GlpQ ortholog and six Lyme disease *Borrelia* species did not (Schwan et al., 2003). Sera from Lyme disease patients should not cross-react in a GlpQ assay because Lyme disease *Borrelia* species (as well as *Anaplasma*, *Babesia* and *Ehrlichia* species) lack the gene for GlpQ (Schwan et al., 1996). Indeed, serum from humans infected with relapsing fever group spirochetes reacted positively by immunoblotting with *Borrelia miyamotoi* GlpQ protein, while serum from patients with Lyme disease did not (Schwan et al., 1996). As such, serologic testing is now used to help confirm *B. miyamotoi* diagnosis. An antibody response to *Borrelia* GlpQ antigen is a characteristic of relapsing fever that distinguishes it from the immune response to Lyme disease (Schwan et al., 1996). A two-tiered antibody assay based on recombinant *B. miyamotoi* GlpQ protein was developed that detects GlpQ-specific antibodies during the acute and convalescent stages of infection (Schwan et al., 1996). *B. miyamotoi* GlpQ protein is also no more than 50% identical to the GlpQ proteins of some other bacterial pathogens, such as *Klebsiella pneumoniae* and *Salmonella enterica* and so is not expected to cross-react with anti-GlpQ antibodies elicited by other disease agents (Bacon et al., 2004).

Purity	>90%
Formulation	300 mM NaCl, 50 mM Tris-HCl, pH 8.5.
Notes	This product is intended for research and manufacturing uses only. It is not a diagnostic device. The user assumes all responsibility for care, custody and control of the material, including its disposal, in accordance with all regulations.
Type	Recombinant

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ClassID 1	Infectious Disease
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GENE INFORMATION

Synonyms	Borrelia Miyamotoi GIpQ
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