

Recombinant *Borrelia burgdorferi* sensu stricto (B31) P39 Protein, MBP-tagged

Cat. No. BOR-036 **Lot. No.** (See product label)

SPECIFICATION

Product Overview	This is a recombinant <i>Borrelia burgdorferi</i> P39 protein, fused to an MBP-tag and produced in <i>E. coli</i> (>90% purity).
Tag	MBP
Background	P39 is encoded by the spirochete <i>B. burgdorferi</i>, which is carried by Ixodes ticks. Strain B31 is the type strain (ATCC 35210) for this organism and was derived by limited dilutional cloning from the original Lyme-disease tick isolate obtained by A. Barbour (Johnson, et al., 1984). The p39 protein, or Basic membrane protein A (BmpA), is one of the immunogenic cell membrane components displayed on the outer surface of <i>B. burgdorferi</i>, the spirochete carried by Ixodes ticks and is an important antigen for serodiagnosis of human infection. BmpA is involved in borreliar pathogenicity and participates in the development of borreliar arthritis. It is a member of the chromosomally-located paralogous family 36 which also includes BmpB, BmpC and BmpD. Its expression is co-regulated with that of BmpC and BmpB and may be subject to global regulation (Bryksin, et al., 2010). The spirochete migrates from the tick mid-gut during feeding to its salivary glands and is then transmitted to the mammal host. This transition may be facilitated by changes in expression of some <i>B. burgdorferi</i> genes (Aron, et al., 1996). It is believed that expression of the various proteins associated with the spirochete may be regulated by the changes in tick life cycle, changes in conditions during tick feeding (such as temperature, pH, and nutrients) and/or in coordination with the course of infection of the mammal host.

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BmpA and its three paralogous proteins, BmpB, C and D, all bind to mammalian laminin and BmpA-directed antibodies, significantly inhibiting the adherence of live *B. burgdorferi* to laminin. The laminin-binding domain of BmpA was mapped to the 80 carboxy-terminal residues. Solubilized collagen inhibited BmpA-laminin binding, suggesting interactions through the collagen-binding domains of laminin. BmpA does not bind mammalian type I or type IV collagens or fibronectin (Verma, et al., 2009). BmpA is expressed during the invasion of the spirochete and in the evolution of the arthritis of Lyme disease in mammals. The major products of the *B. burgdorferi* basic membrane protein (bmp) A/B operon that are induced in murine and human joints possess inflammatory properties. Non-lipidated and lipidated versions of BmpA have been shown to induce the pro-inflammatory cytokines TNF- α and IL-1 β in human synovial cells. The induction of cytokine responses in synovial cells via activation of the NF- κ B and p38 MAP kinase pathways could potentially contribute to the pathogenesis of Lyme arthritis (Yang, et al., 2008).

Purity	>90% by SDS-PAGE
Formulation	0.02 M Potassium Phosphate, 0.15 M Sodium Chloride, pH 7.2 and 0.01% (w/v) Sodium Azide
Stability	At +4 centigrade: Not determined. At -80 centigrade: Not determined.
Freezing	Can be frozen, but avoid multiple freeze/thaw cycles.
Storage	Short Term Storage: +2 centigrade to +8 centigrade Long Term Storage: -80 centigrade
Concentration	1.0 mg/mL by UV absorbance at 280 nm

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.
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Type	Recombinant
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ClassID 1	Infectious Disease
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GENE INFORMATION

Synonyms	Borrelia burgdorferi sensu stricto (B31) P39
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