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SZABO-SCANDIC HandelsgmbH

Quellenstraße 110, A-1100 Wien

T. +43(0)1 489 3961-0

F. +43(0)1 489 3961-7

mail@szabo-scandic.com

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Datasheet for 000-001-C15

OspB Control Protein

Overview

Description:	OspB Control Protein - 000-001-C15
Item No.:	000-001-C15
Size:	100 µg
Applications:	SDS-PAGE, WB, Biochemical Assay
Origin:	Borrelia burgdorferi
Expressed in:	E. coli

Product Details

Background:	OspB, is one of the major Outer Surface Proteins of the outer membrane of Borrelia burgdorferi, which is composed of various unique outer surface proteins (Osp) that have been characterized (OspA through OspF). The Osp proteins are lipoproteins anchored by N-terminally attached fatty acid molecules to the membrane. They are presumed to play a role in virulence, transmission, or survival in the tick. Two of the major surface Ag of Borrelia burgdorferi, the 31-kDa OspA and 34-kDa OspB proteins, show a high degree of sequence similarity, are encoded by a 49-kb plasmid and share a common promoter, and are coordinately transcribed. OspA, OspB, and OspD are expressed by B. burgdorferi residing in the gut of unfed ticks, suggesting that they promote the persistence of the spirochete in ticks between blood meals. OspB has a contributing role in the adherence of B. burgdorferi to the tick gut. The C terminus of OspB is important for eliciting a protective immune response to OspB. B. burgdorferi has the ability to vary its surface proteins in response to immune attack. Lyme disease proteins are ideal for researchers interested in immunology, neurology, rheumatology, coinfections, autoimmune, and neurodegenerative diseases.
Synonyms:	Outer surface protein B, Borrelia burgdorferi OspB, control protein
Species of Origin:	Borrelia burgdorferi
Expressed in:	E. coli
Type:	Recombinant Protein

Target Details

Gene Name:	ospB, locus BB_A16

Purity/Specificity:	OspB is a fusion protein with an MBP tag and was expressed in E. coli. Analysis by SDS-PAGE resulted in a pattern consistent with purified OspB and was estimated to be greater than 90% pure.
Relevant Links:	• UniProtKB - P17739 • NCBI - WP_010890379.1 • GeneID - 1194340

Application Details

Tested Applications:	SDS-PAGE, WB
Suggested Applications:	Biochemical Assay (Based on references)
Application Note:	OspB is suitable as a control in immunological assays. Specific conditions for reactivity should be optimized by the end user. Expect a band at 72.7 kDa for OspB-MBP, (30.3 kDa for OspB and 42.4 for MBP) in size corresponding to OspB by Western blotting in the appropriate cell lysate or extract. Outer surface protein B was tested in SDS-PAGE and WB.
Assay Dilutions:	All assays should be optimized by the user. Recommended dilutions (if any) may be listed below.
ELISA:	User Optimized
WB:	User Optimized

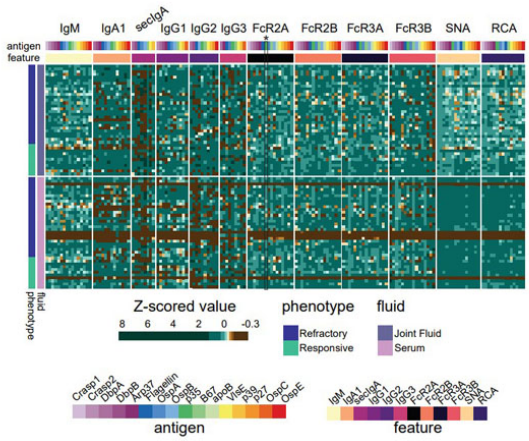
Formulation

Physical State:	Liquid (sterile filtered)
Concentration:	1mg/ml by UV absorbance at 280 nm
Buffer:	0.02 M Potassium Phosphate, 0.15 M Sodium Chloride, pH 7.2
Preservative:	0.01% (w/v) Sodium Azide
Stabilizer:	None

Shipping & Handling

Shipping Condition:	Dry Ice
Storage Condition:	Store vial at -20 °C prior to opening. Aliquot contents and freeze at -20 °C or below for extended storage. Avoid cycles of freezing and thawing. Centrifuge product if not completely clear after standing at room temperature. Dilute only prior to immediate use.
Expiration:	Expiration date is six (6) months from date of receipt.

Images



Figure

Systems serology profiling with Borrelia-specific antigens reveals patient heterogeneity. The heatmap shows the Z-scored measurements for 12 features, across 16 antigens for both refractory and responsive patients, visualized with joint fluid measurements in the upper half of the heatmap and serum measurements in the lower half of the heatmap. Only antigens detected above background for at least 30% of samples were included for each measurement. Statistical significance was assessed using the Mann-Whitney nonparametric test, with p values then corrected for multiple hypothesis testing via Benjamini-Hochburg, *p < 0.05, **p < 0.01, ***p < 0.001, else not significant. CRASP1 (p/n 000-001-C18), CRASP2 (p/n 000-001-C19), DbpA (p/n 000-001-B98), DbpB (p/n 000-001-C16), Arp37 (p/n 000-001-C09), flagellin (p/n 000-001-C14), OspA (p/n 000-001-C13), OspB (p/n 000-001-C15), OspC (p/n 000-001-C11), OspE (p/n 000-001-C10), p27 (p/n 000-001-C30), p35 (p/n 000-001-C12), p39 (p/n 000-001-C17), VlsE (p/n 000-001-C33). Fig 1. PMID: 38303696.

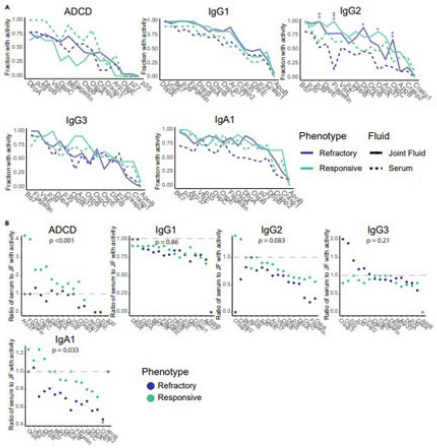
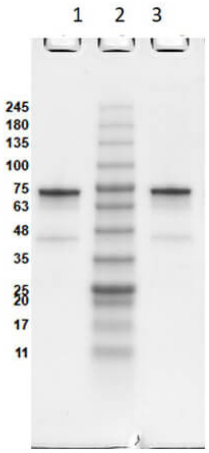


Figure
Antigen-specific IgG2, IgA1, and ADCD partitioning between compartments differs significantly across disease phenotypes. (A) Fraction of samples with non-zero measurements for ADCD, IgG1, IgG2, IgG3, and IgA1 for refractory (dark blue) and responsive (green) patients in the serum (dashed line) and joint fluid (solid line) for each antigen. Significant differences in distribution of non-zero measurements between fluids as assessed by a Fisher's exact test are denoted as *p < 0.05, **p < 0.01, ***p < 0.001 for refractory (dark blue) and responsive (green) samples after correction for multiple hypothesis testing via Benjamini-Hochburg. (B) Ratio of fraction of serum samples with non-zero measurements to fraction of joint fluid samples with non-zero measurements for ADCD, IgG1, IgG2, IgG3, and IgA1 for refractory (dark blue) and responsive (green) patients for each antigen. Significant differences in distributions of ratios between phenotypes are assessed by a Mann-Whitney nonparametric test, then corrected for multiple hypothesis testing via Benjamini-Hochburg. CRASP1, CRASP2, DbpA, DbpB, Arp37, flagellin, OspA, OspB, OspC, OspE, p27, p35, p39, VlsE: Rockland antigens. Fig 6. PMID: 38303696.



SDS-PAGE
SDS PAGE Results of OspB Control Protein. Lane 1: OspB Control Protein Reduced [1µg]. Lane 2: Opal Prestained Molecular Weight Marker (p/n MB-210-0500). Lane 3: OspB Control Protein Non-Reduced [1µg]. 4-20% Gel, Coomassie Stained.

References

- Bowman KA. et al. Borrelia-specific antibody profiles and complement deposition in joint fluid distinguish antibiotic-refractory from -responsive Lyme arthritis. *iScience.* (2024)

www.rockland.com
tech@rockland.com
+1 484.791.3823

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