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Datasheet for 000-001-C13

OspA Control Protein

Overview

Description:	OspA Control Protein - 000-001-C13
Item No.:	000-001-C13
Size:	100 µg
Applications:	SDS-PAGE, WB, Biochemical Assay, Functional Assay
Origin:	Borrelia burgdorferi
Expressed in:	E. coli

Product Details

Background:	Outer-Surface Protein A (OspA), a lipoprotein from Borrelia burgdorferi encoded on its Plasmid lp54, is a major component of the spirochete's extracellular matrix. OspA probably serves as a lipid-anchor. The spirochetes migrate from the tick midgut during feeding to its salivary glands and are thus transmitted to the mammal host. This transition may be facilitated by changes in expression of some B. burgdorferi genes. Upon transmission of the spirochete from the Ixodes tick to mammalian host, the transcript level of OspA can change. 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. B. burgdorferi can attach to (and also differentially express antigens in) diverse tissues within the vertebrate host and the tick vector, suggesting that physiological factors other than pH and temperature may play roles in modulating B. burgdorferi gene expression. Lyme disease proteins are ideal for researchers interested in immunology, neurology, rheumatology, coinfections, autoimmune, and neurodegenerative diseases.
Synonyms:	Outer surface protein A, Borrelia burgdorferi OspA, control protein
Species of Origin:	Borrelia burgdorferi
Expressed in:	E. coli
Type:	Recombinant Protein

Target Details

Gene Name:	ospA, BB_A15

Purity/Specificity:	OspA 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 OspA and was estimated to be greater than 90% pure.
Relevant Links:	• UniProtKB - P0CL66 • NCBI - WP_010890378.1 • GeneID - 1194357

Application Details

Tested Applications:	SDS-PAGE, WB
Suggested Applications:	Biochemical Assay, Functional Assay (Based on references)
Application Note:	OspA is suitable as a control in immunological assays. Specific conditions for reactivity should be optimized by the end user. Expect a band at 70.5 kDa for OspA-MBP, (28.1 kDa for OspA and 42.4 for MBP) in size corresponding to OspA by Western blotting in the appropriate cell lysate or extract. Outer-Surface Protein A has been tested in SDS-page and western blot.
Assay Dilutions:	All assays should be optimized by the user. Recommended dilutions (if any) may be listed below.
ELISA:	User Optimized
WB:	User Optimized

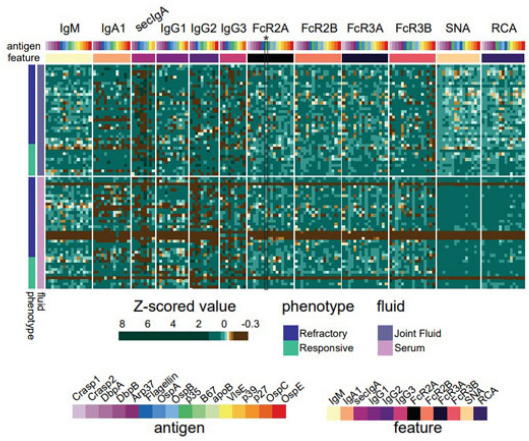
Formulation

Physical State:	Liquid (sterile filtered)
Concentration:	1 mg/ml by modified Lowry assay
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.

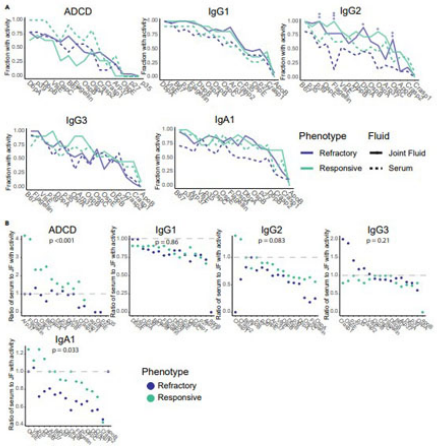
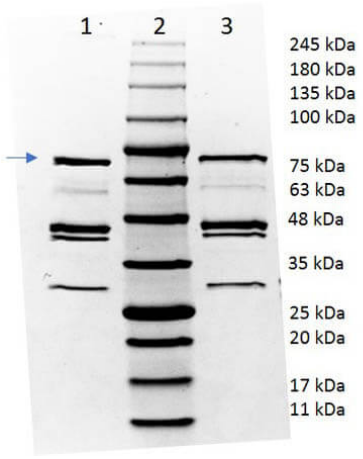


Figure
Antigen-specific IgG2, IgA1, and ADCD partitioning between compartments differs significantly across disease phenotypes. (A) Fraction of samples with non-zero measurements for ADCD, IgG1, IgG2, IgG3, and IgA1 for refractory (dark blue) and responsive (green) patients in the serum (dashed line) 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 of OspA Control Protein. Lane 1: Non-Reduced OspA Control Protein. Lane 2: Opal Stained Molecular Weight Marker (p/n MB-210-0500). Lane 3: Reduced OspA Control Protein. Load: 1µg. Predicted/Observed size: ~70.5 kDa fusion protein (arrowhead), ~42.4 kDa for MBP, ~28.1 kDa for OspA.

References

- Bowman KA. et al. Borrelia-specific antibody profiles and complement deposition in joint fluid distinguish antibiotic-refractory from -responsive Lyme arthritis. *iScience.* (2024)
- Lerner MB et al. Large scale commercial fabrication of high quality graphene-based assays for biomolecule detection. *Sensors and Actuators B: Chemical.* (2017)

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