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Datasheet for 000-001-C09

Erpd/Arp37 Control Protein

Overview

Description:	Erpd/Arp37 Control Protein - 000-001-C09
Item No.:	000-001-C09
Size:	100 µg
Applications:	SDS-PAGE, WB, Biochemical Assay
Origin:	Borrelia burgdorferi
Expressed in:	E. coli

Product Details

Background:	ErpD (ospE/F-Related Protein D), also known as Arp37, is from the spirochete Borrelia burgdorferi, which is carried by Ixodes ticks. Erp proteins from Borrelia burgdorferi are postulated to be lipoproteins, based on their predicted amino acid sequences. The spirochete migrates 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. 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. Several studies have demonstrated that infected humans and animals produce antibodies directed against Erp proteins within the first 2-4 weeks of infection, indicative of Erp synthesis during the initial stages of vertebrate infection. It is postulated that surface-exposed Erp proteins could facilitate interactions with host tissues during the establishment of vertebrate infection. Lyme disease proteins are ideal for researchers interested in immunology, neurology, and rheumatology, coinfections, autoimmune, and neurodegenerative diseases.
Synonyms:	Arp37, Borrelia burgdorferi ErpD, control protein
Species of Origin:	Borrelia burgdorferi
Expressed in:	E. coli
Type:	Recombinant Protein

Target Details

Gene Name:	BB_F01

Purity/Specificity:	ErpD/Arp37 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 ErpD/Arp37 and was estimated to be greater than 90% pure.
Relevant Links:	• UniProtKB - G5IXI1 • NCBI - WP_010890266.1 • GeneID - 1194073

Application Details

Tested Applications:	SDS-PAGE, WB
Suggested Applications:	Biochemical Assay (Based on references)
Application Note:	ErpD/Arp37 is suitable as a control in immunological assays. Specific conditions for reactivity should be optimized by the end user. Expect bands at 78 kDa for Arp37-MBP, (~35.6 kDa for Arp37 and 42.4 kDa for MBP) in size corresponding to ErpD/Arp37 by Western blotting in the appropriate cell lysate or extract. ErpD/Arp37 Protein 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:	1.0mg/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

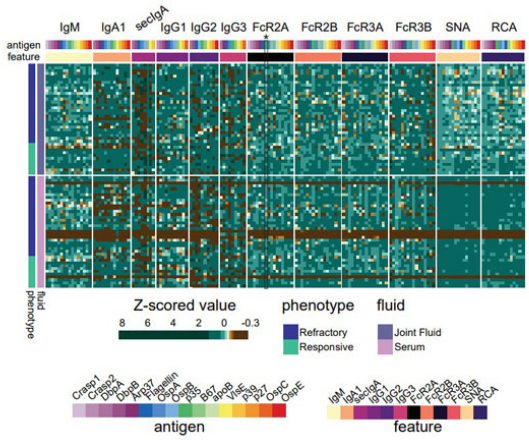


Figure
Systems serology profiling with Borrelia-specific antigens reveals patient heterogeneity. The heatmap shows the Z-scored measurements for 12 features, across 16 antigens for both refractory and responsive patients, visualized with joint fluid measurements in the upper half of the heatmap and serum 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.

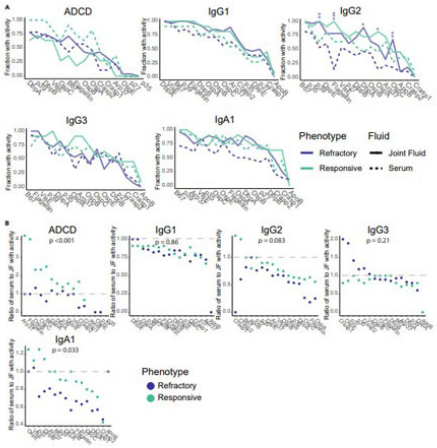
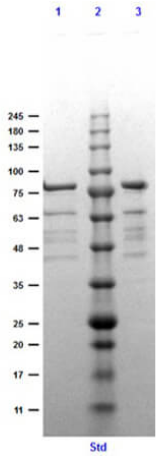


Figure
Antigen-specific IgG2, IgA1, and ADCD partitioning between compartments differs significantly across disease phenotypes. (A) Fraction of samples with non-zero measurements for ADCD, IgG1, IgG2, IgG3, and IgA1 for refractory (dark blue) and responsive (green) patients in the serum (dashed line) 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 Erpd/Arp37 Control Protein. Lane 1: Erdp/Arp37 Control Protein Reduced [1µg]. Lane 2: Opal Prestained Molecular Weight Marker (p/n MB-210-0500). Lane 3: Erpd/Arp37 Control Protein Non-Reduced [1µg]. Predicted/Observed size: 78 kDa fusion protein, 35.6 kDa for Arp37, 42.4 kDa for MBP alone.

References

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

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