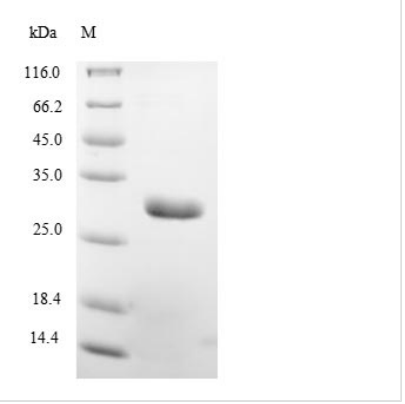
# Recombinant Borreliella burgdorferi Outer surface protein A (ospA)

| | |
|---|---|
| **Product Code** | CSB-EP363424BIO |
| **Abbreviation** | Recombinant Borreliella burgdorferi ospA protein |
| **Storage** | The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C. |
| **Uniprot No.** | P0A3N6 |
| **Storage Buffer** | Tris-based buffer,50% glycerol |
| **Product Type** | Recombinant Proteins |
| **Immunogen Species** | Borreliella burgdorferi (Lyme disease spirochete) (Borrelia burgdorferi) |
| **Purity** | Greater than 85% as determined by SDS-PAGE. |
| **Sequence** | CKQNVSSLDEKNSASVDLPGEMKVLVSKEKDKDGKYSLKATVDKIELKGTSDK DNGSGVLEGTKDDKSKAKLTIADDLSKTTFELFKEDGKTLVSRKVSSKDKTSTD EMFNEKGELSAKTMTRENGTKLEYTEMKSDGTGKAKEVLKNFTLEGKVANDK VTLEVKEGTVTLSKEIAKSGEVTVALNDTNTTQATKKTGAWDSKTSTLTISVNS KKTTQLVFTKQDTITVQKYDSAGTNLEGTAVEIKTLDELKNALK |
| **Research Area** | others |
| **Source** | E.coli |
| **Target Names** | ospA |
| **Protein Names** | Recommended name: Outer surface protein A |
| **Expression Region** | 17-273aa |
| **Notes** | Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week. |
| **Tag Info** | N-terminal 10xHis-tagged and C-terminal Myc-tagged |
| **Mol. Weight** | 32.9 kDa |
| **Protein Length** | Full Length of Mature Protein |
| **Image** | |




(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

## Description

The production of recombinant Borreliella burgdorferi Outer surface protein A (ospA) in E. coli involves several key steps. First, the gene encoding the full length of mature ospA protein (17-273aa) is co-inserted into an expression vector with an N-terminal 10xHis-tag and C-terminal Myc-tag gene and introduced into E. coli cells. The bacteria are cultured under conditions that promote protein expression. After sufficient growth, the cells are lysed to release the recombinant ospA protein. Purification typically involves the affinity chromatography technique. Protein purity is assessed using SDS-PAGE. Its purity is over 85% as determined by SDS-PAGE.

Borrelia burgdorferi OspA is crucial in this viral transmission and infection.
It is one of the major outer surface membrane proteins recognized by antibodies in patients with Lyme borreliosis [1]. OspA, along with OspC, is selectively produced and functionally significant in different stages of the Borrelia burgdorferi life cycle, with OspA being important in the tick vector and OspC in the mammalian host [2]. The expression of OspA is altered during the transmission of Borrelia burgdorferi from ticks to mammalian hosts, indicating its role in the infectivity process [3]. Furthermore, studies have highlighted the significance of outer surface proteins, including OspA, in the evasion of the complement system, a crucial aspect of Borrelia burgdorferi's pathogenicity [4].

References:
[1] W. Schubach, S. Mudri, R. Dattwyler, & B. Luft, Mapping antibody-binding domains of the major outer surface membrane protein (ospa) of borrelia burgdorferi, Infection and Immunity, vol. 59, no. 6, p. 1911-1915, 1991. https://doi.org/10.1128/iai.59.6.1911-1915.1991
[2] S. Srivastava and A. Silva, Reciprocal expression of ospa and ospc in single cells of borrelia burgdorferi, Journal of Bacteriology, vol. 190, no. 10, p. 3429-3433, 2008. https://doi.org/10.1128/jb.00085-08
[3] R. Johns, D. Sonenshine, & W. Hynes, Enhancement of ospc expression byborrelia burgdorferiin the presence of tick hemolymph, Fems Microbiology Letters, vol. 193, no. 1, p. 137-141, 2000. https://doi.org/10.1111/j.1574-6968.2000.tb09415.x
[4] R. Garrigues, S. Thomas, J. Leong, & B. Garcia, Outer surface lipoproteins from the lyme disease spirochete exploit the molecular switch mechanism of the complement protease c1s,, 2022. https://doi.org/10.1101/2022.08.17.504303

| | |
|---|---|
| **Shelf Life** | The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself.<br>Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C. |