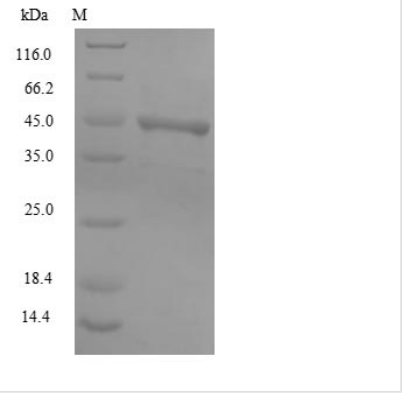
Recombinant BK polyomavirus Major capsid protein VP1

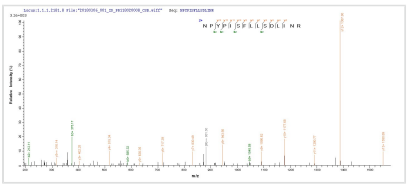
Product Code	CSB-EP360953BGYb1
Relevance	Forms an icosahedral capsid with a T=7 symmetry and a 50 nm diameter. The capsid is composed of 72 pentamers linked to each other by disulfide bonds and associated with VP2 or VP3 proteins. Interacts with gangliosides GT1b and GD1b containing terminal alpha2-8-linked sialic acids on the cell surface to provide virion attachment to target cell. This attachment induces virion internalization predominantly through caveolin-mediated endocytosis and traffics to the endoplasmic reticulum. Inside the endoplasmic reticulum, the protein folding machinery isomerizes VP1 interpentamer disulfide bonds, thereby triggering initial uncoating. Next, the virion uses the endoplasmic reticulum-associated degradation machinery to probably translocate in the cytosol before reaching the nucleus. Nuclear entry of the viral DNA involves the selective exposure and importin recognition of VP2/Vp3 nuclear localization signal. In late phase of infection, neo-synthesized VP1 encapsulates replicated genomic DNA in the nucleus, and participates in rearranging nucleosomes around the viral DNA
Abbreviation	Recombinant BK polyomavirus Major capsid protein VP1 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.	P03088
Product Type	Recombinant Protein
Immunogen Species	BK polyomavirus (BKPyV)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	MAPTKRKGECPGAAPKKPKEPVQVPKLLIKGGVEVLEVKTGVDAITEVECFLN PEMGDPDENLRGFSLKLSAENDFSSDSPERKMLPCYSTARIPLPNLNEDLTCG NLLMWEAVTVQTEVIGITSMLNLHAGSQKVHEHGGGKPIQGSNFHFFAVGGE PLEMQGVLMNYRSKYPDGTITPKNPTAQSQVMNTDHKAYLDKNNAYPVECW VPDPSRNENARYFGTFTGGENVPPVLHVTNTATTVLLDEQGVGPLCKADSLY VSAADICGLFTNSSGTQQWRGLARYFKIRLRKRSVKNPYPISFLLSDLINRRTQ RVDGQPMYGMESQVEEVRVFDGTERLPGDPDMIRYIDKQGQLQTKML
Research Area	others
Source	E.coli
Protein Names	Major structural protein VP1
Expression Region	1-362aa
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	45.1kDa
Protein Length	Full Length

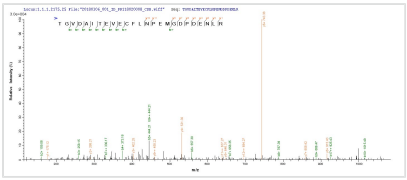
Image



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



Based on the SEQUEST from database of E.coli host and target protein, the LC-MS/MS Analysis result of CSB-EP360953BGYb1 could indicate that this peptide derived from E.coli-expressed BK polyomavirus (BKPyV) (Human polyomavirus 1) N/A.



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Description

Producing recombinant BK polyomavirus major capsid protein VP1 involves several steps, starting with the isolation of the target gene, which corresponds to the full-length BK polyomavirus VP1. The gene is linked with an N-terminal 10xHis-tag and C-terminal Myc-tag gene and then cloned into an expression vector. The vector is introduced into E. coli cells via transformation. The positive cells are cultured for protein expression. The recombinant BK polyomavirus VP1 protein is harvested from the cell lysate. The protein is purified using affinity chromatography. Its purity is over 85% as determined by SDS-PAGE.

The BK polyomavirus (BKPyV) VP1 protein is the major capsid protein of the BKPyV and is important for the viral structure and function. BKPyV VP1 plays a significant role in host cell receptor recognition, proper virion assembly, and determining antigenicity and receptor specificity [1][2][3]. It is essential for the viability and growth of the BKPyV [2]. Studies have shown that VP1 can package DNA independently of the minor structural proteins VP2 and VP3, showcasing its ability to play a critical role in virus assembly [4].

References:

[1] J. Nilsson, N. Miyazaki, X. Li, B. Wu, L. Hammar, T. Liet al., Structure and

assembly of virus-like particle in bk polyomavirus, Journal of Virology, vol. 79, no. 9, p. 5337-5345, 2005. https://doi.org/10.1128/jvi.79.9.5337-5345.2005
[2] A. Dugan, M. Gasparovic, N. Tsomaia, D. Mierke, B. O'Hara, K. Manleyet al., Identification of amino acid residues in bk virus vp1 that are critical for viability and growth, Journal of Virology, vol. 81, no. 21, p. 11798-11808, 2007. https://doi.org/10.1128/jvi.01316-07
[3] U. Neu, J. Wang, D. Macejak, R. Garcea, & T. Stehle, Structures of the major capsid proteins of the human karolinska institutet and washington university polyomaviruses, Journal of Virology, vol. 85, no. 14, p. 7384-7392, 2011. https://doi.org/10.1128/jvi.00382-11
[4] E. Gillock, S. Rottinghaus, D. Chang, X. Cai, S. Smiley, K. Anet al., Polyomavirus major capsid protein vp1 is capable of packaging cellular dna when expressed in the baculovirus system, Journal of Virology, vol. 71, no. 4, p. 2857-2865, 1997. https://doi.org/10.1128/jvi.71.4.2857-2865.1997

Reconstitution

We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.

Shelf Life

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