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# EBV LMP-2A (14B7): sc-101314

## BACKGROUND

Epstein-Barr virus (EBV) is a human herpesvirus that ubiquitously infects the majority of the human population. Although most EBV infections are asymptomatic, the virus itself is associated with epithelioid and lymphoid malignancies. EBV LMP-2A (Epstein-Barr virus latent membrane protein 2A), also known as LMP2A, is a 497 amino acid EBV protein that exists on the surface of EBV-infected cells and consists of a short C-terminal tail, 12 membrane-spanning domains and a long N-terminal segment. Expressed in most EBV-associated malignancies, EBV LMP-2A associates with protein tyrosine kinases and, via this association, activates the PI 3-kinase (phosphatidylinositol 3-kinase) pathway, thereby preventing apoptosis. Through its ability to regulate PI 3-kinase signaling events, EBV LMP-2A provides growth and developmental survival signals to infected cells, thus facilitating EBV-induced tumorigenesis. Additionally, EBV LMP-2A can mimic B-cell receptor complex (BCR) signaling in BCR-negative cells, further implicating EBV LMP-2A as an important factor in the survival of mutated cells.

## REFERENCES

1. Fruehling, S., et al. 1996. Identification of latent membrane protein 2A (LMP2A) domains essential for the LMP2A dominant-negative effect on B-lymphocyte surface immunoglobulin signal transduction. *J. Virol.* 70: 6216-6226.
2. Wang, H., et al. 2006. EBV latent membrane protein 2A induces autoreactive B cell activation and TLR hypersensitivity. *J. Immunol.* 177: 2793-2802.
3. Mancao, C. and Hammerschmidt, W. 2007. Epstein-Barr virus latent membrane protein 2A is a B cell receptor mimic and essential for B cell survival. *Blood* 110: 3715-3721.
4. Rovedo, M. and Longnecker, R. 2007. Epstein-Barr virus latent membrane protein 2B (LMP2B) modulates LMP2A activity. *J. Virol.* 81: 84-94.
5. Fukuda, M. and Longnecker, R. 2007. Epstein-Barr virus latent membrane protein 2A mediates transformation through constitutive activation of the Ras/PI3-K/Akt pathway. *J. Virol.* 81: 9299-9306.
6. Gerle, B., et al. 2007. Acetylated Histone H3 and H4 mark the upregulated LMP2A promoter of Epstein-Barr virus in lymphoid cells. *J. Virol.* 81: 13242-13247.

## SOURCE

EBV LMP-2A (14B7) is a rat monoclonal antibody raised against bacterial TrpE-LMP2A fusion protein.

## PRODUCT

Each vial contains 200 µg IgG<sub>2a</sub> in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

EBV LMP-2A (14B7) is available conjugated Alexa Fluor® 594 (sc-101314 AF594, 200 µg/ml), for WB (RGB), IF, IHC(P) and FCM.

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA

## RESEARCH USE

For research use only, not for use in diagnostic procedures.

## APPLICATIONS

EBV LMP-2A (14B7) is recommended for detection of LMP-2A of EBV origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Molecular Weight of EBV LMP-2A: 54 kDa.

## SELECT PRODUCT CITATIONS

1. Higuchi, M., et al. 2001. Epstein-Barr virus latent-infection membrane proteins are palmitoylated and raft-associated: protein 1 binds to the cytoskeleton through TNF receptor cytoplasmic factors. *Proc. Natl. Acad. Sci. USA* 98: 4675-4680.
2. Watanabe, A., et al. 2010. Epstein-Barr virus-encoded Bcl-2 homologue functions as a survival factor in Wp-restricted Burkitt lymphoma cell line P3HR-1. *J. Virol.* 84: 2893-2901.
3. Kim, D., et al. 2017. Vandetanib and ADAM inhibitors synergistically attenuate the pathological migration of EBV-infected retinal pigment epithelial cells by regulating the VEGF-mediated MAPK pathway. *Exp. Ther. Med.* 13: 1415-1425.
4. Sun, L., et al. 2018. Constructing TC-1-GLUC-LMP2 model tumor cells to evaluate the anti-tumor effects of LMP2-related vaccines. *Viruses* 10: 145.
5. Duan, J., et al. 2019. F factor plasmid-mediated Epstein-Barr virus genome introduction establishes an EBV positive NPC cell model. *Cancer Manag. Res.* 11: 7377-7389.
6. Li, C., et al. 2020. EBNA2-deleted Epstein-Barr virus (EBV) isolate, P3HR1, causes Hodgkin-like lymphomas and diffuse large B cell lymphomas with type II and Wp-restricted latency types in humanized mice. *PLoS Pathog.* 16: e1008590.
7. Zhu, N., et al. 2021. EBV latent membrane proteins promote hybrid epithelial-mesenchymal and extreme mesenchymal states of nasopharyngeal carcinoma cells for tumorigenicity. *PLoS Pathog.* 17: e1009873.
8. Bristol, J.A., et al. 2022. Reduced IRF4 expression promotes lytic phenotype in Type 2 EBV-infected B cells. *PLoS Pathog.* 18: e1010453.
9. Singh, D.R., et al. 2022. Type 1 and Type 2 Epstein-Barr viruses induce proliferation, and inhibit differentiation, in infected telomerase-immortalized normal oral keratinocytes. *PLoS Pathog.* 18: e1010868.

## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.



See **EBV LMP-2A (15F9): sc-101315** for EBV LMP-2A antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.