SANTA CRUZ BIOTECHNOLOGY, INC.

Hep B Pol (2C8): sc-81590

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The Power to Question

BACKGROUND

The Hep B Pol (hepatitis B polymerase) protein is an enzyme that facilitates the transcription of the Hep B RNA genome into the dsDNA found within the forming viral capsids. Hep B Pol performs multiple functions, as it possesses the ability to copy both DNA and RNA templates as well as to excise the RNA strand from a DNA-RNA heteroduplex. Hep B Pol is encapsidated by a continuous core shell together with pregenomic (pg) RNA. It is here that reverse transcription is intitiated by the Hep B Pol protein binding to the ε loop of the pgRNA. The reaction is primed by the Hep B Pol protein covalently binding to a negative (-) sense DNA strand which is extended into a complete strand followed by synthesis of the positive + strand. The Hep B Pol protein is activated by HSP 70 and HSP 40 garnered from the host cell and can be inactivated by a variety of reverse transcriptase inhibitors. Hep B Pol contains a terminal protein domain (TP) which is specific to hepadnaviruses.

REFERENCES

1. Valenzuela, P., et al. 1979. Nucleotide sequence of the gene coding for the major protein of hepatitis B virus surface antigen. Nature 280: 815-819.
2. Lai, C.L. and Yuen, M.F. 2000. Profound suppression of hepatitis B virus replication with lamivudine. J. Med. Virol. 61: 367-373.
3. Hadziyannis, S.J. and Papatheodoridis, G.V. 2004. Adefovir dipivoxil in the treatment of chronic hepatitis B virus infection. Expert Rev. Anti Infect. Ther. 2: 475-483.
4. Langley, D.R., et al. 2007. Inhibition of hepatitis B virus polymerase by entecavir. J. Virol. 81: 3992-4001.

SOURCE

Hep B Pol (2C8) is a mouse monoclonal antibody raised against recombinant hepatitis B polymerase.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Hep B Pol (2C8) is available conjugated to agarose (sc-81590 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-81590 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-81590 PE), fluorescein (sc-81590 FITC), Alexa Fluor® 488 (sc-81590 AF488), Alexa Fluor® 546 (sc-81590 AF546), Alexa Fluor® 594 (sc-81590 AF594) or Alexa Fluor® 647 (sc-81590 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-81590 AF680) or Alexa Fluor® 790 (sc-81590 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

Hep B Pol (2C8) is recommended for detection of amino acids 8-20 corresponding to the terminal protein (TP) region of hepatitis B polymerase of hepatitis B 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 Hep B Pol: 95 kDa.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

SELECT PRODUCT CITATIONS

1. Huang, Y.H., et al. 2016. HBV polymerase overexpression due to large core gene deletion enhances hepatoma cell growth by binding inhibition of microRNA-100. Oncotarget 7: 9448-9461.
2. Priyambada, S.A., et al. 2018. St6gal1 knockdown alters HBV life cycle in HepAD38 cells. Biochem. Biophys. Res. Commun. 503: 1841-1847.
3. Hamada-Tsutsumi, S., et al. 2019. The antiviral effects of human microRNA miR-302c-3p against hepatitis B virus infection. Aliment. Pharmacol. Ther. 49: 1060-1070.
4. Hoogeveen, R.C., et al. 2019. Phenotype and function of HBV-specific T cells is determined by the targeted epitope in addition to the stage of infection. Gut 68: 893-904.
5. Ishii, T., et al. 2020. Analysis of HBV genomes integrated into the genomes of human hepatoma PLC/PRF/5 cells by HBV sequence capture-based next-generation sequencing. Genes 11: 661.
6. Chinnakannan, S.K., et al. 2020. The design and development of a multi-HBV antigen encoded in chimpanzee adenoviral and modified vaccinia ankara viral vectors; a novel therapeutic vaccine strategy against HBV. Vaccines 8: 184.
7. Kao, C.C., et al. 2022. Mechanism of action of hepatitis B virus S antigen transport-inhibiting oligonucleotide polymer, STOPS, molecules. Mol. Ther. Nucleic Acids 27: 335-348.
8. Zhang, J., et al. 2022. 5' preS1 mutations to prevent large envelope protein expression from hepatitis B virus genotype A or genotype D markedly increase polymerase-envelope fusion protein. J. Virol. 96: e0172321.
9. Zhang, X., et al. 2022. A polysaccharide from *Eupolyphaga sinensis* Walker with anti-HBV activities *in vitro* and *in vivo*. Front. Pharmacol. 13: 827128.

STORAGE

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

RESEARCH USE

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