SANTA CRUZ BIOTECHNOLOGY, INC.

DNA-PK$_{CS}$ (G-12): sc-390849

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The phosphatidylinositol kinase (PIK) family members fall into two distinct subgroups. The first subgroup contains proteins such as the PI 3- and PI 4-kinases and the second group comprises the PIK-related kinases. The PIK-related kinases include Atm, DNA-PK$_{CS}$ and FRAP. These proteins have in common a region of homology at their carboxy termini that is not present in the PI 3- and PI 4-kinases. The Atm gene is mutated in the autosomal recessive disorder ataxia telangiectasia (AT) that is characterized by cerebellar degeneration (ataxia) and the appearance of dilated blood vessels (telangiectases) in the conjunctivae of the eyes. AT cells are hypersensitive to ionizing radiation, impaired in mediating the inhibition of DNA synthesis and they display delays in p53 induction. DNA-PK is a heterotrimeric DNA binding enzyme that is composed of a large subunit, DNA-PK$_{CS}$, and two smaller subunits collectively known as Ku. The loss of DNA-PK leads to defects in DSB repair and V(D)J recombination. FRAP can autophosphorylate on serine and bind to rapamycin/FKBP. FRAP is also an upstream regulator of S6 kinase and has been implicated in the regulation of p27 and p21 expression.

CHROMOSOMAL LOCATION

Genetic locus: PRKDC (human) mapping to 8q11.21; Prkdc (mouse) mapping to 16 A2.

SOURCE

DNA-PK$_{CS}$ (G-12) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 4100-4128 at the C-terminus of DNA-PK$_{CS}$ of human origin.

PRODUCT

Each vial contains 200 µg IgG$_{2b}$ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

DNA-PK$_{CS}$ (G-12) is available conjugated to agarose (sc-390849 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-390849 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-390849 PE), fluorescein (sc-390849 FITC), Alexa Fluor® 488 (sc-390849 AF488), Alexa Fluor® 546 (sc-390849 AF546), Alexa Fluor® 594 (sc-390849 AF594) or Alexa Fluor® 647 (sc-390849 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-390849 AF680) or Alexa Fluor® 790 (sc-390849 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-390849 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

APPLICATIONS

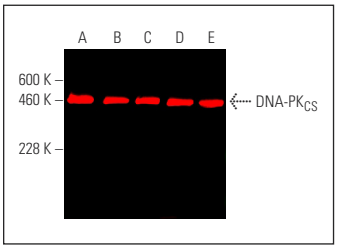
DNA-PK$_{CS}$ (G-12) is recommended for detection of DNA-PK$_{CS}$ of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for DNA-PK$_{CS}$ siRNA (h): sc-35200, DNA-PK$_{CS}$ siRNA (m): sc-35201, DNA-PK$_{CS}$ shRNA Plasmid (h): sc-35200-SH, DNA-PK$_{CS}$ shRNA Plasmid (m): sc-35201-SH, DNA-PK$_{CS}$ shRNA (h) Lentiviral Particles: sc-35200-V and DNA-PK$_{CS}$ shRNA (m) Lentiviral Particles: sc-35201-V.

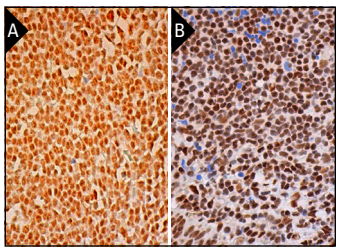
Molecular Weight of DNA-PK$_{CS}$: 460 kDa.

Positive Controls: K-562 whole cell lysate: sc-2203, MOLT-4 cell lysate: sc-2233 or HeLa whole cell lysate: sc-2200.

DATA



DNA-PK$_{CS}$ (G-12): sc-390849. Near-infrared western blot analysis of DNA-PK$_{CS}$ expression in K-562 (**A**), MOLT-4 (**B**), HeLa (**C**), U-698-M (**D**) and CCRF-CEM (**E**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgGκ BP-CFL 790: sc-516181.



DNA-PK$_{CS}$ (G-12): sc-390849. Immunoperoxidase staining of formalin fixed, paraffin-embedded human lymph node tissue showing nuclear staining of cells in germinal center and cells in non-germinal center (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human tonsil tissue showing nuclear staining of cells in non-germinal center and squamous epithelial cells (**B**).

SELECT PRODUCT CITATIONS

1. Liu, H., et al. 2018. Golgi phosphoprotein 3 (GOLPH3) promotes hepatocellular carcinoma progression by activating mTOR signaling pathway. BMC Cancer 18: 661.
2. Zhu, S., et al. 2020. Kinesin Kif2C in regulation of DNA double strand break dynamics and repair. Elife 9: e53402.
3. Yang, L., et al. 2021. Ddb1 is essential for the expansion of CD4^{+} helper T cells by regulating cell cycle progression and cell death. Front. Immunol. 12: 722273.
4. Bradbury, A., et al. 2022. The role of ATR inhibitors in ovarian cancer: investigating predictive biomarkers of response. Cells 11: 2361.
5. Niewolik, D., et al. 2022. Physical ARTEMIS:DNA-PK$_{cs}$ interaction is necessary for V(D)J recombination. Nucleic Acids Res. 50: 2096-2110.

RESEARCH USE

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