SANTA CRUZ BIOTECHNOLOGY, INC.

DNA-PK$_{CS}$ (E-6): sc-390698

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$_{CS}$ (E-6) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 3488-3511 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.

Blocking peptide available for competition studies, sc-390698 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

DNA-PK$_{CS}$ (E-6) 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.

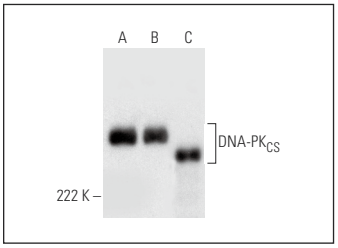
Molecular Weight of DNA-PK$_{CS}$: 460 kDa.

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

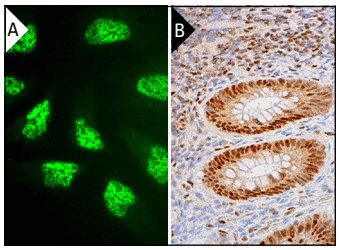
STORAGE

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

DATA



DNA-PK$_{CS}$ (E-6): sc-390698. Western blot analysis of DNA-PK$_{CS}$ expression in K-562 (**A**), MOLT-4 (**B**) and HeLa (**C**) whole cell lysates.



DNA-PK$_{CS}$ (E-6): sc-390698. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human appendix tissue showing nuclear staining of glandular cells and lymphoid cells (**B**).

SELECT PRODUCT CITATIONS

1. Alessio, N., et al. 2015. Low dose radiation induced senescence of human mesenchymal stromal cells and impaired the autophagy process. Oncotarget 6: 8155-8166.
2. Marampon, F., et al. 2016. Cyclin D1 silencing suppresses tumorigenicity, impairs DNA double strand break repair and thus radiosensitizes androgen-independent prostate cancer cells to DNA damage. Oncotarget 7: 5383-5400.
3. Marampon, F., et al. 2017. HDAC4 and HDAC6 sustain DNA double strand break repair and stem-like phenotype by promoting radioresistance in glioblastoma cells. Cancer Lett. 397: 1-11.
4. Alessio, N., et al. 2018. Stress and stem cells: adult Muse cells tolerate extensive genotoxic stimuli better than mesenchymal stromal cells. Oncotarget 9: 19328-19341.
5. Giannattasio, S., et al. 2019. Testosterone-mediated activation of androgenic signalling sustains *in vitro* the transformed and radioresistant phenotype of rhabdomyosarcoma cell lines. J. Endocrinol. Invest. 42: 183-197.
6. Ferrandon, S., et al. 2020. CoA synthase (COASY) mediates radiation resistance via PI3K signaling in rectal cancer. Cancer Res. 80: 334-346.
7. Codenotti, S., et al. 2021. Caveolin-1 promotes radioresistance in rhabdomyosarcoma through increased oxidative stress protection and DNA repair. Cancer Lett. 505: 1-12.

RESEARCH USE

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

CONJUGATES

See **DNA-PK$_{CS}$ (G-12): sc-390849** for DNA-PK$_{CS}$ antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.