SANTA CRUZ BIOTECHNOLOGY, INC.

DNA-PK$_{CS}$ (E-3): sc-390495

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-3) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 3493-3511 at the C-terminus of DNA-PK$_{CS}$ of human origin.

PRODUCT

Each vial contains 200 µg IgM 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-390495 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

DNA-PK$_{CS}$ (E-3) 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) 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.

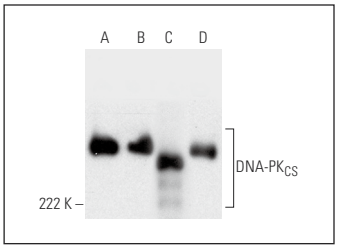
Molecular Weight of DNA-PK$_{CS}$: 460 kDa.

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

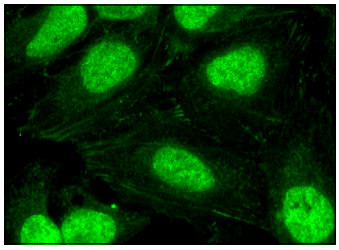
STORAGE

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-3): sc-390495. Western blot analysis of DNA-PK$_{CS}$ expression in K-562 (**A**), MOLT-4 (**B**), HeLa (**C**) and CCRF-CEM (**D**) whole cell lysates.



DNA-PK$_{CS}$ (E-3): sc-390495. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear localization.

SELECT PRODUCT CITATIONS

1. Marampon, F., et al. 2014. Close correlation between MEK/ERK and Aurora-B signaling pathways in sustaining tumorigenic potential and radioresistance of gynecological cancer cell lines. Int. J. Oncol. 44: 285-294.
2. Zhang, H., et al. 2016. Loss of H3K9me3 correlates with Atm activation and histone H2AX phosphorylation deficiencies in Hutchinson-Gilford progeria syndrome. PLoS ONE 11: e0167454.
3. Xiong, H., et al. 2017. Twist1 enhances hypoxia induced radioresistance in cervical cancer cells by promoting nuclear EGFR localization. J. Cancer 8: 345-353.
4. Chen, D., et al. 2020. Targeting the radiation-induced TR4 nuclear receptor-mediated QKI/circZEB1/miR-141-3p/ZEB1 signaling increases prostate cancer radiosensitivity. Cancer Lett. 495: 100-111.
5. Kim, A., et al. 2021. Ablation of USP21 in skeletal muscle promotes oxidative fibre phenotype, inhibiting obesity and type 2 diabetes. J. Cachexia Sarcopenia Muscle 12:1669-1689.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

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.