

# DNA-PK<sub>CS</sub> (6): sc-135886

## 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<sub>CS</sub> 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<sub>CS</sub>, 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.

## REFERENCES

- Nowak, R. 1995. Discovery of AT gene sparks biomedical research bonanza. *Science* 268: 1700-1701.
- Savitsky, K., et al. 1995. A single ataxia telangiectasia gene with a product similar to PI-3 kinase. *Science* 268: 1749-1753.
- Keith, C.T., et al. 1995. PIK-related kinases: DNA repair, recombination, and cell cycle checkpoints. *Science* 270: 50-51.
- Hartley, K.O., et al. 1995. DNA-dependent protein kinase catalytic subunit: a relative of phosphatidylinositol 3-kinase and the ataxia telangiectasia gene product. *Cell* 82: 849-856.
- Hunter, T. 1995. When is a lipid kinase not a lipid kinase? When it is a protein kinase. *Cell* 83: 1-4.
- Yan, Y.Q., et al. 2007. Induction of apoptosis and autophagic cell death by the vanillin derivative 6-bromine-5-hydroxy-4-methoxybenzaldehyde is accompanied by the cleavage of DNA-PK<sub>CS</sub> and rapid destruction of c-Myc oncoprotein in Hep G2 cells. *Cancer Lett.* 252: 280-289.
- Kuhfittig-Kulle, S., et al. 2007. The mutagenic potential of non-homologous end joining in the absence of the NHEJ core factors Ku70/80, DNA-PK<sub>CS</sub> and XRCC4-LigIV. *Mutagenesis* 22: 217-233.

## CHROMOSOMAL LOCATION

Genetic locus: PRKDC (human) mapping to 8q11.21.

## SOURCE

DNA-PK<sub>CS</sub> (6) is a mouse monoclonal antibody raised against amino acids 874-1024 of DNA-PK<sub>CS</sub> of human origin.

## PRODUCT

Each vial contains 50 µg IgG<sub>2a</sub> in 0.5 ml of PBS with < 0.1% sodium azide, 0.1% gelatin, 20% glycerol and 0.04% stabilizer protein.

## APPLICATIONS

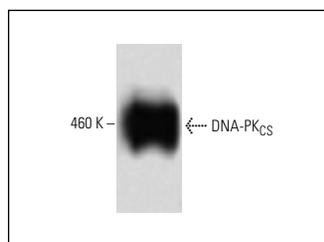
DNA-PK<sub>CS</sub> (6) is recommended for detection of DNA-PK<sub>CS</sub> of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for DNA-PK<sub>CS</sub> siRNA (h): sc-35200, DNA-PK<sub>CS</sub> shRNA Plasmid (h): sc-35200-SH and DNA-PK<sub>CS</sub> shRNA (h) Lentiviral Particles: sc-35200-V.

Molecular Weight of DNA-PK<sub>CS</sub>: 460 kDa.

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

## DATA



DNA-PK<sub>CS</sub> (6): sc-135886. Western blot analysis of DNA-PK<sub>CS</sub> expression in HeLa whole cell lysate.

## SELECT PRODUCT CITATIONS

- Damiani, E., et al. 2015. Platelet-activating factor induces epigenetic modifications in human mast cells. *J. Invest. Dermatol.* 135: 3034-3040.
- Chai, Z., et al. 2019. MicroRNA-101 modulates cisplatin chemoresistance in liver cancer cells via the DNA-PK<sub>CS</sub> signaling pathway. *Oncol. Lett.* 18: 3655-3663.
- Nam, J.K., et al. 2021. An antibody against L1 cell adhesion molecule inhibits cardiotoxicity by regulating persistent DNA damage. *Nat. Commun.* 12: 3279.

## 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. Not for resale.



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