SANTA CRUZ BIOTECHNOLOGY, INC.

# DNA-PK$_{CS}$ (G-4): sc-5282

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.

## SOURCE

DNA-PK$_{CS}$ (G-4) is a mouse monoclonal antibody raised against amino acids 2965-4127 of DNA-PK$_{CS}$ of human origin.

## 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.

DNA-PK$_{CS}$ (G-4) is available conjugated to agarose (sc-5282 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-5282 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-5282 PE), fluorescein (sc-5282 FITC), Alexa Fluor® 488 (sc-5282 AF488), Alexa Fluor® 546 (sc-5282 AF546), Alexa Fluor® 594 (sc-5282 AF594) or Alexa Fluor® 647 (sc-5282 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-5282 AF680) or Alexa Fluor® 790 (sc-5282 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA

## APPLICATIONS

DNA-PK$_{CS}$ (G-4) is recommended for detection of DNA-PK$_{CS}$ 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)], 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).

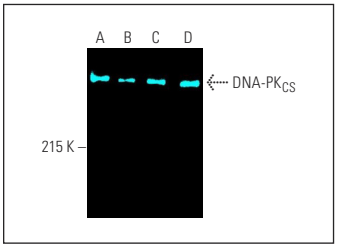
Suitable for use as control antibody for DNA-PK$_{CS}$ siRNA (h): sc-35200, DNA-PK$_{CS}$ shRNA Plasmid (h): sc-35200-SH and DNA-PK$_{CS}$ shRNA (h) Lentiviral Particles: sc-35200-V.

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

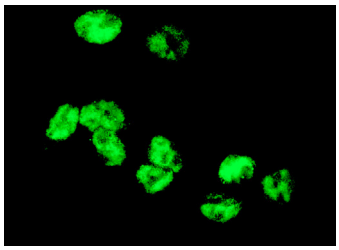
## STORAGE

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

## DATA




DNA-PK$_{CS}$ (G-4) Alexa Fluor® 647: sc-5282 AF647. Direct fluorescent western blot analysis of DNA-PK$_{CS}$ expression in HeLa nuclear extract (**A**) and MOLT-4 (**B**), HeLa (**C**) and K-562 (**D**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214.



DNA-PK$_{CS}$ (G-4): sc-5282. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear staining.

## SELECT PRODUCT CITATIONS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2. Ashraf, R., et al. 2017. Coumarin-chalcone hybrid instigates DNA damage by minor groove binding and stabilizes p53 through post translational modifications. Sci. Rep. 7: 45287.
3. He, H., et al. 2018. UHRF1 depletion sensitizes retinoblastoma cells to chemotherapeutic drugs via downregulation of XRCC4. Cell Death Dis. 9: 164.
4. Tripathi, V., et al. 2019. Abrogation of FBW7α-dependent p53 degradation enhances p53's function as a tumor suppressor. J. Biol. Chem. 294: 13224-13232.
5. Chien, J.C., et al. 2020. A multiplexed bioluminescent reporter for sensitive and non-invasive tracking of DNA double strand break repair dynamics *in vitro* and *in vivo*. Nucleic Acids Res. 48: e100.
6. Martinez-Pastor, B., et al. 2021. Assessing kinetics and recruitment of DNA repair factors using high content screens. Cell Rep. 37: 110176.
7. Cabello-Lobato, M.J., et al. 2022. Microarray screening reveals two non-conventional SUMO-binding modules linked to DNA repair by non-homologous end-joining. Nucleic Acids Res. 50: 4732-4754.
8. Liu, X., et al. 2023. ARIH1 activates STING-mediated T-cell activation and sensitizes tumors to immune checkpoint blockade. Nat. Commun. 14: 4066.
9. Justice, J.L., et al. 2024. DNA-PK and ATM drive phosphorylation signatures that antagonistically regulate cytokine responses to herpesvirus infection or DNA damage. Cell Syst. 15: 339-361.e8.


## RESEARCH USE

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