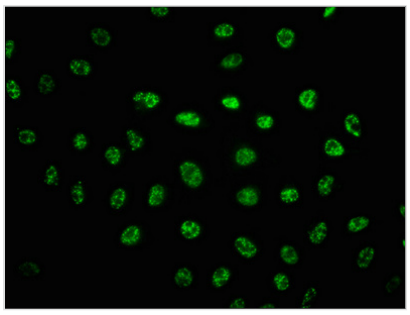
Phospho-PRKDC (S2056) Antibody

Product Code	CSB-RA018714A2056phHU
Abbreviation	DNA-dependent protein kinase catalytic subunit
Storage	Upon receipt, store at -20°C or -80°C. Avoid repeated freeze.
Uniprot No.	P78527
Immunogen	A synthesized peptide derived from Human Phospho-PRKDC (S2056)
Species Reactivity	Human
Tested Applications	ELISA, IF; Recommended dilution: IF:1:20-1:200
Relevance	Serine/threonine-protein kinase that acts as a molecular sensor for DNA damage. Involved in DNA non-homologous end joining (NHEJ) required for double-strand break (DSB) repair and V(D)J recombination. Must be bound to DNA to express its catalytic properties. Promotes processing of hairpin DNA structures in V(D)J recombination by activation of the hairpin endonuclease artemis (DCLRE1C). The assembly of the DNA-PK complex at DNA ends is also required for the NHEJ ligation step. Required to protect and align broken ends of DNA. May also act as a scaffold protein to aid the localization of DNA repair proteins to the site of damage. Found at the ends of chromosomes, suggesting a further role in the maintenance of telomeric stability and the prevention of chromosomal end fusion. Also involved in modulation of transcription. Recognizes the substrate consensus sequence [ST]-Q. Phosphorylates 'Ser-139' of histone variant H2AX/H2AFX, thereby regulating DNA damage response mechanism. Phosphorylates DCLRE1C, c-Abl/ABL1, histone H1, HSPCA, c-jun/JUN, p53/TP53, PARP1, POU2F1, DHX9, SRF, XRCC1, XRCC1, XRCC4, XRCC5, XRCC6, WRN, MYC and RFA2. Can phosphorylate C1D not only in the presence of linear DNA but also in the presence of supercoiled DNA. Ability to phosphorylate p53/TP53 in the presence of supercoiled DNA is dependent on C1D. Contributes to the determination of the circadian period length by antagonizing phosphorylation of CRY1 'Ser-588' and increasing CRY1 protein stability, most likely through an indirect mechanism. Interacts with CRY1 and CRY2; negatively regulates CRY1 phosphorylation. Plays a role in the regulation of DNA virus-mediated innate immune response by assembling into the HDP-RNP complex, a complex that serves as a platform for IRF3 phosphorylation and subsequent innate immune response activation through the cGAS-STING pathway.
Form	Liquid
Conjugate	Non-conjugated
Storage Buffer	Rabbit IgG in phosphate buffered saline , pH 7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol.
Purification Method	Affinity-chromatography
Isotype	Rabbit IgG
Clonality	Monoclonal

Alias	DNA-dependent protein kinase catalytic subunit, DNA-PK catalytic subunit, DNA-PKcs, DNPK1, p460, PRKDC, HYRC, HYRC1
Immunogen Species	Homo sapiens (Human)
Research Area	Epigenetics and Nuclear Signaling
Gene Names	PRKDC
Accession NO.	4A4

Image



Immunofluorescence staining of Hela cells(treated with UV) with CSB-RA018714A2056phHU at 1:100,counter-stained with DAPI. The cells were fixed in 4% formaldehyde, permeabilized using 0.2% Triton X-100 and blocked in 10% normal Goat Serum. The cells were then incubated with the antibody overnight at 4°C. The secondary antibody was Alexa Fluor 488-congugated AffiniPure Goat Anti-Rabbit IgG (H+L).

Description

CUSABIO cloned PRKDC antibody-coding genes into plasma vectors and then transfected these vector clones into mammalian cells using a lipid-based transfection reagent. Following transient expression, the recombinant antibodies against PRKDC were harvested and characterized. The recombinant PRKDC antibody was purified by affinity-chromatography from the culture medium. It can be used to detect PRKDC protein from Human in the ELISA, IF.

Protein kinase, DNA-activated, catalytic polypeptide (PRKDC) encodes a 465 kDa catalytic subunit of DNA-dependent protein kinase that plays a pivotal role in the maintenance of genomic stability and is a critical component of DNA double-strand break repair and recombination. DNA repair genes may serve as potential biomarkers of malignancies or therapeutic targets. Additional analysis showed that a PRKDC mutation was significantly associated with a high mutation load in cervical cancer, colon adenocarcinoma, head and neck squamous cell carcinoma, lung adenocarcinoma, gastric adenocarcinoma and endometrial cancer. Patients with gastric cancer or colon cancer harboring PRKDC mutations were also highly associated with MSI-high status. Loss of PRKDC expression is associated with impaired DNA repair. A loss-of-function PRKDC mutation or DNA-PK inhibitor can enhance the efficacy of immune therapy.