10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.622.0609

DNA PK (PRKDC) Antibody (N-term) Blocking peptide

Synthetic peptide
Catalog # BP7053a

Specification

DNA PK (PRKDC) Antibody (N-term) Blocking peptide - Product Information

Primary Accession P78527

DNA PK (PRKDC) Antibody (N-term) Blocking peptide - Additional Information

Gene ID 5591

Other Names
DNA-dependent protein kinase catalytic subunit, DNA-PK catalytic subunit, DNA-PKcs, DNPK1, p460, PRKDC, HYRC, HYRC1

Target/Specificity
The synthetic peptide sequence used to generate the antibody AP7053a was selected from the N-term region of human PRKDC . A 10 to 100 fold molar excess to antibody is recommended. Precise conditions should be optimized for a particular assay.

Format
Peptides are lyophilized in a solid powder format. Peptides can be reconstituted in solution using the appropriate buffer as needed.

Storage
Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C.

Precautions
This product is for research use only. Not for use in diagnostic or therapeutic procedures.

DNA PK (PRKDC) Antibody (N-term) Blocking peptide - Protein Information

Name PRKDC

DNA PK (PRKDC) Antibody (N-term) Blocking peptide - Background

The PRKDC gene encodes the catalytic subunit of a nuclear DNA-dependent serine/threonine protein kinase (DNA-PK). The second component is the autoimmune antigen Ku (MIM 152690), which is encoded by the G22P1 gene on chromosome 22q. On its own, the catalytic subunit of DNA-PK is inactive and relies on the G22P1 component to direct it to the DNA and trigger its kinase activity; PRKDC must be bound to DNA to express its catalytic properties.[supplied by OMIM]

DNA PK (PRKDC) Antibody (N-term) Blocking peptide - References

Goudelock, D.M., et al., J. Biol. Chem. 278(32):29940-29947 (2003).Ding, Q., et al., Mol. Cell. Biol. 23(16):5836-5848 (2003).Lucero, H., et al., J. Biol. Chem. 278(24):22136-22143 (2003).Calsou, P., et al., J. Mol. Biol. 326(1):93-103 (2003).Karpova, A.Y., et al., Proc. Natl. Acad. Sci. U.S.A. 99(5):2818-2823 (2002).

Synonyms HYRC, HYRC1

Function
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 (PubMed:11955432, PubMed:12649176, PubMed:14734805). 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) (PubMed:11955432). The assembly of the DNA-PK complex at DNA ends is also required for the NHEJ ligation step (PubMed:15574326, PubMed:11955432, PubMed:12649176, PubMed:14734805). Required to protect and align broken ends of DNA (PubMed:15574326, PubMed:11955432, PubMed:12649176, PubMed:14734805). May also act as a scaffold protein to aid the localization of DNA repair proteins to the site of damage (PubMed:15574326, PubMed:<a href="http://www.uniprot.org/ci

tations/11955432"
target="_blank">11955432,
PubMed:<a href="http://www.uniprot.org/ci
tations/12649176"
target="_blank">12649176,
PubMed:<a href="http://www.uniprot.org/ci
tations/14734805"
target="_blank">14734805). 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 (PubMed:<a href="http://www.
uniprot.org/citations/15574326"
target="_blank">15574326,
PubMed:<a href="http://www.uniprot.org/ci
tations/11955432"
target="_blank">11955432,
PubMed:<a href="http://www.uniprot.org/ci
tations/12649176"
target="_blank">12649176,
PubMed:<a href="http://www.uniprot.org/ci
tations/14734805"
target="_blank">14734805). As part
of the DNA-PK complex, involved in the
early steps of ribosome assembly by
promoting the processing of precursor rRNA
into mature 18S rRNA in the small-subunit
processome (PubMed:<a href="http://www.
uniprot.org/citations/32103174"
target="_blank">32103174). Binding
to U3 small nucleolar RNA, recruits PRKDC
and XRCC5/Ku86 to the small-subunit
processome (PubMed:<a href="http://www.
uniprot.org/citations/32103174"
target="_blank">32103174).
Recognizes the substrate consensus
sequence [ST]-Q (PubMed:<a href="http://w
ww.uniprot.org/citations/15574326"
target="_blank">15574326,
PubMed:<a href="http://www.uniprot.org/ci
tations/11955432"
target="_blank">11955432,
PubMed:<a href="http://www.uniprot.org/ci
tations/12649176"
target="_blank">12649176,
PubMed:<a href="http://www.uniprot.org/ci
tations/14734805"
target="_blank">14734805).
Phosphorylates 'Ser-139' of histone variant
H2AX, thereby regulating DNA damage
response mechanism (PubMed:<a href="htt
p://www.uniprot.org/citations/14627815"
target="_blank">14627815,
PubMed:<a href="http://www.uniprot.org/ci
tations/16046194"
target="_blank">16046194).

Phosphorylates DCLRE1C, c-Abl/ABL1, histone H1, HSPCA, c-jun/JUN, p53/TP53, PARP1, POU2F1, DHX9, FH, SRF, XRCC1, XRCC1, XRCC4, XRCC5, XRCC6, WRN, MYC and RFA2 (PubMed:2507541, PubMed:2247066, PubMed:1597196, PubMed:8407951, PubMed:8464713, PubMed:9362500, PubMed:9139719, PubMed:10026262, PubMed:10467406, PubMed:12509254, PubMed:11889123, PubMed:14612514, PubMed:14704337, PubMed:16397295, PubMed:26237645, PubMed:28712728). Can phosphorylate C1D not only in the presence of linear DNA but also in the presence of supercoiled DNA (PubMed:9679063). Ability to

phosphorylate p53/TP53 in the presence of supercoiled DNA is dependent on C1D (PubMed:9363941). 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 (By similarity). 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 (PubMed:28712728).

Cellular Location
Nucleus. Nucleus, nucleolus

DNA PK (PRKDC) Antibody (N-term) Blocking peptide - Protocols

Provided below are standard protocols that you may find useful for product applications.

- Blocking Peptides