abcam

ab92450

Anti-Ku70 antibody [EPR4027]

Recombinant | RabMAb | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR4027
Purification technique	Affinity purification Protein A
Concentration	0.112 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/100 - 1/250
Notes	Antigen retrieval and the use of an HRP/AP polymerized secondary antibody is recommended for enhanced staining.

IP

Tested

Species	Human
Dilution info	1/20
Notes	-

WB

Tested

Species	Human
Dilution info	1/1000 - 1/10000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100 - 1/250
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/10 - 1/100
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Target data

See full target information XRCC6

Function	DNA-binding protein critical for the DNA damage response, specifically in repairing double-strand breaks (DSBs) via the classical non-homologous end joining (NHEJ)

pathway. It forms a heterodimer with XRCC5 (Ku80), creating the Ku70:Ku80 heterodimer (Ku complex), which serves as a DNA end-binding complex. It primarily binds DSBs and recruits essential repair factors, assembling the core long-range NHEJ complex to facilitate the alignment and ligation of broken DNA ends (PubMed:11493912, PubMed:20493174, PubMed:33854234, PubMed:34352203, PubMed:9742108). This pathway ensures the rapid repair of cytotoxic and mutagenic DSBs and contributes to the generation of diversity in T-cell receptors and antibodies through mechanisms such as V(D)J recombination (PubMed:9742108). Likely acts as a 5'-deoxyribose-5-phosphate lyase (5'-dRP lyase), catalyzing the beta-elimination of the 5'-deoxyribose-5-phosphate at abasic sites near DSBs. This activity cleans the termini of abasic sites, a common form of nucleotide damage, preparing broken ends for ligation (PubMed:20383123). It may also possess 3'-5' DNA helicase activity, although this has not been confirmed in vivo, and its physiological significance remains unclear (PubMed:7957065). Beyond DNA repair, the protein contributes to telomere maintenance (PubMed:29490055). It is also implicated in transcriptional regulation, acting as a cofactor for various transcription factors (PubMed:12145306, PubMed:8621488). It 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). Can also bind RNAs and recruits PRKDC to a wide range of cellular RNAs, including the U3 small nucleolar RNA, playing a role in the biogenesis of ribosomal RNAs (PubMed:32103174). Additionally, it negatively regulates apoptosis by interacting with BAX, sequestering it from the mitochondria, and may possess deubiquitination activity targeting BAX (PubMed:15023334, PubMed:18362350, PubMed:35545041).

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Stable for 12 months at -20°C

Notes

Species reactivity
Mouse, Rat: We have preliminary internal testing data to indicate this antibody may not react with these species. Please contact us for more information.

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Ku70 also known as XRCC6 or K331 is a DNA repair protein with a molecular mass of approximately 70 kDa. It belongs to the Ku protein family which includes Ku80. This protein expresses mainly in the nucleus of cells across various tissue types. As a part of a heterodimer together with Ku80 Ku70 forms the Ku70/Ku80 complex which binds to free DNA ends allowing DNA repair processes to occur efficiently.
Biological function summary	The Ku70 protein plays a significant role in maintaining genomic stability. It is an important component of the non-homologous end joining (NHEJ) pathway a primary mechanism for repairing double-strand breaks in DNA. By forming the Ku70/Ku80 complex it accurately aligns DNA ends to facilitate repair and prevent chromosomal abnormalities. The Ku70 protein also involves in telomere maintenance and can influence cell cycle regulation.
Pathways	Ku70 contributes mainly to the NHEJ DNA repair pathway. This pathway is important for cellular response to DNA damage and involves other proteins such as DNA-PKcs (DNA-dependent protein kinase catalytic subunit) and XRCC4. Ku70's interaction with DNA-PKcs enables the activation of its kinase activity which is essential for the repair process. Additionally Ku70 is involved in the homologous recombination pathway where it interacts with proteins like Rad51 to ensure repair fidelity.
Associated diseases and disorders	Research links the Ku70 protein to cancer and neurodegenerative diseases. Dysregulation or mutations affecting Ku70 can lead to genomic instability contributing to cancer development. Ku70 also shows connections to neurodegenerative conditions like Alzheimer's disease where its role in DNA repair and apoptosis regulation may impact neuronal cell survival. Interactions with p53 a protein important for DNA damage response further underline Ku70's influence in these disease contexts.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

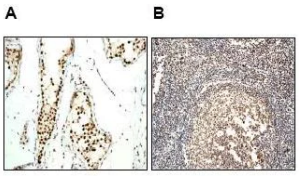
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

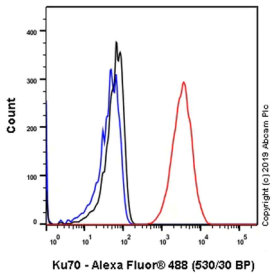
Full details and terms and conditions can be found here:
Terms & Conditions.

10 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Ku70 antibody [EPR4027] (ab92450)

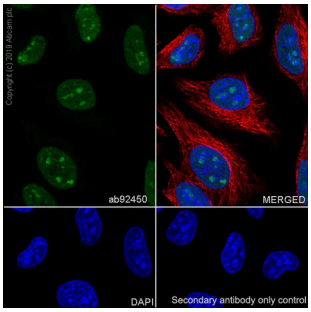
Paraffin embedded Human testis tissue (A) or Human tonsil tissue (B) were labelled with unpurified ab92450 at 1/100 dilution.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Flow Cytometry (Intracellular) - Anti-Ku70 antibody [EPR4027] (ab92450)

Ku70 Flow Cytometry (Intracellular) staining using rabbit Anti-Ku70 antibody

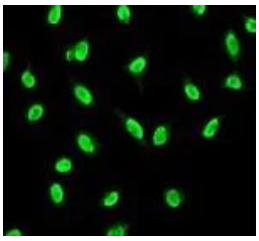
Intracellular Flow Cytometry analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labeling Ku70 with purified ab92450 at 1/20 dilution (5µg/ml) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluorr® 488, ab150077) secondary antibody was used at 1/2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabeled control - Cell without incubation with primary antibody and secondary antibody (Blue).



Immunocytochemistry/ Immunofluorescence - Anti-Ku70 antibody [EPR4027] (ab92450)

Ku70 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Ku70 antibody

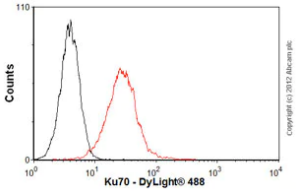
Immunocytochemistry/ Immunofluorescence analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labeling Ku70 with purified ab92450 at 1/250 dilution (0.46 µg/ml). Cells were fixed in 100% Methanol and permeabilized with None. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1/200 (2.5 µg/ml). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1/1000 (2 µg/ml) dilution. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.



Immunocytochemistry/ Immunofluorescence - Anti-Ku70 antibody [EPR4027] (ab92450)

Ku70 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Ku70 antibody

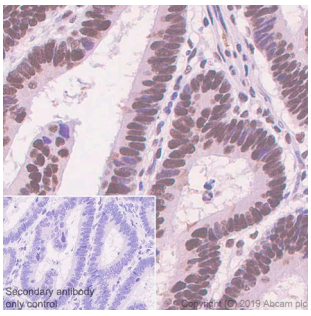
Immunofluorescence staining of HeLa cells using unpurified ab92450 at 1/100 dilution.



Flow Cytometry (Intracellular) - Anti-Ku70 antibody [EPR4027] (ab92450)

Ku70 Flow Cytometry (Intracellular) staining using rabbit Anti-Ku70 antibody

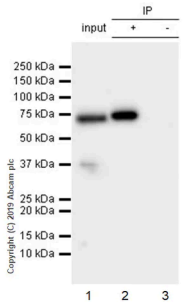
Overlay histogram showing HeLa cells stained with unpurified ab92450 (red line). The cells were fixed with 4% paraformaldehyde (10 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab92450, 1/100 dilution) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-rabbit IgG (H+L) (ab96899) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit IgG (monoclonal) (1µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a positive signal in HeLa cells fixed with 80% methanol (5 min)/permeabilized with 0.1% PBS-Tween for 20 min used under the same conditions.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Ku70 antibody [EPR4027] (ab92450)

Ku70 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Ku70 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human colon carcinoma tissue sections labeling Ku70 with purified ab92450 at 1/250 dilution (0.46 µg/ml). Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 1 (pH 6.0). Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) was used as the secondary antibody.
Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Immunoprecipitation - Anti-Ku70 antibody [EPR4027] (ab92450)

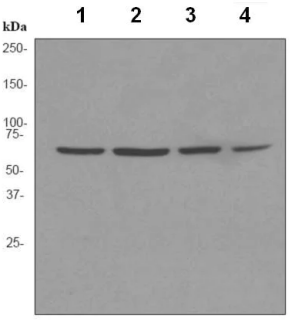
ab92450 (purified) at 1/20 dilution (0.5ug) immunoprecipitating Ku70 in HeLa whole cell lysate.
Lane 1 (input): HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate 10ug
Lane 2 (+): ab92450 & HeLa whole cell lysate
Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab92450 in HeLa whole cell lysate

For western blotting, VeriBlot for IP Detection Reagent (HRP) (ab131366) was used at 1/1000 dilution.

Blocking and diluting buffer: 5% NFDM/TBST.

All lanes:
Immunoprecipitation - Anti-Ku70 antibody [EPR4027] (ab92450)

Predicted band size: 70 kDa



Western blot - Anti-Ku70 antibody [EPR4027] (ab92450)

All lanes:
Western blot - Anti-Ku70 antibody [EPR4027] (ab92450) at 1/1000 dilution

Lane 1:
HeLa cell lysate at 10 µg

Lane 2:
293T cell lysate at 10 µg

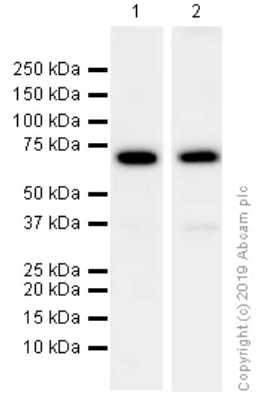
Lane 3:
A549 cell lysate at 10 µg

Lane 4:
A431 cell lysate at 10 µg

Secondary

All lanes:
HRP labelled goat anti-rabbit at 1/2000 dilution

Predicted band size: 70 kDa



Western blot - Anti-Ku70 antibody [EPR4027] (ab92450)

All lanes:
Western blot - Anti-Ku70 antibody [EPR4027] (ab92450) at 1/5000 dilution

Lane 1:
A549 (Human lung carcinoma epithelial cell) whole cell lysates at 15 µg

Lane 2:
HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysates at 15 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 70 kDa

Observed band size: 70 kDa

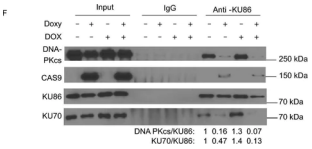


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Western blot - Anti-Ku70 antibody [EPR4027] (ab92450)

Ku70 Western blot staining using rabbit Anti-Ku70 antibody

Ku70 western blot using anti-Ku70 antibody [EPR4027] ab92450. Publication image and figure legend from Xu, S., Kim, J., et al., 2020, Protein Cell, PubMed 32170574.

ab92450 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab92450 please see the product overview.

CAS9 interacts with KU86 and disrupts the formation of DNA-PK. (A and B) Reciprocal immunoprecipitation shows the interaction between CAS9 and KU86. Protein extracts from hESCs expressing CAS9 were immunoprecipitated with anti-KU86 (A) or anti-CAS9 (B), and immune precipitates were analyzed for the presence of KU86 and CAS9. (C) The interaction between CAS9 and KU86 was confirmed by the proximity ligation analysis (PLA). Cell nucleus were revealed by DAPI (Blue) staining and the CAS9-KU86 interaction indicated by red color. Scale bar, 25 μm. Unpaired t test. n = 20. Data are presented as mean value ± SD. ***p < 0.001. (D) Mapping the domain of CAS9 involved in the interaction with KU86. The Flag-tagged deletional mutants of CAS9 expressed in 293FT cells were immunoprecipitated with anti-flag antibody. Immune precipitates were analyzed for the presence of CAS9 mutants and KU86. (E) The expression of the PAM domain (1100) of CAS9 disrupted the interaction between CAS9 and KU86. The levels of CAS9, KU86, PAM in the input and immunoprecipitate were analyzed by Western blot. The ratio of CAS9 versus KU86 in the immunoprecipitate is shown at the bottom. (F) CAS9 disrupts the formation of DNA-PK complex. Protein extracts of cells in the presence and absence of CAS9 and DOX treatment were immunoprecipitated with anti-KU86 antibody. The levels of KU70, DNA-PKcs and CAS9 in the immunoprecipitate were analyzed. The relative ratios of DNA-PKcs versus KU86 or KU70 versus KU86 are indicated

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