abcam

ab247495

Anti-Ku80 antibody [EPR3467] - BSA and Azide free

Recombinant | RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR3467
Purification technique	Affinity purification Protein A
Specificity	The immunogen for this antibody has 78.6% homology with mouse and rat ku80, therefore we do not guarantee reactivity in these species.
Concentration	1.022 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human

Dilution info	-
Notes	-

IP

Not recommended

Species	Human
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	-

Target data

See full target information XRCC5

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 XRCC6 (Ku70), 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:33854234, PubMed:34352203). 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).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

ab247495 is the carrier-free version of ab79391.

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.

Conjugation ready

Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide

and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility
This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

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

Activity summary	The Ku80 protein also known as Ku p70 Ku antigen p70 and by gene identifiers such as Ku80 hum39 and 5c5 functions critically in DNA repair processes. With a molecular mass of approximately 80 kDa Ku80 is ubiquitously expressed in mammalian cells. It is an important component of the Ku heterodimer working with its partner Ku70 to detect and bind DNA double-strand breaks (DSBs). This action initiates repair by aligning with DNA ends to prevent break processing and sustain genome integrity.
Biological function summary	The Ku80 protein executes an important role in maintaining cellular stability by participating in the non-homologous end joining (NHEJ) pathway. Ku80 forms a complex with DNA-PKcs (DNA-dependent protein kinase catalytic subunit) which activates the kinase to phosphorylate itself and other proteins facilitating the repair of DSBs. Its expression is significant in tissues that undergo high rates of cellular turnover and are experienced with DNA damage where the DNA repair mechanisms are important for regular cell cycle progression.
Pathways	DNA repair and V(D)J recombination are principal domains where Ku80 shows its influence. In the context of DNA repair Ku80's partnership with DNA-PKcs as part of the NHEJ repair pathway is fundamental in fixing DNA damage from environmental insults or normal cellular metabolism. In the immune development process through V(D)J recombination Ku80 partners with other proteins like the Artemis complex to perform programmed DNA rearrangements required for the diversity of immune receptors.
Associated diseases and disorders	Ku80 has a significant relation to cancer and immune deficiencies. Defects in Ku80 function can lead to increased sensitivity to ionizing radiation and a higher propensity for cancer development because of impaired DNA repair capabilities. Moreover in immune-related disorders inadequate Ku80 performance affects the maturation of lymphocytes leading to immune system malfunction. Its malfunctioning connection with proteins like DNA-PKcs and Artemis highlights its critical roles in both tumor suppression and immune system competence.

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

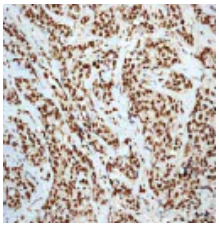
We do not recommend this combination. It is not covered by our product promise.

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.

3 product images

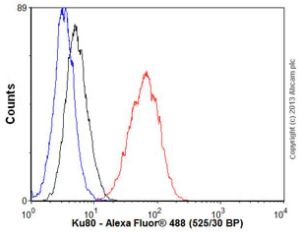


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Ku80 antibody [EPR3467] - BSA and Azide free (ab247495)

Ku80 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Ku80 antibody

This data was developed using ab79391, the same antibody clone in a different buffer formulation. ab79391 at 1/250 dilution staining Ku80 in human breast carcinoma by Immunohistochemistry, Paraffin-embedded tissue.

Perform heat mediated antigen retrieval before commencing with IHC staining protocol.

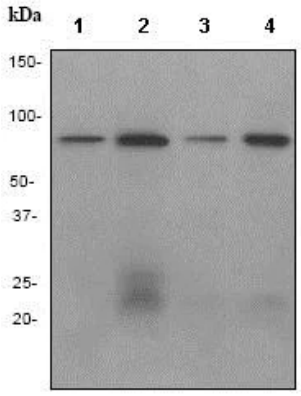


Flow Cytometry (Intracellular) - Anti-Ku80 antibody [EPR3467] - BSA and Azide free (ab247495)

Ku80 Flow Cytometry (Intracellular) staining using rabbit Anti-Ku80 antibody

This data was developed using ab79391, the same antibody clone in a different buffer formulation. Overlay histogram showing HeLa cells stained with ab79391 (red line). The cells were fixed with 80% methanol (5 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 (ab79391, 1/100 dilution) for 30 min at 22°C. The secondary antibody used was Alexa Fluor® 488 goat anti-rabbit IgG (H+L) (ab150077) at 1/2000 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. Unlabelled sample (blue line) was also used as a control. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter.



Western blot - Anti-Ku80 antibody [EPR3467] - BSA and Azide free (ab247495)

Ku80 Western blot staining using rabbit Anti-Ku80 antibody

This data was developed using ab79391, the same antibody clone in a different buffer formulation.
All lanes:
Western blot - Anti-Ku80 antibody [EPR3467] (ab79391) at 1/2000 dilution

Lane 1:
A549 cell lysate, treated with FBS at 10 µg

Lane 2:
HeLa cell lysate at 10 µg

Lane 3:
U937 (Human histiocytic lymphoma cell line) cell lysate at 10 µg

Lane 4:
HepG2 cell lysate at 10 µg

Secondary

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

Predicted band size: 83 kDa

Observed band size: 83 kDa

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.