abcam

ab201963

Anti-Ku70 antibody [7A9E7]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.05% Sodium azide Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Fragment Protein within Human XRCC6 aa 1-250. The exact immunogen used to generate this antibody is proprietary information. Database link P12956
Clone number	7A9E7
Purification technique	Affinity purification Protein G
Purification notes	Purified from tissue culture supernatant.

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	1/200 - 1/400
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

WB

Tested

Species	Human
Dilution info	1/500 - 1/2000
Notes	-

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	Blue Ice
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	Avoid freeze / thaw cycle

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.

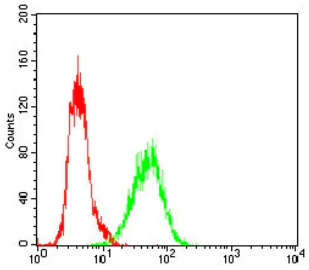
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Terms & Conditions.

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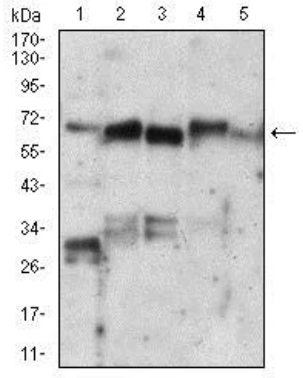
4 product images



Flow Cytometry - Anti-Ku70 antibody [7A9E7] (ab201963)

Ku70 Flow Cytometry staining using mouse Anti-Ku70 antibody

Flow cytometric analysis of A431 cells labeling Ku70 with ab201963 at 1/200 dilution (green). Negative control (red).



Western blot - Anti-Ku70 antibody [7A9E7] (ab201963)

All lanes:
Western blot - Anti-Ku70 antibody [7A9E7] (ab201963) at 1/500 dilution

Lane 1:
PC2 cell lysate

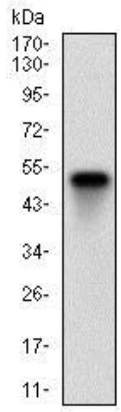
Lane 2:
A549 cell lysate

Lane 3:
A431 cell lysate

Lane 4:
HepG2 cell lysate

Lane 5:
K562 cell lysate

Predicted band size: 70 kDa

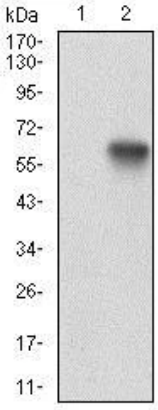


Western blot - Anti-Ku70 antibody [7A9E7] (ab201963)

(Expected MW is 49.7 kDa)
All lanes:
Western blot - Anti-Ku70 antibody [7A9E7] (ab201963) at 1/500 dilution

All lanes:
Human recombinant Ku70 (aa6-214) protein

Predicted band size: 70 kDa



Western blot - Anti-Ku70 antibody [7A9E7] (ab201963)

All lanes:
Western blot - Anti-Ku70 antibody [7A9E7] (ab201963) at 1/500 dilution

Lane 1:
HEK293 cell lysate

Lane 2:
Human recombinant Ku70 (aa6-214)-hIgGFc transfected HEK293 cell lysate

Predicted band size: 70 kDa

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