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Ku70 Antibody

Purified Mouse Monoclonal Antibody (Mab)
Catalog # AP52823

Product Information

Application	WB, ICC
Primary Accession	P12956
Reactivity	Human
Host	Mouse
Clonality	Monoclonal
Isotype	IgG2b
Calculated MW	69843

Additional Information

Gene ID	2547
Other Names	5''-deoxyribose-5-phosphate lyase Ku70;5''-dRP lyase Ku70;70 kDa subunit of Ku antigen;ATP dependent DNA helicase 2 subunit 1;ATP dependent DNA helicase II 70 kDa subunit;ATP-dependent DNA helicase 2 subunit 1;ATP-dependent DNA helicase II 70 kDa subunit;CTC box binding factor 75 kDa subunit;CTC box-binding factor 75 kDa subunit;CTC75;CTCBF;CTCBF;DNA repair protein XRCC6;G22P1;Ku 70;Ku autoantigen 70kDa;Ku autoantigen p70 subunit;Ku autoantigen, 70kDa;Ku p70;Ku70;Ku70 DNA binding component of DNA-dependent proteinkinase complex (thyroid autoantigen 70 kDa;Kup70;Lupus Ku autoantigen protein p70;ML8;Thyroid autoantigen 70kD (Ku antigen);Thyroid autoantigen;Thyroid lupus autoantigen;Thyroid lupus autoantigen;Thyroid lupus autoantigen p70;Thyroid-lupus autoantigen;TLAA;TLAA;X ray repair complementing defective repair in Chinese hamster cells 6;X-ray repair complementing defective repair in Chinese hamster cells 6;X-ray repair cross-complementing protein 6;XRCC 6;XRCC6;XRCC6_HUMAN.
Dilution	WB~~1:1000 ICC~~1:200
Format	Liquid in PBS containing 50% glycerol, 0.5% BSA and 0.02% sodium azide, pH 7.3.
Storage	Store at 4°C short term. Aliquot and store at -20°C long term. Avoid freeze/thaw cycles.

Protein Information

Name	XRCC6 (HGNC:4055)
Synonyms	G22P1

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).
Cellular Location	Nucleus. Chromosome. Cytoplasm. Note=When trimethylated, localizes in the cytoplasm.

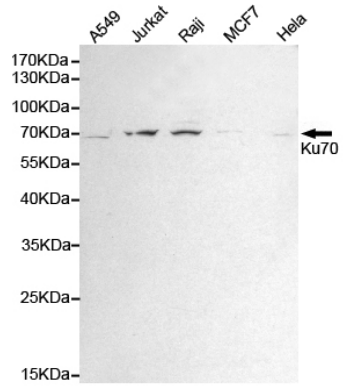
Background

Single-stranded DNA-dependent ATP-dependent helicase. Has a role in chromosome translocation. The DNA helicase II complex binds preferentially to fork-like ends of double-stranded DNA in a cell cycle-dependent manner. It works in the 3'-5' direction. Binding to DNA may be mediated by XRCC6. Involved in DNA non-homologous end joining (NHEJ) required for double-strand break repair and V(D)J recombination. The XRCC5/6 dimer acts as regulatory subunit of the DNA-dependent protein kinase complex DNA-PK by increasing the affinity of the catalytic subunit PRKDC to DNA by 100-fold. The XRCC5/6 dimer is probably involved in stabilizing broken DNA ends and bringing them together. The assembly of the DNA-PK complex to DNA ends is required for the NHEJ ligation step. Required for osteocalcin gene expression. Probably also acts as a 5'-deoxyribose-5-phosphate lyase (5'-dRP lyase), by catalyzing the beta-elimination of the 5' deoxyribose- 5-phosphate at an abasic site near double-strand breaks. 5'-dRP lyase activity allows to 'clean' the termini of abasic sites, a class of nucleotide damage commonly associated with strand breaks, before such broken ends can be joined. The XRCC5/6 dimer together with APEX1 acts as a negative regulator of transcription.

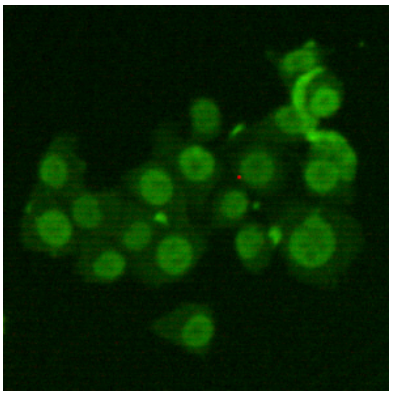
References

Chan J.Y.,et al.J. Biol. Chem. 264:3651-3654(1989).
Reeves W.H.,et al.J. Biol. Chem. 264:5047-5052(1989).
Griffith A.J.,et al.Mol. Biol. Rep. 16:91-97(1992).
Ota T.,et al.Nat. Genet. 36:40-45(2004).
Halleck A.,et al.Submitted (JUN-2004) to the EMBL/GenBank/DDBJ databases.

Images



Western blot detection of Ku70 in Hela,A549,MCF7,Jurkat and Raji cell lysates using Ku70 mouse mAb (1:1000 diluted).Predicted band size:70KDa.Observed band size:70KDa.



Immunocytochemistry staining of HeLa cells fixed with 4% Paraformaldehyde and using Ku70 mouse mAb (dilution 1:200).