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Ku80 Antibody

Purified Mouse Monoclonal Antibody (Mab)
Catalog # AP52826

Product Information

Application	WB, ICC, IP
Primary Accession	P13010
Reactivity	Human
Host	Mouse
Clonality	Monoclonal
Isotype	IgG1
Calculated MW	82705

Additional Information

Gene ID	7520
Other Names	ATP dependent DNA helicase II 80 kDa subunit; ATP dependent DNA helicase II 86 Kd subunit; ATP dependent DNA helicase II; ATP-dependent DNA helicase 2 subunit 2; ATP-dependent DNA helicase II 80 kDa subunit; CTC box binding factor 85 kDa; CTC box-binding factor 85 kDa subunit; CTC85; CTCBF; DNA repair protein XRCC5; Double strand break rejoining; FLJ39089; G22P2; KARP 1; KARP1; Ku 80; Ku autoantigen 80kDa; Ku80; Ku86; Ku86 autoantigen related protein 1; KUB 2; KUB2; Lupus Ku autoantigen protein p86; NFIV; Nuclear factor IV; Thyroid lupus autoantigen; Thyroid-lupus autoantigen; TLAA; X ray repair complementing defective repair in Chinese hamster cells 5 (double strand break rejoining); X-ray repair complementing defective repair in Chinese hamster cells 5 (double-strand-break rejoining); X-ray repair cross-complementing protein 5; Xray repair complementing defective repair in Chinese hamster cells 5; XRCC 5; XRCC5; XRCC5_HUMAN.
Dilution	WB~~1:1000 ICC~~1:400 IP~~1:500
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	XRCC5 (HGNC:12833)
Synonyms	G22P2
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).

Cellular Location Nucleus. Nucleus, nucleolus Chromosome

Background

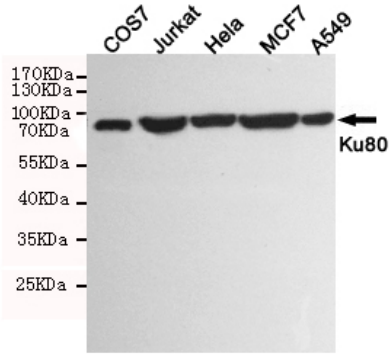
Single-stranded DNA-dependent ATP-dependent helicase. Has a role in chromosome translocation. The DNA helicase II complex binds preferentially to fork-like ends of double-stranded DNA in a cell cycle-dependent manner. It works in the 3'-5' direction. Binding to DNA may be mediated by XRCC6. Involved 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. In association with NAA15, the XRCC5/6 dimer binds to the osteocalcin promoter and activates osteocalcin expression. The XRCC5/6 dimer 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. XRCC5 probably acts as the catalytic subunit of 5'-dRP activity, and 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

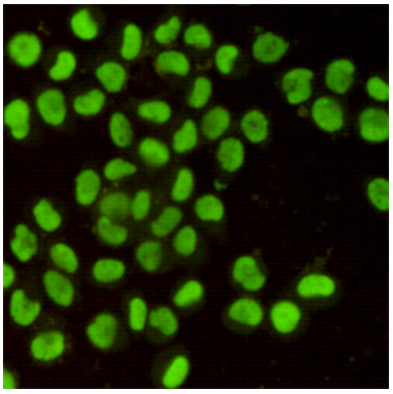
Yaneva M.,et al.J. Biol. Chem. 264:13407-13411(1989).
Mimori T.,et al.Proc. Natl. Acad. Sci. U.S.A. 87:1777-1781(1990).
Ota T.,et al.Nat. Genet. 36:40-45(2004).
Suzuki Y.,et al.Submitted (APR-2005) to the EMBL/GenBank/DDBJ databases.
Mural R.J.,et al.Submitted (JUL-2005) to the EMBL/GenBank/DDBJ databases.

Images

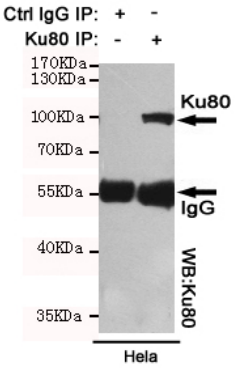
Western blot detection of Ku80 in COS7,Jurkat,Hela,MCF7



and A549 cell lysates using Ku80 mouse mAb (1:1000 diluted). Predicted band size:86KDa. Observed band size:86KDa.



Immunofluorescent analysis of Hela cells using Ku80 mouse mAb (1:400).



Immunoprecipitation analysis of Hela cell lysates using Ku80 mouse mAb.

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