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XRCC5 Antibody

Purified Mouse Monoclonal Antibody
Catalog # AO1587a

Product Information

Application	WB, IHC, FC, ICC, E
Primary Accession	P13010
Reactivity	Human, Mouse
Host	Mouse
Clonality	Monoclonal
Clone Names	5C5
Isotype	IgG1
Calculated MW	82705
Description	The protein encoded by this gene is the 80-kilodalton subunit of the Ku heterodimer protein which is also known as ATP-dependant DNA helicase II or DNA repair protein XRCC5. Ku is the DNA-binding component of the DNA-dependent protein kinase, and it functions together with the DNA ligase IV-XRCC4 complex in the repair of DNA double-strand break by non-homologous end joining and the completion of V(D)J recombination events. This gene functionally complements Chinese hamster xrs-6, a mutant defective in DNA double-strand break repair and in ability to undergo V(D)J recombination. A rare microsatellite polymorphism in this gene is associated with cancer in patients of varying radiosensitivity.
Immunogen	Purified recombinant fragment of human XRCC5 expressed in E. Coli.
Formulation	Ascitic fluid containing 0.03% sodium azide.

Additional Information

Gene ID	7520
Other Names	X-ray repair cross-complementing protein 5, 3.6.4.-, 86 kDa subunit of Ku antigen, ATP-dependent DNA helicase 2 subunit 2, ATP-dependent DNA helicase II 80 kDa subunit, CTC box-binding factor 85 kDa subunit, CTC85, CTCBF, DNA repair protein XRCC5, Ku80, Ku86, Lupus Ku autoantigen protein p86, Nuclear factor IV, Thyroid-lupus autoantigen, TLAA, X-ray repair complementing defective repair in Chinese hamster cells 5 (double-strand-break rejoining), XRCC5, G22P2
Dilution	WB~~1/500 - 1/2000 IHC~~1/500 - 1/2000 FC~~1/200 - 1/400 ICC~~N/A E~~1/10000
Storage	Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.

Precautions	XRCC5 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	XRCC5
Synonyms	G22P2
Function	Single-stranded DNA-dependent ATP-dependent helicase that plays a key role in DNA non-homologous end joining (NHEJ) by recruiting DNA-PK to DNA (PubMed:11493912, PubMed:12145306, PubMed:7957065, PubMed:8621488). Required for double-strand break repair and V(D)J recombination (PubMed:11493912, PubMed:12145306, PubMed:7957065, PubMed:8621488). Also has a role in chromosome translocation (PubMed:11493912, PubMed:12145306, PubMed:7957065, PubMed:8621488). The DNA helicase II complex binds preferentially to fork-like ends of double-stranded DNA in a cell cycle-dependent manner (PubMed:11493912, PubMed:12145306, PubMed:7957065, PubMed:8621488). It works in the 3'-5' direction (PubMed:11493912, PubMed:12145306, PubMed:7957065, PubMed:8621488). During NHEJ, the XRCC5-XRRC6 dimer performs the recognition step: it recognizes and binds to the broken ends of the DNA and protects them from further resection (PubMed:11493912, PubMed:12145306, PubMed:7957065, PubMed:8621488). Binding to DNA may be mediated by XRCC6 (PubMed:11493912, PubMed:12145306, PubMed:7957065, PubMed:8621488). The XRCC5-XRRC6 dimer acts as a 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 (PubMed:11493912, PubMed:12145306, PubMed:20383123, PubMed:7957065, PubMed:8621488). The XRCC5-XRRC6 dimer is probably involved in stabilizing broken DNA ends and bringing them together (PubMed:12145306, PubMed:20383123, PubMed:7957065, PubMed:8621488). The assembly of the DNA-PK complex to DNA ends is required for the NHEJ ligation step (PubMed:12145306, PubMed:20383123, PubMed:7957065, PubMed:8621488). The XRCC5-XRRC6 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 (PubMed:20383123). 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 (PubMed:20383123). The XRCC5-XRRC6 dimer together with APEX1 acts as a negative regulator of transcription (PubMed:8621488). In association with NAA15, the XRCC5-XRRC6 dimer binds to the osteocalcin promoter and activates osteocalcin expression (PubMed:12145306). As part of the DNA-PK complex, involved in the early steps of ribosome assembly by promoting the processing of precursor rRNA into mature 18S rRNA in the small- subunit processome (PubMed:32103174). Binding to U3 small nucleolar RNA, recruits PRKDC and XRCC5/Ku86 to the small-subunit processome (PubMed:32103174). 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).
Cellular Location	Nucleus. Nucleus, nucleolus Chromosome

References

1. Breast Cancer Res. 2009;11(6):R83. 2. Biochem Biophys Res Commun. 2009 Dec 18;390(3):738-42.

Images

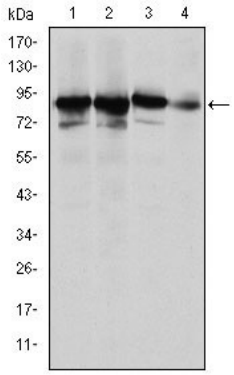

Figure 1: Western blot analysis using XRCC5 mouse mAb against Hela (1), MCF-7 (2), A549 (3) and NIH/3T3 (4) cell lysate.

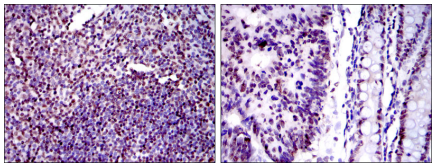

Figure 2: Immunohistochemical analysis of paraffin-embedded human tonsil tissues (left) and human colon cancer tissues (right) using XRCC5 mouse mAb with DAB staining.

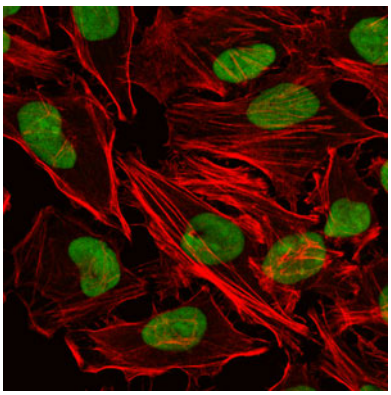

Figure 3: Immunofluorescence analysis of Hela cells using XRCC5 mouse mAb (green). Red: Actin filaments have been labeled with Alexa Fluor-555 phalloidin.

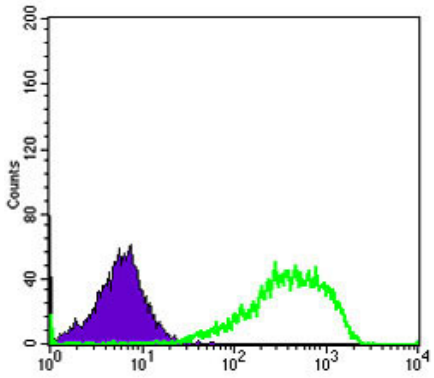

Figure 4: Flow cytometric analysis of Hela cells using XRCC5 mouse mAb (green) and negative control (purple).