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XRCC6 Antibody

Purified Mouse Monoclonal Antibody
Catalog # AO1956a

Product Information

Application	WB, IHC, FC, ICC, E
Primary Accession	P12956
Reactivity	Human
Host	Mouse
Clonality	Monoclonal
Clone Names	2F7F5
Isotype	IgG1
Calculated MW	69843
Description	The p70/p80 autoantigen is a nuclear complex consisting of two subunits with molecular masses of approximately 70 and 80 kDa. The complex functions as a single-stranded DNA-dependent ATP-dependent helicase. The complex may be involved in the repair of nonhomologous DNA ends such as that required for double-strand break repair, transposition, and V(D)J recombination. High levels of autoantibodies to p70 and p80 have been found in some patients with systemic lupus erythematosus.
Immunogen	Purified recombinant fragment of human XRCC6 (AA: 6-214) expressed in E. Coli.
Formulation	Purified antibody in PBS with 0.05% sodium azide.

Additional Information

Gene ID	2547
Other Names	X-ray repair cross-complementing protein 6, 3.6.4.-, 4.2.99.-, 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, CTC box-binding factor 75 kDa subunit, CTC75, CTCBF, DNA repair protein XRCC6, Lupus Ku autoantigen protein p70, Ku70, Thyroid-lupus autoantigen, TLAA, X-ray repair complementing defective repair in Chinese hamster cells 6, XRCC6, G22P1
Dilution	WB~~1/500 - 1/2000 IHC~~1/200 - 1/1000 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	XRCC6 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

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

The protein encoded by this gene is a member of the keratin gene family. The type II cytokeratins consist of basic or neutral proteins which are arranged in pairs of heterotypic keratin chains coexpressed during differentiation of simple and stratified epithelial tissues. This type II cytokeratin is specifically expressed in the basal layer of the epidermis with family member KRT14. Mutations in these genes have been associated with a complex of diseases termed epidermolysis bullosa simplex. The type II cytokeratins are clustered in a region of chromosome 12q12-q13. ; ;

References

1. Clin Cancer Res. 2013 Mar 15;19(6):1547-56.2. Mol Carcinog. 2012 Oct;51 Suppl 1:E183-90.

Images

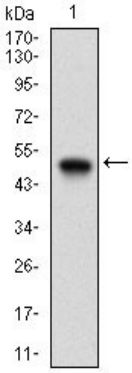


Figure 1: Western blot analysis using XRCC6 mAb against human XRCC6 (AA: 6-214) recombinant protein. (Expected MW is 49.7 kDa)

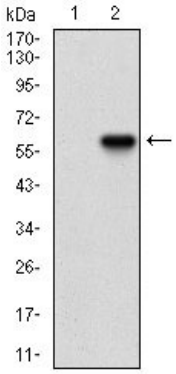


Figure 2: Western blot analysis using XRCC6 mAb against HEK293 (1) and XRCC6 (AA: 6-214)-hIgGFc transfected HEK293 (2) cell lysate.

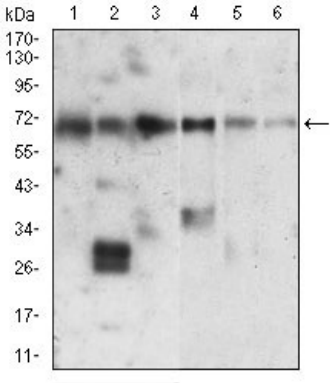


Figure 3: Western blot analysis using XRCC6 mouse mAb against Hela (1), PC-2 (2), A549 (3), A431 (4), HepG2 (5), K562 (6) cell lysate.

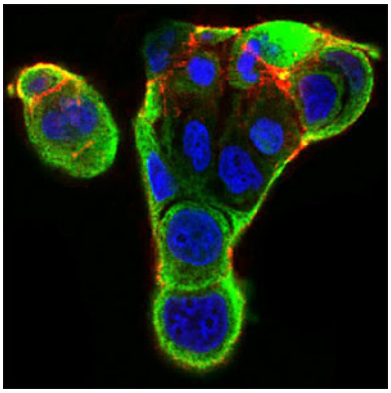


Figure 4: Immunofluorescence analysis of MCF-7 cells using XRCC6 mouse mAb (green). Blue: DRAQ5 fluorescent DNA dye. Red: Actin filaments have been labeled with Alexa Fluor-555 phalloidin. Secondary antibody from Fisher (Cat#: 35503)

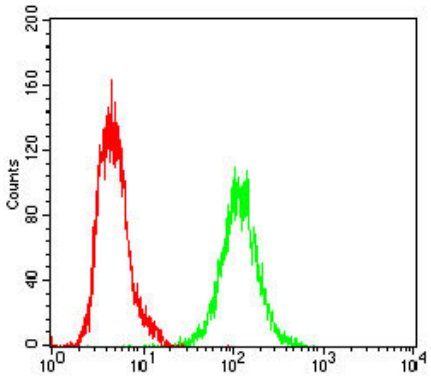
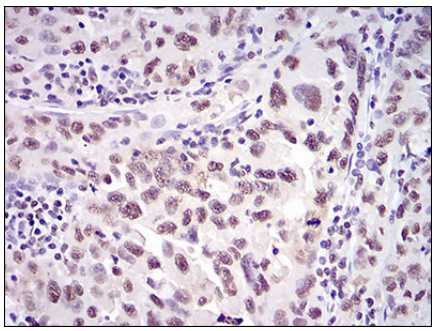


Figure 5: Flow cytometric analysis of A431 cells using XRCC6 mouse mAb (green) and negative control (red).

Figure 6: Immunohistochemical analysis of paraffin-embedded endometrial cancer tissues using XRCC6 mouse mAb with DAB staining.



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