

**XRCC5 Antibody**  
**Purified Mouse Monoclonal Antibody**  
**Catalog # AO1587a****Specification****XRCC5 Antibody - Product Information**

Application	<b>E, WB, IHC, IF, FC</b>
Primary Accession	<a href="#">P13010</a>
Reactivity	<b>Human, Mouse</b>
Host	<b>Mouse</b>
Clonality	<b>Monoclonal</b>
Isotype	<b>IgG1</b>
Calculated MW	<b>86kDa KDa</b>

**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. <br />

**Formulation**

Ascitic fluid containing 0.03% sodium azide.

**XRCC5 Antibody - 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**

E~~1/10000  
WB~~1/500 - 1/2000  
IHC~~1/500 - 1/2000  
IF~~1/200 - 1/1000  
FC~~1/200 - 1/400

**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.

## XRCC5 Antibody - 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:<a href="http://www.uniprot.org/citations/11493912" target="\_blank">11493912</a>, PubMed:<a href="http://www.uniprot.org/citations/12145306" target="\_blank">12145306</a>, PubMed:<a href="http://www.uniprot.org/citations/7957065" target="\_blank">7957065</a>, PubMed:<a href="http://www.uniprot.org/citations/8621488" target="\_blank">8621488</a>). Required for double-strand break repair and V(D)J recombination (PubMed:<a href="http://www.uniprot.org/citations/11493912" target="\_blank">11493912</a>, PubMed:<a href="http://www.uniprot.org/citations/12145306" target="\_blank">12145306</a>, PubMed:<a href="http://www.uniprot.org/citations/7957065" target="\_blank">7957065</a>, PubMed:<a href="http://www.uniprot.org/citations/8621488" target="\_blank">8621488</a>). Also has a role in chromosome translocation (PubMed:<a href="http://www.uniprot.org/citations/11493912" target="\_blank">11493912</a>, PubMed:<a href="http://www.uniprot.org/citations/12145306" target="\_blank">12145306</a>, PubMed:<a href="http://www.uniprot.org/citations/7957065" target="\_blank">7957065</a>, PubMed:<a href="http://www.uniprot.org/citations/8621488" target="\_blank">8621488</a>). The DNA helicase II complex binds preferentially to fork-like ends of double-stranded DNA in a cell cycle-dependent manner (PubMed:<a href="http://www.uniprot.org/citations/11493912" target="\_blank">11493912</a>, PubMed:<a href="http://www.uniprot.org/citations/12145306" target="\_blank">12145306</a>, PubMed:<a href="http://www.uniprot.org/citations/7957065" target="\_blank">7957065</a>, PubMed:<a href="http://www.uniprot.org/citations/8621488" target="\_blank">8621488</a>). It works in the 3'-5' direction (PubMed:<a href="http://www.uniprot.org/citations/11493912" target="\_blank">11493912</a>, PubMed:<a href="http://www.uniprot.org/citations/12145306" target="\_blank">12145306</a>, PubMed:<a href="http://www.uniprot.org/citations/7957065" target="\_blank">7957065</a>, PubMed:<a href="http://www.uniprot.org/citations/8621488" target="\_blank">8621488</a>). During NHEJ, the XRCC5-XRCC6 dimer performs the recognition step: it recognizes and binds to the broken ends of the DNA and protects them from further resection (PubMed:<a href="http://www.uniprot.org/citations/11493912" target="\_blank">11493912</a>, PubMed:<a href="http://www.uniprot.org/citations/12145306" target="\_blank">12145306</a>, PubMed:<a href="http://www.uniprot.org/citations/7957065" target="\_blank">7957065</a>, PubMed:<a href="http://www.uniprot.org/citations/8621488" target="\_blank">8621488</a>). Binding to DNA may be mediated by XRCC6 (PubMed:<a href="http://www.uniprot.org/citations/11493912" target="\_blank">11493912</a>, PubMed:<a href="http://www.uniprot.org/citations/12145306" target="\_blank">12145306</a>, PubMed:<a href="http://www.uniprot.org/citations/7957065" target="\_blank">7957065</a>, PubMed:<a href="http://www.uniprot.org/citations/8621488" target="\_blank">8621488</a>). The XRCC5-XRCC6 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:<a href="http://www.uniprot.org/citations/11493912" target="\_blank">11493912</a>, PubMed:<a href="http://www.uniprot.org/citations/12145306" target="\_blank">12145306</a>, PubMed:<a href="http://www.uniprot.org/citations/20383123" target="\_blank">20383123</a>, PubMed:<a href="http://www.uniprot.org/citations/7957065" target="\_blank">7957065</a>, PubMed:<a href="http://www.uniprot.org/citations/8621488" target="\_blank">8621488</a>). The

XRCC5-XRCC6 dimer is probably involved in stabilizing broken DNA ends and bringing them together (PubMed:<a href="http://www.uniprot.org/citations/12145306" target="\_blank">12145306</a>, PubMed:<a href="http://www.uniprot.org/citations/20383123" target="\_blank">20383123</a>, PubMed:<a href="http://www.uniprot.org/citations/7957065" target="\_blank">7957065</a>, PubMed:<a href="http://www.uniprot.org/citations/8621488" target="\_blank">8621488</a>). The assembly of the DNA-PK complex to DNA ends is required for the NHEJ ligation step (PubMed:<a href="http://www.uniprot.org/citations/12145306" target="\_blank">12145306</a>, PubMed:<a href="http://www.uniprot.org/citations/20383123" target="\_blank">20383123</a>, PubMed:<a href="http://www.uniprot.org/citations/7957065" target="\_blank">7957065</a>, PubMed:<a href="http://www.uniprot.org/citations/8621488" target="\_blank">8621488</a>). The XRCC5-XRCC6 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:<a href="http://www.uniprot.org/citations/20383123" target="\_blank">20383123</a>). 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:<a href="http://www.uniprot.org/citations/20383123" target="\_blank">20383123</a>). The XRCC5-XRCC6 dimer together with APEX1 acts as a negative regulator of transcription (PubMed:<a href="http://www.uniprot.org/citations/8621488" target="\_blank">8621488</a>). In association with NAA15, the XRCC5-XRCC6 dimer binds to the osteocalcin promoter and activates osteocalcin expression (PubMed:<a href="http://www.uniprot.org/citations/12145306" target="\_blank">12145306</a>). 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:<a href="http://www.uniprot.org/citations/32103174" target="\_blank">32103174</a>). Binding to U3 small nucleolar RNA, recruits PRKDC and XRCC5/Ku86 to the small-subunit processome (PubMed:<a href="http://www.uniprot.org/citations/32103174" target="\_blank">32103174</a>). 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:<a href="http://www.uniprot.org/citations/28712728" target="\_blank">28712728</a>).

### Cellular Location

Nucleus. Nucleus, nucleolus. Chromosome

### XRCC5 Antibody - Protocols

Provided below are standard protocols that you may find useful for product applications.

- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

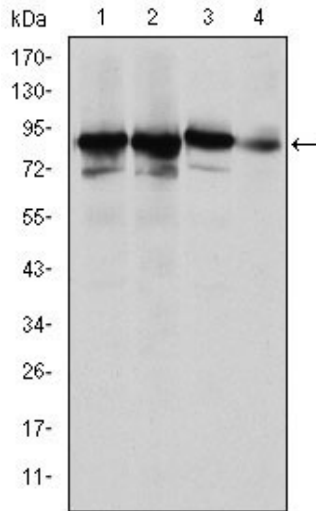
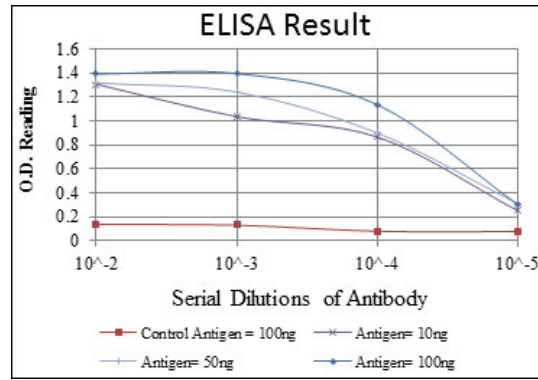


Figure 1: Western blot analysis using XRCC5 mouse mAb against HeLa (1), MCF-7 (2), A549 (3) and NIH/3T3 (4) cell lysate.

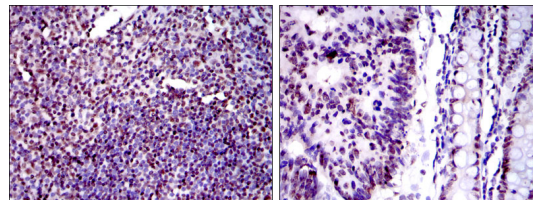


Figure 2: Immunohistochemical analysis of paraffin-embedded human tonsil tissues (left) and human colon cancer tissues (right) using XRCC5 mouse mAb with DAB staining.

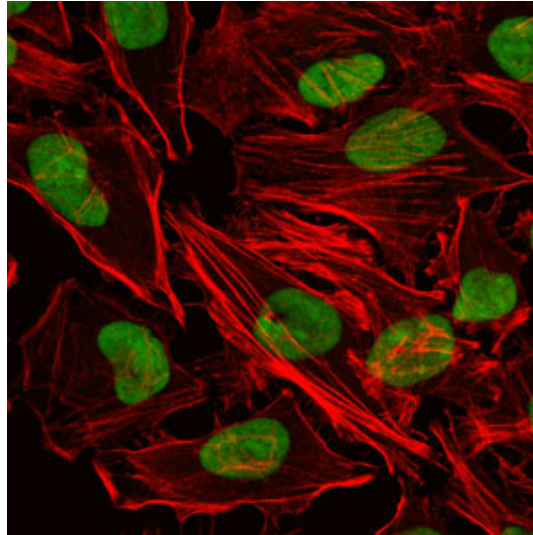


Figure 3: Immunofluorescence analysis of HeLa cells using XRCC5 mouse mAb (green). Red: Actin filaments have been labeled with Alexa Fluor-555 phalloidin.

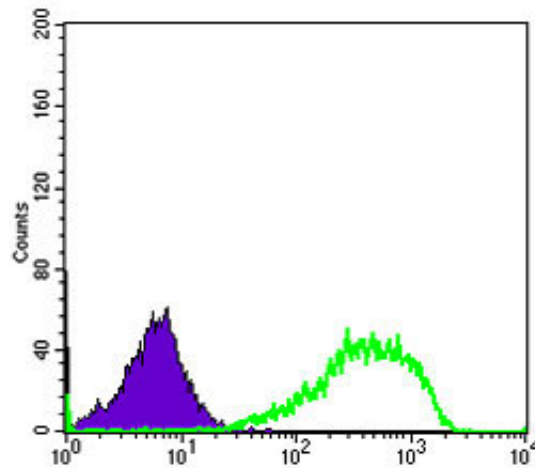


Figure 4: Flow cytometric analysis of HeLa cells using XRCC5 mouse mAb (green) and negative control (purple).

#### **XRCC5 Antibody - References**

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