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ProductInformation

Anti-XRCC1
produced in rabbit, affinity isolated antibody

Catalog Number **X0629**

Product Description

Anti-XRCC1 is produced in rabbit using as immunogen a synthetic peptide corresponding to amino acids 615-633 of human XRCC1 (GeneID: 7515), conjugated to KLH via an N-terminal added cysteine residue. The immunizing peptide is identical in mouse and rat. The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-XRCC1 specifically recognizes XRCC1. Applications include immunoblotting (85 kDa) and immunofluorescence. Staining of the XRCC1 band in immunoblotting is specifically inhibited by the immunizing peptide.

The integrity of genetic information depends on the fidelity of DNA replication and on the efficiency of several different DNA repair processes. The primary structure of DNA is constantly subjected to alteration by cellular metabolites and exogenous DNA-damaging agents, which cause alterations such as base changes of deletions, fusions, translocations, or aneuploidy. The four types of response pathways elicited by DNA damage are DNA repair, DNA damage checkpoints, transcriptional response, and apoptosis. Defects in these pathways may cause genomic instability.[1, 2]

DNA repair mechanisms include direct repair, base excision repair, nucleotide excision repair, double-strand break repair, and cross-linking repair.[1-3] DNA single-strand breaks (SSBs) are among the most frequent DNA lesions, arising directly from damage to the deoxyribose moieties or indirectly as intermediates of DNA base excision repair.[1, 4] XRCC is a molecular saffold protein that coordinates the assembly of repair complexes at damaged sites.[1, 5] XRCC has been shown to physically interact with several enzymes known to be involved in the repair of SSBs, including DNA ligase IIIα, DNA Polymerase β, APE1, polynucleotide kinase (PNK), poly (ADP-ribose), polymerases 1 and 2 (PARP-1 and 2), and others.[6-8] Casein kinase II (CK2) phosphorylates XRCC1 and thereby enables the assembly and activity of DNA single-strand break repair protein complex *in vitro* and at sites of chromosome breakage.[9]

Reagent

Supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide as a preservative.

Antibody concentration: ~1 mg/mL

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilutions should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a working concentration of 0.5-1 µg/mL is recommended using A431 cell lysates.

Indirect immunofluorescence: a working concentration of 5-10 µg/mL is recommended by staining MCF7 cells fixed with paraformaldehyde-Triton.

Note: In order to obtain the best results using various techniques and preparations, we recommend determining the optimal working dilutions by titration.

References

1. Sancar, A., et al., *Annu. Rev. Biochem.*, **73**, 39-85 (2004).
2. Ataian, Y., and Krebs, J.E., *Biochem. Cell Biol.*, **84**, 490-504 (2006).
3. Lindahl, T., *Nature*, **362**, 709-715 (1993).
4. Brem, R., and Hall, J., *Nucl. Acids Res.*, **33**, 2512-2520 (2005).
5. Caldecott, K.W., et al., *Nucl. Acids Res.*, **24**, 4387-4394 (1996).

6. Kubota, Y., et al., *EMBO J*., **15**, 6662-6670 (1996).
7. Marsin, S., et al., *J. Biol. Chem*., **278**, 44068-44074 (2003).
8. Vidal., A.E., et al., *EMBO J*., **20**, 6530-6539 (2001).
9. Loizou, J.I., et al., *Cell*, **117**, 17-28 (2004)

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