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ProductInformation

Anti-XPG (C-terminal)
produced in rabbit, affinity isolated antibody

Catalog Number **X1629**

Product Description

Anti-XPG (C-terminal) is produced in rabbit using as immunogen a synthetic peptide corresponding to amino acids 1120-1137 of human XPG (Gene ID: 2073), conjugated to KLH via an N-terminal added cysteine residue. The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-XPG (C-terminal) specifically recognizes recombinant human XPG. Applications include immunoblotting and immunofluorescence. Detection of the XPG protein by immunoblotting or immunofluorescence 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] Nucleotide excision repair (NER) is the major repair system for removing bulky DNA lesions formed by exposure to UV light or other environmental chemicals. The damaged bases are removed by a multisubunit enzyme system that makes dual incisions, bracketing the lesion in the damaged strand.[1, 4-6] The basic steps of NER are (a) damage recognition, (b) dual incisions bracketing the lesion to form a 24-32-nt oligomer in eukaryotes, (c) release of the oligomer, (d) repair synthesis to fill in the resulting gap, and (e) ligation.[1] In human, excision repair is carried out by six repair factors (RPA, XPA, XPC, TFIIH, XPG and XPF/ERCC1), composed of 15 polypeptides. Defects in excision repair cause a photosensitivity syndrome called xeroderma pigmentosum (XP), which is characterized by a very high incidence of light-induced skin cancer.[7, 8] With respect to the mechanism of NER, the order of arrival of each factor at a lesion remains controversial. However, it is widely accepted that XPC-hHR23B complex recognizes the DNA damage-induced helical distortion, and the transcription factor TFIIH, XPA (possibly in its homodimeric form), and replication protein A (RPA), arrive sequentially at the site of damage.[9, 10] XPG is a member of the FEN-1 family of structure-specific nucleases and contains two highly conserved nuclease motifs known as the N and I regions separated by a large insertion. This separation is responsible for the binding of XPG to TFIIH subunits and for its substrate specificity. Mutations in the XPG gene cause the Cockayne syndrome which is characterized by severe growth defects, mental retardation, and cachexia.[9-11]

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: ~1.0 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 1-2 µg/mL is recommended using whole cell lysates of COS7 cells expressing recombinant XPG fusion protein.

For immunoblotting, we strongly recommend diluting the antibody in PBS containing 3% non-fat dry milk and 0.05% TWEEN® 20.

Indirect immunofluorescence: a working concentration of 2-4 µg/mL is recommended using HEK-293T cells expressing recombinant XPG fusion protein, 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. Wood, R.D., *J. Biol. Chem*., **272**, 23465-23468 (1997).
5. Wood, R.D., *Biochimie*, **81**, 39-44 (1999).
6. You, J.-S., et al., *J. Biol. Chem*., **278**, 7476-7485 (2003).
7. Sancar, A., and Reardon, J.T., *Adv. Protein Chem.*, **69**, 43-71 (2004).
8. Neumann, A.S., et al., *Mol. Carcinog*., **42**, 65-92 (2005).
9. Park, C.-J., and Choi, B.-S., *FEBS J.*, **273**, 1600-1608 (2006).
10. Mer, G., et al., *Cell*, **103**, 449-456 (2000).
11. Wijnhoven, S.W.P., et al., *Mutat. Res*., **614**, 77-94 (2007).

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