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ProductInformation

Anti-RAD1 (C-Terminal)
produced in rabbit, IgG fraction of antiserum

Catalog Number **R5029**

Product Description

Anti RAD1 (C-terminal) is developed in rabbit using a synthetic peptide corresponding to amino acids 267-282 of human RAD1, conjugated to KLH via an N-terminal added lysine residue, as immunogen. The immunizing peptide is present in RAD1A and RAD1B (isoforms 1 and 2). Whole antiserum is fractionated and then further purified by ion-exchange chromatography to provide the IgG fraction of antiserum that is essentially free of other rabbit serum proteins.

Anti RAD1 (C-terminal) specifically recognizes RAD1. Applications include immunoblotting (30 kDa) and immunoprecipitation. Staining of the RAD1 band in immunoblotting is specifically inhibited by the immunizing peptide.

DNA damage checkpoints are biochemical pathways that delay or arrest cell cycle progression in response to DNA damage.[1, 2] Key checkpoint regulators are conserved throughout eukaryotes. For instance, cloning of the human ATM gene revealed significant homology with its yeast counterparts.[3, 4] ATM and ATR, which are central players in the checkpoint signaling pathway, are considered sensors that are activated by IR or UV radiation, respectively. ATM is activated in response to double-strand breaks, whereas ATR is activated in response to stalled replication forks and to damages that cause distortions and single strands.[1, 5] RAD1, RAD9, HUS1, and RAD17 are sensor proteins as well.[6] RAD9, RAD1, and HUS1 form a stable radioresponsive checkpoint complex commonly known as 9-1-1, which participates in cellular responses to DNA damage.[5-8] 9-1-1 holds structural and functional similarity to the sliding clamp proliferating cell nuclear antigen (PCNA) and can be recruited to the sites of DNA damage by RAD17-RFC where it attracts specialized DNA polymerases and other DNA repair effectors. The complex also interacts with and stimulates the activity of the DNA replication and base-excision repair (BEP) enzyme Flap endonuclease.[6-9] RAD1A and RAD1B (isoforms 1 and 2) are derived from two alternatively spliced variants of 282 and 173 amino acids, respectively.[10,11] RAD1 exhibits terminal exonuclease activity on double-stranded DNA with a preference for 3-prime ends.[10]

Reagent

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

Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous 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 dilution of 1:500-1:1,000 is recommended using lysates of HL-60 cells.

Immunoprecipitation: 2-4 µL immunoprecipitates RAD1 from 293-T cell lysates.

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. Elledge, S.J., *Science*, **274**, 1664-1672 (1996).
3. Weinert, T., *Cell*, **94**, 555-558 (1998).
4. Savitsky, K., et al., *Science*, **268**, 1749-1753 (1995).
5. Abraham, T., *Genes Dev.*, **15**, 2177-2196 (2001).
6. Volkmer, E., and Karnitz, L.M., *J. Biol. Chem*., **274**, 567-570 (1999).
7. Freire, R., et al., *Genes Dev.*, **12**, 2560-2573 (1998).
8. Dang, T., et al., *Genes Cells*, **10**, 287-290 (2005).
9. Wang, W., et al., *Proc. Natl. Acad. Sci. USA*, **48**, 16762-16767 (2004).
10. Udell, C.M., et al., Nucleic Acids Res., **26**, 3971-3976 (1998).
11. Parker, A.W., et al., *J. Biol. Chem*., **273**, 18332-18339 (1998).

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