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Product Information

Anti-DNMT1
produced in rabbit, affinity isolated antibody

Catalog Number **D4692**

Product Description

Anti-DNMT1 is produced in rabbit using as immunogen a synthetic peptide corresponding to amino acids 72-78 of human DNMT1, conjugated to KLH via an N-terminal added cysteine residue. The sequence is conserved in mouse, and is different from the rat sequence by one amino acid. The antibody is affinity purified using the immunizing peptide immobilized on agarose.

Anti-DNMT1 recognizes DNMT1 by immunoblotting (~180 kDa). Staining of the DNMT1 band in immunoblotting is specifically inhibited by the DNMT1 immunizing peptide.

Chromatin, the physiological packaging structure of histone proteins and DNA, is a key element in the regulation of gene expression. Histones are subjected to post-translational modifications, such as acetylation, phosphorylation, and methylation, that play a major role in the regulation of transcription.[1, 2] DNA methylation, a major modification of eukaryotic genomes, occurs at the fifth position of cytosine in CpG dinucleotide sequences.[3, 4] DNA methylation is associated with transcriptional repression.[5, 6] Silencing of transcription units have been found to occur in genes located on the inactive X-chromosome, genes silenced by genomic imprinting, and genes silenced in transformed cell lines and tumors.[3, 7-9]

To date, the DNA methylation system is composed of methyl-CpG-binding proteins, as well as of DNA cytosine methyl transferases.[3,10] Three DNA (cytosine-5)-methyltransferases (DNMT) have been isolated: DNMT1, 2, 3, and the respective isoforms. The main DNA methyltransferase DNMT1 is suggested to be important for the maintenance as well as for the *de novo* methylation activities occurring in somatic cells of vertebrates.[11] Human DNMT1 is a 1616 amino acids protein; the N-terminal two-thirds of the protein is considered to be the regulatory domain, while the C-terminal region contains the catalytic domain. The catalytic domain shares sequence homologies with all DNMTs. Two isoforms of DNMT1 have been isolated, DNMT1a and DNMT1b, the difference residing in DNMT1b encoding for 16 extra amino acids. DNMT1b is the minor form representing about 2% of the total DNMT1 protein. DNMT1 is a part of several different complexes. It can establish a repressive transcription complex with the histone deacetylase HDAC4 and with DMAP1.[12] Consistent with the role of DNA methylation in gene silencing, DNMT1 can associate also with HDAC1 and MeCP2. *In vivo* co-expression of hDNMT1 and hDNMT3a or hDNMT3b leads to methylation spreading in the genome, suggesting cooperation between *de novo* and maintenance enzymes during DNA methylation.[13]

Antibodies reacting specifically with DNMT1 may be useful for studying the effects of chromatin remodeling on gene expression.

Reagent

Supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 1% bovine serum albumin and 15 mM sodium azide.

Antibody Concentration: 0.8-1.2 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 dilution samples should be discarded if not used within 12 hours.

Product Profile
Immunoblotting: a working antibody concentration of 0.5-1.0 µg/ml is recommended using nuclear extracts of 293T or HeLa cells.

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

References

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