

DNA (cytosine-5) methyltransferase 1 (mouse), Dnmt1, Functional

10-201 300 units

Shipping and Storage: Ship with dry-ice and Store at -80°C

Product: Recombinant mouse Dnmt1 (aa 291-1620), His-Tag attached to N-terminal, expressed in baculovirus expression system.

Reagents Supplied with Enzyme

Dnmt1 Reaction Buffer (5 x)

20mM S-adenosylmethionine (SAM) which was purified by chromatography from the commercial reagent and dissolved in H₂O

Note: SAM is very unstable. Store at -80°C

Applications

- 1) In vitro methylation of cytosine residues in hemimethylated DNA at 5'....CG...3'.
- 2) Antigen for anti-mammalian Dnmt1 antibodies.

Form: 0.5mg protein/ml in 0.2M NaCl, 10mM HEPES (pH 7.4), 50% glycerol

Definition of specific activity: 1 unit is defined as the amount of the enzyme that transfer 1 pmole of methyl group to poly dI-dC substrate during 30 minutes at 37°C

Specific activity: 17 units/ul

Purity: Greater than 95% protein determined by SDS-PAGE (CBB staining) (Fig.1)

Reaction Conditions

Incubate in 1 x Dnmt1 Reaction Buffer (20mM Tris-HCl, pH7.4, 0.5 mM EDTA, 0.2 mM DTT, 5% glycerol) with 10µM S-adenosylmethionine (SAM) at 37°C

Background: DNA methylation is significant for epigenetic regulation of gene expression, X chromosome inactivation, genomic imprinting, and development. Abberant methylation patterns are associated with certain human tumors and developmental abnormalities. In vertebrates, there are two types of DNA methyltransferase activities; *de novo* and maintenance types. Two DNA methyltransferases, Dnmt3a and Dnmt3b, are responsible for the creation of methylation patterns at an early stage of embryogenesis (*de novo*-type), while **Dnmt1** is responsible for the maintenance of methylation patterns during replication. **Dnmt1** favors to methylate the hemimethylated DNA and preferentially methylates one strand of the double-stranded DNA during its processive methylation. This product, mouse **Dnmt1** deleting the N-terminal 290 amino acid residues, was expressed using a [baculovirus expression system*](#)

Data Link UniProtKB/Swiss-Prot [P13864](#) (DNMT1_MOUSE)

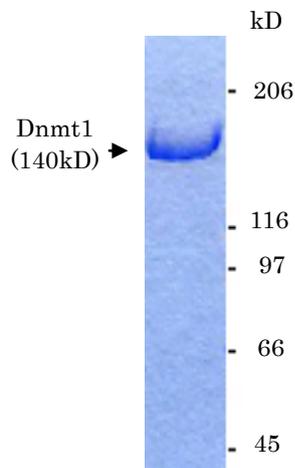


Fig.1 SDS-polyacrylamide gel electrophoresis of recombinant Dnmt1

References:This product was described in ref.1 and used in the subsequent publications.

- 1.Vilkaitis G et al. Processive methylation of hemimethylated CpG sites by mouse Dnmt1 DNA methyltransferase. [J Biol Chem.](#) 2005 Jan 7;280(1):64-72. PMID: [15509558](#)
- 2.Ross JP et al. Recombinant mammalian DNA methyltransferase activity on model transcriptional gene silencing short RNA-DNA heteroduplex substrates. [Biochem J.](#) 2010 Dec 1;432(2):323-32. PMID: [20846120](#)
- 3.Takeshita K et al. Structural insight into maintenance methylation by mouse DNA methyltransferase 1 (Dnmt1). [Proc Natl Acad Sci U S A.](#) 2011 May 31;108(22):9055-9. PMID: [21518897](#)
- 4.Takahashi S et al. A novel method to analyze 5-hydroxymethylcytosine in CpG sequences using maintenance DNA methyltransferase, DNMT1. [FEBS Open Bio.](#) 2015 Sep 8;5:741-7. PMID: [26504739](#)

Related Products:

[#70-201](#) anti-Dnmt1 (1-248) antibody, affinity-purified (rabbit polyclonal)

[#70-205](#) anti-Dnmt3b antibody, affinity-purified (rabbit polyclonal)