

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

The Cartagene protocol on Biosafety: Applicable

Product code	10-201
Size	300 U
Storage	Store at -80°C. Avoid freeze-thaw cycles.
Product	Recombinant mouse Dnmt1 (aa 291-1620), His-Tag attached to N-terminal, expressed in baculovirus expression system.
Concentration	0.5 mg/ml
Buffer	0.2M NaCl, 10mM HEPES (pH 7.4), 50% glycerol
Purity	Greater than 95% protein determined by SDS-PAGE (CBB staining) (Fig.1)
Reagents Supplied with Enzyme	<p>#10-Drb 5 x Dnmt1 Reaction Buffer (1.5ml)</p> <p>#10-Sam S-adenosylmethionine (SAM) (10~20mM) which was purified by chromatography from the commercial reagent and dissolved in H₂O.</p> <p>(Lot01 20mM 20μl) (Lot02 16.2mM 25μl)</p> <p>Note: SAM is very unstable. Store at -80°C</p>
Application	<p>1. In vitro methylation of cytosine residues in hemimethylated DNA at 5'....CG...3'.</p> <p>2. Antigen for anti-mammalian Dnmt1 antibodies.</p>
Specific activity	<p>Definition of specific activity:</p> <p>1 unit (U) 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</p> <p>Specific activity: 17 units/μl</p>
Reaction Condition	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	<p>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*</p>
Data Link	UniProtKB P13864 (DNMT1_MOUSE)
<p>Please note: All products are FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES. NOT FOR MILITARY USE.</p>	

Data Images: 10-201 DNA (cytosine-5) methyltransferase 1 (Dnmt1) (mouse), Functional

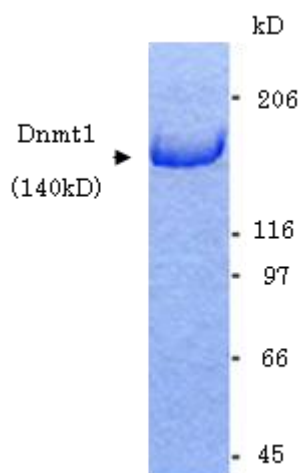


Fig.1 SDS-polyacrylamide gel electrophoresis of recombinant Dnmt1

Related products:

70-201 anti-Dnmt1 (1-248) antibody, rabbit polyclonal

70-206 anti-Dnmt3b (mouse) antibody, rabbit polyclonal

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](#)