**Description:** Dnmt1 methylates cytosine residues in hemimethylated DNA at 5’...CG...3’ (1,2). Mammalian Dnmt1 is believed to be involved in carcinogenesis, embryonic development and several other biological functions (3–5). The bulk of the methylation takes place during DNA replication in the S-phase of the cell cycle (6).

**Source:** Dnmt1 is expressed from human Dnmt1 cDNA using a baculovirus expression system (1,7).

**Reagents Supplied with Enzyme:**
- 10X Dnmt1 Reaction Buffer, 100X BSA and 32 mM S-adenosylmethionine (SAM).

**Reaction Conditions:** 1X Dnmt1 Reaction Buffer, supplemented with 100 µg/ml BSA (supplied) and 160 µM S-adenosylmethionine (supplied). Incubate at 37°C.

**1X Dnmt1 Reaction Buffer:**
- 50 mM Tris-HCl
- 1 mM EDTA
- 1 mM dithiothreitol
- 5% glycerol
- pH 7.8 @ 25°C

**Unit Definition:** One unit is the amount of enzyme required to catalyze the transfer of 1 pmol of methyl group to poly dl dC substrate in a total reaction volume of 25 µl in 30 minutes at 37°C.

**Quality Assurance:** Purified free of contaminating endonucleases and exonucleases.

**Storage of SAM:** S-adenosylmethionine (SAM) (Sigma Catalog #A7007) is stored at –20°C as a 32 mM solution dissolved in 0.005 M sulfuric acid and 10% ethanol. Under these conditions SAM is stable for up to 6 months. SAM is unstable at (pH 7.5), 37°C (1) and should be replenished in reactions incubated longer than 4 hours. Methylation can be optimized by using fresh SAM.

**Heat Inactivation:** 65°C for 20 minutes.

**References:**

**Note:** For DNA modification and protection applications, M.SssI (NEB #M0226) is preferred because it efficiently methylates both unmethylated and hemimethylated DNA substrates.

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**Human DNA (cytosine-5) Methyltransferase (Dnmt1)**

**Methylation Site:**

<table>
<thead>
<tr>
<th>CH₃</th>
<th>5’...G C...3’</th>
<th>3’...G C...5’</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Human Dnmt1</td>
<td></td>
</tr>
</tbody>
</table>

**50 units** 2,000 U/ml **Lot:** 0321209 **RECOMBINANT** Store at –20°C **Exp:** 9/13

**Description:** Dnmt1 methylates cytosine residues in hemimethylated DNA at 5’...CG...3’ (1,2). Mammalian Dnmt1 is believed to be involved in carcinogenesis, embryonic development and several other biological functions (3–5). The bulk of the methylation takes place during DNA replication in the S-phase of the cell cycle (6).

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