**T4 Phage β-glucosyltransferase (T4-BGT)**

**Description:** T4 Phage β-glucosyltransferase specifically transfers the glucose moiety of uridine diphosphoglucose (UDP-Glc) to the 5-hydroxymethylcytosine (5-hmC) residues in double-stranded DNA, making beta-glucosyl-5-hydroxymethylcytosine. It is a restriction modification enzyme from bacteriophage T4.

**Applications:**
- Glucosylation of 5-hydroxymethylcytosine in DNA
- Immunodetection of 5-hydroxymethylcytosine in DNA
- Labeling of 5-hydroxymethylcytosine residues by incorporation of $[^{1}H]-[^{12}C]$-glucose into 5-hmC-containing DNA acceptor after incubation with $[^{1}H]-[^{12}C]$-UDP-Glc
- Detection of 5-hydroxymethylcytosine in DNA by protection from endonuclease cleavage.

**Source:** An *E. coli* strain that carries the cloned bgt gene from bacteriophage T4.

**Supplied:** 20 mM KPO$_2$, 200 mM NaCl (pH 7.0 @ 25°C), 0.1 mM EDTA, 0.25 mM dithiothreitol and 50% glycerol.

**Applications:**
- Glucosylation of 5-hydroxymethylcytosine in DNA
- Immunodetection of 5-hydroxymethylcytosine in DNA
- Labeling of 5-hydroxymethylcytosine residues by incorporation of $[^{1}H]-[^{12}C]$-glucose into 5-hmC-containing DNA acceptor after incubation with $[^{1}H]-[^{12}C]$-UDP-Glc
- Detection of 5-hydroxymethylcytosine in DNA by protection from endonuclease cleavage.

**Source:** An *E. coli* strain that carries the cloned bgt gene from bacteriophage T4.

**Supplied:** 20 mM KPO$_2$, 200 mM NaCl (pH 7.0 @ 25°C), 0.1 mM EDTA, 0.25 mM dithiothreitol and 50% glycerol.

**Applications:**
- Glucosylation of 5-hydroxymethylcytosine in DNA
- Immunodetection of 5-hydroxymethylcytosine in DNA
- Labeling of 5-hydroxymethylcytosine residues by incorporation of $[^{1}H]-[^{12}C]$-glucose into 5-hmC-containing DNA acceptor after incubation with $[^{1}H]-[^{12}C]$-UDP-Glc
- Detection of 5-hydroxymethylcytosine in DNA by protection from endonuclease cleavage.

**Source:** An *E. coli* strain that carries the cloned bgt gene from bacteriophage T4.

**Supplied:** 20 mM KPO$_2$, 200 mM NaCl (pH 7.0 @ 25°C), 0.1 mM EDTA, 0.25 mM dithiothreitol and 50% glycerol.

**Applications:**
- Glucosylation of 5-hydroxymethylcytosine in DNA
- Immunodetection of 5-hydroxymethylcytosine in DNA
- Labeling of 5-hydroxymethylcytosine residues by incorporation of $[^{1}H]-[^{12}C]$-glucose into 5-hmC-containing DNA acceptor after incubation with $[^{1}H]-[^{12}C]$-UDP-Glc
- Detection of 5-hydroxymethylcytosine in DNA by protection from endonuclease cleavage.

**Source:** An *E. coli* strain that carries the cloned bgt gene from bacteriophage T4.

**Supplied:** 20 mM KPO$_2$, 200 mM NaCl (pH 7.0 @ 25°C), 0.1 mM EDTA, 0.25 mM dithiothreitol and 50% glycerol.

**Applications:**
- Glucosylation of 5-hydroxymethylcytosine in DNA
- Immunodetection of 5-hydroxymethylcytosine in DNA
- Labeling of 5-hydroxymethylcytosine residues by incorporation of $[^{1}H]-[^{12}C]$-glucose into 5-hmC-containing DNA acceptor after incubation with $[^{1}H]-[^{12}C]$-UDP-Glc
- Detection of 5-hydroxymethylcytosine in DNA by protection from endonuclease cleavage.

**Source:** An *E. coli* strain that carries the cloned bgt gene from bacteriophage T4.

**Supplied:** 20 mM KPO$_2$, 200 mM NaCl (pH 7.0 @ 25°C), 0.1 mM EDTA, 0.25 mM dithiothreitol and 50% glycerol.

**Applications:**
- Glucosylation of 5-hydroxymethylcytosine in DNA
- Immunodetection of 5-hydroxymethylcytosine in DNA
- Labeling of 5-hydroxymethylcytosine residues by incorporation of $[^{1}H]-[^{12}C]$-glucose into 5-hmC-containing DNA acceptor after incubation with $[^{1}H]-[^{12}C]$-UDP-Glc
- Detection of 5-hydroxymethylcytosine in DNA by protection from endonuclease cleavage.

**Source:** An *E. coli* strain that carries the cloned bgt gene from bacteriophage T4.

**Supplied:** 20 mM KPO$_2$, 200 mM NaCl (pH 7.0 @ 25°C), 0.1 mM EDTA, 0.25 mM dithiothreitol and 50% glycerol.

**Applications:**
- Glucosylation of 5-hydroxymethylcytosine in DNA
- Immunodetection of 5-hydroxymethylcytosine in DNA
- Labeling of 5-hydroxymethylcytosine residues by incorporation of $[^{1}H]-[^{12}C]$-glucose into 5-hmC-containing DNA acceptor after incubation with $[^{1}H]-[^{12}C]$-UDP-Glc
- Detection of 5-hydroxymethylcytosine in DNA by protection from endonuclease cleavage.

**Source:** An *E. coli* strain that carries the cloned bgt gene from bacteriophage T4.
Enzyme Properties

Activity in NEBuffers:

<table>
<thead>
<tr>
<th>Buffer</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>100%</td>
</tr>
</tbody>
</table>

Survival in a Reaction: A minimum of 0.16 unit for 16 hours is required to protect 0.5 µg T4 gt-DNA against cleavage by MfeI.

Heat Inactivation: 65°C for 10 minutes

Molecular Weight: 40,666 kDa

References: