

# PRODUCT INFORMATION



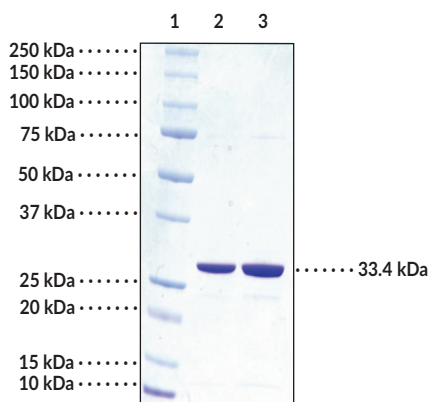
## LgtC (*N. meningitidis*) Glycosyltransferase Item No. 25002

### Overview and Properties

<b>Synonyms:</b>	Lipopolysaccharyl $\alpha$ -galactosyltransferase, Lipopolysaccharyl-1,4-galactosyltransferase
<b>Source:</b>	Active recombinant C-terminal His-tagged LgtC expressed in <i>E. coli</i>
<b>Amino Acids:</b>	1-286
<b>Uniprot No.:</b>	Q93EK7
<b>Molecular Weight:</b>	33.4 kDa
<b>Storage:</b>	-80°C (as supplied)
<b>Stability:</b>	$\geq 1$ year
<b>Purity:</b>	$\geq 90\%$ estimated by SDS-PAGE
<b>Supplied in:</b>	50 mM Tris HCl, pH 7.5, with 3 mM DTT
<b>Protein</b>	
<b>Concentration:</b>	<i>batch specific</i> mg/ml
<b>Activity:</b>	<i>batch specific</i> U/ml
<b>Specific Activity:</b>	<i>batch specific</i> U/mg
<b>Unit Definition:</b>	One unit is defined as the amount of LgtC enzyme require to produce 1 $\mu$ mol of globotriose (Gb3) from lactose per minute at pH 7.5 at 30°C in the presence of 10 mM of UDP-galactose.

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Images



Lane 1: MW Markers  
Lane 2: LgtC (2  $\mu$ g)  
Lane 3: LgtC (4  $\mu$ g)

SDS-PAGE Analysis of LgtC.

Representative gel image shown; actual purity may vary between each batch.



Lane 1: Lactose (control)  
Lane 2: Galactose (control)  
Lane 3: Negative control (no enzyme control)  
Lane 4: Reaction mixture with enzyme

**TLC Analysis of Lactose Conversion by Purified LgtC.** Assay was performed in 500  $\mu$ l volume containing 25  $\mu$ g of enzyme with lactose as substrate (2.0 mM) in the assay buffer (100 mM Tris HCl buffer, pH 7.5, containing 5 mM DTT, 1 mM MnCl<sub>2</sub>). The reaction was incubated in a thermoshaker (300 rpm) at 30°C for a total of 15 minutes. Analysis was done in a TLC plate (Analtech, 2.5 x 10 cm) using the solvents ethyl acetate:methanol:water:acetic acid at a ratio of 5:2:1.5:0.5 v/v.

**WARNING**  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

**SAFETY DATA**  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

**WARRANTY AND LIMITATION OF REMEDY**  
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## Description

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Lipopolysaccharide  $\alpha$ -1,4-galactosyltransferase (LgtC) is a retaining glycosyltransferase and member of glycosyltransferase family 8 (GT8) that is found in *N. meningitidis*, an opportunistic bacterium that can cause meningitis.<sup>1</sup> It is composed of an N-terminal mixed  $\alpha/\beta$  domain, which contains the active site, and a C-terminal helical domain, which is responsible for attachment to cell membranes.<sup>2,3</sup> LgtC transfers a galactosyl moiety from UDP-galactose (UDP-Gal) to the terminal lactose moiety on lipooligosaccharides (LOSs) while retaining the configuration of the donor sugar glycosidic bond.<sup>2</sup> Isolated LgtC has been used in the analysis of newborn dried blood spots as a potential screening assay for galactosemia, an inborn error of metabolism characterized by a deficiency in galactose-1-phosphate uridylyltransferase (GALT), the enzyme that converts UDP-glucose to UDP-galactose.<sup>4</sup> Cayman's LgtC (*N. meningitidis*) protein can be used for biocatalysis and enzyme activity assay applications.

## References

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1. Ly, H.D., Loughheed, B., Wakarchuk, W.W., *et al.* Mechanistic studies of a retaining  $\alpha$ -galactosyltransferase from *Neisseria meningitidis*. *Biochemistry* **41(16)**, 5075-5085 (2002).
2. Persson, K., Ly, H.D., Dieckelmann, M., *et al.* Crystal structure of the retaining galactosyltransferase LgtC from 'Neisseria meningitidis' in complex with donor and acceptor sugar analogs. *Nat. Struct. Biol.* **8(2)**, 166-175 (2001).
3. Chan, P.H.W., Weissbach, S., Okon, M., *et al.* Nuclear magnetic resonance spectral assignments of  $\alpha$ -1,4-galactosyltransferase LgtC from *Neisseria meningitidis*: Substrate binding and multiple conformational states. *Biochemistry* **51(41)**, 8278-8292 (2012).
4. Hong, X., Kumar, A.B., Scott, C.R., *et al.* Multiplex tandem mass spectrometry assay for newborn screening of X-linked adrenoleukodystrophy, biotinidase deficiency, and galactosemia with flexibility to assay other enzyme assays and biomarkers. *Mol. Genet. Metab.* **124(2)**, 101-108 (2018).

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