

Supplemental Table 1. *C. jejuni* LOS biosynthesis genes and primer sequences used for their detection

Code ^A	Proposed function	Primer sequences ^B
ORF1abcde	Heptosyl transferase I	
ORF2abcde	Lipid A biosynthesis acyltransferase	
ORF3abcde	Two-domain glucosyltransferase	
ORF4abc	β -1,3-Galactosyltransferase	
ORF5-Iab	β -1,4- <i>N</i> -Acetylgalactosaminyltransferase	
ORF5-IIb	β -1,4- <i>N</i> -Acetylgalactosaminyltransferase	5'-TCATTTCTTTATATAAAAGATACTCG-3' 5'-TTCTTTAATATTTGCTCGATTACAGG-3'
ORF6abc	β -1,3-Galactosyltransferase	
ORF7c (<i>cst-III</i>)	α -2,3-Sialyltransferase	
ORF7ab (<i>cst-II</i>)	α -2,3 or α -2,3/ α -2,8-Sialyltransferase	5'-ATGAGTATGAATATTAATGCTTTGG-3' 5'-TTATCTATTTTTATTTGCATATTTTC-3'
ORF8abc	Sialic acid synthetase	
ORF9abc	<i>N</i> -acetylglucosamine 2-epimerase	
ORF10ab	CMP-sialic acid synthetase	
ORF5/10c	β -1,4- <i>N</i> -Acetylgalactosaminyltransferase, CMP-sialic acid synthetase	
ORF11ab	Putative acetyltransferase	
ORF12abcde	Putative glycosyltransferase	
ORF13abcde	Heptosyltransferase II	
ORF14c	Putative glycosyltransferase	5'-CAACTTTGCAAAATGATTTTATCTATCATT-3' 5'-ATGCAAATACAACAAAACAATTC-3'
ORF15c	Putative glycosyltransferase	
ORF16c	Hypothetical protein	
ORF19d	Putative galactosyltransferase	5'-AATAGTACAAAAGAACTTACAAAAG-3' 5'-TAAAAAGTTTTAAATTGATACCCAC-3'
ORF21e	Putative glucose-1-phosphate thymidyl transferase	5'-GGCATTATTTTAGCTGGAGG-3' 5'-GGCAATCTTATAACCCTGCC-3'

^A The letters a,b,c,d and/or e behind the ORF# refer to the LOS locus classes in which the respective ORF is present.

^B Primers used as class-specific primers for the determination of the LOS locus class. Forward and reverse primer sequences are given, respectively.

Supplemental Table 2. Assignment of the variants for the lipid A backbone and variable terminal Gal (t-Gal), GalNAc, inner (i-NeuAc) and terminal (t-NeuAc) sialic acids in the *O*-deacylated LOS samples from *C. jejuni* GB11 wild-type and mutant constructs.

Strain	Lipid A variant	i-NeuAc	GalNAc	t-Gal	t-NeuAc	Observed mass	Calculated mass
GB11	GlcN3N-GlcN- <i>PP</i> EtN	+	+	+	-	3231.5	3230.1
	GlcN3N-GlcN- <i>2PP</i> EtN	+	+	+	-	3353.0	3353.1
	GlcN3N-GlcN	+	+	+	+	3399.0	3398.3
	GlcN3N-GlcN3N- <i>PP</i> EtN	+	+	+	-	3456.0	3455.4
	GlcN3N-GlcN- <i>PP</i> EtN	+	+	+	+	3522.0	3521.3
	GlcN3N-GlcN3N- <i>2PP</i> EtN	+	+	+	-	3579.5	3578.5
	GlcN3N-GlcN- <i>2PP</i> EtN	+	+	+	+	3644.5	3644.4
	GlcN3N-GlcN3N- <i>PP</i> EtN	+	+	+	+	3747.5	3746.7
	GlcN3N-GlcN3N- <i>2PP</i> EtN	+	+	+	+	3870.0	3869.8
<i>orf10/orf11</i> mutant	GlcN3N-GlcN	-	-	-	-	2450.5	2450.4
	GlcN3N-GlcN- <i>PP</i> EtN	-	-	-	-	2574.0	2573.5
	GlcN3N-GlcN- <i>2PP</i> EtN	-	-	-	-	2696.5	2696.5
	GlcN3N-GlcN- <i>PP</i> EtN	-	+	-	-	2777.0	2776.7
	GlcN3N-GlcN3N- <i>PP</i> EtN	-	-	-	-	2798.5	2798.9
	GlcN3N-GlcN- <i>2PP</i> EtN	-	+	-	-	2900.5	2899.7
	GlcN3N-GlcN- <i>PP</i> EtN	-	+	+	-	2939.0	2938.8
	GlcN3N-GlcN3N- <i>PP</i> EtN	-	+	-	-	3002.5	3002.0
	GlcN3N-GlcN- <i>2PP</i> EtN	-	+	+	-	3062.5	3061.9
	GlcN3N-GlcN3N- <i>2PP</i> EtN	-	+	-	-	3126.0	3125.1
	GlcN3N-GlcN3N- <i>PP</i> EtN	-	+	+	-	3164.5	3164.2
<i>orf11</i> mutant	GlcN3N-GlcN- <i>PP</i> EtN	+	+	+	-	3229.5	3230.1
	GlcN3N-GlcN- <i>2PP</i> EtN	+	+	+	-	3353.0	3353.1
	GlcN3N-GlcN	+	+	+	+	3399.0	3398.3

	GlcN3N-GlcN3N- <i>PP</i> EtN	+	+	+	-	3456.0	3455.4
	GlcN3N-GlcN- <i>PP</i> EtN	+	+	+	+	3521.0	3521.3
	GlcN3N-GlcN3N-2 <i>PP</i> EtN	+	+	+	-	3579.5	3578.5
	GlcN3N-GlcN-2 <i>PP</i> EtN	+	+	+	+	3644.5	3644.4
	GlcN3N-GlcN3N- <i>PP</i> EtN	+	+	+	+	3747.5	3746.7
	GlcN3N-GlcN3N-2 <i>PP</i> EtN	+	+	+	+	3869.0	3869.8
<i>cst-II</i> mutant	GlcN3N-GlcN	-	-	-	-	2449.7	2450.4
	GlcN3N-GlcN- <i>PP</i> EtN	-	-	-	-	2574.8	2573.5
	GlcN3N-GlcN-2 <i>PP</i> EtN	-	-	-	-	2696.8	2696.5
	GlcN3N-GlcN- <i>PP</i> EtN	-	+	-	-	2777.2	2776.7
	GlcN3N-GlcN-2 <i>PP</i> EtN	-	+	-	-	2900.3	2899.7
	GlcN3N-GlcN- <i>PP</i> EtN	-	+	+	-	2938.5	2938.8
	GlcN3N-GlcN-2 <i>PP</i> EtN	-	+	+	-	3063.3	3061.9
	GlcN3N-GlcN3N- <i>PP</i> EtN	-	+	+	-	3165.8	3164.2
	GlcN3N-GlcN3N-2 <i>PP</i> EtN	-	+	+	-	3288.3	3287.2

Assignments are from a comparison of the observed and calculated mass (Da) based on proposed LOS structures (Figure 3). Average mass units were used for calculation of molecular mass values based on proposed compositions as follows: Glc/Gal, 162.14; GalNAc, 203.19; Hep, 192.17; KDO, 220.18; GlcN: 161.16; GlcN3N, 160.18; NeuAc, 291.26; phosphate, 79.98; *PE*tn, 123.05; fatty acid, 226.36.