

B

The top 20 glycans bound by Privigen.

Chart #	Glycan Name	Antibody binding ratio (ABR)
562	GalNAcb1-3GlcNAcb-Sp0	43449.31575
30	(3S)Galb1-3GlcNAcb-Sp0	21369.6875
377	Neu5Aca2-6Galb1-4GlcNAcb1-3GalNAc-Sp14	18457.11625
65	Fuca1-2Galb1-3GlcNAcb1-3Galb1-4Glc-Sp8	16635.94575
90	GalNAca1-3(Fuca1-2)Galb-Sp18	16223.9325
114	Gala1-3Galb1-3GlcNAcb-Sp0	14177.7985
525	Gala1-3(Fuca1-2)Galb1-3GlcNAcb1-6GalNAc-Sp14	11079.85325
123	Gala1-4GlcNAcb-Sp8	9381.1425
331	Neu5Aca2-3Galb1-3(Fuca1-4)GlcNAcb1-3Galb1-3(Fuca1-4)GlcNAcb-Sp0	8931.22675
107	Gala1-3(Fuca1-2)Galb-Sp8	8055.35775
491	Neu5Aca2-3Galb1-3GlcNAcb1-6GalNAca-Sp14	7876.8205
485	Galb1-4GlcNAcb1-6(Galb1-4GlcNAcb1-2)Mana1-6(Galb1-4GlcNAcb1-2)Manb1-4GlcNAcb1-4(Fuca1-6)GlcNAcb-Sp24	7270.845
514	GalNAcb1-4(6S)GlcNAc-Sp8	6894.9575
414	GalNAca1-3(Fuca1-2)Galb1-4GlcNAcb1-3GalNAca-Sp14	6734.65
494	Fuca1-2Galb1-4GlcNAcb1-6GalNAca-Sp14	6290.3545
105	Gala1-3(Fuca1-2)Galb1-4GlcNAc-Sp0	6245.08875
116	Gala1-3Galb1-4Glc-Sp0	5418.57625
569	(3S)GlcAb1-3Galb1-4GlcNAcb1-3Galb1-4Glc-Sp0	5133.6885
561	GlcNAcb1-3Galb1-4GlcNAcb1-6(GlcNAcb1-3Galb1-3)GalNAca-Sp14	5031.56975
487	Neu5Aca2-6Galb1-4GlcNAcb1-6(Fuca1-2Galb1-4(Fuca1-3)GlcNAcb1-3)Galb1-4Glc-Sp21	4362.745

Figure S1. Recognition of distinct carbohydrate-structures (glycans) by IgG antibodies in Privigen IVIG. **(A)** A total of 610 glycans were screened for binding of IgG in IgGPrepB by the glycan array CFG 5.1 as outlined in the Materials and Methods section. The carbohydrate structures of several of the top Privigen bound glycans are indicated as illustrative examples. **(B)** Results of top 20 glycans sorted by IgGPrepB ABR. RFU below the cut-off of the 95th percentile of the myeloma control were considered as negative and have been excluded from the table. Error bars represent s.e.m.

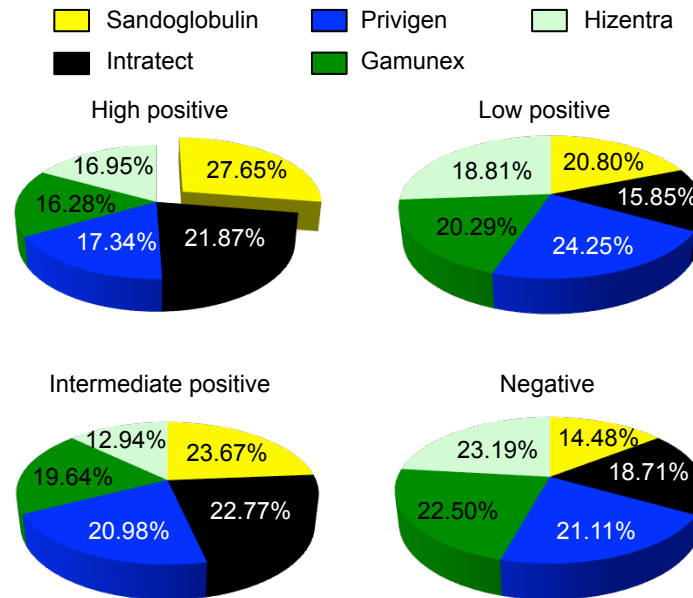


Figure S2. Relative distribution of negative, high-, low and intermediate positive bound glycans. Pie charts depicting the relative distribution of Sandoglobulin, Privigen, Hizentra, Intratect and Gamunex for negative, high-, intermediate-, and low positive bound glycans revealing a predominance of Sandoglobulin for high bound glycans. Categorized binding intensity was computed, as outlined in the Materials and methods section.

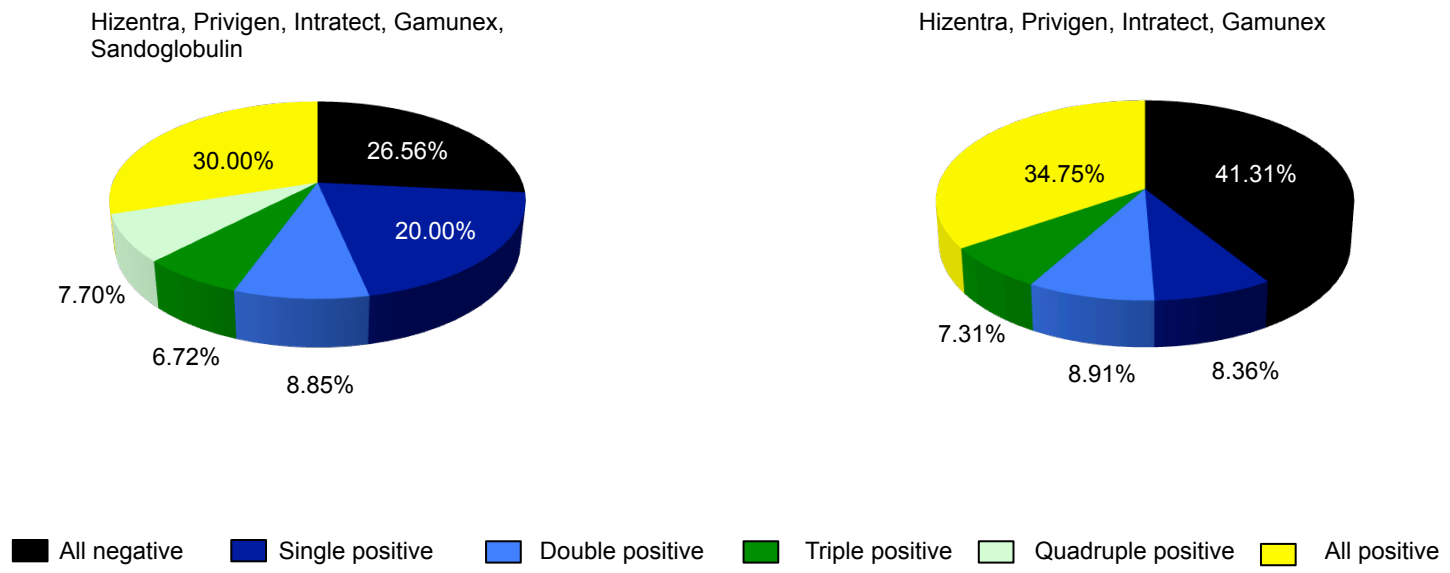


Figure S3. Similarities in glycan recognition among different IVIG preparations. Pie charts depicting the percentages of glycans recognized either by one (single positive), several or all preparations, including (left) or without (right) Sandoglobulin.

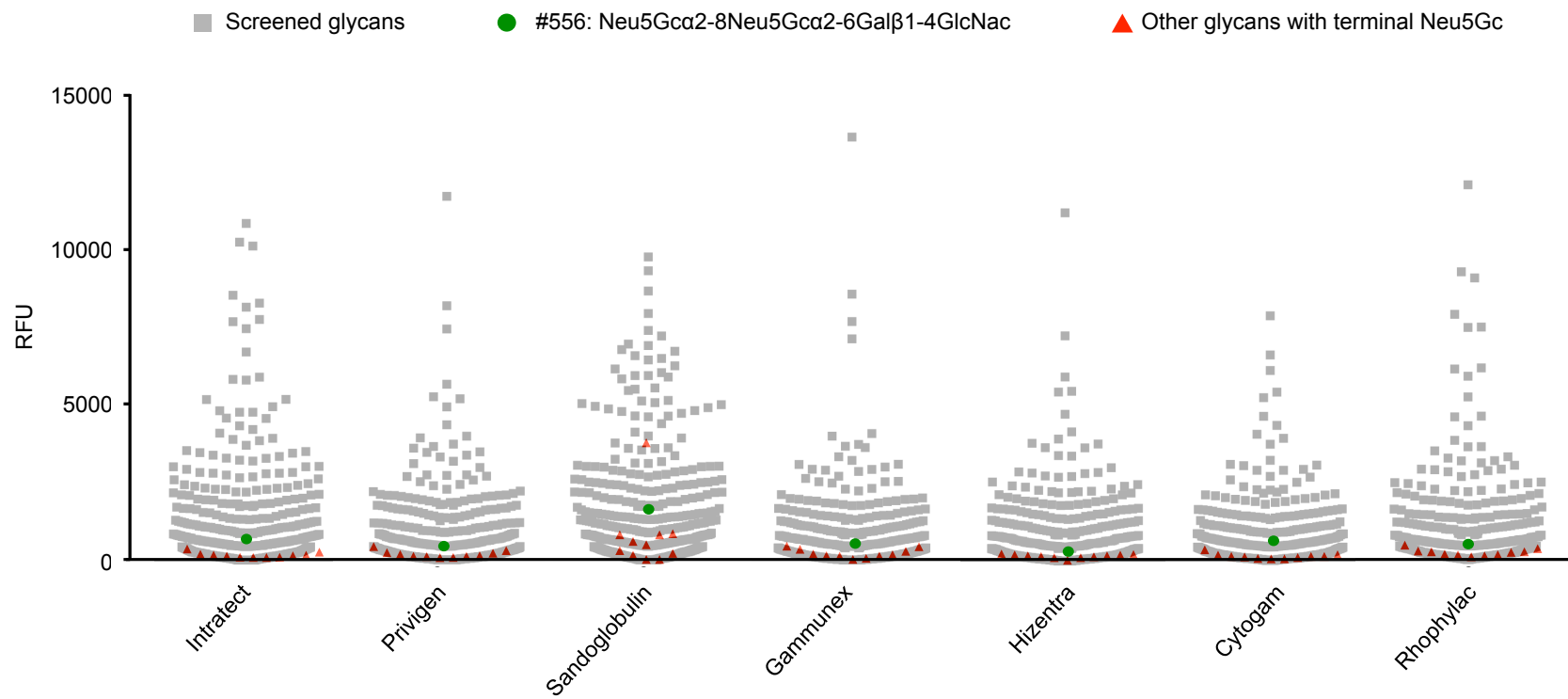
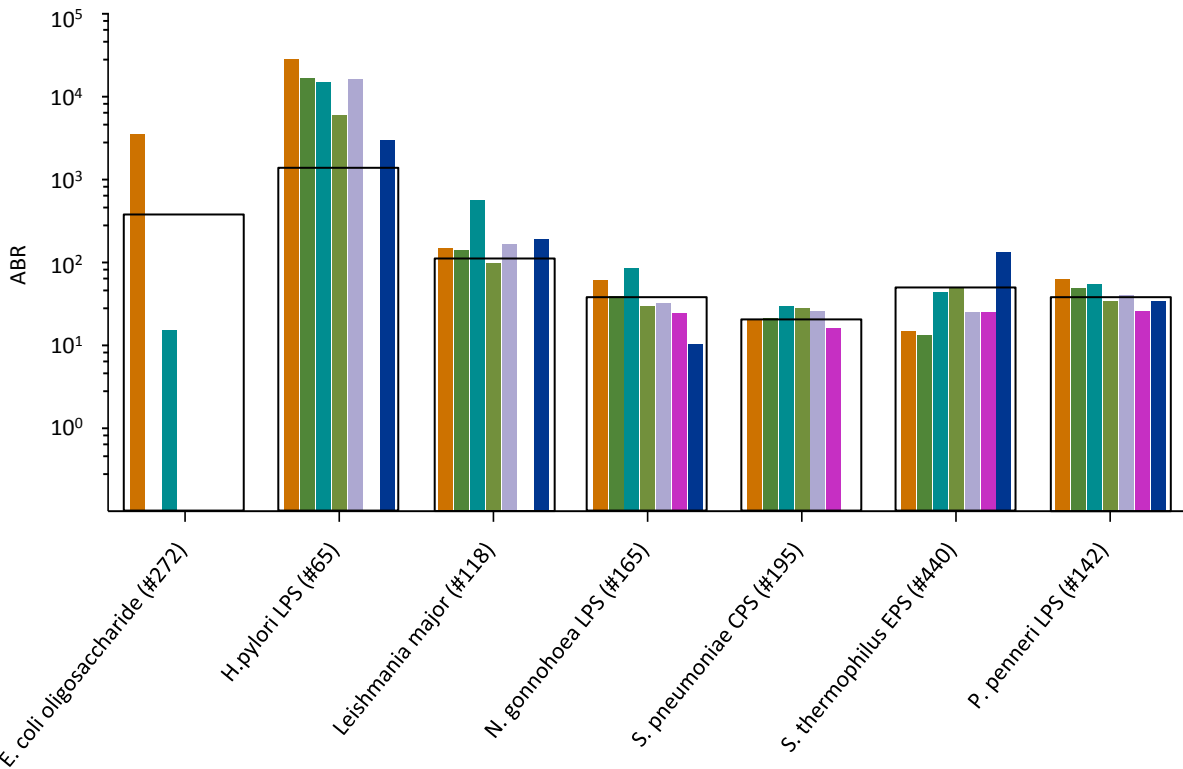


Figure S4. Immunogenicity of Neu5Gc-terminated glycans. Binding reactivities (RFU) of Sandoglobulin, Gammunex, Hizentra, Intratect, Privigen, Cytogam and Rhophylac to Neu5Gc-terminated carbohydrate structures (red or green).

A Intratect Privigen Sandoglobulin Gamunex Hizentra Cytogam Rhophylac



B

The top 20 microorganism associated glycans bound by IVIG / SCIG																
Chart #	Glycan Name	LPS / LOS		LTA	CPS		EPS		Other		Eukaryotic		Predominant Ab Isotype			
		gram -	gram +	gram +	gram -	gram +	gram -	gram +	gram -	Pathogen	Comm./Environ.	Pathogen	Comm./Environ.	Non-IgG2	IgG2	
		Pathogen	Comm./Environ.	Pathogen	Comm./Environ.	Pathogen	Comm./Environ.	Pathogen	Comm./Environ.	Pathogen	Comm./Environ.	Pathogen	Comm./Environ.			
562	GalNAcβ1-3GlcNAcβ-Sp0		x												x	
65	Fuca1-2Galβ1-3GlcNAcβ1-3Galβ1-4Glcβ-Sp8	x														x
107	Galα1-3(Fuca1-2)Galb-Sp8									x						x
190	GlcNAcβ1-4GlcNAcβ1-4GlcNAcβ1-4GlcNAcβ1-4GlcNAcβ1-Sp8														x	
8	Rhaa-Sp8		x													
145	Galβ1-3GalNAcβ1-4Galβ1-4Glcβ-Sp8	x														
118	Galα1-3Galb-Sp8							x				x				x
122	Galα1-4Galβ1-4Glcβ-Sp0	x	x													x
66	Fuca1-2Galβ1-3GlcNAcβ1-3Galβ1-4Glcβ-Sp10	x														
79	Fuca1-3GlcNAcβ-Sp8	x														
108	Galα1-3(Fuca1-2)Galb-Sp18							x								x
142	Galβ1-3GalNAcβ-Sp8	x	x							x					x	
165	Galβ1-4GlcNAcβ1-3Galβ1-4Glcβ-Sp8	x	x		x										x	
100	Galα1-2Galb-Sp8															
115	Galα1-3Galb1-4GlcNAcb-Sp8		x							x			x			x
264	Neu5Aca2-3Galb1-4Glcβ-Sp8	x	x													x
102	Galα1-3(Fuca1-2)Galβ1-3GlcNAcβ-Sp8	x													x	
468	Galα1-3(Fuca1-2)Galb1-3GalNAcb-Sp8	x													x	
179	GlcNAcβ1-3GalNAcα-Sp8	x														x
448	Galβ1-4GlcNAcβ1-2Mana-Sp0		x												x	

Figure S5. IgG binding to microorganism-associated carbohydrate structures. **(A)** Exemplary examples of ABR values for seven different glycans, associated with surface expression on microorganisms, in a grouped box plot for different IVIG and SCIG preparations. **(B)** The top 20 microorganism-associated glycans bound by IVIG/SCIG. Bacterial glycans were identified using the Bacterial Carbohydrate Structure Data Base (BCSDB). Abbreviations: CPS = capsular polysaccharides, EPS = exopolysaccharides, LPS = lipopolysaccharides, LOS = lipooligosaccharides, LTA = lipoteichoic acid, Comm. = commensal, Environ. = environmental, Ab = antibody

Supplemental Table 1: Characteristics of immunoglobulin products used in the study

Product	IgG2 content ¹⁾	Manufacturing processes: major purification steps	Excipients	Route Form	Characteristics	Plasma origin; Donors per lot	Manufacturer
Intratect	37%	Cold ethanol fractionation, cation-exchange chromatography	Glycine	i.v. liquid	Total serum IgG	na	Biotest
Privigen	28.7%	Cold ethanol fractionation, octanoic acid precipitation, anion-exchange chromatography	Proline	i.v. liquid	Total serum IgG	EU ²⁾ , USA; 1000 - 60'000	CSL Behring
Hizentra	22-34%	Cold ethanol fractionation, octanoic acid precipitation, anion-exchange chromatography	Proline, polysorbate 80	s.c. liquid	Total serum IgG	EU ²⁾ , USA; 1000 - 60'000	CSL Behring
Gamunex	29.7%	Cold ethanol fractionation, caprylate precipitation, anion exchange chromatography	Glycine	i.v. liquid	Total serum IgG	na	Grifols/Talecris
CytoGam	28%	Cold ethanol fractionation	Sucrose, albumin	i.v. liquid	Total IgG from anti-CMV enriched serum	USA 1500-5000	CSL Behring
Rhophylac	7.6%	Cation-exchange chromatography	Glycine, albumin, NaCl	i.v.; i.m. liquid	Hyperimmune IgG anti-RhD blood group antigen	USA; <400	CSL Behring
Sandoglobulin	30.2%	Cold ethanol fractionation	Sucrose, NaCl	i.v. lyophil.	Total serum IgG	USA; >16'000	CSL Behring

¹⁾ Average IgG2 content as reported in Summary of Product Characteristics (SPC) documents or Product Insert leaflets of the various products

²⁾ Austria, Switzerland, Germany

na; information not available

Supplemental Table 2. Comprehensive list of glycoforms bound by antibodies contained in IVIG. Results for each of the 610 glycoforms on the array and for 8 different IVIg preparations (Intratect, Privigen, Gamunex, Hizentra, CytoGam, Rhophylac, Sandoglobulin, IgG2-depl. Sandoglobulin) and 1 control mix IgG are shown. Displayed are average RFU and S.D. for each preparation (n=6 per preparation).

Chart #	MasterList Name	Intratect		Privigen		Gamunex		Hizentra		CytoGam		Rhophylac		Sandoglobulin		IgG2 depl.		Control Mix	
		RFU	S.D.	RFU	S.D.	RFU	S.D.	RFU	S.D.	RFU	S.D.	RFU	S.D.	RFU	S.D.	RFU	S.D.	RFU	S.D.
1	Gala	1253.4	108.8	728.3	71.3	667.8	134.8	752.7	117.0	1062.6	58.2	1039.0	106.3	2273.6	392.5	177.7	80.8	136.7	18.7
2	Neu5Ac	446.6	61.0	126.5	64.1	75.3	18.1	172.5	28.2	159.6	70.0	293.4	120.0	129.6	56.6	73.4	17.0	47.3	28.1
3	Mana	292.9	26.0	374.1	50.0	108.6	61.8	314.6	90.3	236.4	55.0	278.4	5.8	315.7	240.0	154.0	24.8	71.6	24.2
4	GalNAc	392.4	119.0	144.6	14.0	302.3	101.6	106.5	24.4	163.2	63.0	230.4	90.7	194.0	73.1	66.6	15.5	26.3	14.2
5	Fuca	613.7	20.2	501.6	43.8	289.1	61.7	133.7	29.7	398.7	144.9	731.4	22.1	332.3	62.2	253.5	70.4	191.1	102.5
6	Fuca	633.7	33.3	354.7	79.6	510.9	49.4	290.8	110.6	576.6	54.1	1038.9	73.8	283.3	97.3	161.0	37.1	43.3	30.9
7	Fuca	239.5	73.6	244.3	25.9	81.7	30.3	150.7	76.4	368.3	93.2	269.1	82.8	352.4	64.3	162.4	84.4	20.4	30.7
8	Neu5Ac	8646.4	488.5	7429.8	284.4	7684.5	270.7	7270.2	234.3	6094.0	399.2	7458.4	782.0	6022.8	611.7	3362.7	638.4	45.4	39.8
9	Neu5Ac	698.6	133.1	374.0	63.8	189.8	63.4	331.9	58.3	280.9	91.5	271.5	42.3	94.9	36.0	298.1	17.4	131.9	43.6
10	Neu5Ac	87.7	15.5	111.1	14.5	110.1	54.5	75.0	38.0	109.6	25.0	109.0	25.7	43.9	67.8	28.8	2.6	2.9	19.0
11	Neu5Ac	1180.1	103.8	1349.8	126.8	616.1	38.1	1060.8	66.8	939.9	119.2	503.4	25.7	1335.3	247.1	518.9	131.2	75.6	7.0
12	Gal1-3	241.0	91.3	1109.4	231.3	135.1	107.3	51.7	99.8	43.1	350.6	339.8	392.3	85.3	44.5	21.2	118.1	34.3	38.6
13	Glc3	125.4	75.3	0.0	0.0	16.1	60.5	7.9	41.1	14.3	31.8	18.2	0.0	53.9	20.3	14.1	3.3	38.6	0.0
14	Manb	535.7	43.7	63.9	23.3	57.7	12.9	156.3	46.7	160.9	25.7	376.2	139.1	6.2	26.2	58.8	38.6	75.3	21.7
15	GlcNAc	615.0	71.3	61.0	29.2	208.3	34.7	20.8	68.3	77.5	35.1	50.5	0.0	43.6	17.2	20.0	11.0	35.7	38.7
16	GlcNAc	711.6	59.2	176.5	93.5	23.6	7.5	0.0	202.2	157.2	45.9	829.9	289.2	287.6	65.4	115.2	48.6	114.4	44.8
17	GlcNAc	758.9	122.7	355.9	96.7	455.1	67.0	299.3	179.4	491.5	69.9	1593.7	321.3	396.3	62.6	113.2	108.7	11.2	11.6
18	GlcNAc	430.5	125.0	317.2	78.3	73.2	21.4	13.6	48.8	290.6	28.8	582.0	124.5	335.1	71.2	108.1	26.3	274.4	45.0
19	Gal1-4GlcNAc	24.7	11.1	0.0	23.4	48.8	32.0	92.6	99.6	83.9	61.6	82.7	35.7	20.6	40.3	24.6	23.0	63.4	58.9
20	Gal1-4GlcNAc	559.8	150.5	383.7	40.7	149.0	85.3	287.9	32.5	624.9	42.9	503.6	36.6	558.4	83.0	361.3	30.3	153.4	16.1
21	GlcNAc1-6GlcNAc	581.1	496.0	2087.9	267.2	4962.4	233.2	2244.4	85.2	1429.4	83.6	971.4	31.6	3103.2	769.0	372.3	100.0	16.1	8.4
22	RS(3S)Gal1-4GlcNAc	241.0	91.3	1109.4	231.3	135.1	107.3	51.7	99.8	43.1	350.6	339.8	392.3	85.3	44.5	21.2	118.1	34.3	38.6
23	RS(3S)Gal1-4GlcNAc	262.6	66.2	275.3	11.8	319.6	36.9	173.2	14.2	359.1	42.7	799.1	120.8	175.1	48.1	109.8	26.3	86.9	12.7
24	(3S)Gal1-4(Fuca1-3)6S(Glc	365.9	53.0	441.0	91.9	391.2	21.8	399.6	32.7	347.8	37.8	432.8	47.8	629.2	626.8	128.9	18.8	156.2	23.2
25	(3S)Gal1-4(Glc	607.8	72.1	259.6	49.5	173.6	59.8	206.4	41.3	358.9	76.5	386.0	81.9	354.0	71.3	103.2	20.0	124.1	14.1
26	(3S)Gal1-4(6S)Glc	584.0	64.5	29.2	19.7	19.7	33.2	68.3	19.3	68.3	19.3	68.3	19.3	68.3	19.3	68.3	19.3	68.3	19.3
27	(3S)Gal1-4(6S)Glc	879.9	56.1	380.0	28.8	472.1	55.2	436.0	100.0	583.4	36.4	639.2	17.4	727.6	63.8	241.6	42.7	10.2	19.2
28	(3S)Gal1-3(Fuca1-4)GlcNAc	157.7	30.3	139.2	13.3	199.4	100.2	28.8	174.1	152.7	25.4	348.7	11.2	27.2	19.1	102.3	9.2	23.1	17.7
29	(3S)Gal1-3GlcNAc	227.3	39.5	181.9	30.8	207.9	61.1	193.1	53.3	164.8	61.1	193.1	53.3	164.8	61.1	193.1	53.3	164.8	61.1
30	(3S)Gal1-3GlcNAc	4773.0	621.7	2137.0	355.6	1786.4	221.7	1606.7	482.3	1430.0	157.8	3300.6	508.5	1851.8	249.0	1623.1	311.3	0.1	15.8
31	(3S)Gal1-3GlcNAc	2829.8	1525.1	1971.0	17.2	1234.4	41.3	2212.0	235.2	2099.4	73.3	2902.4	289.3	3590.0	754.7	2301.5	110.9	29.8	26.6
32	(3S)Gal1-4(Fuca1-3)GlcNAc	220.0	37.2	214.8	28.5	286.5	37.2	214.8	28.5	286.5	37.2	214.8	28.5	286.5	37.2	214.8	28.5	286.5	37.2
33	(3S)Gal1-4(Fuca1-3)GlcNAc	302.0	49.6	380.8	49.8	182.2	66.7	176.4	60.9	177.7	60.9	177.7	60.9	177.7	60.9	177.7	60.9	177.7	60.9
34	(3S)Gal1-4(6S)GlcNAc	400.9	35.2	351.9	59.8	288.1	48.8	386.6	107.5	432.5	37.3	615.7	61.3	324.2	103.2	117.8	48.7	18.1	42.8
35	(3S)Gal1-4(6S)GlcNAc	397.2	111.8	327.7	56.3	198.0	41.0	264.8	21.3	215.7	165.9	550.8	88.0	414.4	82.0	113.4	22.0	73.2	14.2
36	(3S)Gal1-4(GlcNAc	697.5	68.0	519.1	63.8	507.9	63.1	532.8	116.8	618.3	63.8	519.1	63.8	507.9	63.8	519.1	63.8	507.9	63.8
37	(3S)Gal1-4GlcNAc	73.2	24.4	46.1	17.0	46.1	17.0	46.1	17.0	46.1	17.0	46.1	17.0	46.1	17.0	46.1	17.0	46.1	17.0
38	(3S)Gal1-4GlcNAc	228.3	47.7	74.2	23.6	48.8	20.7	79.7	39.7	153.8	39.6	430.9	87.6	0.0	8.8	73.0	36.1	117.6	20.2
39	(3S)Gal1-4GlcNAc	242.0	90.7	591.8	67.4	366.0	19.9	404.4	18.7	404.4	18.7	404.4	18.7	404.4	18.7	404.4	18.7	404.4	18.7
40	(4S)Gal1-4GlcNAc	1727.8	34.4	249.1	29.2	20.2	8.9	86.2	35.7	285.2	42.6	319.7	7.7	21.5	35.8	50.0	13.4	17.5	35.7
41	(6P)Mana	742.1	128.8	485.7	72.3	467.4	44.3	238.8	172.3	380.4	70.1	556.8	59.3	663.3	21.2	142.8	22.1	67.1	18.9
42	(6S)Gal1-4Glc	386.1	98.8	209.3	70.1	104.2	11.5	128.4	56.8	306.3	62.2	643.2	482.3	286.6	34.6	38.1	31.9	215.0	94.4
43	(6S)Gal1-4Glc	122.0	30.7	591.8	67.4	366.0	19.9	404.4	18.7	404.4	18.7	404.4	18.7	404.4	18.7	404.4	18.7	404.4	18.7
44	(6S)Gal1-4Glc	11.1	21.6	73.2	18.8	11.1	21.6	73.2	18.8	11.1	21.6	73.2	18.8	11.1	21.6	73.2	18.8	11.1	21.6
45	(6S)Gal1-4(6S)Glc	540.4	80.4	439.7	59.2	331.5	65.0	798.9	219.2	503.9	31.8	720.3	70.9	489.9	115.4	137.2	50.8	61.8	23.2
46	(6S)Gal1-4(6S)Glc	831.3	137.9	444.0	73.5	457.6	40.4	572.1	188.9	561.4	74.6	1193.7	148.3	687.1	60.2	118.5	48.5	28.6	25.2
47	(6S)Gal1-4(6S)Glc	58.6	25.0	20.0	34.8	111.5	39.2	26.5	32.6	238.3	144.4	243.9	45.5	1002.4	24.8	32.4	18.5	4.9	12.6
48	(6S)Gal1-4(6S)Glc	168.3	30.3	159.5	27.7	91.4	41.6	402.5	93.7	66.1	16.8	113.5	38.2	14.0	21.5	63.6	13.9	37.1	8.0
49	Man1-6(Man1-3)Man1-4GlcNAc	698.6	90.5	616.8	60.0	616.8	60.0	616.8	60.0	616.8	60.0	616.8	60.0	616.8	60.0	616.8	60.0	616.8	60.0
50	Man1-6(Man1-3)Man1-4GlcNAc	335.4	61.5	298.7	19.4	189.0	45.2	864.6	732.4	237.5	80.2	218.2	38.7	255.3	132.2	171.1	0.8	165.6	51.7
51	Man1-6(Man1-3)Man1-4GlcNAc	92.6	46.0	0.0	9.3	55.3	51.2	37.0	37.9	91.8	39.4	137.0	26.6	67.2	41.0	46.6	14.6	26.8	17.9
52	GlcNAc1-2Man1-6(GlcNAc1-2Man1-3)Man1-4GlcNAc	180.8	58.1	156.6	15.9	91.9	29.4	244.1	89.1	94.0	14.9	128.7	24.2	93.0	32.2	139.3	40.0	71.5	18.7
53	GlcNAc1-2Man1-6(GlcNAc1-2Man1-3)Man1-4GlcNAc	111.3	58.9	0.8	34.7	150.2	34.2	99.4	47.3	221.4	96.6	223.8	23.9	120.1	44.9	81.0	51.9	45.9	15.5
54	GlcNAc1-2Man1-6(GlcNAc1-2Man1-3)Man1-4GlcNAc	66.5	30.6	111.7	51.6	139.5	38.5	129.4	62.9	80.5	34.0	118.4	69.8	267.1	321.8	6.8	50.0	58.5	21.6
55	Neu5Ac2-6Gal1-4GlcNAc	170.8	12.8	98.3	24.4	344.7	248.0	126.9	13.7	100.9	32.5	205.2	46.1	82.6	57.0	41.6	29.1	33.0	9.4
56	Neu5Ac2-6Gal1-4GlcNAc	28.7	42.6	111.1	51.4	123.4	13.5	384.3	277.0	99.0	24.0	149.0	82.8	290.5	89.8	84.5	34.9	128.3	18.7
57	Neu5Ac2-6Gal1-4GlcNAc	464.3	41.4	326.7	62.1	163.8	22.3	172.0	56.8	225.0	67.6	374.4	42.1	472.2	32.1	121.5	54.4	30.0	19.0
58	Fuca1-2Gal1-3GalNAc1-3Gal1-4Gal1-4Glc	1664.9	41.8	1039.7	168.8	924.0	198.8	1250.6	63.4	851.8	121.2	1858.3	74.8	975.1	210.7	165.4	38.0	50.2	13.6
59	Fuca1-2Gal1-3GalNAc1-3Gal1-4Gal1-4Glc	86.5	59.5	24.3	17.1	86.5	59.5	24.3	17.1	86.5	59.5	24.3	17.1	86.5	59.5	24.3	17.1	86.5	59.5
60	Fuca1-2Gal1-3GalNAc1-3Gal1-4Gal1-4Glc	97.0	38.0	30.3	12.4	31.6	18.3	57.4	14.8	49.1	20.3	68.2	212.4	6.4	16.2	94.4	40.0	110.5	39.2
61	Fuca1-2Gal1-3GalNAc1-3																		

Supplemental Table 2. (Continued)

137	NeuAc2-6(Gal1-3)GalNAc4	119	19.0	15.3	10.0	34.1	13.0	62.1	21.2	38.2	26.0	55.1	25.4	0.0	56.3	44.2	27.1	5.0	15.2	
138	NeuAc2-6(Gal1-3)GlcNAc1-4Gal1-4Glc	166	64.5	152.1	61.1	170.0	40.3	91.4	33.8	151.1	27.6	98.8	52.5	561.0	141.8	6.9	25.3	4.2	24.7	
139	Gal1-3GalNAc4	69	31.5	42.7	13.8	18.0	15.5	22.3	21.4	32.8	10.8	44.6	15.4	15.4	61.8	59.5	9.4	0.1	11.6	
140	Gal1-3GalNAc4	125	53.4	155.3	57.6	103.4	16.8	146.6	68.3	109.6	49.8	225.1	220.1	733.4	33.1	0.0	138.3	44.7	17.9	
141	Gal1-3GalNAc4	120	24.1	159.5	189.3	46.0	15.9	75.5	57.8	16.2	18.2	88.3	60.0	425.0	57.3	74.1	24.3	1.2	31.3	
142	Gal1-3GalNAc4	2470	71.5	191.1	35.5	1370.2	97.1	1596.7	21.3	1033.2	51.8	1355.3	109.4	2174.6	240.1	1477.8	119.3	39.8	21.8	
143	Gal1-3GalNAc1-3Gal1-4Gal1-4Glc	1107.1	107.5	92.8	60.7	1298.1	119.9	68.8	892.3	36.2	2269.3	193.7	3045.7	189.2	291.3	39.7	2.5	25.1		
144	Gal1-3GalNAc1-4NeuAc2-3Gal1-4Glc	254.3	57.1	287.7	28.3	270.2	71.4	175.7	37.9	203.0	47.3	288.3	104.3	178.3	21.4	123.1	23.8	0.1	4.5	
145	Gal1-3GalNAc1-4Gal1-4Glc	2325.4	87.5	1896.7	192.4	1647.4	109.1	2013.3	178.8	1283.2	99.8	970.3	124.1	2578.4	148.5	663.4	66.6	5.2	48.4	
146	Gal1-3GalNAc1-4Glc	234.0	39.3	239.3	32.3	229.5	4.5	259.6	6.8	157.8	9.8	157.8	9.8	157.8	9.8	157.8	9.8	157.8	9.8	
147	Gal1-3GlcNAc1-3Gal1-4GlcNAc	151.4	20.3	74.3	53.9	49.0	42.4	40.4	22.8	26.7	16.3	19.7	11.2	87.7	22.0	0.0	38.0	0.1	19.7	
148	Gal1-3GlcNAc1-3Gal1-4Glc	1023.0	86.4	679.3	86.7	763.8	105.7	843.2	30.9	567.9	78.8	237.7	39.1	271.5	230.6	376.3	31.9	6.3	11.6	
149	Gal1-3GlcNAc1-3Gal1-4Glc	101.9	39.3	78.7	54.4	101.2	32.4	14.7	45.3	75.1	29.4	54.5	17.8	175.4	154.5	10.0	46.0	22.6	6.8	
150	Gal1-3GlcNAc1-3Gal1-4Glc	107.8	47.2	82.3	11.3	113.2	40.2	137.3	74.9	183.2	82.5	361.2	120.3	3162.7	191.8	68.8	8.9	4.6	12.7	
151	Gal1-4(Fuca1-3)GlcNAc	101.0	16.6	53.2	14.3	140.8	84.3	13.0	28.4	71.8	24.5	133.5	35.9	148.7	81.0	48.8	9.1	0.1	15.6	
152	Gal1-4(Fuca1-3)GlcNAc	93.7	99.5	135.4	22.7	244.8	166.4	69.9	138.3	79.0	199.3	75.0	0.0	147.1	72.8	12.3	22.2	19.8	11.8	
153	Gal1-4(Fuca1-3)GlcNAc1-3Gal1-4(Fuca1-3)GlcNAc	885.6	55.4	671.2	38.3	831.9	74.2	414.6	60.6	787.9	32.3	841.2	81.5	744.9	58.8	470.3	85.5	54.7	29.5	
154	Gal1-4(Fuca1-3)GlcNAc1-3Gal1-4(Fuca1-3)GlcNAc1-3Gal1-4(Fuca1-3)GlcNAc	128.1	60.2	297.4	42.2	328.8	29.9	240.8	74.5	482.3	67.0	180.1	35.1	463.6	81.0	57.1	31.0	33.0	30.4	
155	Gal1-4(Fuca1-3)GlcNAc	380.3	73.3	550.2	43.3	758.6	126.0	478.7	88.3	705.0	81.1	1119.4	56.9	1969.3	203.1	99.3	26.7	92.5	27.7	
156	Gal1-4(Fuca1-3)GlcNAc	545.8	72.0	612.3	68.1	680.1	51.3	375.3	113.9	969.3	15.6	713.4	50.2	1310.9	216.8	128.1	59.4	59.5	51.8	
157	Gal1-4(Fuca1-3)GlcNAc1-3Gal1-4GlcNAc	0.0	23.4	0.0	47.9	0.0	13.0	44.1	20.4	3.5	6.3	0.0	22.4	20.5	24.3	0.0	8.7	17.0	11.8	
158	Gal1-4(Fuca1-3)GlcNAc1-3Gal1-4GlcNAc	44.7	151.3	0.0	45.8	0.0	15.7	3.7	8.5	35.1	16.7	163.6	81.8	0.0	13.7	51.7	17.8	65.5	46.7	
159	Gal1-4(Fuca1-3)GlcNAc1-3Gal1-4GlcNAc	31.3	14.2	121.4	10.2	14.7	11.6	41.4	26.9	34.9	8.0	58.9	37.4	21.1	33.0	28.1	28.2	27.2	17.4	
160	Gal1-4(Fuca1-3)GlcNAc1-3Gal1-4GlcNAc	0.0	10.9	25.9	16.9	16.4	15.8	19.0	14.2	83.5	28.1	107.6	45.2	92.8	22.7	88.0	50.7	137.0	58.3	
161	Gal1-4(Fuca1-3)GlcNAc1-3Gal1-4(Fuca1-3)GlcNAc1-3Gal1-4(Fuca1-3)GlcNAc	169.4	41.6	110.8	38.3	162.7	36.0	0.0	62.3	186.0	52.8	123.6	37.2	249.4	55.6	62.4	50.2	41.8	25.6	
162	Gal1-4GlcNAc1-3Gal1-4GlcNAc1-3Gal1-4GlcNAc	83.4	61.7	58.4	7.6	23.6	15.7	20.5	14.8	85.8	28.2	77.5	19.4	140.3	21.7	46.2	5.5	146.0	30.0	
163	Gal1-4GlcNAc1-3Gal1-4GlcNAc	70.8	34.0	114.7	12.7	111.7	38.1	155.8	67.7	95.5	53.1	108.8	25.3	3006.4	3518.7	23.6	32.6	10.6	19.0	
164	Gal1-4GlcNAc1-3Gal1-4GlcNAc	103.8	33.8	103.8	15.4	65.4	11.6	65.4	11.6	65.4	11.6	65.4	11.6	65.4	11.6	65.4	11.6	65.4	11.6	
165	Gal1-4GlcNAc1-3Gal1-4GlcNAc	3452.1	190.2	221.2	280.3	1640.4	155.8	1819.8	386.3	1396.3	175.2	573.6	73.8	4717.3	484.7	1059.2	56.9	6.9	16.6	
166	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	226.9	23.1	297.9	41.7	131.8	16.7	276.2	109.2	269.7	35.7	330.6	94.1	6244.6	1436.0	60.2	9.2	16.9	25.9	
167	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	539.9	95.3	571.8	61.1	390.7	38.8	376.5	199.0	487.4	39.6	428.7	44.4	692.2	86.2	215.8	33.3	25.1	30.0	
168	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	251.4	61.0	246.3	36.8	239.9	12.3	189.4	101.6	481.9	80.4	481.9	80.4	481.9	80.4	481.9	80.4	481.9	80.4	
169	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	167.7	34.9	111.2	50.7	69.1	25.8	74.3	19.6	64.5	39.5	106.4	39.7	264.3	84.8	10.9	21.6	0.1	17.2	
170	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	2319.0	996.5	1573.0	132.8	1634.1	81.0	1137.5	234.1	2141.2	82.2	3827.7	442.2	6765.2	297.3	665.5	121.9	30.2	16.8	
171	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	846.5	171.3	680.7	74.3	867.8	126.6	500.1	244.8	650.8	89.1	6113.4	1208.7	2103.7	1366.2	213.8	40.7	21.5	18.1	
172	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	4932.2	116.9	203.4	63.4	624.8	94.8	1922.5	40.2	2139.8	194.4	1511.5	157.2	1969.3	137.2	694.2	39.6	14.2	19.1	
173	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	176.3	71.7	106.3	28.7	133.2	73.3	93.6	125.4	234.6	27.3	178.9	38.8	1567.9	95.1	7.0	22.0	25.4	5.2	
174	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	236.4	48.7	629.8	45.2	717.6	47.8	600.5	54.8	1499.9	84.6	1304.9	90.1	811.7	118.0	142.7	15.4	121.8	60.3	
175	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
176	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	1136.3	29.5	1020.7	62.2	926.6	73.8	400.8	105.6	1114.8	61.2	320.5	50.9	1878.2	248.8	148.8	21.2	60.1	20.9	
177	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	180.0	0.0	34.8	0.0	18.4	0.0	18.0	46.9	15.1	14.0	26.8	26.0	20.1	0.5	48.0	13.1	7.8	0.1	8.2
178	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	259.9	68.5	22.2	12.4	37.1	11.7	0.0	25.3	104.9	57.0	367.2	51.8	0.0	32.2	65.9	9.1	63.3	8.7	
179	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	0.0	28.7	0.0	7.2	0.0	19.2	0.0	8.4	13.3	30.3	0.0	8.4	7.2	29.9	13.5	39.8	25.5	6.8	
180	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	2.7	34.5	25.0	6.2	11.5	4.4	29.0	8.6	63.9	10.0	146.0	35.3	0.0	20.8	63.8	20.4	148.7	51.3	
181	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	70.1	34.8	0.0	19.4	63.4	13.3	64.8	52.5	33.0	33.4	34.1	20.4	127.9	57.0	25.5	36.9	39.2	27.8	
182	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	70.1	34.8	0.0	19.4	63.4	13.3	64.8	52.5	33.0	33.4	34.1	20.4	127.9	57.0	25.5	36.9	39.2	27.8	
183	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	10259.3	720.8	8174.7	1011.6	8564.8	1890.9	5942.7	463.3	5399.9	367.2	3022.8	850.3	5488.4	2287.9	2106.2	210.5	25.5	27.6	
184	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	4821.0	997.6	2272.9	75.2	2520.7	309.0	1827.3	115.2	2698.9	217.0	1206.3	200.0	6895.9	2068.7	62.9	26.8	73.8	67.1	
185	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	2470.8	42.9	3457.8	21.8	2477.6	321.9	2568.6	121.9	4059.3	401.8	1444.6	138.8	5477.9	528.6	146.8	21.8	97.8	135.6	
186	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	5834.9	221.5	3095.1	262.8	3083.3	208.7	3010.8	110.9	2585.2	176.6	274.4	74.5	2308.5	204.6	812.0	30.7	39.5	46.0	
187	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	5904.1	216.7	3650.3	111.4	2823.8	91.6	2726.6	123.3	3811.1	822.3	1889.3	54.4	5030.3	64.8	1468.5	107.0	5.5	23.0	
188	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	2294.1	107.0	1623.7	183.3	2105.8	87.3	1301.5	75.8	1535.6	83.9	911.7	96.3	2199.5	281.5	486.1	49.1	26.2	15.7	
189	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	1828.1	44.9	624.9	64.8	624.9	64.8	624.9	64.8	624.9	64.8	624.9	64.8	624.9	64.8	624.9	64.8	624.9	64.8	
190	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	5834.9	221.5	3095.1	262.8	3083.3	208.7	3010.8	110.9	2585.2	176.6	274.4	74.5	2308.5	204.6	812.0	30.7	39.5	46.0	
191	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	5904.1	216.7	3650.3	111.4	2823.8	91.6	2726.6	123.3	3811.1	822.3	1889.3	54.4	5030.3	64.8	1468.5	107.0	5.5	23.0	
192	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	2294.1	107.0	1623.7	183.3	2105.8	87.3	1301.5	75.8	1535.6	83.9	911.7	96.3	2199.5	281.5	486.1	49.1	26.2	15.7	
193	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	1828.1	44.9	624.9	64.8	624.9	64.8	624.9	64.8	624.9	64.8	624.9	64.8	624.9	64.8	624.9	64.8	624.9	64.8	
194	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	2173.1	39.8	1062.6	136.8	963.1	118.1	963.1	118.1	963.1	118.1	963.1	118.1	963.1	118.1	963.1	118.1	963.1	118.1	
195	Gal1-4GlcNAc1-6(Gal1-3)GalNAc4	305.6	92.1	434.5	52.3	241.0	96.3	296.5	86.4	416.7	21.1	527.9	609.3	570.6	98.7	28.5	63.2	43.8	83.7	
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Supplemental Table 2. (Continued)

385	Galb1-4(Fuca1-3)GlcNAc1-6(Fuca1-4)(Fuca1-2Galb1-3)GlcNAc1-3Galb1-4Glc	148.2	77.1	0.0	24.0	0.0	7.7	5.1	32.0	83.1	32.2	102.1	68.8	0.0	34.2	6.1	19.8	62.5	43.2
386	Galb1-3GlcNAc1-3Galb1-4(Fuca1-3)GlcNAc1-6(Galb1-3)GlcNAc1-3Galb1-4Glc	156.0	52.3	73.4	23.8	65.7	14.3	21.1	18.9	80.2	53.9	46.0	30.8	49.1	34.6	37.0	50.2	39.1	45.9
387	Galb1-4GlcNAc1-6(Galb1-4)GlcNAc1-2)Man1-6(Galb1-4)GlcNAc1-4(Galb1-4)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	5.4	51.6	0.0	25.4	0.0	10.1	0.0	194.7	69.8	23.8	101.0	20.7	8.6	64.5	24.5	4.9	123.0	33.6
388	Galb1-4GlcNAc1-6(Galb1-4)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	516.7	189.3	386.5	93.0	248.5	105.2	181.9	148.2	312.5	168.6	113.6	33.4	246.4	41.7	113.2	28.1	87.6	7.5
389	Fuca1-2Galb1-3GalNAc1-3(Fuca1-2)Galb1-4Glc	306.9	227.6	317.1	157.8	504.0	223.3	33.1	125.6	438.2	207.8	320.9	163.4	596.0	43.8	82.2	46.8	237.0	43.2
390	Fuca1-2Galb1-3GalNAc1-3(Fuca1-2)Galb1-4GlcNAc	630.9	273.1	680.0	200.8	892.5	215.7	727.9	404.3	412.1	280.3	278.2	205.4	252.4	104.9	109.8	63.1	68.0	49.8
391	Galb1-3GlcNAc1-3GalNAc	269.3	178.4	173.4	236.3	313.2	176.9	49.0	114.6	310.6	225.8	298.6	174.5	746.2	105.6	55.6	12.0	80.5	10.7
392	GalNAc1-4Neu5Ac2-3Galb1-4GlcNAc1-3GalNAc	1766.5	66.7	1668.9	96.9	1084.3	60.3	1511.5	315.9	1152.4	125.0	970.9	312.3	666.1	52.2	1087.9	107.8	1225.4	271.1
393	GalNAc1-3(Fuca1-2)Galb1-3GalNAc1-4(Fuca1-2)Galb1-4GlcNAc	939.4	361.5	1626.6	547.6	1898.0	188.7	1051.8	369.7	639.4	220.1	231.6	137.9	1490.9	288.2	44.5	21.9	25.2	14.9
394	Galb1-3Galb1-4GlcNAc1-2)Man1-6(Galb1-3Galb1-3)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	877.0	287.2	684.1	251.7	710.7	244.3	941.7	81.1	902.9	356.5	2176.5	1137.4	1143.3	182.1	345.8	155.5	379.8	189.7
395	Galb1-3Galb1-4GlcNAc1-2)Man1-6(Galb1-3Galb1-3)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	3508.4	168.3	3981.3	361.0	3621.6	245.0	3404.1	139.0	4332.4	618.3	4604.1	837.1	4899.8	646.3	1238.8	73.8	499.6	72.8
396	Neu5Ac2-3Galb1-3GlcNAc1-2)Man1-6(Galb1-3Galb1-3)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	671.3	153.6	571.7	170.1	242.7	187.1	641.0	114.7	510.3	182.7	645.1	136.8	3015.1	804.0	209.6	68.4	385.1	99.6
397	GlcNAc1-2)Man1-6(Galb1-4)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	229.5	123.6	0.0	48.4	62.5	36.7	120.2	54.0	87.2	54.6	311.7	34.7	80.9	101.7	21.6	33.7	0.1	16.1
398	Galb1-4GlcNAc1-2)Man1-6(GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	523.9	80.6	293.0	41.1	266.1	71.6	338.6	50.4	477.3	74.3	422.9	39.7	1460.2	464.4	85.2	23.7	0.1	28.8
399	Neu5Ac2-3Galb1-3GlcNAc1-3GalNAc	293.9	103.8	185.9	93.0	276.1	30.8	190.7	26.6	175.3	49.2	161.7	21.7	171.1	52.4	134.0	31.7	65.8	38.8
400	Fuca1-2Galb1-4GlcNAc1-3GalNAc	522.8	120.5	367.9	110.3	249.0	13.9	651.5	350.2	369.7	80.2	303.4	102.7	260.1	26.3	103.5	55.6	0.1	27.7
401	Galb1-4(Fuca1-3)GlcNAc1-3GalNAc	366.9	83.6	332.4	128.8	498.1	111.4	323.3	78.5	428.8	120.3	413.4	115.3	283.4	176.8	160.6	9.1	91.8	23.8
402	GalNAc1-3GalNAc1-3Galb1-4Galb1-4GlcNAc	4337.0	1435.3	2055.9	724.4	1982.7	470.7	2705.0	952.9	1863.9	580.9	1600.1	541.8	4633.4	268.2	917.8	424.6	24.2	14.9
403	Galb1-4Galb1-3GlcNAc1-2)Man1-6(Galb1-4Galb1-3)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	4774.4	1605.3	2692.0	856.9	2926.8	367.2	2875.3	785.2	2195.3	547.3	2407.9	388.8	5448.2	588.8	971.8	584.7	81.7	33.3
404	Galb1-4Galb1-3GlcNAc1-2)Man1-6(Galb1-4Galb1-3)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	4582.6	803.7	2004.4	235.9	1838.7	211.0	1917.6	289.8	1629.7	241.9	1757.0	208.2	9304.6	826.0	1344.0	161.7	65.9	11.5
405	Galb1-3Galb1-4GlcNAc1-3GalNAc	959.3	356.1	504.7	219.0	908.9	424.3	496.6	233.9	596.4	123.9	380.7	134.2	1875.1	173.2	102.7	43.7	37.3	8.4
406	Galb1-3Galb1-4GlcNAc1-3GalNAc	291.7	78.7	324.8	29.3	142.5	37.0	129.6	21.6	240.4	39.6	436.5	119.0	604.3	47.8	48.1	38.9	11.1	27.5
407	Galb1-3GlcNAc1-2)Man1-6(Galb1-4)GlcNAc1-4GlcNAc	7764.9	733.5	3594.8	940.0	2696.7	473.8	3803.6	742.7	2271.9	139.2	829.7	59.2	6710.0	706.4	885.7	73.3	22.8	19.8
408	Galb1-3Galb1-4GlcNAc1-4GlcNAc	2126.3	836.9	49.6	28.4	0.0	11.1	731.8	230.8	128.8	47.6	398.9	138.5	168.8	55.9	24.7	22.2	33.8	12.2
409	Galb1-3Galb1-4GlcNAc1-4GlcNAc	194.4	103.9	165.7	142.7	18.1	11.7	70.3	21.8	139.4	25.7	231.6	31.6	283.8	164.3	23.9	24.5	12.2	38.8
410	Galb1-4GlcNAc1-6(Galb1-4)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	190.9	43.9	192.3	150.0	68.2	103.3	34.4	97.6	118.4	18.6	58.3	20.8	178.3	33.0	31.9	45.3	45.0	33.4
411	Galb1-3Galb1-4GlcNAc1-4Neu5Ac2-3Galb1-4GlcNAc	2102.1	229.9	1017.1	270.8	94.4	53.8	566.7	101.7	921.4	116.3	728.1	145.4	1390.9	93.7	102.5	45.3	175.4	31.8
412	Neu5Ac2-3Galb1-3GlcNAc1-4Neu5Ac2-8Neu5Ac2-3Galb1-4GlcNAc	1078.0	350.6	523.9	292.1	867.2	180.9	378.6	149.1	652.8	69.2	329.1	106.1	736.0	270.4	278.2	61.6	52.7	20.1
413	Galb1-3(Fuca1-2)Galb1-4GlcNAc1-3GalNAc	361.7	137.0	320.9	96.4	319.4	56.3	252.8	85.5	291.0	66.0	205.9	52.3	472.0	86.5	106.6	34.7	187.0	36.3
414	GalNAc1-3(Fuca1-2)Galb1-4GlcNAc1-3GalNAc	525.2	53.7	673.5	26.8	691.2	88.3	594.1	120.0	563.9	48.7	508.4	34.8	265.0	171.5	148.4	34.8	0.1	8.1
415	GalNAc1-3(Fuca1-2)Galb1-4GlcNAc1-3GalNAc	4217.7	1547.8	3176.7	920.3	3077.4	603.8	1956.0	828.4	3635.6	822.8	1915.6	451.4	5110.7	1015.3	91.7	13.8	103.7	18.9
416	Fuca1-2Galb1-4(Fuca1-3)GlcNAc1-3GalNAc	430.7	115.0	271.4	65.8	410.2	422.2	1072.3	589.5	469.2	86.5	577.4	195.5	369.8	121.2	137.7	60.7	104.0	75.8
417	Galb1-3(Fuca1-2)Galb1-4(Fuca1-3)GlcNAc1-3GalNAc	1107.5	220.7	1185.2	119.2	1023.8	82.4	824.2	220.0	1410.7	147.1	1126.4	134.3	422.0	47.1	182.7	59.9	47.0	4.1
418	Galb1-3(Fuca1-2)Galb1-4(Fuca1-3)GlcNAc1-3GalNAc	353.0	208.7	133.7	51.5	329.7	84.1	330.0	49.2	283.3	64.6	420.9	93.8	515.5	21.5	73.5	83.8	123.8	53.0
419	Galb1-4(Fuca1-3)GlcNAc1-2)Man1-6(Galb1-4)Fuca1-3)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	372.9	66.3	384.3	100.3	314.5	110.7	266.9	54.5	188.9	52.7	456.0	147.3	463.7	176.8	46.4	118.2	22.7	22.1
420	Fuca1-2Galb1-4GlcNAc1-2)Man1-6(Galb1-4)Fuca1-3)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	1972.5	498.2	1718.9	129.2	1443.0	132.9	1495.1	193.1	1606.7	130.3	1917.4	97.9	2433.3	95.5	83.2	134.5	187.9	45.9
421	GlcNAc1-2)Man1-6(GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	85.6	9.3	28.0	29.8	14.2	14.1	23.2	81.7	63.9	95.8	34.0	56.7	12.5	35.7	11.7	2.0	31.4	
422	Fuca1-2Galb1-3GlcNAc1-3GalNAc	234.7	106.3	190.2	39.9	198.8	54.1	0.0	361.1	180.0	45.8	471.7	89.9	100.7	95.0	51.4	28.4	60.5	19.4
423	Galb1-3(Fuca1-2)Galb1-3GlcNAc1-3GalNAc	630.4	156.2	344.4	157.1	619.4	68.8	433.3	25.2	347.7	107.7	548.4	72.1	1244.2	170.0	114.4	23.1	25.7	30.6
424	GalNAc1-3(Fuca1-2)Galb1-3GlcNAc1-3GalNAc	794.3	175.0	536.9	91.8	370.6	39.9	650.3	36.7	428.2	46.1	474.1	116.9	453.5	25.2	242.2	30.9	83.1	7.6
425	Galb1-3Galb1-4GlcNAc1-3GalNAc	1059.9	150.4	694.8	143.9	710.1	178.9	697.2	43.1	999.6	178.4	1241.3	70.4	1360.6	126.8	481.2	122.1	43.8	4.6
426	Galb1-3Galb1-4GlcNAc1-4(Fuca1-6)GlcNAc	1755.5	310.3	1745.7	328.4	1222.5	146.3	1367.9	145.8	1383.3	91.2	1477.5	79.2	2485.5	1020.0	825.1	65.5	96.1	19.8
427	Galb1-3(Fuca1-2)Galb1-4GlcNAc1-2)Man1-6(Galb1-3)Fuca1-2)Galb1-4GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	1814.5	487.8	1546.7	387.9	1880.7	339.6	1859.6	528.2	1992.8	175.8	913.3	158.3	1545.7	244.5	135.8	75.7	31.8	7.3
428	Galb1-3GlcNAc1-6(Galb1-3)GlcNAc1-2)Man1-6(Galb1-3)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	1229.5	248.9	1758.9	361.0	1066.7	155.9	1209.5	203.9	1125.5	184.9	784.2	126.5	1376.1	150.5	67.1	25.7	82.6	13.3
429	Galb1-4GlcNAc1-6(Galb1-4)GlcNAc1-2)Man1-6(Galb1-4)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	153.4	59.1	165.6	61.7	395.2	170.4	210.6	104.1	25.2	123.5	20.6	349.8	42.1	61.2	24.4	0.7	23.2	
430	Fuca1-3GlcNAc1-6(Galb1-4)GlcNAc1-3)Galb1-4Glc	598.3	213.3	539.2	169.8	288.5	125.3	385.2	174.2	407.2	65.1	428.2	167.5	709.3	65.3	250.0	73.7	190.6	63.8
431	GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	133.1	84.5	408.1	54.1	1235.6	138.7	309.8	100.2	854.9	145.7	247.0	32.8	142.2	33.3	141.1	93.3	22.2	15.4
432	GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc1-4)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	169.2	34.4	52.2	28.2	20.4	15.5	53.4	14.3	21.4	11.8	62.2	38.4	52.3	12.1	20.3	14.9	5.6	16.7
433	GlcNAc1-4)GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc1-2)Man1-3)Manb1-4)GlcNAc1-4GlcNAc	666.8	108.0	230.0															

Supplemental Table 2. (Continued)

474	Neu5Ac2-3Gal1-3GlcNAc1-6(Neu5Ac2-3Gal1-3GlcNAc1-2)Man1-6(Neu5Ac2-3Gal1-3GlcNAc1-2)Man1-3)Man1-4(GlcNAc1-4)GlcNAc	849.5	105.7	685.2	39.0	593.7	43.7	744.0	360.4	1036.8	65.5	2856.4	468.5	762.0	76.7	437.4	92.1	102.2	24.9
475	GlcNAc1-6(GlcNAc1-2)Man1-6(GlcNAc1-2)Man1-3)Man1-4(GlcNAc1-4)Fucal-6(GlcNAc1-4)GlcNAc	462.3	80.5	211.5	54.7	342.5	94.8	197.5	52.8	380.6	90.4	512.2	67.7	105.0	58.7	125.1	45.4	84.3	28.6
476	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-3)Man1-4(GlcNAc1-4)GlcNAc	4573.0	823.6	5245.3	1681.0	3990.0	338.0	5453.1	904.6	3084.2	284.5	3488.9	493.8	1518.8	118.9	2482.4	291.6	196.8	61.1
477	Neu5Ac2-6Gal1-4(GlcNAc1-6)Gal1-3(GlcNAc1-3)Gal1-4(GlcNAc1-6)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	414.2	100.5	311.7	67.2	300.4	47.8	229.7	22.0	349.0	72.3	304.7	50.5	146.9	18.7	96.5	54.7	102.3	71.3
478	Neu5Ac2-3Gal1-4(GlcNAc1-6)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	1093.6	46.4	933.4	107.6	688.6	83.8	946.5	220.2	726.3	162.0	3165.9	363.8	563.4	130.4	545.7	128.2	116.9	23.3
479	Neu5Ac2-3Gal1-4(GlcNAc1-6)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	342.3	328.8	1756.2	488.8	2032.4	92.8	328.3	122.1	2263.7	374.1	1455.4	127.5	205.8	51.7	1023.5	138.5	81.5	43.8
480	Neu5Ac2-6Gal1-4(GlcNAc1-6)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	426.0	189.6	471.9	131.3	743.9	306.9	454.9	27.4	1007.7	590.8	666.5	367.7	906.2	44.0	101.0	55.4	78.2	21.4
481	Neu5Ac2-6Gal1-4(GlcNAc1-6)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	238.8	38.8	317.2	59.7	232.9	65.3	240.9	64.9	359.0	143.1	362.7	153.1	554.7	23.3	27.4	33.5	0.1	34.5
482	Neu5Ac2-6Gal1-4(GlcNAc1-6)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	100.1	91.2	66.9	67.7	109.5	155.1	36.6	69.2	45.8	99.0	68.7	140.6	185.5	72.5	259.3	446.7	34.4	9.8
483	Neu5Ac2-3Gal1-4(GlcNAc1-6)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	86.5	57.2	58.8	17.3	51.1	41.3	63.6	10.0	112.0	45.3	113.7	48.8	0.0	30.9	72.3	49.9	70.8	22.9
484	Man1-6(Man1-4)GlcNAc1-6(GlcNAc1-4)Fucal-6(GlcNAc1-4)GlcNAc	948.7	54.6	920.2	156.2	45.9	16.9	1187.4	249.6	121.2	49.4	307.2	103.1	101.5	42.3	127.5	11.1	74.1	15.5
485	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	1286.1	96.0	727.1	145.1	212.5	106.3	723.9	46.8	710.9	102.4	288.4	86.9	413.4	58.7	102.2	77.0	0.1	34.5
486	Neu5Ac2-3Gal1-4(GlcNAc1-6)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	316.4	52.5	286.2	81.4	40.8	33.6	378.9	45.7	62.9	24.8	326.7	44.7	310.6	73.9	106.7	37.0	25.8	11.4
487	Neu5Ac2-6Gal1-4(GlcNAc1-6)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	503.3	111.8	436.3	43.2	329.9	31.5	273.0	58.5	365.6	120.8	196.5	104.1	279.4	30.4	73.3	63.0	0.1	51.3
488	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	752.4	224.9	331.9	148.1	161.2	37.6	188.0	121.9	44.1	7.7	416.7	98.7	1284.6	107.8	83.4	16.0	7.0	37.4
489	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	1692.9	543.4	610.9	284.1	793.4	165.4	483.6	156.7	914.2	229.2	493.1	111.0	1947.3	126.0	92.2	29.4	27.0	17.1
490	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	100.0	72.7	34.8	55.7	124.5	39.3	244.1	12.4	0.0	16.3	47.1	101.5	154.3	28.8	31.9	4.6	0.1	27.9
491	Neu5Ac2-3Gal1-4(GlcNAc1-6)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	1630.9	468.3	787.7	269.1	387.7	134.8	498.3	174.0	535.3	124.5	605.2	188.9	2454.0	192.8	434.8	173.3	0.1	33.8
492	3S(Gal1-3)Fucal-4(GlcNAc1-6)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	30.8	74.7	257.4	58.2	190.1	13.4	484.0	224.0	277.9	67.8	56.8	88.2	50.9	152.5	118.6	31.9	42.7	14.7
493	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	449.8	109.2	267.1	39.1	198.8	33.3	146.4	43.0	250.0	60.5	126.8	25.9	408.6	42.2	192.5	12.9	53.9	10.6
494	Fucal-2(Gal1-3)GlcNAc1-6(GlcNAc1-4)GlcNAc	571.1	36.0	629.0	17.0	563.4	56.8	1181.9	185.0	869.3	21.7	1008.4	49.7	1236.0	171.8	212.5	8.4	0.1	20.7
495	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	1664.8	340.0	394.8	189.3	595.0	260.2	368.2	106.8	389.7	182.3	389.6	67.2	2026.7	534.1	165.4	68.9	0.1	49.6
496	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	225.2	73.9	3.4	8.4	0.0	60.4	296.5	6.4	166.9	19.2	584.9	33.8	73.4	30.1	34.8	21.4	24.6	49.8
497	Fucal-2(Gal1-3)GlcNAc1-6(GlcNAc1-4)GlcNAc	2091.2	236.0	1640.1	109.2	1437.4	135.8	1241.1	187.7	1892.5	144.4	2118.4	140.7	656.5	65.4	815.4	146.7	11.8	29.0
498	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	1207.6	256.3	552.7	214.5	713.3	111.8	900.1	116.9	1029.3	187.1	899.7	202.5	648.6	77.4	424.9	141.8	104.3	31.7
499	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	1934.5	160.1	1374.9	253.8	1503.2	131.5	983.3	186.2	1641.5	52.7	1455.3	114.5	803.0	30.5	464.0	68.9	74.3	18.6
500	Fucal-2(Gal1-3)GlcNAc1-6(GlcNAc1-4)GlcNAc	6197.0	1565.8	5649.7	129.2	4076.2	366.0	4738.5	468.9	4624.3	696.5	9232.3	473.4	3606.9	895.2	1968.1	189.1	150.1	16.6
501	Neu5Ac2-6Gal1-4(GlcNAc1-6)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	767.4	195.3	534.0	189.3	495.6	106.3	567.1	105.9	713.7	81.7	493.5	136.8	486.9	33.6	37.2	11.5	23.5	9.0
502	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	690.2	105.2	651.8	213.8	458.2	63.7	214.4	124.4	1170.0	178.3	187.3	83.5	338.7	119.4	14.9	22.9	30.2	
503	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	344.5	139.4	367.0	191.4	615.9	93.0	428.2	144.7	447.9	169.3	463.3	13.2	2308.2	136.5	60.5	39.9	89.3	7.9
504	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	733.6	18.8	1030.4	63.3	679.0	68.6	802.1	72.0	1567.4	84.8	1348.5	50.9	869.5	100.5	230.4	12.3	100.9	33.5
505	Fucal-2(Gal1-3)GlcNAc1-6(GlcNAc1-4)GlcNAc	334.5	452.4	95.4	48.0	0.0	15.7	840.4	138.0	179.6	36.1	114.6	28.1	61.6	9.3	41.0	11.2	12.2	37.7
506	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	1316.5	28.6	10.6	7.9	0.0	6.3	325.3	459.1	8.3	12.8	156.8	38.3	0.0	24.3	83.3	15.1	76.6	29.0
507	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	75.6	28.0	10.6	7.9	0.0	6.3	325.3	459.1	8.3	12.8	156.8	38.3	0.0	24.3	83.3	15.1	76.6	29.0
508	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	215.3	79.8	98.2	43.1	22.4	12.9	70.2	11.6	148.0	17.9	40.8	15.5	13.7	39.9	26.1	36.5	0.1	26.3
509	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	6718.5	1177.4	2515.4	600.0	3407.5	94.5	3655.4	542.3	909.4	361.7	431.8	102.3	3351.0	707.0	97.8	13.7	1.4	20.9
510	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	472.1	99.8	150.5	72.0	248.0	139.9	201.1	82.4	230.2	31.6	94.0	33.1	412.7	47.3	51.5	17.8	0.1	39.6
511	(6S)4S(GlcNAc1-4)GlcNAc	63.7	7.2	103.1	50.9	89.1	17.1	140.3	45.7	14.7	30.7	323.1	59.5	74.5	29.3	65.8	9.8	0.1	6.1
512	(5S)4S(GlcNAc1-4)GlcNAc	158.2	44.0	189.0	62.5	153.5	42.0	139.4	22.5	19.4	38.1	255.9	64.4	47.5	42.5	64.6	23.5	0.0	19.5
513	(3S)4S(GlcNAc1-4)GlcNAc	44.5	260.0	441.1	102.2	554.8	36.3	286.1	69.9	80.8	85.8	707.5	129.9	1003.9	296.5	0.0	56.1	8.9	12.3
514	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	917.9	175.2	689.5	189.3	383.3	136.4	507.7	189.5	467.2	177.4	1443.5	343.7	1454.7	232.6	72.8	0.1	21.9	
515	(3S)4S(GlcNAc1-4)GlcNAc	846.9	246.8	276.0	265.4	781.4	383.2	282.4	138.5	408.2	67.9	263.9	159.1	1299.3	424.6	120.2	15.4	5.7	24.4
516	(4S)4S(GlcNAc1-4)GlcNAc	537.6	116.2	244.6	211.8	294.7	47.1	214.4	124.4	122.4	1170.0	178.3	187.3	83.5	338.7	119.4	14.9	22.9	30.2
517	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	120.4	67.0	129.8	88.2	255.5	210.9	309.6	185.6	152.3	93.3	352.7	81.1	495.0	86.4	29.5	24.4	0.1	19.4
518	(6P)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	3895.4	163.1	802.5	284.2	1474.9	125.4	1225.8	170.8	1477.9	248.5	877.0	66.3	6144.1	293.9	1098.8	123.8	241.5	19.7
519	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	2254.5	309.8	1176.3	284.2	628.4	132.4	1249.3	227.5	768.4	108.9	1284.4	33.8	62.4	48.4	23.9	15.9	42.8	14.7
520	Neu5Ac2-6Gal1-4(GlcNAc1-6)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	554.9	51.1	463.3	57.3	346.3	93.8	402.8	85.1	286.6	102.3	378.2	51.1	218.7	22.8	233.2	46.2	157.2	73.1
521	Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)Gal1-3(GlcNAc1-2)Man1-6(GlcNAc1-4)GlcNAc	871.8	92.8	450.4	122.6	613.3	152.8												

