

Targeted glycoproteomic identification of cancer cell glycosylation

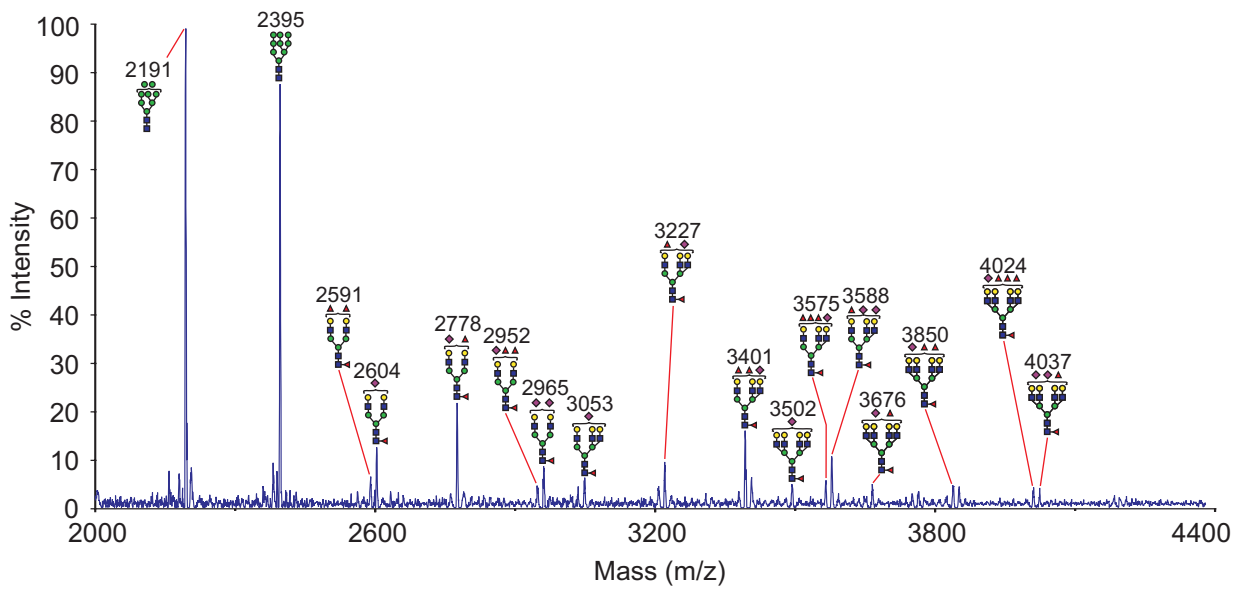
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Supplementary information:

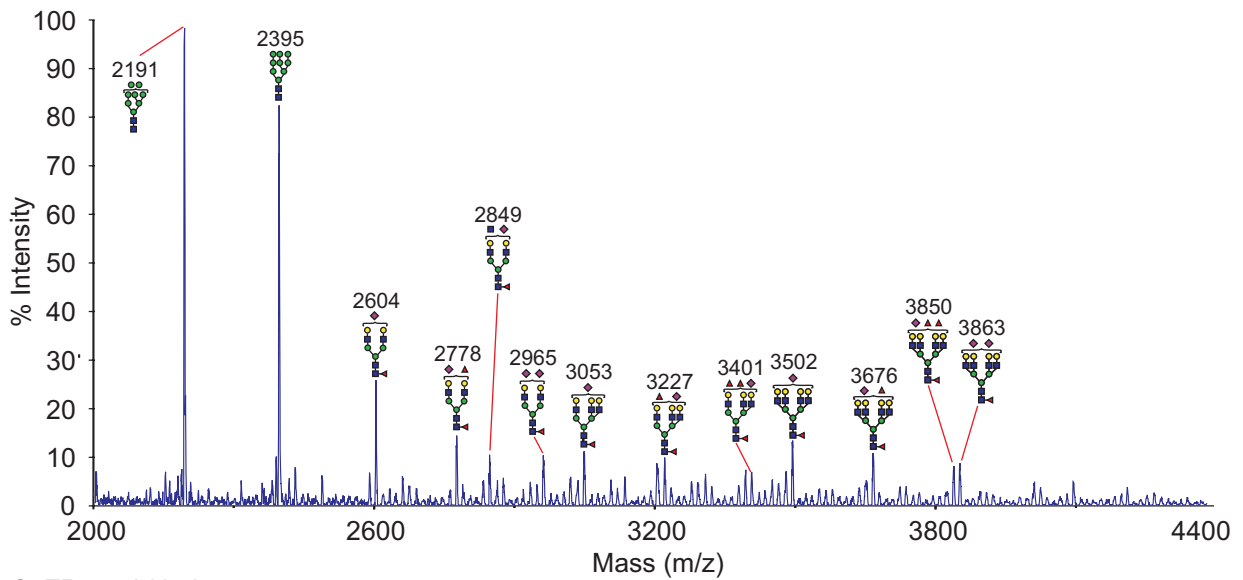
Supplementary Figures 1 - 2

Supplementary Tables I - III

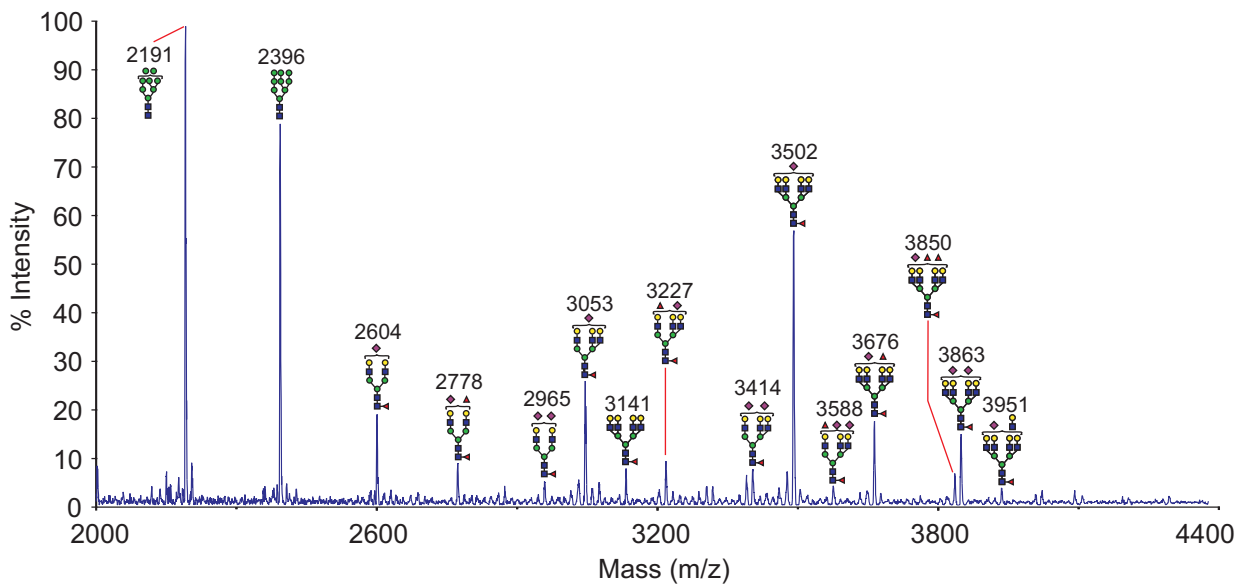
A. SKBR3 N-glycans



B. T47D N-glycans

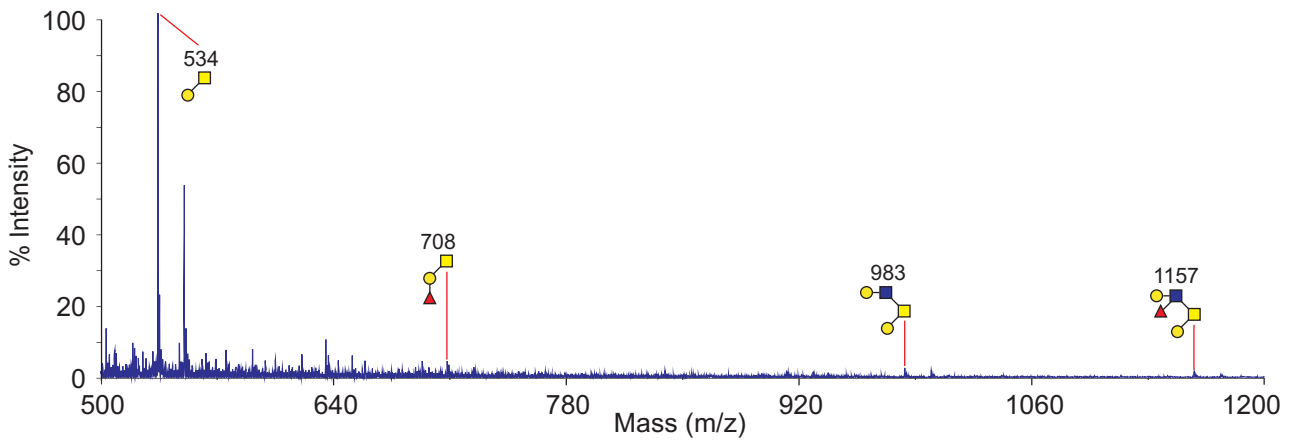


C. ZR-75-1 N-glycans

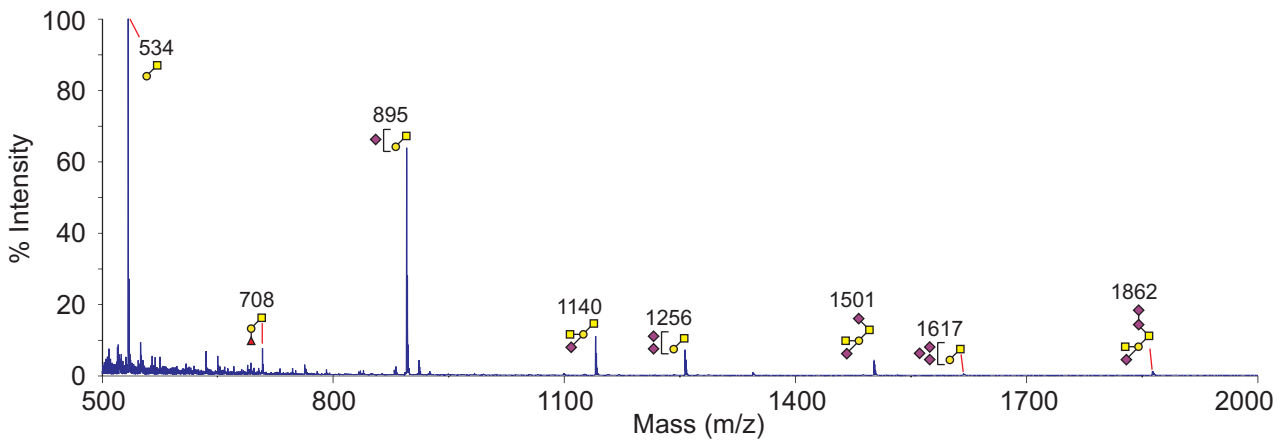


Supplementary Figure 1. Analysis of N-linked glycans from (A) SKBR3, (B) T47D, and (C) ZR75-1 cells. MALDI/TOF mass spectra of the major elution fractions from the Sep-Pak purifications are shown. All labeled ions were subjected to MS/MS analysis.

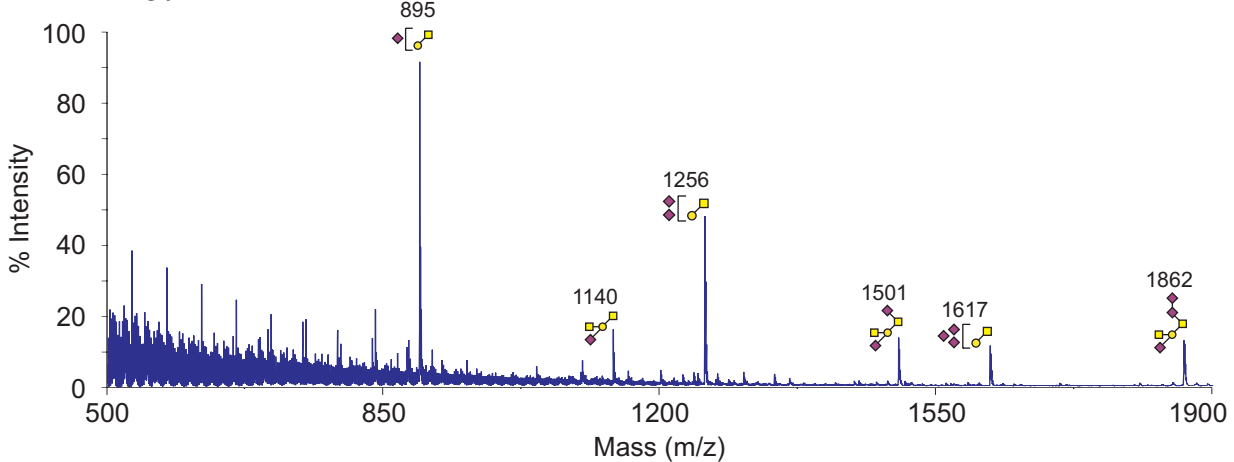
A. MCF7 O-glycans



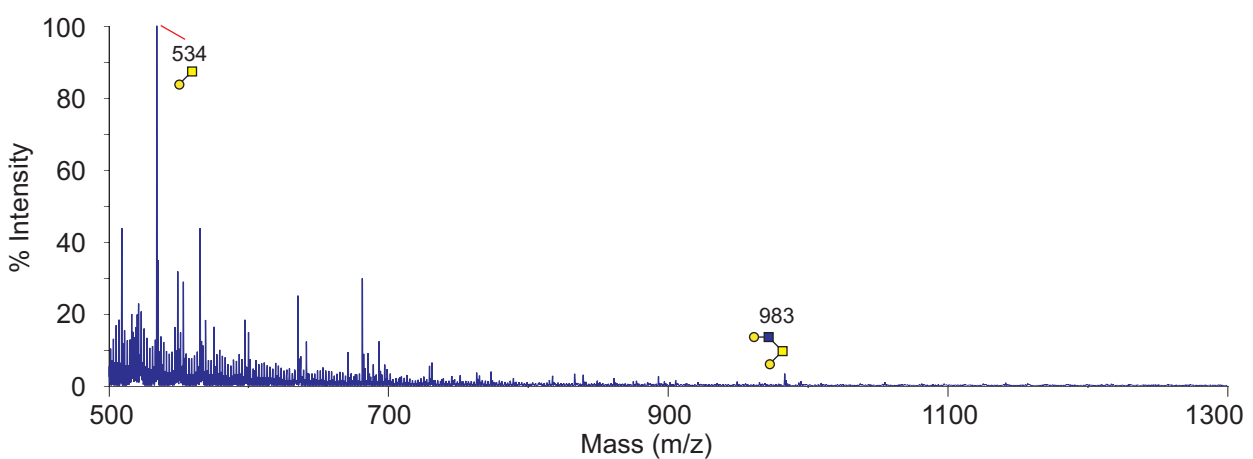
B. SKBR3 O-glycans



C. T47D O-glycans



D. ZR75-1 O-glycans



Supplementary Figure 2. Analysis of O-linked glycans from (A) MCF7, (B) SKBR3, (C) T47D, and (D) ZR75-1 cells. The MALDI/TOF spectra of the major elution fractions from the Sep-Pak purifications are shown.

Supplementary Table I. Glyans on glycan array.

Glycan number	Glycan structure	Average fluorescence	Standard deviation
7	α -D-Gal-Sp8	2635	1443
8	α -D-Glc-Sp8	738	378
9	α -D-Man-Sp8	509	1151
10	α -GalNAc-Sp8	4595	1896
11	α -L-Fuc-Sp8	1291	582
12	α -L-Fuc-Sp9	1333	596
13	α -L-Rha-Sp8	438	160
14	α -Neu5Ac-Sp8	678	335
15	α -Neu5Ac-Sp11	804	448
16	β -Neu5Ac-Sp8	576	322
17	β -D-Gal-Sp8	2260	1475
18	β -D-Glc-Sp8	976	311
19	β -D-Man-Sp8	425	697
20	β -GalNAc-Sp8	1043	624
21	β -GlcNAc-Sp0	514	175
22	β -GlcNAc-Sp8	383	214
23	β -GlcN(Gc)-Sp8	613	317
24	(Gal β 1-4GlcNAc β) ₂ -3,6-GalNAc α -Sp8	1222	543
25	GlcNAc β 1-3(GlcNAc β 1-4)(GlcNAc β 1-6)GlcNAc-Sp8	375	247
26	[3OSO3][6OSO3]Gal β 1-4[6OSO3]GlcNAc β -Sp0	3905	524
27	[3OSO3][6OSO3]Gal β 1-4GlcNAc β -Sp0	1861	1132
28	[3OSO3]Gal β 1-4Glc β -Sp8	1822	643
29	[3OSO3]Gal β 1-4(6OSO3)Glc β -Sp0	2250	957
30	[3OSO3]Gal β 1-4(6OSO3)Glc β -Sp8	3185	568
31	[3OSO3]Gal β 1-3(Fuca1-4)GlcNAc β -Sp8	1361	404
32	[3OSO3]Gal β 1-3GalNAc α -Sp8	815	450
33	[3OSO3]Gal β 1-3GlcNAc β -Sp8	1511	552
34	[3OSO3]Gal β 1-4(Fuca1-3)GlcNAc β -Sp8	737	159
35	[3OSO3]Gal β 1-4[6OSO3]GlcNAc β -Sp8	2561	938
36	[3OSO3]Gal β 1-4GlcNAc β -Sp0	1180	476
37	[3OSO3]Gal β 1-4GlcNAc β -Sp8	974	349
38	[3OSO3]Gal β -Sp8	1705	1440
39	[4OSO3][6OSO3]Gal β 1-4GlcNAc β -Sp0	1633	518
40	[4OSO3]Gal β 1-4GlcNAc β -Sp8	1351	453
41	6-H ₂ PO ₃ Man α -Sp8	511	252
42	[6OSO3]Gal β 1-4Glc β -Sp0	2256	1217
43	[6OSO3]Gal β 1-4Glc β -Sp8	2742	1060
44	[6OSO3]Gal β 1-4GlcNAc β -Sp8	2604	1243
45	[6OSO3]Gal β 1-4[6OSO3]Glc β -Sp8	7262	2333
46	NeuAca2-3[6OSO3]Gal β 1-4GlcNAc β -Sp8	694	427
47	[6OSO3]GlcNAc β -Sp8	2103	690
48	9-O-AcNeu5NAc α -Sp8	489	183
49	9-O-AcNeu5NAc α 2-6Gal β 1-4GlcNAc β -Sp8	597	198
50	Man α 1-3(Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β -Gly	738	543
51	GlcNAc β 1-2Man α 1-3(GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β -Gly	564	147
52	Gal β 1-4GlcNAc β 1-2Man α 1-3(Gal β 1-4GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β -Gly	2076	459
53	Neu5Aca2-6Gal β 1-4GlcNAc β 1-2Man α 1-3(Neu5Aca2-6Gal β 1-4GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β -Gly	1263	780
54	Neu5Aca2-6Gal β 1-4GlcNAc β 1-2Man α 1-3(Neu5Aca2-6Gal β 1-4GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β -Sp8	1355	591
55	Fuca1-2Gal β 1-3GalNAc β 1-3Gal α -Sp9	636	164
56	Fuca1-2Gal β 1-3GalNAc β 1-3Gal α 1-4Gal β 1-4Glc β -Sp9	704	246
57	Fuca1-2Gal β 1-3(Fuca1-4)GlcNAc β -Sp8	307	178
58	Fuca1-2Gal β 1-3GalNAc α -Sp8	867	661
59	Fuca1-2Gal β 1-3GalNAc β 1-4(Neu5Aca2-3)Gal β 1-4Glc β -Sp0	847	273
60	Fuca1-2Gal β 1-3GalNAc β 1-4(Neu5Aca2-3)Gal β 1-4Glc β -Sp9	1289	370
61	Fuca1-2Gal β 1-3GlcNAc β 1-3Gal β 1-4Glc β -Sp10	370	267
62	Fuca1-2Gal β 1-3GlcNAc β 1-3Gal β 1-4Glc β -Sp8	404	300
63	Fuca1-2Gal β 1-3GlcNAc β -Sp0	424	248
64	Fuca1-2Gal β 1-3GlcNAc β -Sp8	211	106
65	Fuca1-2Gal β 1-4(Fuca1-3)GlcNAc β 1-3Gal β 1-4(Fuca1-3)GlcNAc β -Sp0	444	61
66	Fuca1-2Gal β 1-4(Fuca1-3)GlcNAc β 1-3Gal β 1-4(Fuca1-3)GlcNAc β 1-3Gal β 1-4(Fuca1-3)GlcNAc β -Sp0	607	371

67	Fuca1-2Galβ1-4(Fuca1-3)GlcNAcβ-Sp0	389	243
68	Fuca1-2Galβ1-4(Fuca1-3)GlcNAcβ-Sp8	383	152
69	Fuca1-2Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAc-Sp0	450	283
70	Fuca1-2Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ-Sp0	546	187
71	Fuca1-2Galβ1-4GlcNAcβ-Sp0	449	332
72	Fuca1-2Galβ1-4GlcNAcβ-Sp8	339	150
73	Fuca1-2Galβ1-4Glcβ-Sp0	282	97
74	Fuca1-2Galβ-Sp8	1707	575
75	Fuca1-3GlcNAcβ-Sp8	642	633
76	Fuca1-3GlcNAcβ-Sp8	416	271
77	Fuca1-4GlcNAcβ-Sp8	397	238
78	Fucβ1-3GlcNAcβ-Sp8	814	1172
79	GalNAca1-3(Fuca1-2)Galβ1-3GlcNAcβ-Sp0	542	346
80	GalNAca1-3(Fuca1-2)Galβ1-4(Fuca1-3)GlcNAcβ-Sp0	443	150
81	GalNAca1-3(Fuca1-2)Galβ1-4GlcNAcβ-Sp0	426	164
82	GalNAca1-3(Fuca1-2)Galβ1-4GlcNAcβ-Sp8	398	128
83	GalNAca1-3(Fuca1-2)Galβ1-4Glcβ-Sp0	715	463
84	GalNAca1-3(Fuca1-2)Galβ-Sp8	6005	14001
85	GalNAca1-3GalNAcβ-Sp8	331	161
86	GalNAca1-3Galβ-Sp8	695	380
87	GalNAca1-4(Fuca1-2)Galβ1-4GlcNAcβ-Sp8	459	142
88	GalNAcβ1-3GalNAca-Sp8	228	123
89	GalNAcβ1-3(Fuca1-2)Galβ-Sp8	4340	1928
90	GalNAcβ1-3Galα1-4Galβ1-4GlcNAcβ-Sp0	1745	475
91	GalNAcβ1-4(Fuca1-3)GlcNAcβ-Sp0	339	250
92	GalNAcβ1-4GlcNAcβ-Sp0	669	265
93	GalNAcβ1-4GlcNAcβ-Sp8	470	148
94	Galα1-2Galβ-Sp8	459	217
95	Galα1-3(Fuca1-2)Galβ1-3GlcNAcβ-Sp0	357	244
96	Galα1-3(Fuca1-2)Galβ1-4(Fuca1-3)GlcNAcβ-Sp0	340	197
97	Galα1-3(Fuca1-2)Galβ1-4GlcNAc-Sp0	300	89
98	Galα1-3(Fuca1-2)Galβ1-4Glcβ-Sp0	331	166
99	Galα1-3(Fuca1-2)Galβ-Sp8	400	167
100	Galα1-3(Galα1-4)Galβ1-4GlcNAcβ-Sp8	4983	2540
101	Galα1-3GalNAca-Sp8	510	66
102	Galα1-3GalNAcβ-Sp8	258	191
103	Galα1-3Galβ1-4(Fuca1-3)GlcNAcβ-Sp8	413	194
104	Galα1-3Galβ1-3GlcNAcβ-Sp0	525	398
105	Galα1-3Galβ1-4GlcNAcβ-Sp8	879	175
106	Galα1-3Galβ1-4Glcβ-Sp0	363	229
107	Galα1-3Galβ-Sp8	608	342
108	Galα1-4(Fuca1-2)Galβ1-4GlcNAcβ-Sp8	573	141
109	Galα1-4Galβ1-4GlcNAcβ-Sp0	1173	353
110	Galα1-4Galβ1-4GlcNAcβ-Sp8	1760	1164
111	Galα1-4Galβ1-4Glcβ-Sp0	1004	494
112	Galα1-4GlcNAcβ-Sp8	2245	462
113	Galα1-6Glcβ-Sp8	1012	442
114	Galβ1-2Galβ-Sp8	624	493
115	Galβ1-3(Fuca1-4)GlcNAcβ1-3Galβ1-4(Fuca1-3)GlcNAcβ-Sp0	27645	3827
116	Galβ1-3(Fuca1-4)GlcNAcβ1-3Galβ1-4GlcNAcβ-Sp0	2362	413
117	Galβ1-3(Fuca1-4)GlcNAc-Sp0	11544	3156
118	Galβ1-3(Fuca1-4)GlcNAc-Sp8	25937	4145
119	Galβ1-3(Fuca1-4)GlcNAcβ-Sp8	13755	11332
120	Galβ1-3(Galβ1-4GlcNAcβ1-6)GalNAca-Sp8	16480	6923
121	Galβ1-3(GlcNAcβ1-6)GalNAca-Sp8	3983	818
122	Galβ1-3(Neu5Acα2-6)GalNAca-Sp8	4411	2011
123	Galβ1-3(Neu5Acβ2-6)GalNAca-Sp8	5998	3514
124	Galβ1-3(Neu5Acα2-6)GlcNAcβ1-4Galβ1-4Glcβ-Sp10	1480	342
125	Galβ1-3GalNAca-Sp8	6720	3221
126	Galβ1-3GalNAcβ-Sp8	14254	3225
127	Galβ1-3GalNAcβ1-3Galα1-4Galβ1-4Glcβ-Sp0	27047	8778
128	Galβ1-3GalNAcβ1-4(Neu5Acα2-3)Galβ1-4Glcβ-Sp0	22770	3463
129	Galβ1-3GalNAcβ1-4Galβ1-4Glcβ-Sp8	20665	12510
130	Galβ1-3Galβ-Sp8	3457	1537
131	Galβ1-3GlcNAcβ1-3Galβ1-4GlcNAcβ-Sp0	723	310
132	Galβ1-3GlcNAcβ1-3Galβ1-4Glcβ-Sp10	1439	252
133	Galβ1-3GlcNAcβ-Sp0	1270	830

134	Galβ1-3GlcNAcβ-Sp8	1900	277
135	Galβ1-4(Fuca1-3)GlcNAcβ-Sp0	11018	3525
136	Galβ1-4(Fuca1-3)GlcNAcβ-Sp8	17675	2294
137	Galβ1-4(Fuca1-3)GlcNAcβ1-4Galβ1-4(Fuca1-3)GlcNAcβ-Sp0	10200	1390
138	Galβ1-4(Fuca1-3)GlcNAcβ1-4Galβ1-4(Fuca1-3)GlcNAcβ1-4Galβ1-4(Fuca1-3)GlcNAcβ-Sp0	47546	5464
139	Galβ1-4[6OSO3]Glcβ-Sp0	3820	1199
140	Galβ1-4[6OSO3]Glcβ-Sp8	8256	2780
141	Galβ1-4GalNAca1-3(Fuca1-2)Galβ1-4GlcNAcβ-Sp8	35253	5429
142	Galβ1-4GalNAcβ1-3(Fuca1-2)Galβ1-4GlcNAcβ-Sp8	38753	5948
143	Galβ1-4GlcNAcβ1-3(Galβ1-4GlcNAcβ1-6)GalNAca-Sp8	1883	225
144	Galβ1-4GlcNAcβ1-3GalNAca-Sp8	603	530
145	Galβ1-4GlcNAcβ1-3Galβ1-4(Fuca1-3)GlcNAcβ1-3Galβ1-4(Fuca1-3)GlcNAcβ-Sp0	2284	384
146	Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ-Sp0	430	178
147	Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ-Sp0	2497	970
148	Galβ1-4GlcNAcβ1-3Galβ1-4Glcβ-Sp0	933	468
149	Galβ1-4GlcNAcβ1-3Galβ1-4Glcβ-Sp8	1820	787
150	Galβ1-4GlcNAcβ1-6(Galβ1-3)GalNAca-Sp8	7136	5663
151	Galβ1-4GlcNAcβ1-6GalNAca-Sp8	22993	5394
152	Galβ1-4GlcNAcβ-Sp0	757	482
153	Galβ1-4GlcNAcβ-Sp8	644	396
154	Galβ1-4Glcβ-Sp0	938	557
155	Galβ1-4Glcβ-Sp8	2556	4729
156	GlcNAca1-3Galβ1-4GlcNAcβ-Sp8	311	286
157	GlcNAca1-6Galβ1-4GlcNAcβ-Sp8	16641	2363
158	GlcNAcβ1-2Galβ1-3GalNAca-Sp8	230	305
159	GlcNAcβ1-3(GlcNAcβ1-6)GalNAca-Sp8	285	237
160	GlcNAcβ1-3(GlcNAcβ1-6)Galβ1-4GlcNAcβ-Sp8	738	481
161	GlcNAcβ1-3GalNAca-Sp8	189	143
162	GlcNAcβ1-3Galβ-Sp8	336	181
163	GlcNAcβ1-3Galβ1-3GalNAca-Sp8	298	118
164	GlcNAcβ1-3Galβ1-4GlcNAcβ-Sp0	327	157
165	GlcNAcβ1-3Galβ1-4GlcNAcβ-Sp8	302	134
166	GlcNAcβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ-Sp0	551	259
167	GlcNAcβ1-3Galβ1-4Glcβ-Sp0	305	181
168	GlcNAcβ1-4MDPLys	304	175
169	GlcNAcβ1-4(GlcNAcβ1-6)GalNAca-Sp8	203	117
170	GlcNAcβ1-4Galβ1-4GlcNAcβ-Sp8	573	510
171	(GlcNAcβ1-4)6β-Sp8	640	390
172	(GlcNAcβ1-4)5β-Sp8	997	374
173	GlcNAcβ1-4GlcNAcβ1-4GlcNAcβ-Sp8	2040	552
174	GlcNAcβ1-6(Galβ1-3)GalNAca-Sp8	2459	2410
175	GlcNAcβ1-6GalNAca-Sp8	2300	761
176	GlcNAcβ1-6Galβ1-4GlcNAcβ-Sp8	941	272
177	Glcα1-4Glcβ-Sp8	175	92
178	Glcα1-4Glcα-Sp8	519	387
179	Glcα1-6Glcα1-6Glcβ-Sp8	549	699
180	Glcβ1-4Glcβ-Sp8	300	172
181	Glcβ1-6Glcβ-Sp8	348	286
182	Sorbitol-Sp8	564	355
183	GlcAα-Sp8	626	386
184	GlcAβ-Sp8	384	263
185	GlcAβ1-3Galβ-Sp8	614	462
186	GlcAβ1-6Galβ-Sp8	3500	2173
187	KDNα2-3Galβ1-3GlcNAcβ-Sp0	340	296
188	KDNα2-3Galβ1-4GlcNAcβ-Sp0	451	215
189	Mana1-2Mana1-2Mana1-3Mana-Sp9	524	94
190	Mana1-2Mana1-3(Mana1-2Mana1-6)Mana-Sp9	295	56
191	Mana1-2Mana1-3Mana-Sp9	456	288
192	Mana1-6(Mana1-2Mana1-3)Mana1-6(Mana2Mana1-3)Manβ1-4GlcNAcβ1-4GlcNAcβ-N	298	188
193	Mana1-2Mana1-6(Mana1-3)Mana1-6(Mana2Mana2Mana1-3)Manβ1-4GlcNAcβ1-4GlcNAcβ-N	432	269
194	Mana1-2Mana1-2Mana1-3(Mana1-2Mana1-3(Mana1-2Mana1-6)Mana1-6)Manβ1-4GlcNAcβ1-4GlcNAcβ-N	381	400
195	Mana1-3(Mana1-6)Mana-Sp9	503	311
196	Mana1-3(Mana1-2Mana1-2Mana1-6)Mana-Sp9	481	192
197	Mana1-6(Mana1-3)Mana1-6(Mana2Mana1-3)Manβ1-4GlcNAcβ1-4GlcNAcβ-N	466	133
198	Mana1-6(Mana1-3)Mana1-6(Mana1-3)Manβ1-4GlcNAcβ1-4 GlcNAcβ-N	894	742
199	Man5_9mix N	634	414
200	Manβ1-4GlcNAcβ-Sp0	288	222

201	Neu5Aca2-3(Galβ1-3GalNAcβ1-4)Galβ1-4Glcβ-Sp0	29741	6517
202	Neu5Aca2-3Galβ1-3GalNAcα-Sp8	457	277
203	NeuAca2-8NeuAca2-8NeuAca2-8NeuAca2-3(GalNAcβ1-4)Galβ1-4Glcβ-Sp0	846	402
204	Neu5Aca2-8Neu5Aca2-8Neu5Aca2-3(GalNAcβ1-4)Galβ1-4Glcβ-Sp0	1292	512
205	Neu5Aca2-8Neu5Aca2-8Neu5Aca2-3Galβ1-4Glcβ-Sp0	454	262
206	Neu5Aca2-8Neu5Aca2-3(GalNAcβ1-4)Galβ1-4Glcβ-Sp0	3261	4473
207	Neu5Aca2-8Neu5Aca2-8Neu5Aca-Sp8	222	126
208	Neu5Aca2-3(6-O-Su)Galβ1-4(Fuca1-3)GlcNAcβ-Sp8	479	384
209	Neu5Aca2-3(GalNAcβ1-4)Galβ1-4GlcNAcβ-Sp0	612	270
210	Neu5Aca2-3(GalNAcβ1-4)Galβ1-4GlcNAcβ-Sp8	404	156
211	Neu5Aca2-3(GalNAcβ1-4)Galβ1-4Glcβ-Sp0	757	272
212	NeuAca2-3(NeuAca2-3Galβ1-3GalNAcβ1-4)Galβ1-4Glcβ-Sp0	412	141
213	Neu5Aca2-3(Neu5Aca2-6)GalNAcα-Sp8	419	222
214	Neu5Aca2-3GalNAcα-Sp8	481	281
215	Neu5Aca2-3GalNAcβ1-4GlcNAcβ-Sp0	510	469
216	Neu5Aca2-3Galβ1-3(6OSO3)GlcNAc-Sp8	464	601
217	Neu5Aca2-3Galβ1-3(Fuca1-4)GlcNAcβ-Sp8	450	428
218	NeuAca2-3Galβ1-3(Fuca1-4)GlcNAcβ1-3Galβ1-4(Fuca1-3)GlcNAcβ Sp0	725	305
219	Neu5Aca2-3Galβ1-3(Neu5Aca2-3Galβ1-4)GlcNAcβ-Sp8	507	221
220	Neu5Aca2-3Galβ1-3[6OSO3]GalNAcα-Sp8	1075	736
221	Neu5Aca2-3Galβ1-3(Neu5Aca2-6)GalNAcα-Sp8	444	215
222	Neu5Aca2-3Galβ-Sp8	797	501
223	NeuAca2-3Galβ1-3GalNAcβ1-3Galα1-4Galβ1-4Glcβ-Sp0	411	371
224	NeuAca2-3Galβ1-3GlcNAcβ1-3Galβ1-4GlcNAcβ-Sp0	529	220
225	Neu5Aca2-3Galβ1-3GlcNAcβ-Sp0	406	239
226	Neu5Aca2-3Galβ1-3GlcNAcβ-Sp8	344	147
227	Neu5Aca2-3Galβ1-4[6OSO3]GlcNAcβ-Sp8	828	630
228	Neu5Aca2-3Galβ1-4(Fuca1-3)(6OSO3)GlcNAcβ-Sp8	1394	329
229	Neu5Aca2-3Galβ1-4(Fuca1-3)GlcNAcβ1-3Galβ1-4(Fuca1-3)GlcNAcβ1-3Galβ1-4(Fuca1-3)GlcNAcβ-Sp0	790	425
230	Neu5Aca2-3Galβ1-4(Fuca1-3)GlcNAcβ-Sp0	713	520
231	Neu5Aca2-3Galβ1-4(Fuca1-3)GlcNAcβ-Sp8	456	280
232	Neu5Aca2-3Galβ1-4(Fuca1-3)GlcNAcβ1-3Galβ-Sp8	380	271
233	Neu5Aca2-3Galβ1-4(Fuca1-3)GlcNAcβ1-3Galβ1-4GlcNAcβ-Sp8	1446	269
234	Neu5Aca2-3Galβ1-4GlcNAcβ1-3Galβ1-4(Fuca1-3)GlcNAc-Sp0	519	291
235	Neu5Aca2-3Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ-Sp0	966	329
236	Neu5Aca2-3Galβ1-4GlcNAcβ-Sp0	428	430
237	Neu5Aca2-3Galβ1-4GlcNAcβ-Sp8	606	458
238	Neu5Aca2-3Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ-Sp0	620	734
239	Neu5Aca2-3Galβ1-4Glcβ-Sp0	715	553
240	Neu5Aca2-3Galβ1-4Glcβ-Sp8	270	167
241	Neu5Aca2-6(Galβ1-3)GalNAcα-Sp8	4542	2836
242	Neu5Aca2-6GalNAcα-Sp8	545	601
243	Neu5Aca2-6GalNAcβ1-4GlcNAcβ-Sp0	388	90
244	Neu5Aca2-6Galβ1-4[6OSO3]GlcNAcβ-Sp8	2798	1633
245	Neu5Aca2-6Galβ1-4GlcNAcβ-Sp0	385	289
246	Neu5Aca2-6Galβ1-4GlcNAcβ-Sp8	353	157
247	Neu5Aca2-6Galβ1-4GlcNAcβ1-3Galβ1-4(Fuca1-3)GlcNAcβ1-3Galβ1-4(Fuca1-3)GlcNAcβ-Sp0	951	349
248	Neu5Aca2-6Galβ1-4GlcNAcβ1-3Galβ1-4GlcNAcβ-Sp0	785	442
249	Neu5Aca2-6Galβ1-4Glcβ-Sp0	601	192
250	Neu5Aca2-6Galβ1-4Glcβ-Sp8	450	352
251	Neu5Aca2-6Galβ-Sp8	1147	365
252	Neu5Aca2-8Neu5Aca-Sp8	615	610
253	Neu5Aca2-8Neu5Aca2-3Galβ1-4Glcβ-Sp0	945	529
254	Neu5Acβ2-6GalNAcα-Sp8	203	212
255	Neu5Acβ2-6Galβ1-4GlcNAcβ-Sp8	483	236
256	Neu5Acβ2-6(Galβ1-3)GalNAcα-Sp8	2480	2916
257	Neu5Gca2-3Galβ1-3(Fuca1-4)GlcNAcβ-Sp0	437	335
258	Neu5Gca2-3Galβ1-3GlcNAcβ-Sp0	714	206
259	Neu5Gca2-3Galβ1-4(Fuca1-3)GlcNAcβ-Sp0	880	582
260	Neu5Gca2-3Galβ1-4GlcNAcβ-Sp0	647	212
261	Neu5Gca2-3Galβ1-4Glcβ-Sp0	712	253
262	Neu5Gca2-6GalNAcα-Sp0	365	116
263	Neu5Gca2-6Galβ1-4GlcNAcβ-Sp0	748	200
264	Neu5Gca-Sp8	243	237
265	[3OSO3]Galβ1-4(Fuca1-3)(6OSO3)Glc-Sp0	1598	452
266	[3OSO3]Galβ1-4(Fuca1-3)Glc-Sp0	514	260
267	[3OSO3]Galβ1-4[Fuca1-3][6OSO3]GlcNAc-Sp8	1995	366

268	[3OSO3]Galβ1-4[Fuca1-3]GlcNAc-Sp0	394	303
269	Fuca1-2[6OSO3]Galβ1-4GlcNAc-Sp0	1381	985
270	Fuca1-2Galβ1-4[6OSO3]GlcNAc-Sp8	1305	1220
271	Fuca1-2[6OSO3]Galβ1-4[6OSO3]Glc-Sp0	2156	1083
272	Fuca1-2-(6OSO3)-Galβ1-4Glc-Sp0	1701	2480
273	Fuca1-2-Galβ1-4[6OSO3]Glc-Sp0	1359	559
274	Galβ1-3(Fuca1-4)GlcNAcβ1-3Galβ1-3(Fuca1-4)GlcNAcβ-Sp0	4469	2914
275	Galβ1-3-(Galβ1-4GlcNAcβ1-6)GalNAc-T	12027	8153
276	Galβ1-3(GlcNAcβ1-6)GalNAc-T	8636	2146
277	Galβ1-3-(Neu5Ac2-3Galβ1-4GlcNAcβ1-6)GalNAc-T	3835	1833
278	Galβ1-3GalNAc-T	10274	5772
279	Galβ1-3GlcNAcβ1-3Galβ1-3GlcNAcβ-Sp0	160	91
280	Galβ1-4[Fuca1-3][6OSO3]GlcNAc-Sp0	3319	3394
281	Galβ1-4[Fuca1-3][6OSO3]Glc-Sp0	2356	1641
282	Galβ1-4(Fuca1-3)GlcNAcβ1-3Galβ1-3(Fuca1-4)GlcNAcβ-Sp0	2981	1602
283	Galβ1-4GlcNAcβ1-3Galβ1-3GlcNAcβ-Sp0	373	213
284	Neu5Ac2-3Galβ1-3GlcNAcβ1-3Galβ1-3GlcNAcβ-Sp0	472	201
285	Neu5Ac2-3Galβ1-4GlcNAcβ1-3Galβ1-3GlcNAcβ-Sp0	437	293

Supplementary Table II. MALDI TOF/TOF mass spectrometry of tryptic fragments of MCF7 cell glycoproteins purified on GalMBP.

Band Number	SwissProt Accession number	Protein name	Precursor mass	Protein score	Peptides matched	Sequence Coverage (%)
1	P19999	Mannose-binding protein A (precursor)	25292	63	9	34
2	Q01650	Large neutral amino acids transporter small subunit 1 (CD98lc)	54974	111	7	17
3	P08195	4F2 cell-surface antigen heavy chain (CD98hc)	57909	375	23	47
4	P08195	4F2 cell-surface antigen heavy chain (CD98hc)	57909	349	22	43
5	P08195	4F2 cell-surface antigen heavy chain (CD98hc)	57909	204	19	37
6	P08195	4F2 cell-surface antigen heavy chain (CD98hc)	57909	190	18	38
7	P08195	4F2 cell-surface antigen heavy chain (CD98hc)	57909	89	14	25
8	P08195	4F2 cell-surface antigen heavy chain (CD98hc)	57909	58	9	17

Supplementary Table III. Glycoprotein ligands identified by proteomic analysis.

Cell line	Accession number	Protein	Peptides matched	Total Ion Score
MCF7	4F2_HUMAN	CD98 heavy chain (CD98hc)	18	1077
	LAT1_HUMAN	CD98 light chain (LAT1)	4	253
	CD166_HUMAN	Activated leukocyte adhesion molecule (ALCAM)	4	188
SKBR3	SUSD2_HUMAN	Sushi domain-containing protein 2	6	335
	AAAT_HUMAN	Neutral amino acid transporter B(0)	4	232
	LG3BP_HUMAN	Galectin-3-binding protein precursor (LG3BP)	4	171
	GTR1_HUMAN	Solute carrier family 2, facilitated glucose transporter member 1 (GLUT1)	3	157
	SC5A6_HUMAN	Sodium-dependent multivitamin transporter	3	155
	4F2_HUMAN	CD98 heavy chain (CD98hc)	3	154
	AT1A1_HUMAN	Na/K-transporting ATPase subunit alpha-1	3	130
ZR75-1	LAMP1_HUMAN	Lysosome-associated membrane protein-1 (LAMP1)	6	293
	ADT2_HUMAN	ADP/ATP translocase 2	5	238
	ANO1_HUMAN	Anoctamin-1	5	180
	LAMP2_HUMAN	Lysosome-associated membrane protein-2 (LAMP2)	3	175
	AT1A1_HUMAN	Na/K-transporting ATPase subunit alpha-1	3	142
	CD166_HUMAN	Activated leukocyte adhesion molecule (ALCAM)	3	118
T47D	MUC1_HUMAN	MUC1	6	438
	LAMP1_HUMAN	Lysosome-associated membrane protein-1 (LAMP1)	6	369
	LCAP_HUMAN	Leucyl-cystinyl aminopeptidase	4	269
	4F2_HUMAN	CD98 heavy chain (CD98hc)	5	261
	LAMP2_HUMAN	Lysosome-associated membrane protein-2 (LAMP2)	3	168
	CBPD_HUMAN	Carboxypeptidase D precursor	3	149
	FPRP_HUMAN	Prostaglandin F2 receptor negative regulator precursor	3	141