

Supplementary Information

Supplementary Table 1. Glycans covalently attached on the microarray. Different categories of glycans on the array are color-coded in column 1 as follows: No color, sialic acid; blue, α 2-3 sialosides; orange, α 2-6 sialosides; magenta, mixed α 2-3/ α 2-6 biantennaries; green, N-glycolylneuraminic acid-containing glycans; brown, α 2-8-linked sialosides; purple, β 2-6-linked and 9-O-acetylated sialic acids; grey, asialo glycans.

Chart #	Structure	Description
1	α -Neu5Ac	α -Neu5Ac
2	α -Neu5Ac	α -Neu5Ac
3	b-Neu5Ac	β -Neu5Ac
4	Neu5Ac α 2-3(6-O-Su)Gal β 1-4(Fuc α 1-3)GlcNAc β	α 2-3 so4
5	Neu5Ac α 2-3Gal β 1-3[6OSO3]GalNAc α	α 2-3 so4
6	Neu5Ac α 2-3Gal β 1-4[6OSO3]GlcNAc β	α 2-3 so4
7	Neu5Ac α 2-3Gal β 1-4(Fuc α 1-3)(6OSO3)GlcNAc β	α 2-3 so4
8	Neu5Ac α 2-3Gal β 1-3(6OSO3)GlcNAc	α 2-3 so4
9	Neu5Ac α 2-3Gal β 1-3(Neu5Ac α 2-3Gal β 1-4)GlcNAc β	di-sialoside
10	Neu5Ac α 2-3Gal β 1-3(Neu5Ac α 2-3Gal β 1-4GlcNAc β 1-6)GalNAc β	di-sialoside
11	Neu5Ac α 2-3Gal β 1-4GlcNAc β 1-2Man α 1-3(Neu5Ac α 2-3Gal β 1-4GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β	α 2-3 biantennary
12	Neu5Ac α 2-3Gal β	α 2-3
13	Neu5Ac α 2-3GalNAc α	α 2-3
14	Neu5Ac α 2-3Gal β 1-3GalNAc α	α 2-3
15	Neu5Ac α 2-3Gal β 1-3GlcNAc β	α 2-3
16	Neu5Ac α 2-3Gal β 1-3GlcNAc β	α 2-3
17	Neu5Ac α 2-3Gal β 1-4Glc β	α 2-3
18	Neu5Ac α 2-3Gal β 1-4Glc β	α 2-3
19	Neu5Ac α 2-3Gal β 1-4GlcNAc β	α 2-3
20	Neu5Ac α 2-3Gal β 1-4GlcNAc β	α 2-3
21	Neu5Ac α 2-3GalNAc β 1-4GlcNAc β	α 2-3
22	Neu5Ac α 2-3Gal β 1-4GlcNAc β 1-3Gal β 1-4GlcNAc β	α 2-3
23	Neu5Ac α 2-3Gal β 1-3GlcNAc β 1-3Gal β 1-3GlcNAc β	α 2-3
24	Neu5Ac α 2-3Gal β 1-4GlcNAc β 1-3Gal β 1-4GlcNAc β 1-3Gal β 1-4GlcNAc β	α 2-3
25	Neu5Ac α 2-3Gal β 1-4GlcNAc β 1-3Gal β 1-3GlcNAc β	α 2-3
26	Neu5Ac α 2-3Gal β 1-3GalNAc α	α 2-3
27	Gal β 1-3(Neu5Ac α 2-3Gal β 1-4(Fuc α 1-3)GlcNAc β 1-6)GalNAc β	α 2-3 fucosylated
28	Neu5Ac α 2-3Gal β 1-3(Fuc α 1-4)GlcNAc β	α 2-3 fucosylated
29	Neu5Ac α 2-3Gal β 1-4(Fuc α 1-3)GlcNAc β	α 2-3 fucosylated
30	Neu5Ac α 2-3Gal β 1-4(Fuc α 1-3)GlcNAc β	α 2-3 fucosylated
31	Neu5Ac α 2-3Gal β 1-4(Fuc α 1-3)GlcNAc β 1-3Gal β	α 2-3 fucosylated
32	Neu5Ac α 2-3Gal β 1-4(Fuc α 1-3)GlcNAc β 1-3Gal β 1-4GlcNAc β	α 2-3 fucosylated
33	Neu5Ac α 2-3Gal β 1-4(Fuc α 1-3)GlcNAc β 1-3Gal β 1-4(Fuc α 1-3)GlcNAc β 1-3Gal β 1-4(Fuc α 1-3)GlcNAc β	α 2-3 fucosylated
34	Neu5Ac α 2-3Gal β 1-4GlcNAc β 1-3Gal β 1-4(Fuc α 1-3)GlcNAc	α 2-3 fucosylated
35	Neu5Ac α 2-3(GalNAc β 1-4)Gal β 1-4GlcNAc β	α 2-3 internal

36	Neu5Ac α 2-3(GalNAc β 1-4)Gal β 1-4GlcNAc β	α 2-3 internal
37	Neu5Ac α 2-3(GalNAc β 1-4)Gal β 1-4Glc β	α 2-3 internal
38	Gal β 1-3GalNAc β 1-4(Neu5Ac α 2-3)Gal β 1-4Glc β	α 2-3 internal
39	Fuca1-2Gal β 1-3GalNAc β 1-4(Neu5Ac α 2-3)Gal β 1-4Glc β	α 2-3 internal
40	Fuca1-2Gal β 1-3GalNAc β 1-4(Neu5Ac α 2-3)Gal β 1-4Glc β	α 2-3 internal
41	Neu5Ac α 2-6Gal β 1-4[6OSO ₃]GlcNAc β	α 2-6 so4
42	Gal β 1-4GlcNAc β 1-2Man α 1-3(Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β	α 2-6 branched
43	GlcNAc β 1-2Man α 1-3(Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β	α 2-6 branched
44	Gal β 1-4GlcNAc β 1-2Man α 1-3(Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β	α 2-6 branched
45	Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-2Man α 1-3(GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β	α 2-6 branched
46	Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-2Man α 1-3(Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β	α 2-6 biantenary
47	Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-2Man α 1-3(Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β	α 2-6 biantenary
48	Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-2Man α 1-3(Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β	α 2-6 biantenary
49	Neu5Ac α 2-6Gal 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	α 2-6 biantenary
50	Neu5Ac α 2-6GalNAc α	α 2-6
51	Neu5Ac α 2-6Gal β	α 2-6
52	Neu5Ac α 2-6Gal β 1-4Glc β	α 2-6
53	Neu5Ac α 2-6Gal β 1-4GlcNAc β	α 2-6
54	Neu5Ac α 2-6Gal β 1-4GlcNAc β	α 2-6
55	Neu5Ac α 2-6GalNAc β 1-4GlcNAc β	α 2-6
56	Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-3Gal β 1-4GlcNAc β	α 2-6
57	Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-3Gal β 1-4(Fuca1-3)GlcNAc β 1-3Gal β 1-4(Fuca1-3)GlcNAc β	α 2-6 + fucosylation
58	Gal β 1-3(Neu5Ac α 2-6)GlcNAc β 1-3Gal β 1-4Glc β	α 2-6 internal
59	Gal β 1-3(Neu5Ac α 2-6)GalNAc α	α 2-6 internal
60	Neu5Ac α 2-3Gal β 1-4GlcNAc β 1-2Man α 1-3(Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β	α 2-3/6 biantenary
61	Neu5Ac α 2-6Gal β 1-4GlcNAc β 1-2Man α 1-3(Neu5Ac α 2-3Gal β 1-4GlcNAc β 1-2Man α 1-6)Man β 1-4GlcNAc β 1-4GlcNAc β	α 2-3/6 biantenary
62	Neu5Ac α 2-3Gal β 1-3(Neu5Ac α 2-6)GalNAc	α 2-3/6 disialoside
63	Neu5Ac α 2-3Gal β 1-3(Neu5Ac α 2-6)GalNAc α	α 2-3/6 disialoside
64	Neu5Ac α 2-3(Neu5Ac α 2-6)GalNAc α	α 2-3/6 disialoside
65	Neu5Gc α	Neu5Gc α
66	Neu5Gc α 2-3Gal β 1-3(Fuca1-4)GlcNAc β	Neu5Gc α 2-3
67	Neu5Gc α 2-3Gal β 1-3GlcNAc β	Neu5Gc α 2-3
68	Neu5Gc α 2-3Gal β 1-4(Fuca1-3)GlcNAc β	Neu5Gc α 2-3
69	Neu5Gc α 2-3Gal β 1-4GlcNAc β	Neu5Gc α 2-3
70	Neu5Gc α 2-3Gal β 1-4Glc β	Neu5Gc α 2-3
71	Neu5Gc α 2-6GalNAc α	Neu5Gc α 2-6
72	Neu5Gc α 2-6Gal β 1-4GlcNAc β	Neu5Gc α 2-6
73	Neu5Ac α 2-8Neu5Ac α	Neu5Ac α 2-8
74	Neu5Ac α 2-8Neu5Ac α 2-8Neu5Ac α	Neu5Ac α 2-8
75	Neu5Ac α 2-8Neu5Ac α 2-3(GalNAc β 1-4)Gal β 1-4Glc β	Neu5Ac α 2-8 α 2-3
76	Neu5Ac α 2-8Neu5Ac α 2-3Gal β 1-4Glc β	Neu5Ac α 2-8 α 2-3

77	Neu5Ac α 2-8Neu5Ac α 2-8Neu5Ac α 2-3(GalNAc β 1-4)Gal β 1-4Glc β	Neu5Ac α 2-8 α 2-8 α 2-3
78	Neu5Ac α 2-8Neu5Ac α 2-8Neu5Ac α 2-3Gal β 1-4Glc β	Neu5Ac α 2-8 α 2-8 α 2-3
79	Neu5Ac α 2-8Neu5Ac α	Neu5Ac α 2-8
80	Neu5Ac α 2-8Neu5Ac β	Neu5Ac α 2-8
81	Neu5Ac α 2-8Neu5Ac α 2-8Neu5Ac β	Neu5Ac α 2-8 α 2-8
82	Neu5Ac β 2-6GalNAc α	β 2-6
83	Neu5Ac β 2-6Gal β 1-4GlcNAc β	β 2-6
84	Neu5Gc β 2-6Gal β 1-4GlcNAc	β 2-6
85	Gal β 1-3(Neu5Ac β 2-6)GalNAc α	β 2-6
86	9NAcNeu5Ac α	9NAcNeu5
87	9NAcNeu5Ac α 2-6Gal β 1-4GlcNAc β	9NAcNeu5
88	Gal β 1-4GlcNAc β 1-3Gal β 1-4GlcNAc β 1-3Gal β 1-4GlcNAc β	asialo
89	Gal β 1-3GlcNAc β 1-3Gal β 1-3GlcNAc β	asialo
90	Fuc α 1-2Gal β 1-3GlcNAc β 1-3Gal β 1-4Glc β	asialo
91	Fuc α 1-2Gal β 1-4(Fuc α 1-3)GlcNAc β 1-3Gal β 1-4(Fuc α 1-3)GlcNAc β	asialo
92	GalNAc α 1-3(Fuc α 1-2)Gal β 1-3GlcNAc β	asialo
93	GalNAc α 1-3(Fuc α 1-2)Gal β 1-4GlcNAc β	asialo
94	Gal α 1-3(Fuc α 1-2)Gal β 1-3GlcNAc β	asialo
95	Gal α 1-3(Fuc α 1-2)Gal β 1-4(Fuc α 1-3)GlcNAc β	asialo
96	Gal β 1-3GalNAc	asialo

Key: Neu5Ac = Sialic acid
 Neu5Gc = N-glycolylneuraminic acid
 OSO₃ = sulfate; Gal = galactose
 Fuc = fucose
 GlcNAc = N-acetyl-D-glucosamine
 GalNAc = N-acetyl-D-galactosamine
 Glc = D-glucose
 Man = D-mannose
 9NAc = 9-O-acetyl