

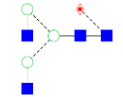
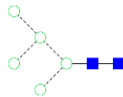
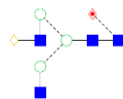

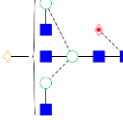


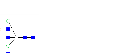
# The Alterations of Serum N-glycome in Response to SARS-CoV-2 Vaccination

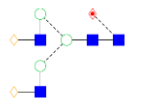

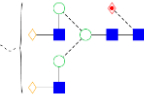
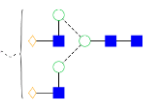
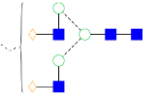
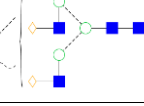
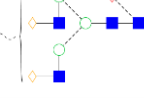
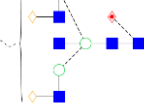
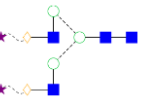
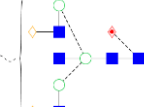

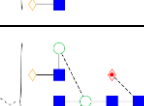
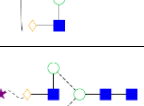
Dalma Dojcsák<sup>1</sup>, Zsófia Kardos<sup>2</sup>, Miklós Szabó<sup>2</sup>, Csaba Oláh<sup>2</sup>, Zsolt Körömi<sup>2</sup>, Béla Viskolcz<sup>1</sup> and Csaba Váradi<sup>1\*</sup>

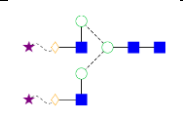
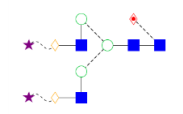
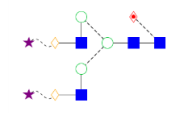
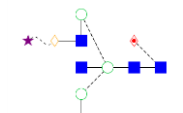
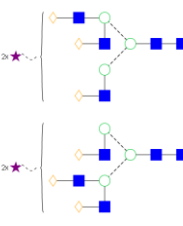
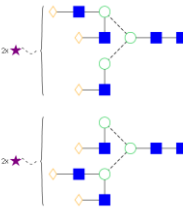
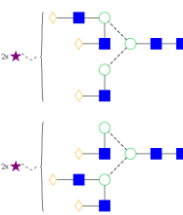
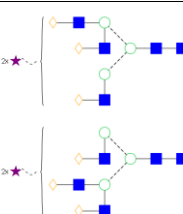
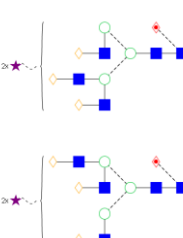
<sup>1</sup> Advanced Materials and Intelligent Technologies Higher Education and Industrial Cooperation Centre, University of Miskolc, Hungary 3515;

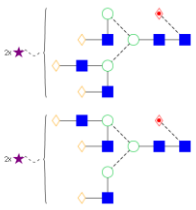
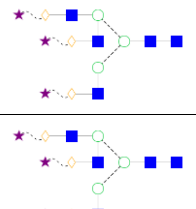
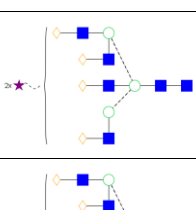
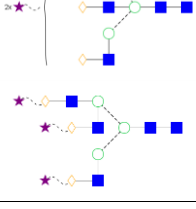
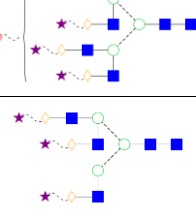
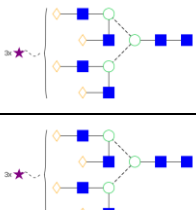
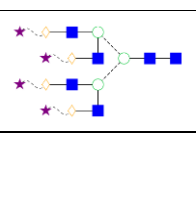



<sup>2</sup> Borsod Academic County Hospital, Hungary 3526

Supplementary Table S1.

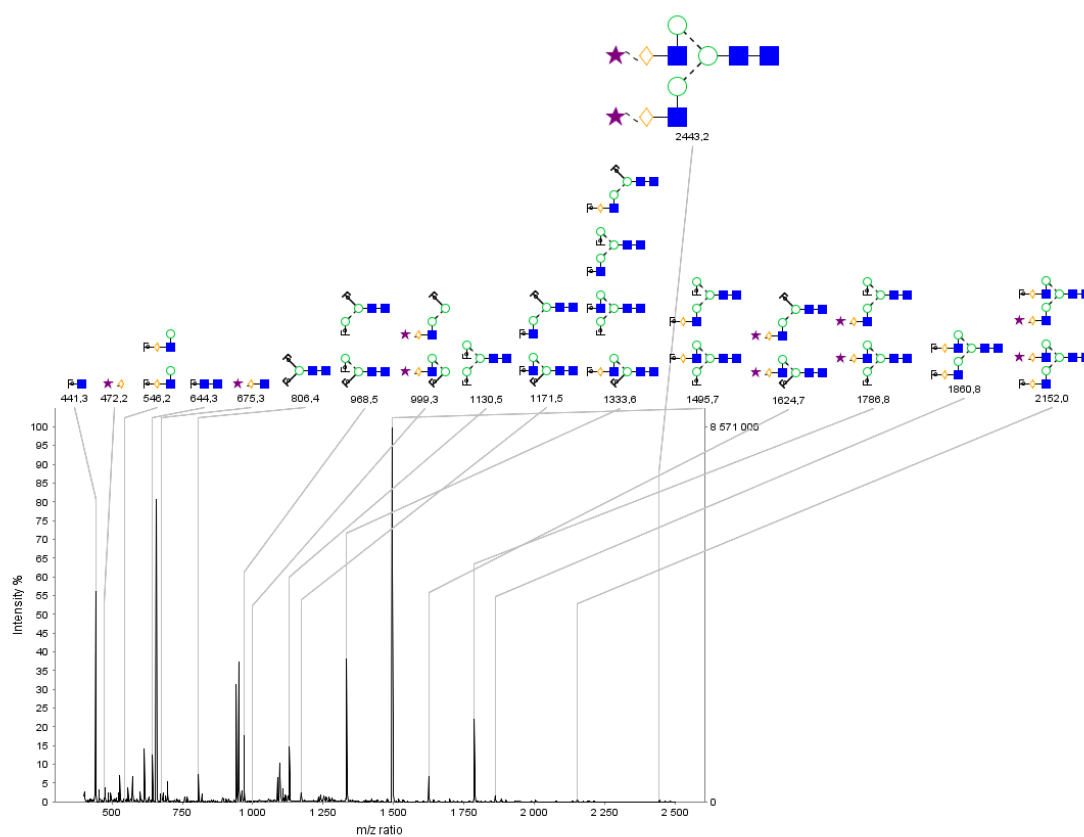
Glycan structures [Theoretical m/z] <sup>2+</sup>		Average area % ± std deviation				Significance level with 95% confidence (* Statistically significant p ≤ 0.05)
		Covid-Vaccine-	Covid-Vaccine+	Covid+Vaccine-	Covid+Vaccine+	
FA2 [841.94] <sup>2+</sup>		4.28 ± 2.02	3.72 ± 1.10	3.88 ± 1.12	3.63 ± 1.55	0.794
M5 [727.89] <sup>2+</sup>		2.55 ± 0.86	2.50 ± 0.41	2.33 ± 0.45	2.20 ± 0.54	0.361
FA2G1 [922.97] <sup>2+</sup>		3.67 ± 0.94	3.74 ± 0.88	3.62 ± 0.61	3.37 ± 0.97	0.500
FA2G1 [922.97] <sup>2+</sup>		1.74 ± 0.57	1.82 ± 0.48	1.62 ± 0.23	1.62 ± 0.37	0.701
FA2BG1 [1024.51] <sup>2+</sup>		1.33 ± 0.36	1.38 ± 0.27	1.24 ± 0.32	1.20 ± 0.30	0.575
M6 [808.92] <sup>2+</sup>		1.32 ± 0.38	1.46 ± 0.28	1.25 ± 0.24	1.25 ± 0.34	0.128
A2G2 [930.97] <sup>2+</sup>		1.15 ± 0.33	1.27 ± 0.21	1.29 ± 0.26	1.20 ± 0.17	0.716
A2BG2 [1032.51] <sup>2+</sup>		0.51 ± 0.12	0.53 ± 0.09	0.59 ± 0.17	0.50 ± 0.10	0.336

FA2G2 [1004.00] <sup>2+</sup>		$3.04 \pm 0.84$	$3.54 \pm 1.07$	$2.93 \pm 0.51$	$2.93 \pm 0.81$	0.208
FA2BG2 [1105.54] <sup>2+</sup>		$2.33 \pm 0.36$	$2.43 \pm 0.27$	$2.26 \pm 0.40$	$2.18 \pm 0.34$	0.320
FA2G2S1 [1149.55] <sup>2+</sup>		$0.40 \pm 0.09$	$0.44 \pm 0.07$	$0.42 \pm 0.05$	$0.39 \pm 0.10$	0.132
A2G2S1 [1076.52] <sup>2+</sup>		$2.94 \pm 0.67$	$3.09 \pm 0.52$	$3.04 \pm 0.31$	$3.03 \pm 0.51$	0.991
A2G2S1 [1076.52] <sup>2+</sup>		$9.43 \pm 1.26$	$9.85 \pm 1.10$	$10.29 \pm 1.09$	$9.64 \pm 0.87$	0.202
A2FG2S1 [1149.55] <sup>2+</sup>		$0.69 \pm 0.44$	$0.56 \pm 0.24$	$0.70 \pm 0.29$	$0.56 \pm 0.20$	0.224
FA2G2S1 [1149.55] <sup>2+</sup>		$4.36 \pm 1.12$	$4.86 \pm 0.74$	$4.65 \pm 0.79$	$4.61 \pm 0.76$	0.661
FA2BG2S1 [1251.09] <sup>2+</sup>		$0.69 \pm 0.37$	$0.64 \pm 0.13$	$0.68 \pm 0.18$	$0.63 \pm 0.14$	0.246
A2G2S2 [1222.06] <sup>2+</sup>		$2.73 \pm 0.85$	$3.28 \pm 0.70$	$3.02 \pm 1.19$	$2.90 \pm 0.65$	0.229
FA2BG2S1 [1251.08] <sup>2+</sup>		$2.16 \pm 0.42$	$2.08 \pm 0.73$	$2.29 \pm 0.84$	$2.06 \pm 0.76$	0.737
FA2BG2S1 [1251.08] <sup>2+</sup>		$0.72 \pm 0.63$	$0.65 \pm 0.08$	$0.54 \pm 0.07$	$0.53 \pm 0.15$	*0.013
FA2BG2S1 [1251.08] <sup>2+</sup>		$0.46 \pm 0.06$	$0.44 \pm 0.06$	$0.48 \pm 2.81$	$0.47 \pm 0.06$	0.328
A2G2S2 [1222.06] <sup>2+</sup>		$29.87 \pm 2.39$	$29.08 \pm 2.14$	$29.71 \pm 0.15$	$30.02 \pm 1.75$	0.657

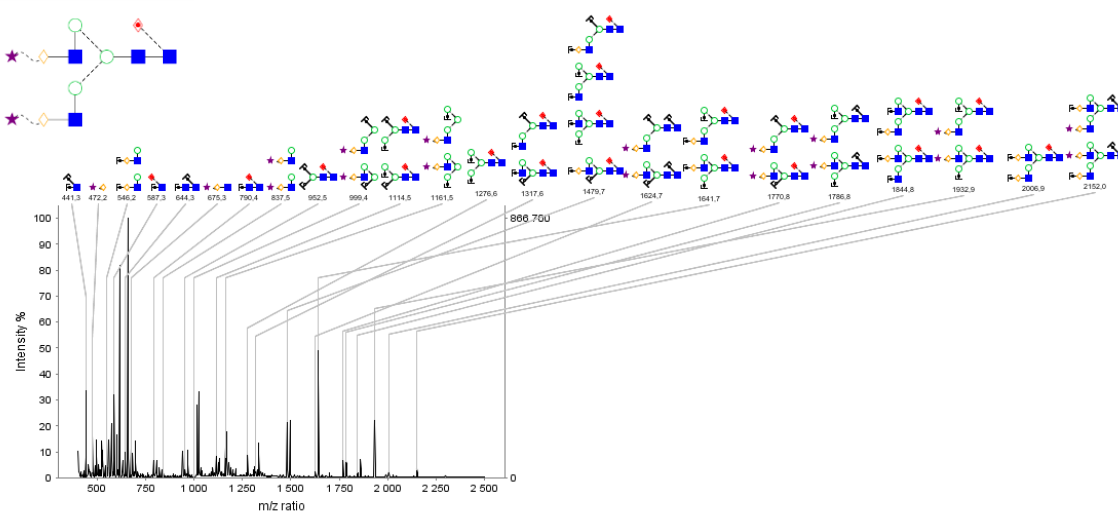
A2G2S2 [1222.06] <sup>2+</sup>		$1.07 \pm 0.28$	$1.24 \pm 0.17$	$1.09 \pm 0.27$	$1.22 \pm 0.12$	*0.027
FA2G2S2 [1295.09] <sup>2+</sup>		$0.60 \pm 0.25$	$0.48 \pm 0.13$	$0.51 \pm 1.04$	$0.37 \pm 0.14$	*0.001
FA2G2S2 [1295.09] <sup>2+</sup>		$4.11 \pm 0.93$	$3.83 \pm 0.94$	$4.23 \pm 0.59$	$4.28 \pm 0.96$	0.545
FA2BG2S2 [1396.63] <sup>2+</sup>		$2.38 \pm 0.51$	$2.20 \pm 0.55$	$2.43 \pm 0.58$	$2.33 \pm 0.53$	0.620
A3G3S2 [1404.63] <sup>2+</sup>		$1.58 \pm 0.40$	$1.75 \pm 0.41$	$1.78 \pm 0.05$	$1.86 \pm 0.35$	0.313
A3G3S2 [1404.63] <sup>2+</sup>		$0.20 \pm 0.08$	$0.22 \pm 0.06$	$0.21 \pm 0.24$	$0.28 \pm 0.18$	0.334
A3G3S2 [1404.63] <sup>2+</sup>		$0.92 \pm 0.25$	$1.02 \pm 0.28$	$0.95 \pm 0.24$	$1.10 \pm 0.30$	0.213
A3G3S2 [1404.63] <sup>2+</sup>		$0.53 \pm 0.25$	$0.43 \pm 0.09$	$0.46 \pm 0.13$	$0.57 \pm 0.21$	0.177
FA3G3S2 [1477.66] <sup>2+</sup>		$1.14 \pm 0.25$	$1.16 \pm 0.22$	$1.17 \pm 0.23$	$1.10 \pm 0.28$	0.969

FA3G3S2 [1477.66] <sup>2+</sup>		0.38 ± 0.06	0.37 ± 0.08	0.36 ± 0.05	0.42 ± 0.14	0.122
A3G3S3 [1550.18] <sup>2+</sup>		4.32 ± 1.08	4.17 ± 1.22	4.55 ± 1.78	5.01 ± 0.99	0.174
A3G3S3 [1550.18] <sup>2+</sup>		0.32 ± 0.09	0.33 ± 0.08	0.29 ± 0.09	0.35 ± 0.09	0.349
A4G4S2 [1587.20] <sup>2+</sup>		0.33 ± 0.09	0.34 ± 0.10	0.27 ± 0.09	0.39 ± 0.12	*0.027
A4G4S2 [1587.20] <sup>2+</sup>		0.44 ± 0.13	0.41 ± 0.14	0.44 ± 0.16	0.53 ± 0.20	0.165
A3G3S3 [1550.18] <sup>2+</sup>		1.53 ± 0.38	1.27 ± 0.31	1.32 ± 0.40	1.69 ± 0.52	*0.045
A3FG3S3 [1623.21] <sup>2+</sup>		2.23 ± 0.89	2.05 ± 0.69	1.91 ± 0.88	1.97 ± 0.55	0.454
A3G3S3 [1550.18] <sup>2+</sup>		0.76 ± 0.23	0.71 ± 0.22	0.67 ± 0.16	0.96 ± 0.25	*0.009
A4G4S3 [1155.50] <sup>2+</sup>		0.24 ± 0.14	0.20 ± 0.09	0.18 ± 0.12	0.17 ± 0.09	0.253
A4G4S3 [1155.50] <sup>2+</sup>		0.29 ± 0.09	0.22 ± 0.07	0.20 ± 0.07	0.30 ± 0.10	*0.001
A4G4S4 [1252.53] <sup>2+</sup>		0.27 ± 0.10	0.23 ± 0.16	0.16 ± 0.06	0.20 ± 0.08	*0.049

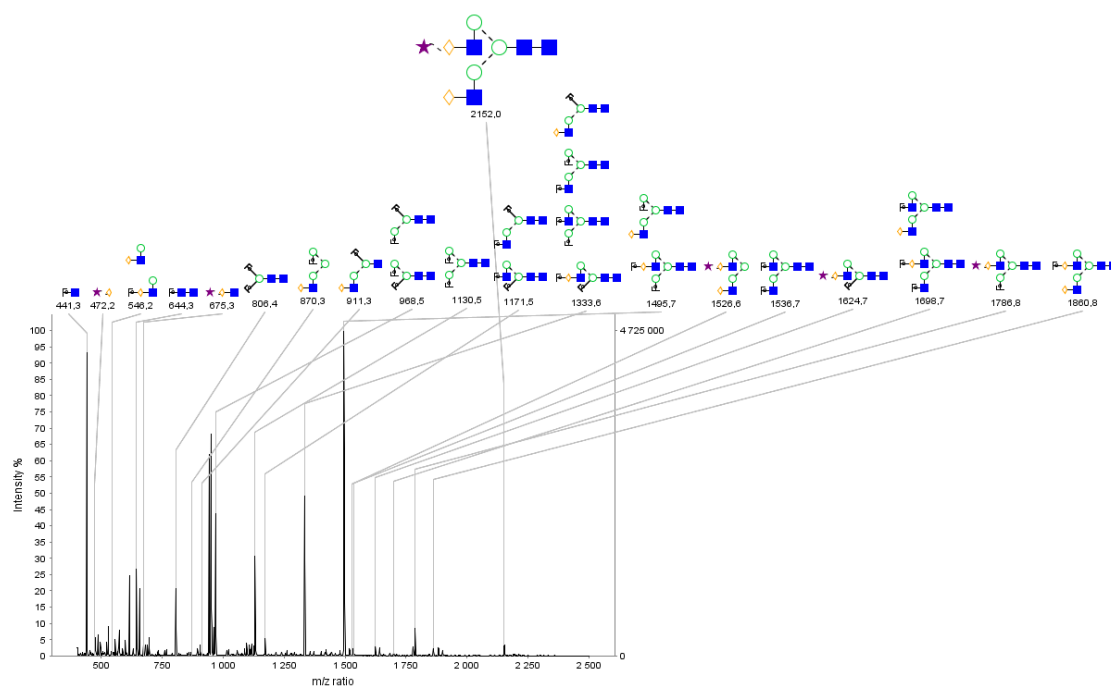
**Supplementary Figure S1.** Fragmentation of parent ion: A2G2S2 [2443.2]<sup>+</sup>



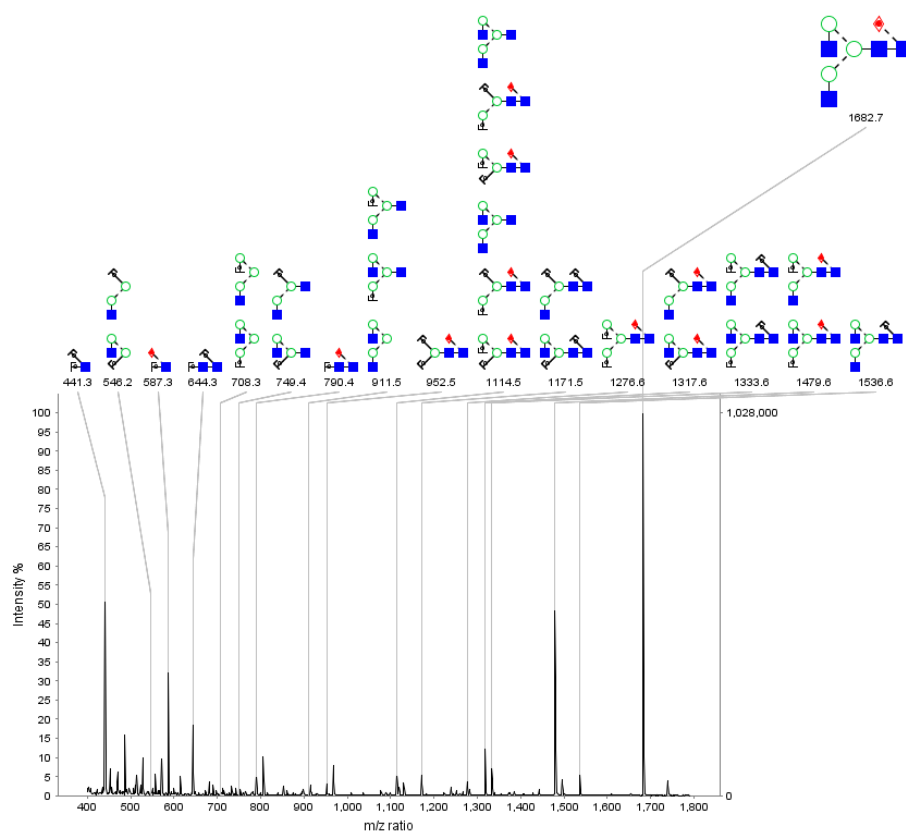
**Supplementary Figure S2.** Fragmentation of parent ion: FA2G2S2 [2589.2]<sup>+</sup>



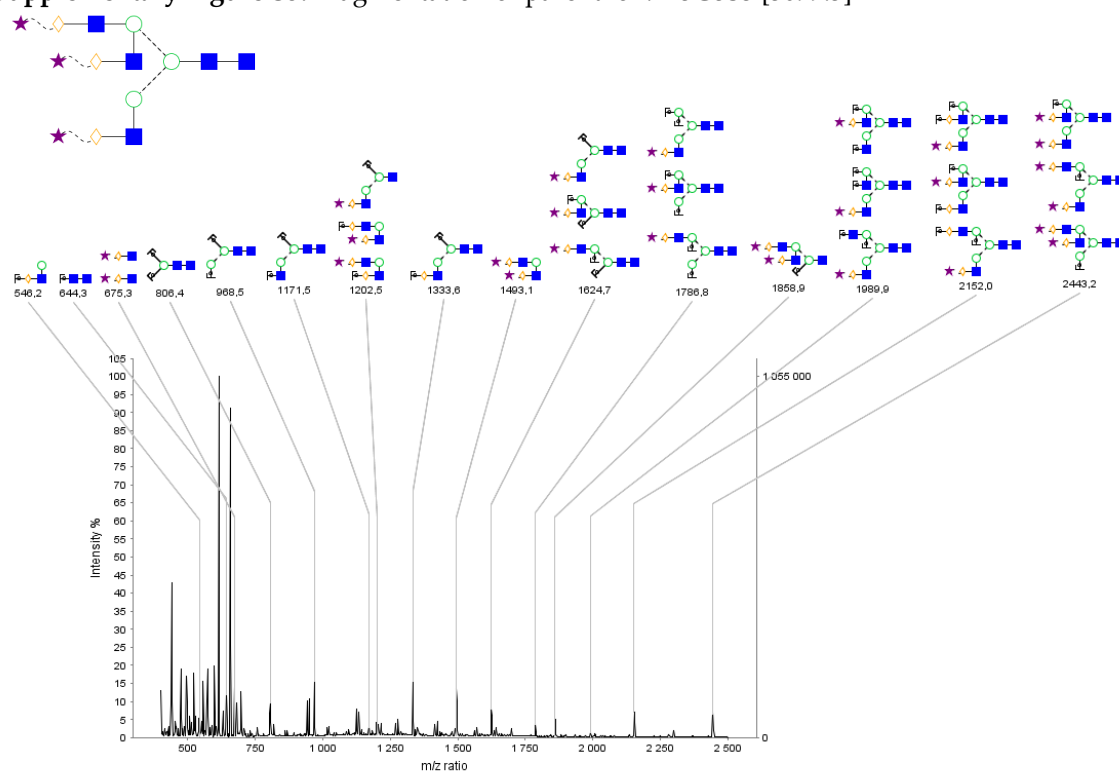
Supplementary Figure S3. Fragmentation of parent ion: A2G2S1 [2152.0]<sup>+</sup>



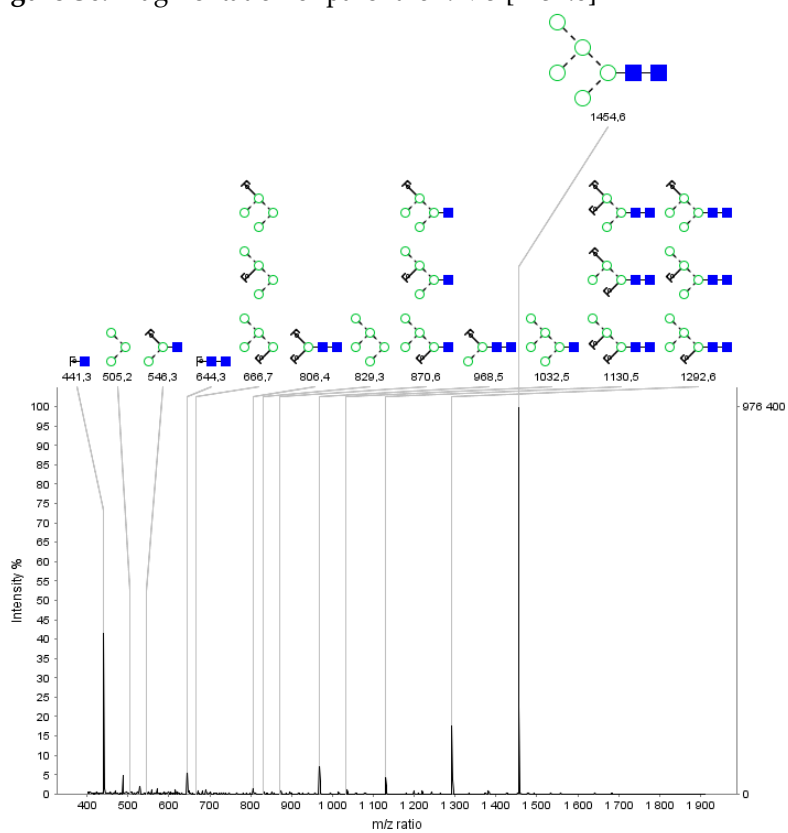
Supplementary Figure S4. Fragmentation of parent ion: FA2 [1682.7]<sup>+</sup>



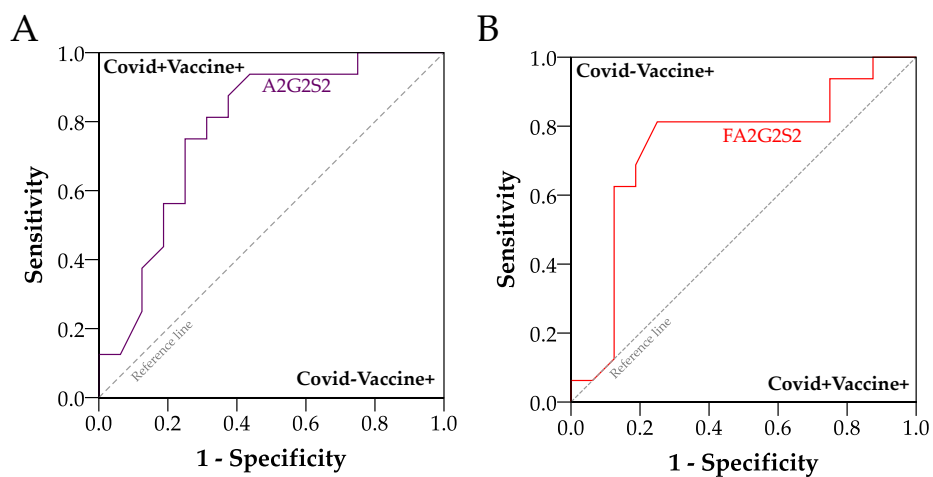
**Supplementary Figure S5.** Fragmentation of parent ion: A3G3S3 [3099.3]<sup>+</sup>



**Supplementary Figure S6.** Fragmentation of parent ion: M5 [1454.6]<sup>+</sup>



**Supplementary Figure S7.** Roc curve analysis of A2G2S2 (A), FA2G2S2 (B) and their significance levels (C)



**C**

Area Under the Curve					
Test variable	Area	Std. Error <sup>a</sup>	Asymptotic Sig. <sup>b</sup>	Asymptotic 95% Confidence Interval	
				Lower Bound	Upper Bound
A2G2S2	0.78	0.09	0.01	0.61	0.94
FA2G2S2	0.74	0.09	0.02	0.56	0.93

a. Under the nonparametric assumption

b. Null hypothesis: true area = 0.5