

FIG. 1

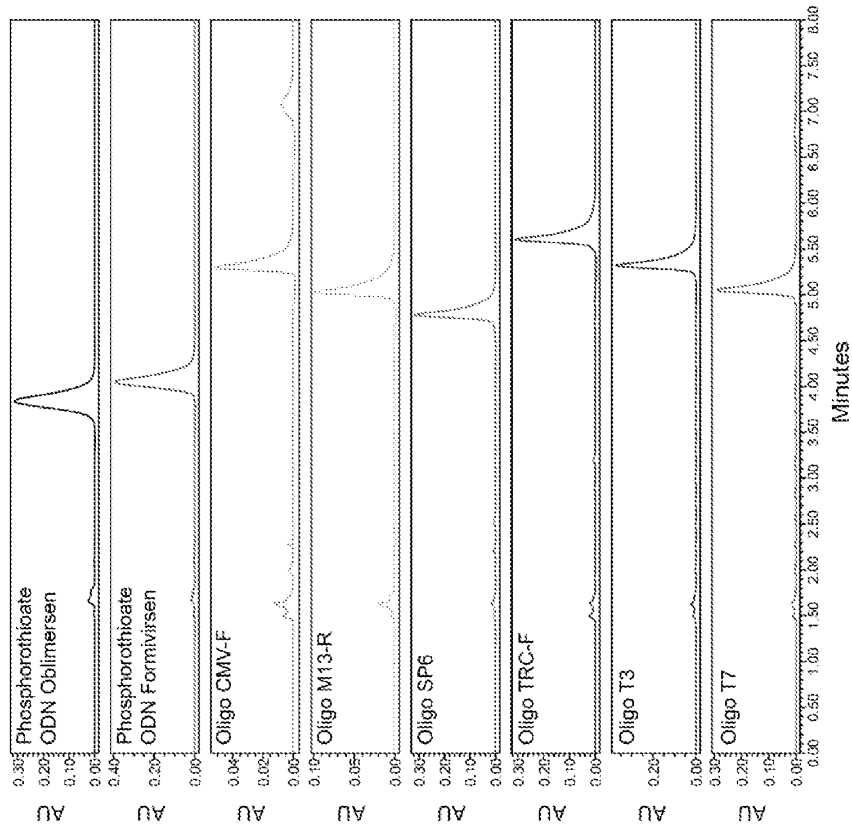


FIG. 2A

MPA: 15 mM ammonium acetate in 70% ACN
MPB: 15 mM ammonium acetate in 30% ACN

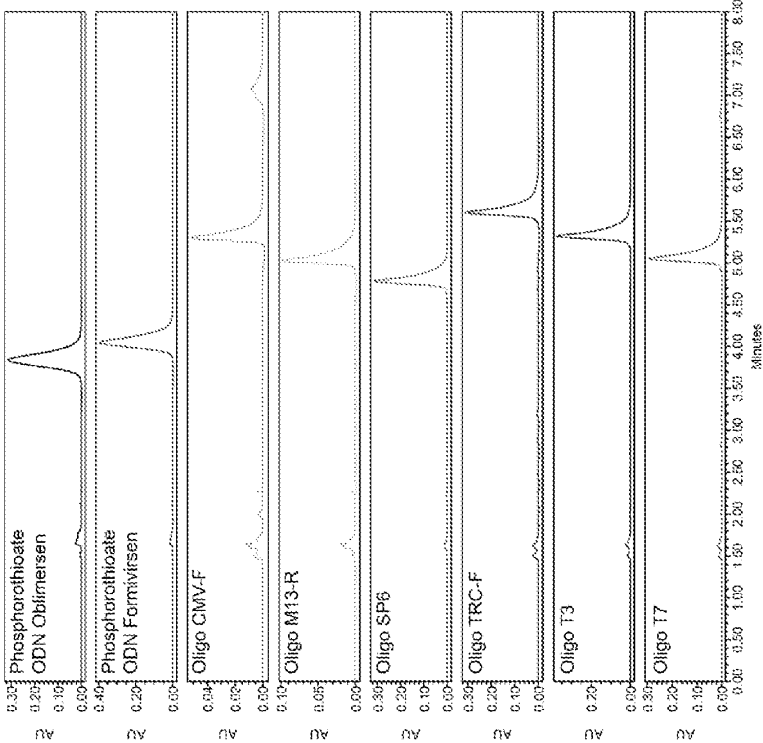


FIG. 2B

MPA: 15 mM ammonium formate in 70% ACN
MPB: 15 mM ammonium formate in 30% ACN

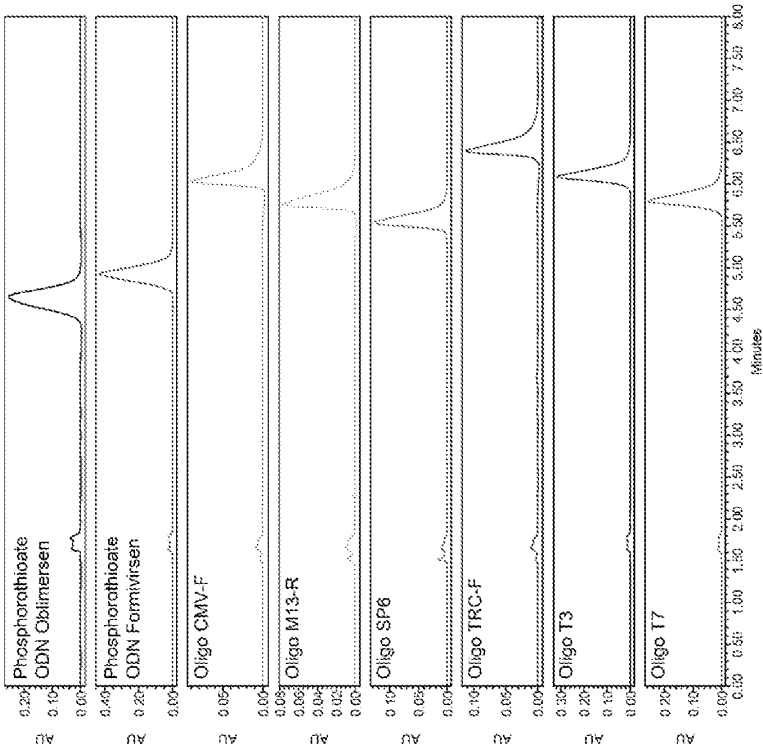


FIG. 3A

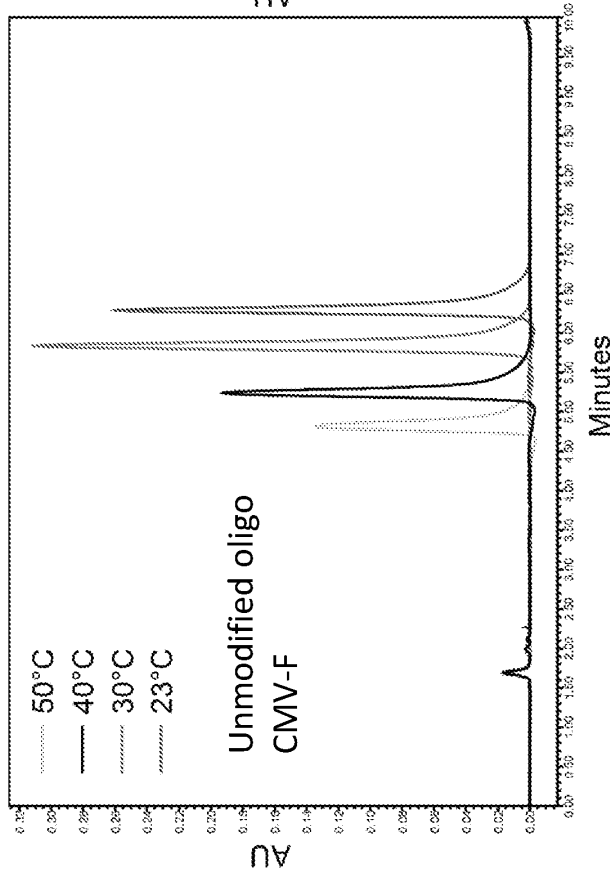
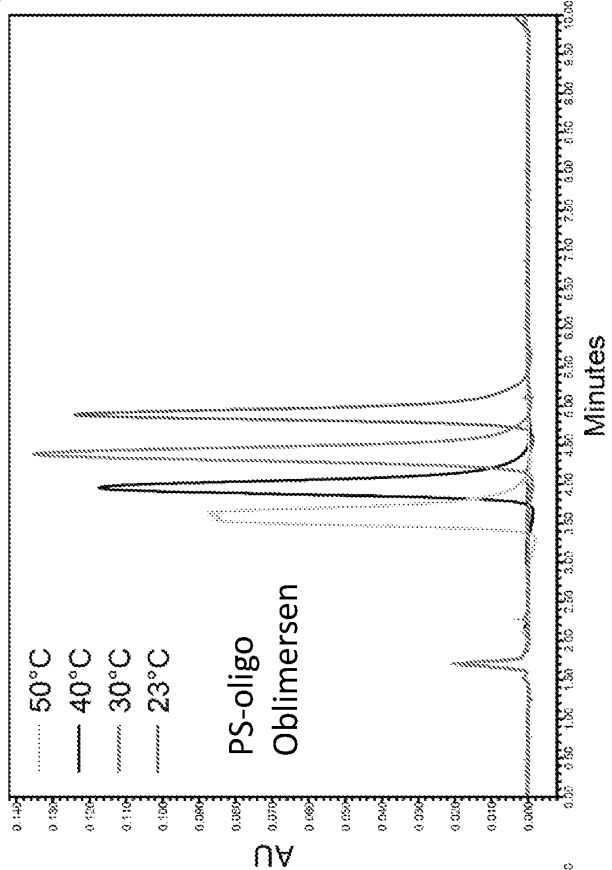


FIG. 3B



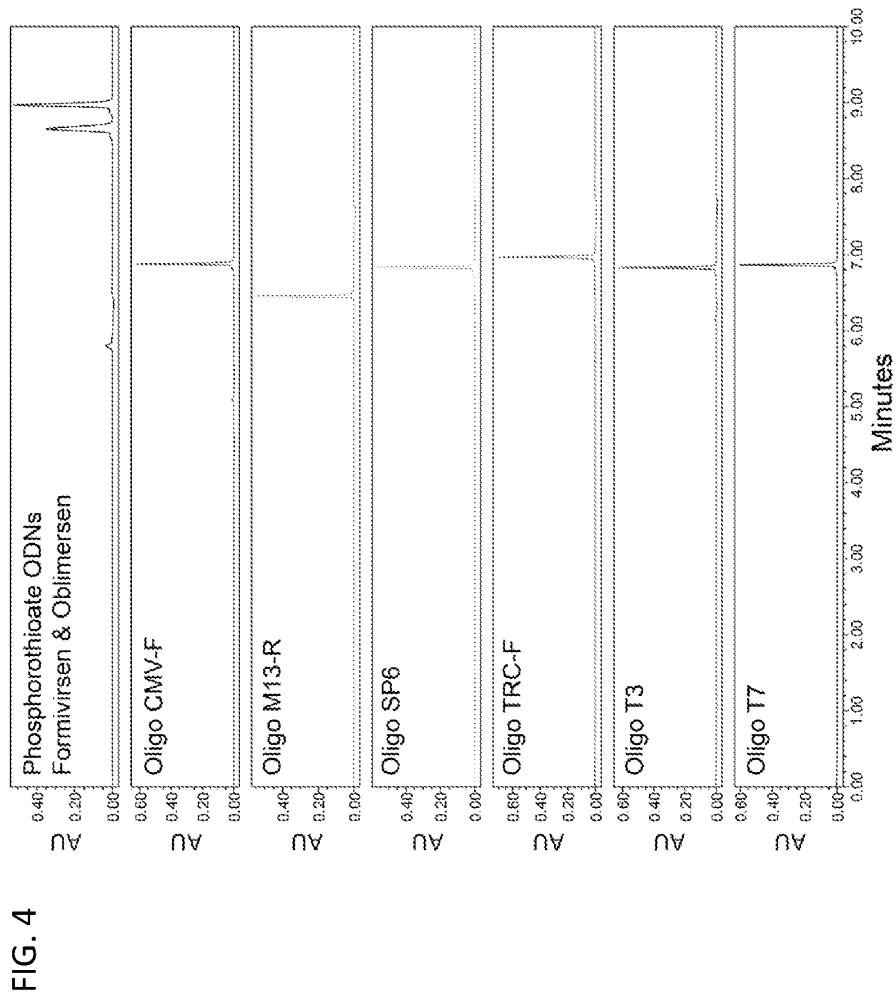


FIG. 5

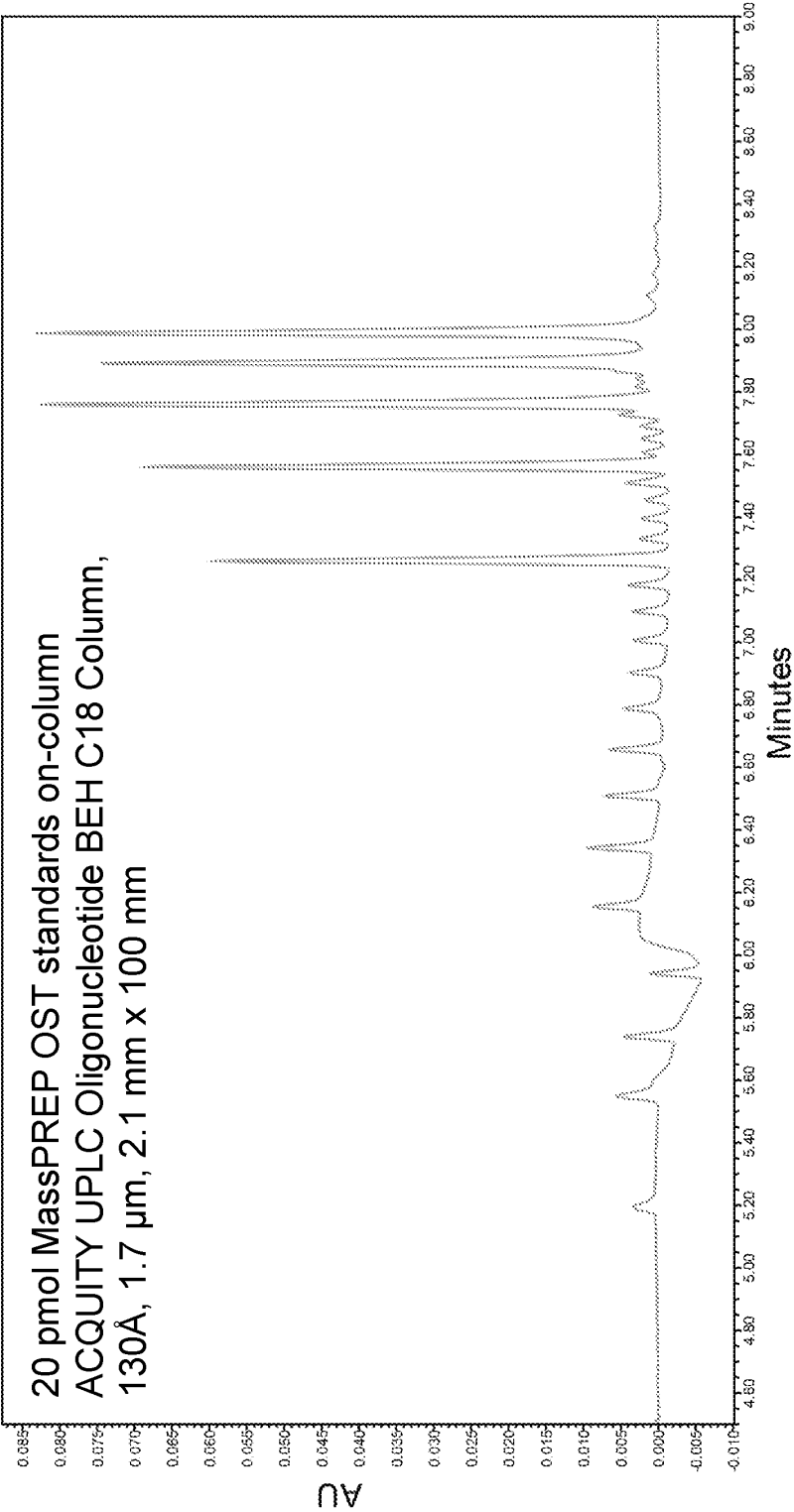
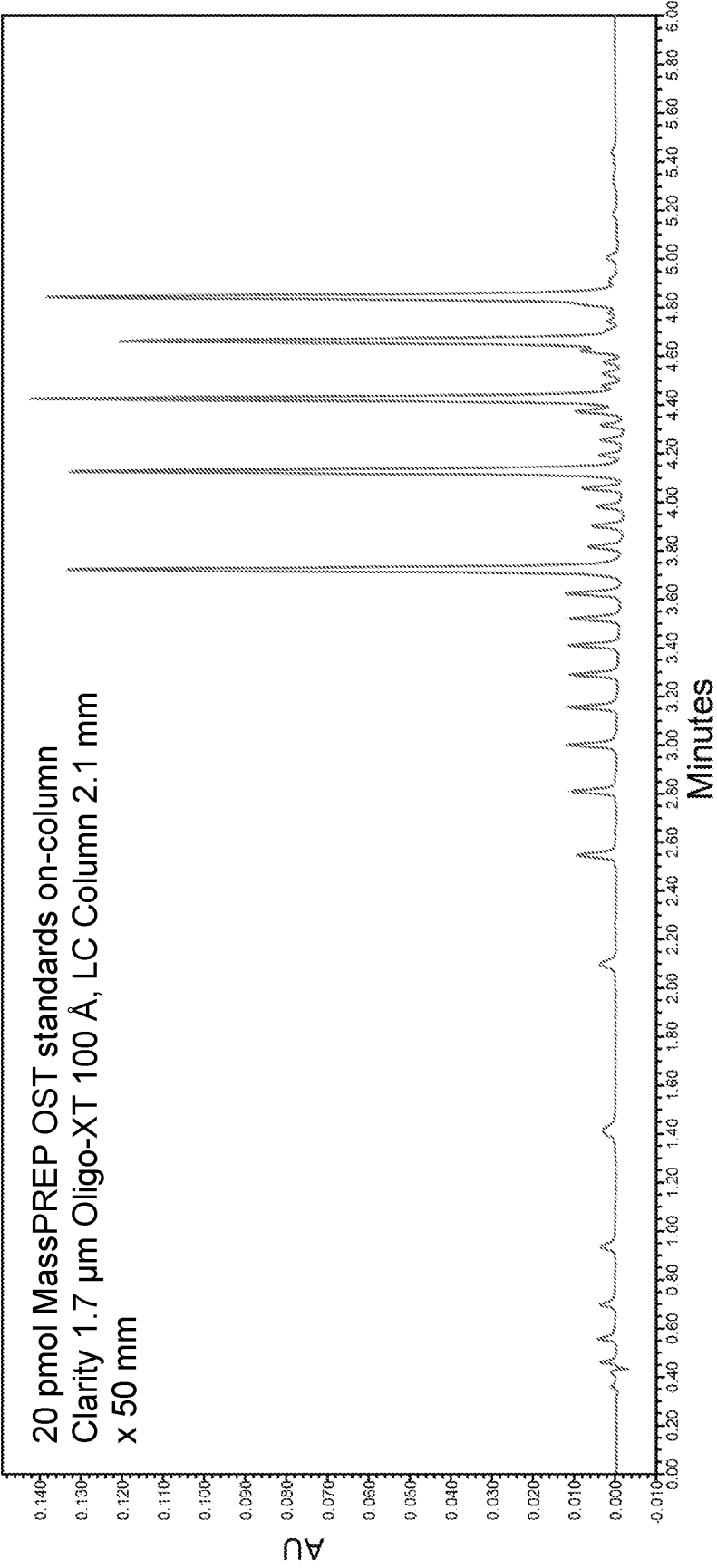


FIG. 6



Oligo M13-R
CAGGAAACAGCTATGAC

FIG. 7

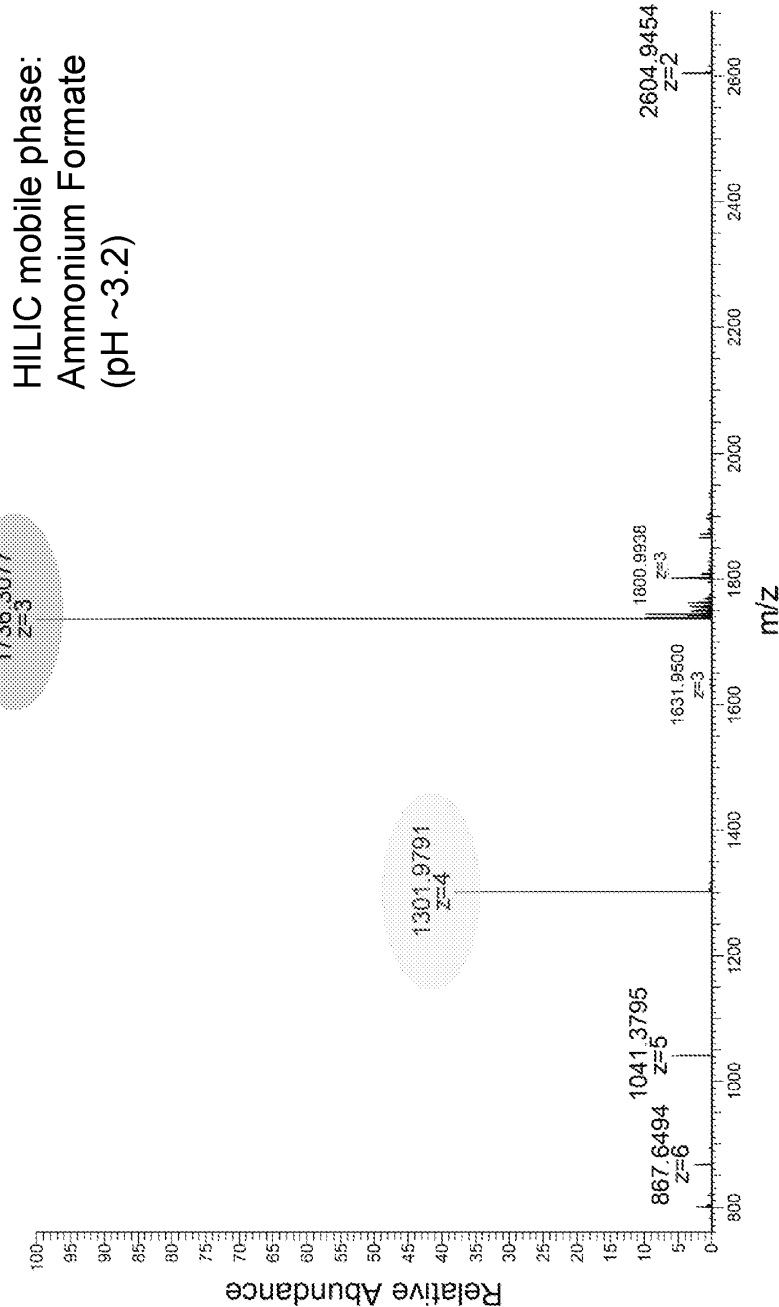


FIG. 8

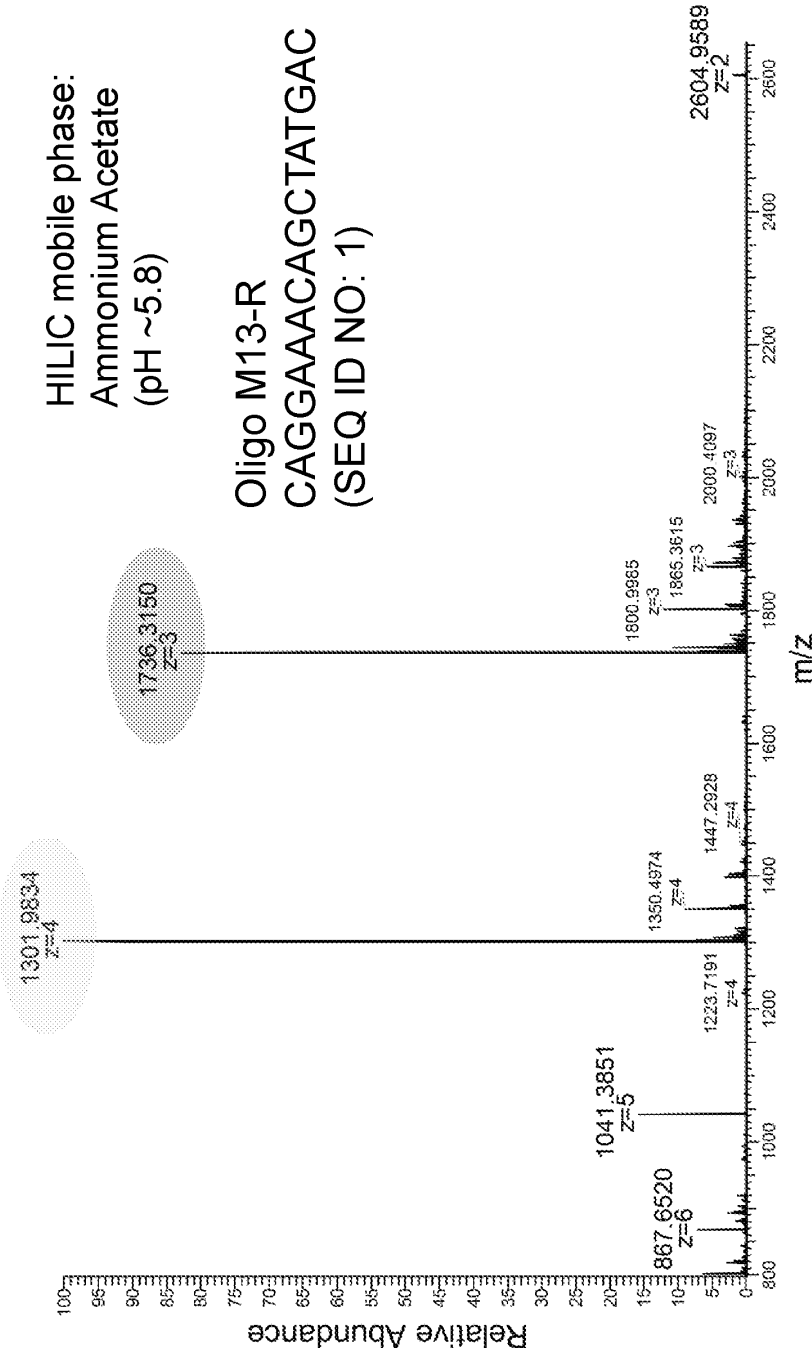


FIG. 9

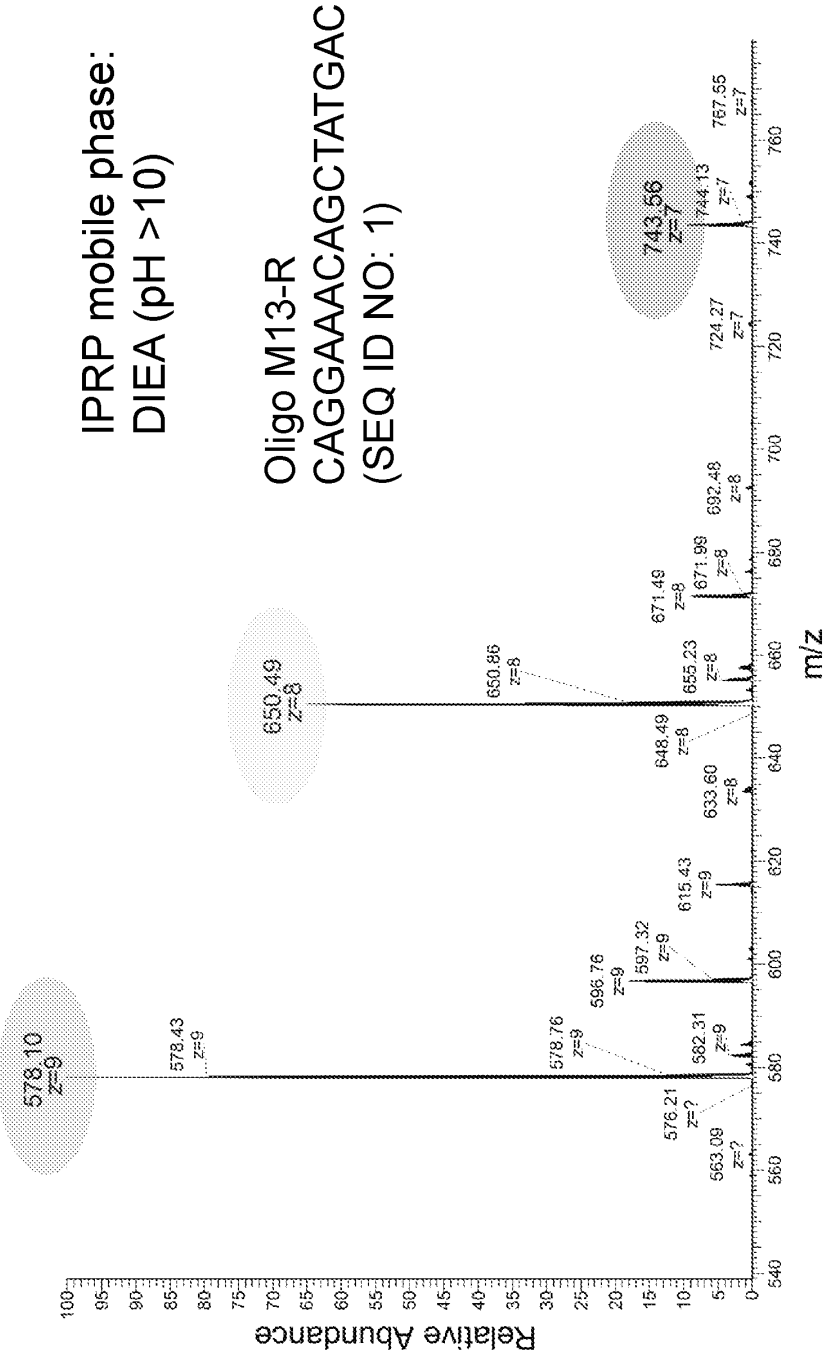
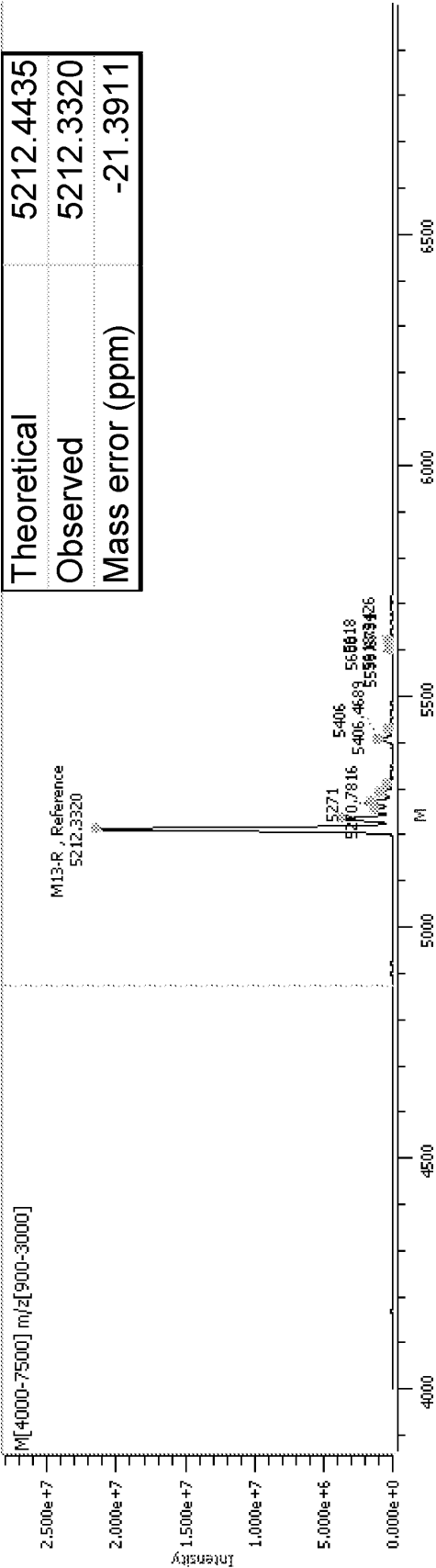


FIG. 10A



Theoretical	5212.4435
Observed	5212.3320
Mass error (ppm)	-21.3911

FIG. 10B

Sample name ←		20191104_M13-R_Top5_method_v3.raw
Name ↓		(%)
M13-R 4-17(G,CAAACAGC...), Reference		0.09
M13-R, Reference		99.91

FIG. 11A

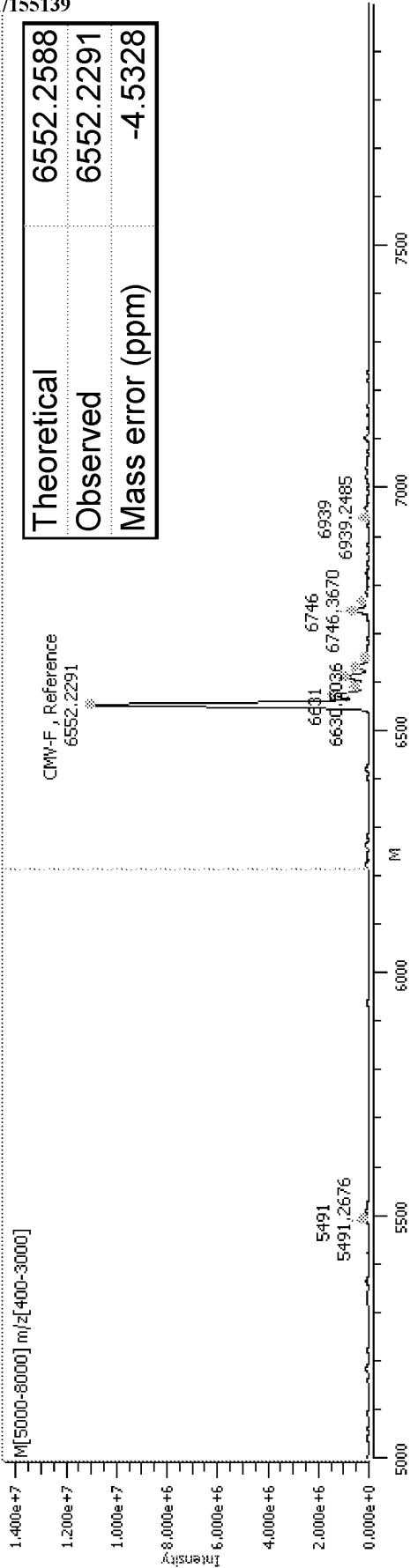


FIG. 11B

Sample name ←	
Name :	20191211_CMV-F_AF50Luna05_top5_v5_2.5kV.raw (%)
CMV-F 5-21(AAATGGGGCG...), Reference	1.19
CMV-F 1-19(...CGTAGGGCG...), Reference	7.49
CMV-F, Reference	91.31

FIG. 12A

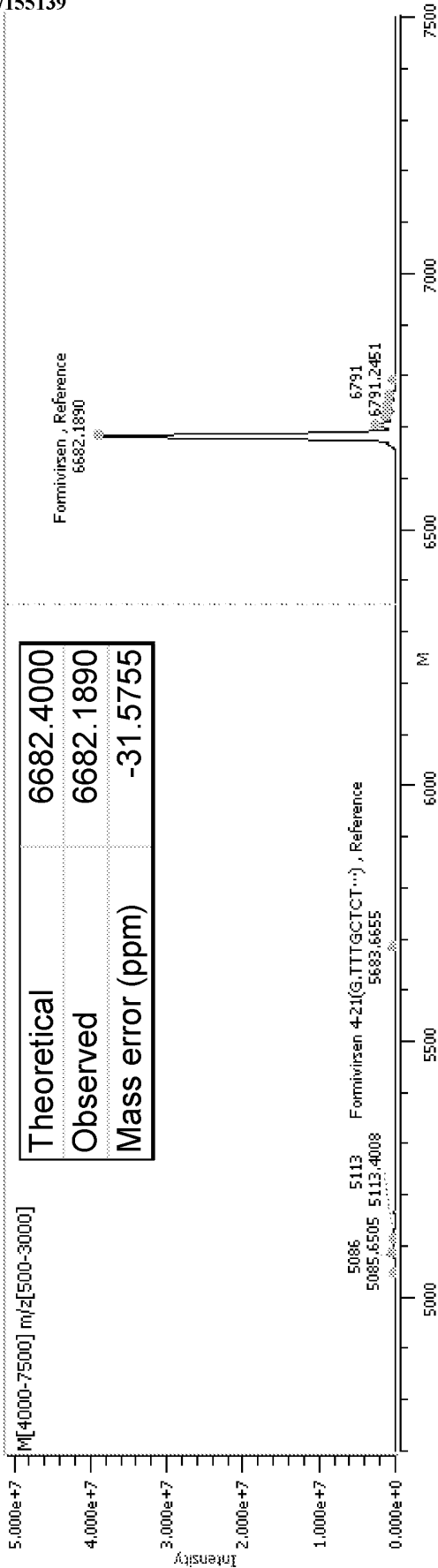


FIG. 12B

Name 1	Sample name ←	20200121_Form_A450Luna05_Top5_v5_3kV.raw (%)
Formivirsen 6-21(TTGGCTCTC...), Reference		2.22
Formivirsen 4-21(GTTGGCTCT...), Reference		0.50
Formivirsen 1-15(CCTCTCTO), Reference		1.43
Formivirsen, Reference		91.86

FIG. 13

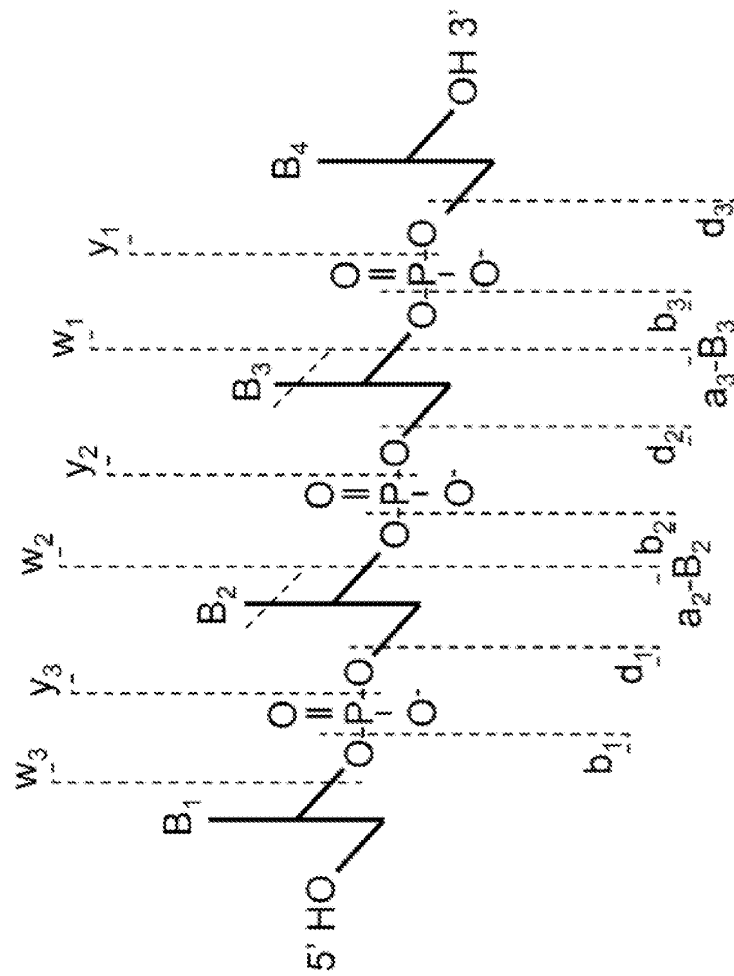


FIG. 14A

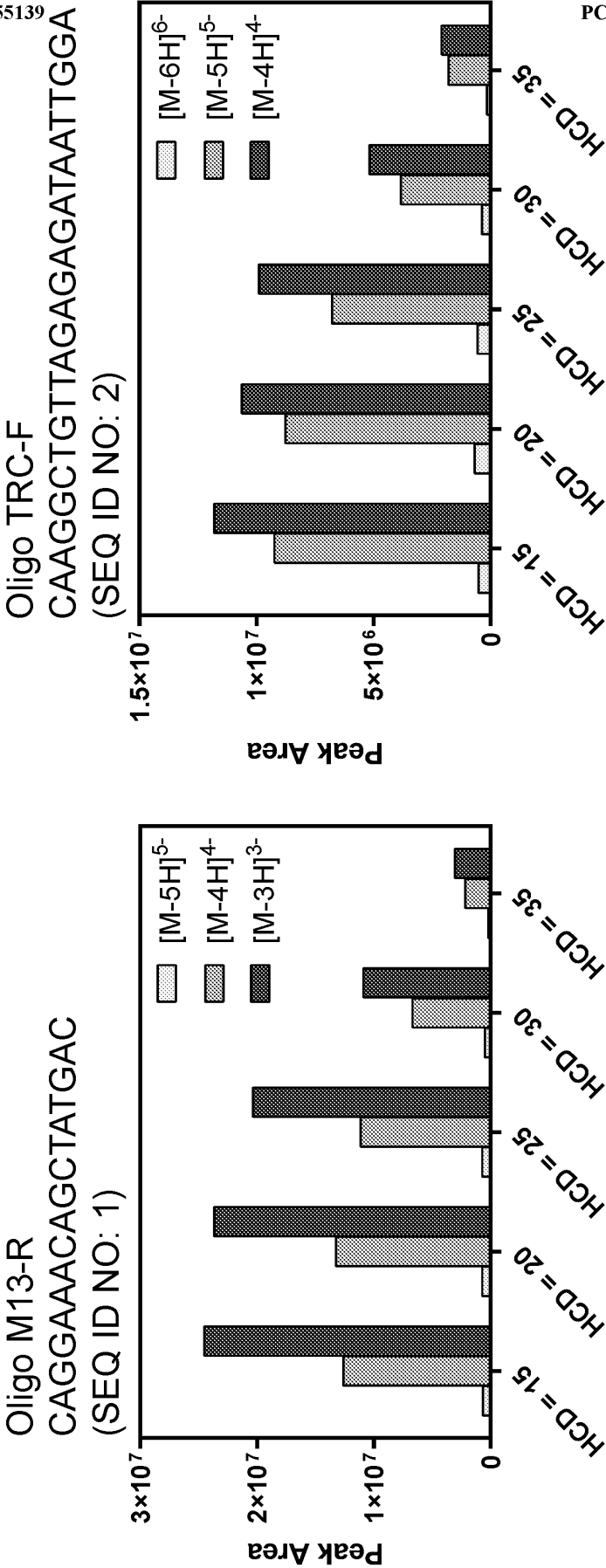


FIG. 14B



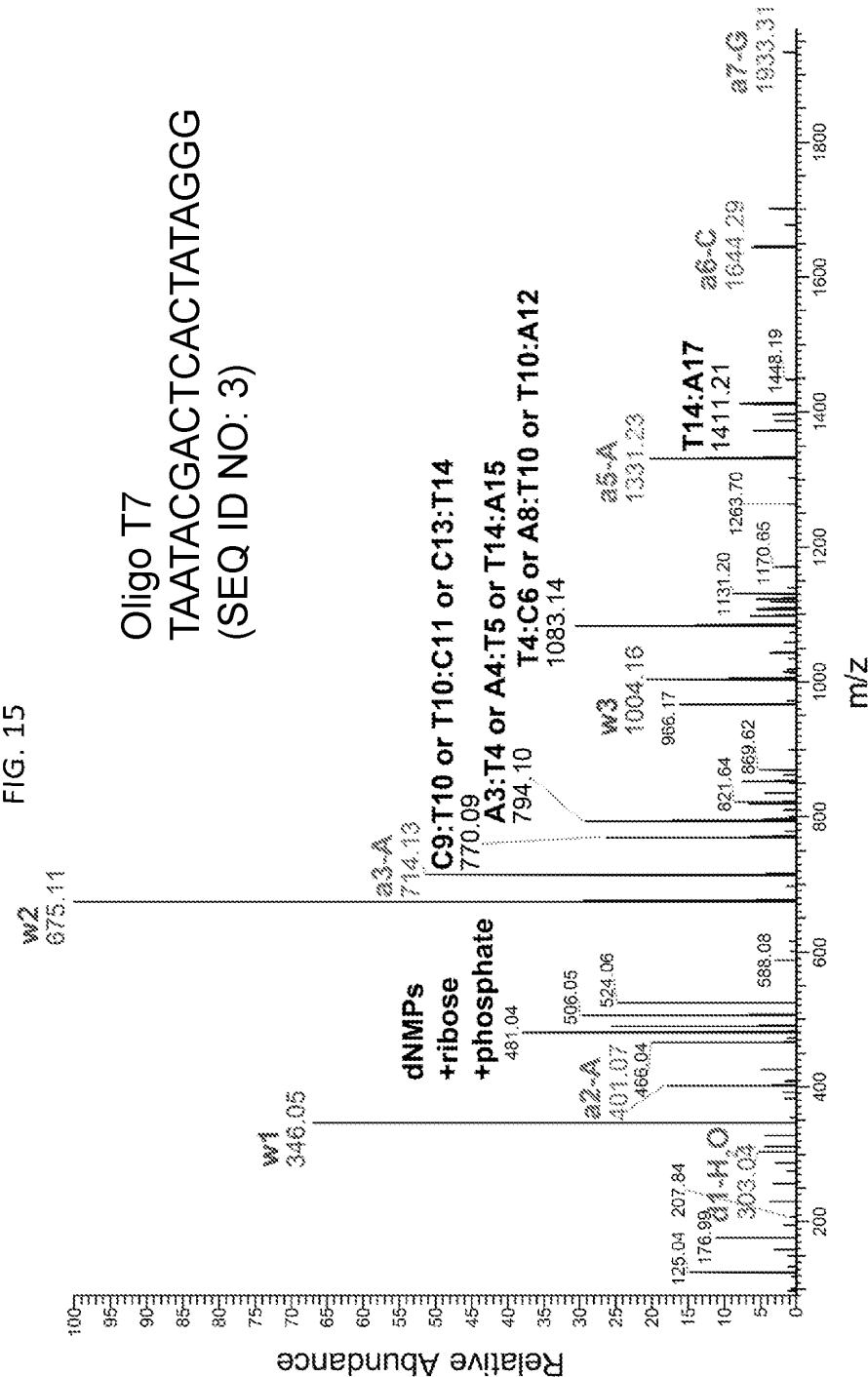


FIG. 16

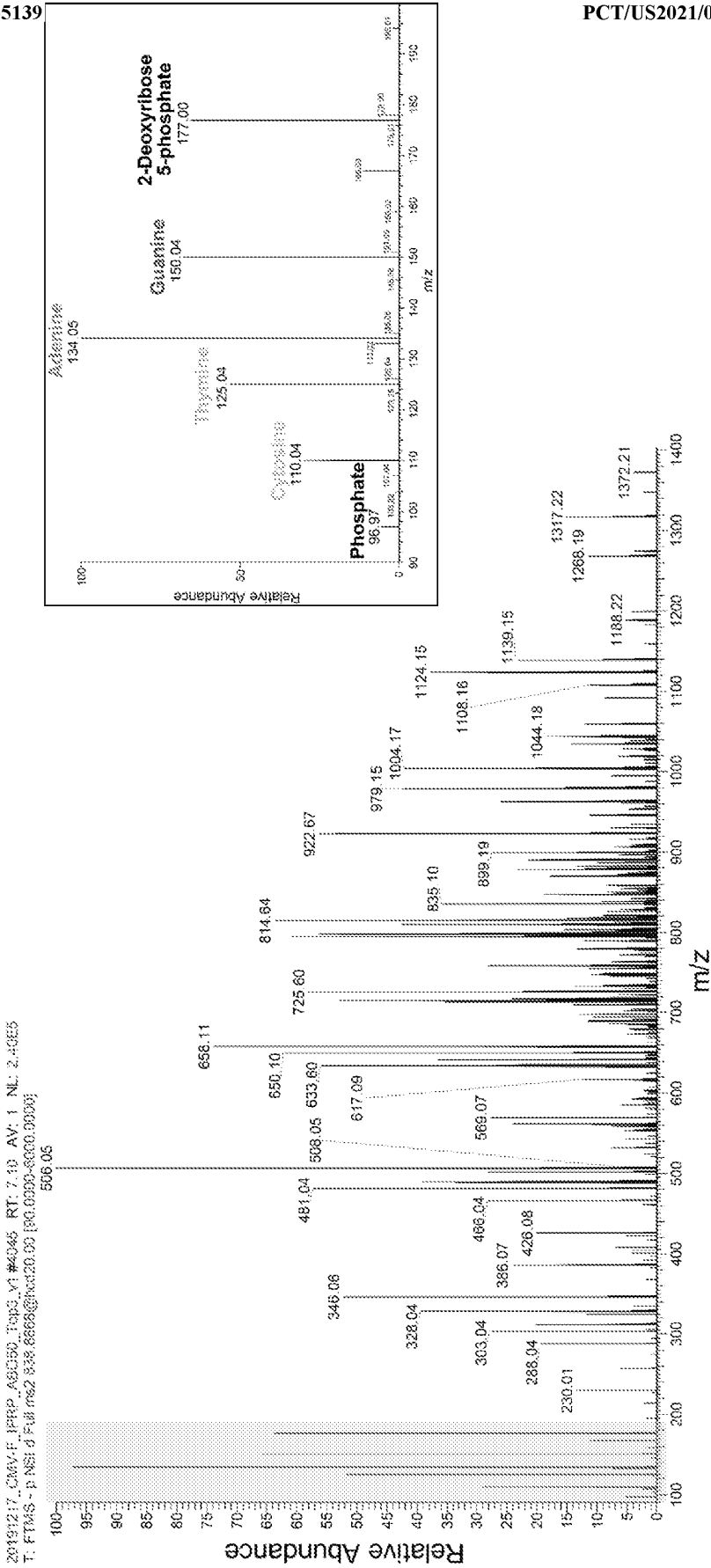
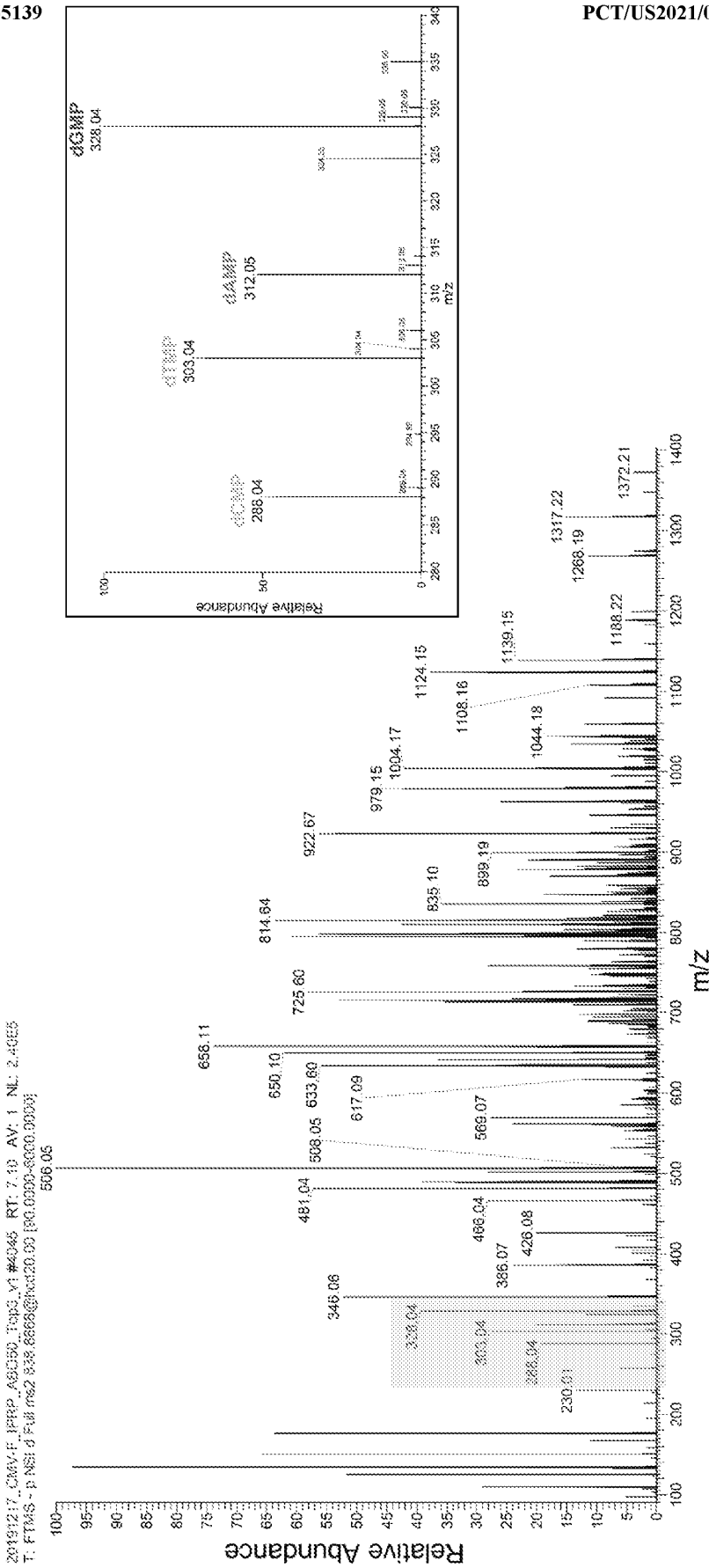


FIG. 17



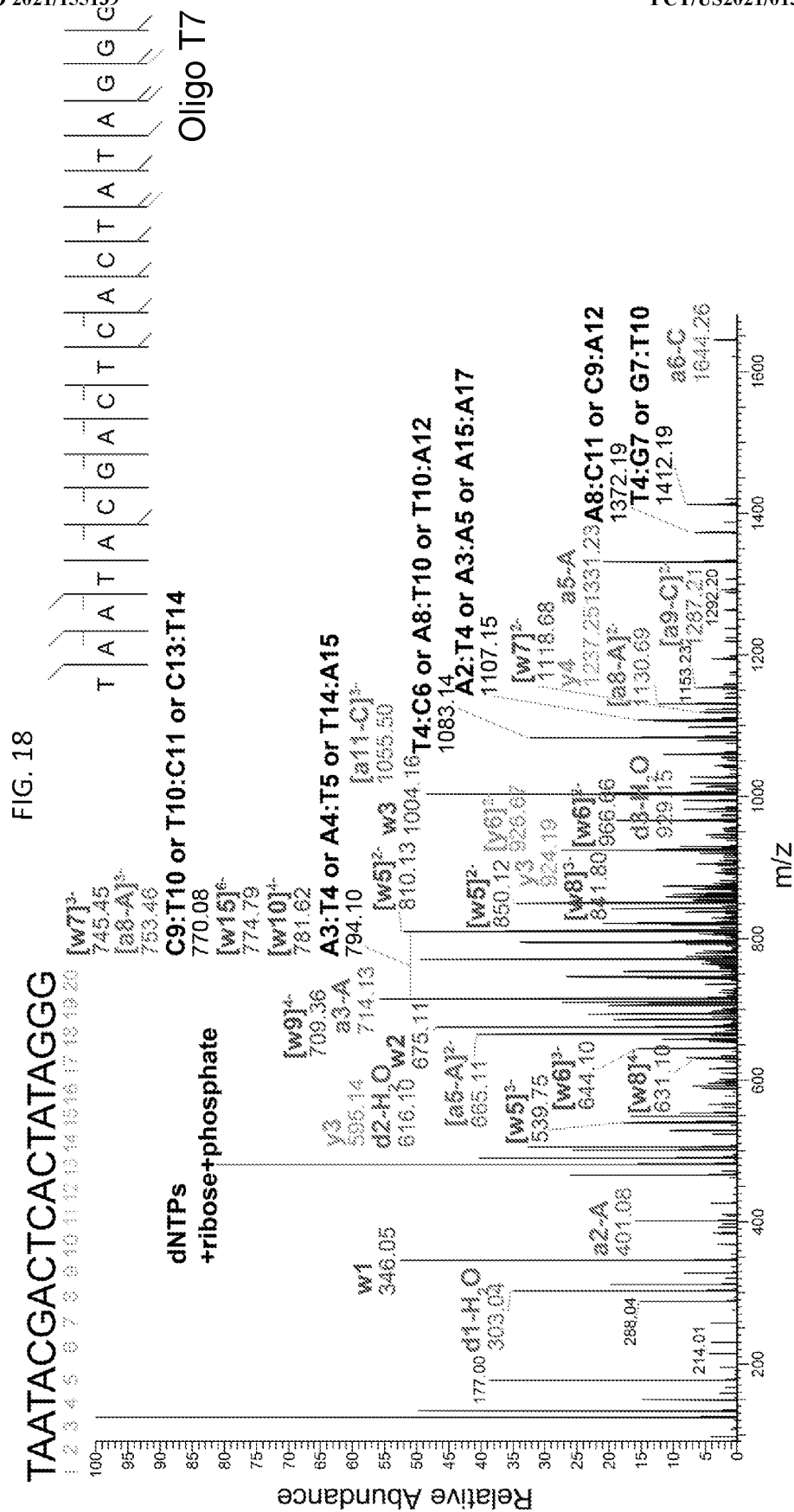
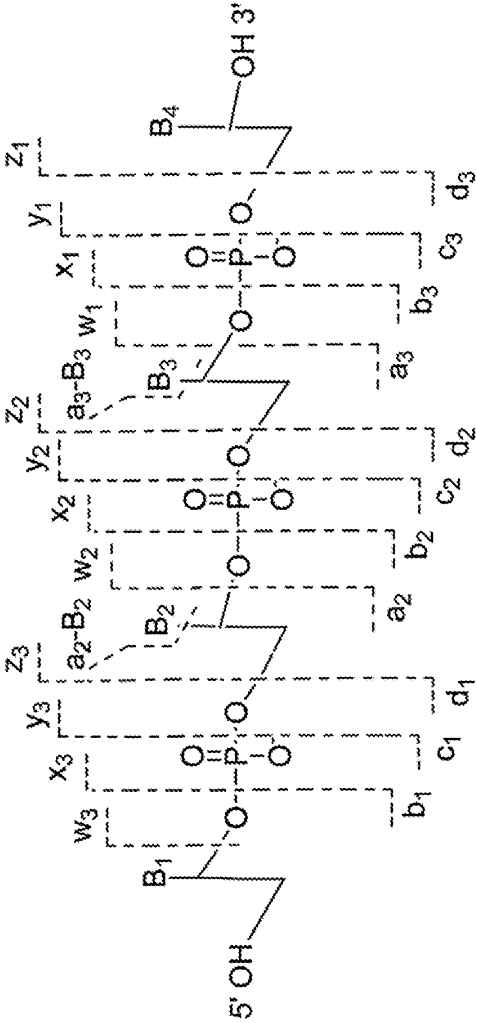


FIG. 19A

Unmodified sequence:
TCTCCCAGCGTGCGCCAT
(SEQ ID NO: 4)

↑ Oblimersen

T**C**T**C**C**C**A*G**C**G*T*G**C**C*G**C**C*A*T
(SEQ ID NO: 5)



Oligonucleotide Fragmentation Nomenclature

FIG. 19B

Unmodified sequence:
TCTCCCAGCGTGCGCCAT
(SEQ ID NO: 4)



Oblimersen
TCTTC*CC*AG*CG*GT*GCC*GC*CAT*
(SEQ ID NO: 5)

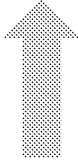
$$\begin{aligned} a_x\text{-B (PS)} &= a_x\text{-B (unmodified)} + (x-1)*(-15.9994+32.0648) \\ w_x\text{ (PS)} &= w_x\text{ (unmodified)} + (x)*(-15.9994+32.0648) \\ y_x\text{ (PS)} &= y_x\text{ (unmodified)} + (x-1)*(-15.9994+32.0648) \\ d_x\text{-H}_2\text{O (PS)} &= d_x\text{-H}_2\text{O (unmodified)} + (x)*(-15.9994+32.0648) \end{aligned}$$

Oxygen	
MW:	15.999405
EM:	15.99491
Sulfur	
MW:	32.064787
EM:	31.97207

FIG. 19C

Unmodified sequence:

TCTCCAGCGTGCGCCAT
(SEQ ID NO: 4)



Oblimersen

TCTTC*CC*AG*CGTG*CC*G*CC*CAT*
(SEQ ID NO: 5)

Charge	Unmodified sequence				Full PS-modified sequence			
	a-B	w	y	d-H ₂ O	a-B	w	y	d-H ₂ O
-1		321.05	241.08	303.04		337.11	241.08	319.10
-2	401.07	634.11	554.14	592.08	352.88	601.97	505.94	559.95
-3	690.12	923.15	843.19	896.13	625.86	874.95	778.92	847.93
-4	994.17	1212.20	1132.23	1185.18	913.84	1147.94	1051.90	1120.91
-5	1283.21	1541.25	1461.28	1474.22	1186.82	1460.92	1364.89	1393.89
-6	1572.26	1830.30	1750.33	1763.27	1459.80	1733.90	1637.87	1666.87
-7	1861.30	2159.35	2079.38	2076.32	1732.78	2046.89	1950.86	1963.87
-8	2174.36	2463.39	2383.43	2405.38	2029.77	2334.87	2238.84	2276.85
-9	2503.41	2792.45	2712.48	2694.42	2342.76	2647.86	2551.83	2549.83
-10	2792.46	3081.49	3001.53	3023.48	2615.74	2920.84	2824.81	2862.82
-11	3121.51	3410.54	3330.58	3327.52	2928.73	3233.82	3137.79	3150.80
-12	3425.56	3723.60	3643.63	3656.57	3216.71	3530.82	3434.78	3463.79
-13	3754.61	4012.65	3932.68	3945.62	3529.69	3803.80	3707.76	3736.77
-14	4043.66	4301.69	4221.73	4274.67	3802.67	4076.78	3980.75	4049.76
-15	4372.71	4590.74	4510.77	4563.72	4115.66	4349.76	4253.73	4322.74

