

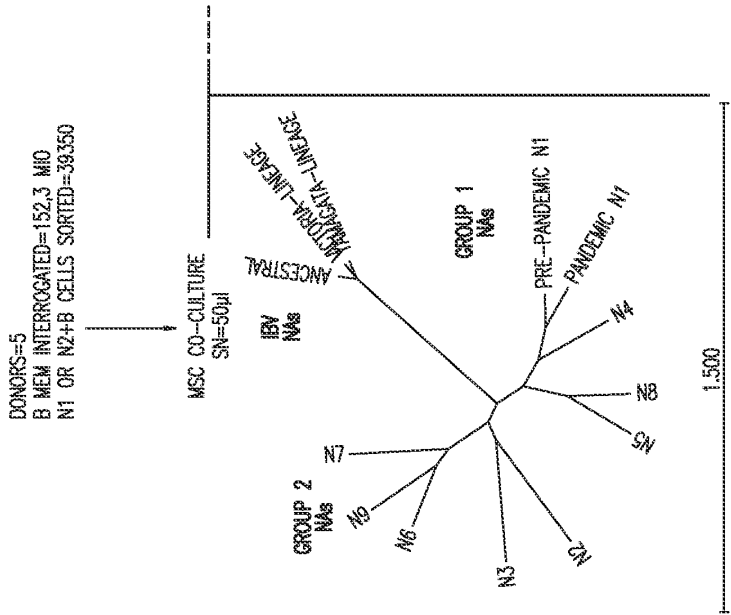


FIG. 1

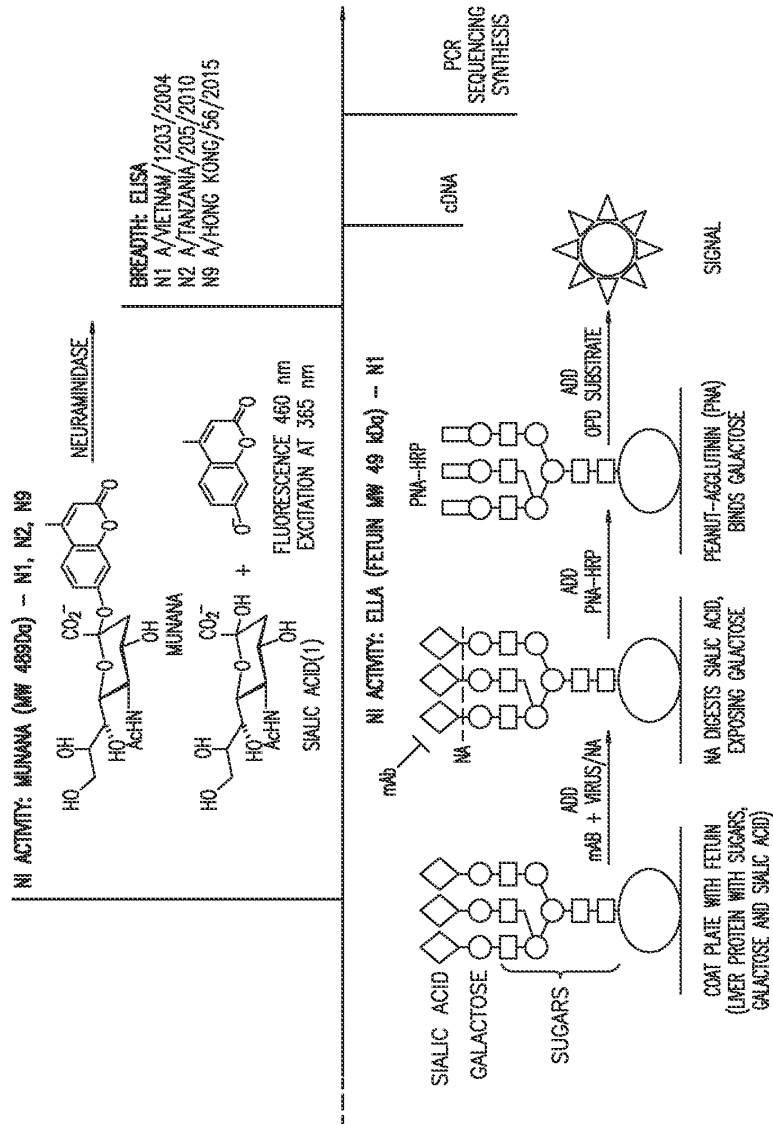


FIG. 1(cont'd)

	20	40	60	
FNI1	QVQLVQSGAEVKRPGSSVRISCKASGDTFNNYVL	SWVRQAPCGGLEWMGG	IIPIISGIPHYAQK	
FNI2	V.....	T.....	V...KTT.....	
FNI3	KV.....	A...S...H...A.....	H...ATAT.....	
FNI4	K.....	SR...I.....	AI...RRAT.....	
FNI5	K.....	SK...I.....	...L...RTAT.....	
FNI6	K.....	G...SSQ.....	...T...ANN.....	
FNI7	KV.....	G...RQ.....	L...T...RGDE...ER	
FNI9	H.....	TV.....	F...T...TS...R	
FNI10	K.....	GS...QA.....	TT...T...IGA...EG	
FNI12	H.....	G...LSSQ.....	...L...P...AR...E	
FNI13	K.....	S...K...EV.....	...FOT...N...E	
FNI14	L.....	V...K.....	...T...AN.....	
FNI17	KV.....	G...S...N...I.....	...T...AN.....	
FNI19	V.....	EG...K...T...T.....	...AN.....	
	80	100	120	
FNI1	FQGRVAIIADESASTVYMELSSLRSSEDSAVYYCA	RAVSDYFNDRDLGWDDYYFPL	WGQGLTVTVSS	128
FNI2	ST.....	I.....	E.....	128
FNI3	A...LT...A.....	NG.....	EN...DS.....	128
FNI4	T...T...T...A...IQ...G...T...D...T.....	H.....	E...DY.....	128
FNI5	T...T...T...T...Q...G...D...T...A.....	R.....	DY.....	128
FNI6	T...T...G...TG.....	G...T...G...T...A.....	EN...EY.....	128
FNI7	T...T...E.....	D...G...T...G...T...A.....	EN...ES.....	128
FNI9	TFT.....	TT...D...D...T...T.....	EN...AS.....	128
FNI10	S...S...R.....	T...T...G...T...T.....	EN...ES.....	128
FNI12	T...T...FT...IQ...T...D...T...T.....	TIR.....	F...F...DH.....	128
FNI13	T...T...T...T...A.....	I.....	EN...ED.....	128
FNI14	T...T...T...T...T.....	L.....	H.....	128
FNI17	K...T...T...A.....	F.....	EN.....	128
FNI19	T...T...T...T...A.....	T.....	A.....	128

FIG. 2A

5/249

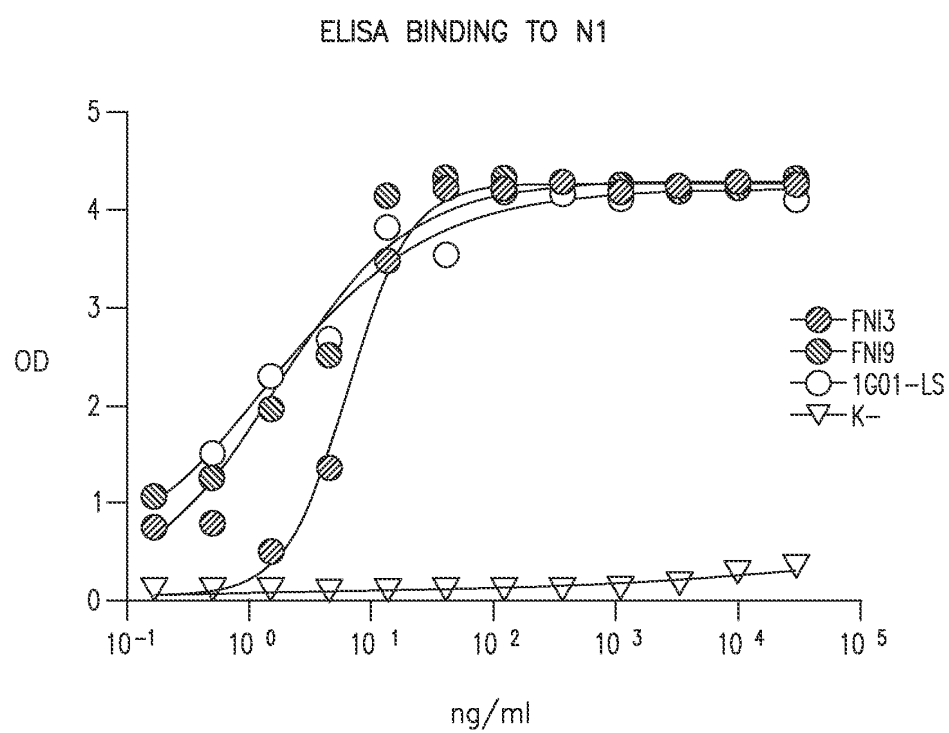


FIG. 3A

6/249

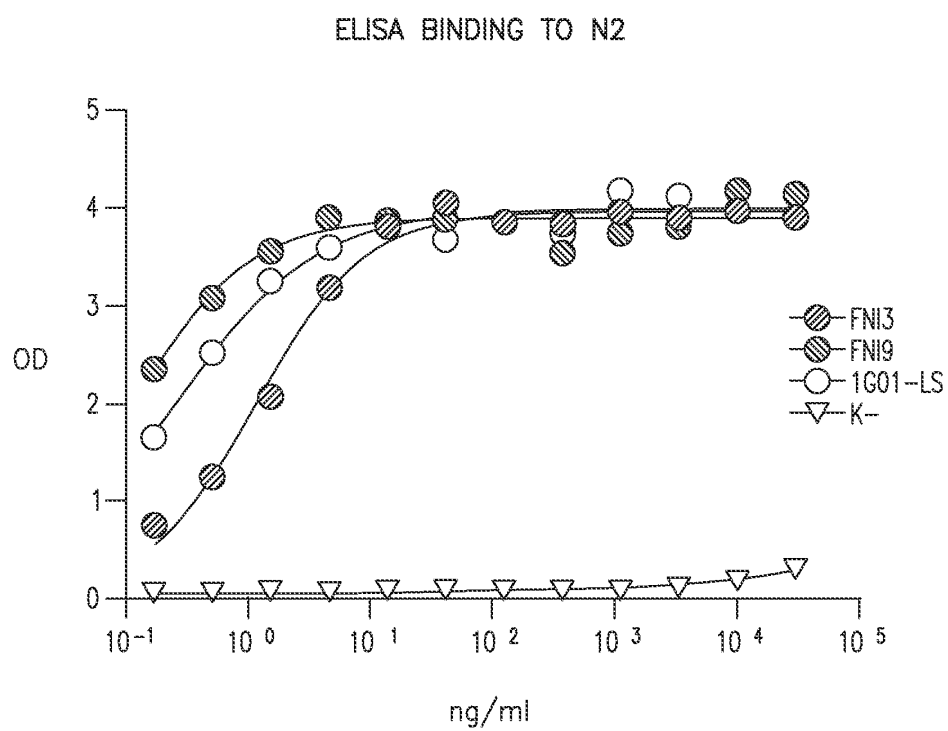


FIG. 3B

7/249

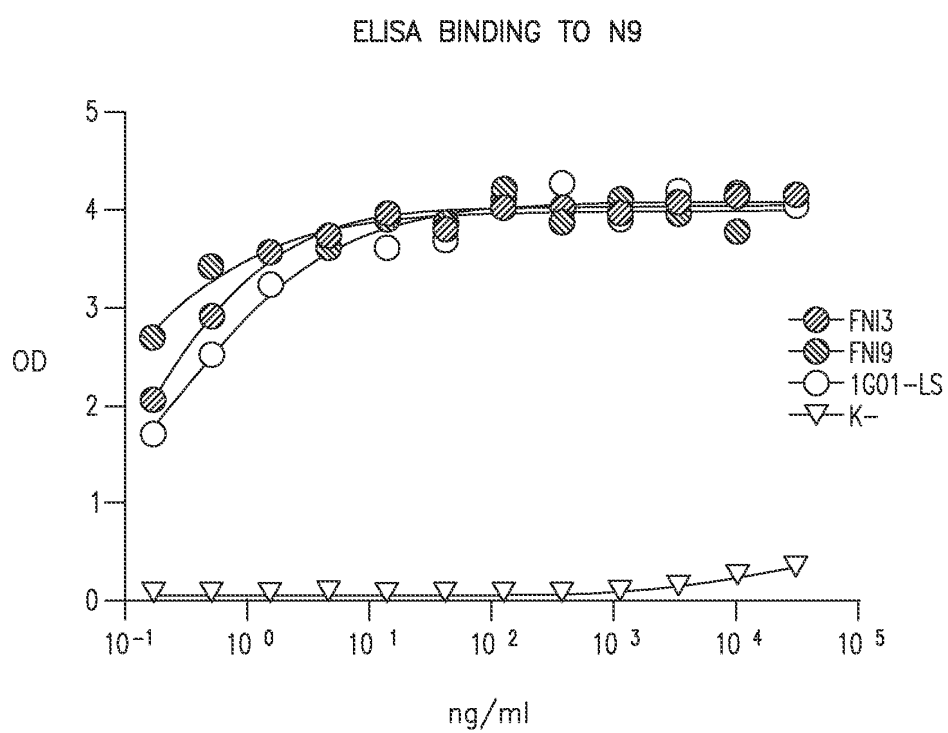


FIG. 3C

8/249

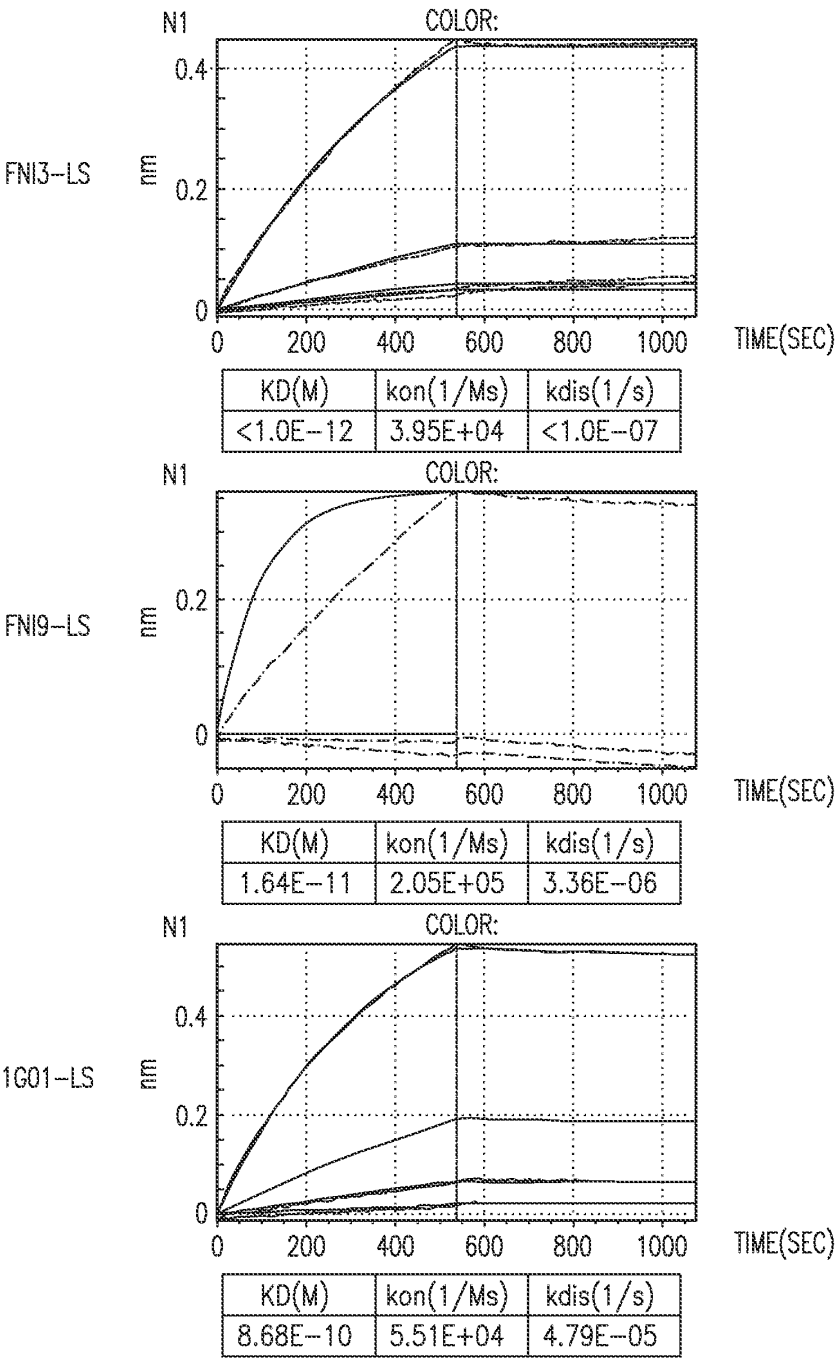


FIG. 4A

9/249

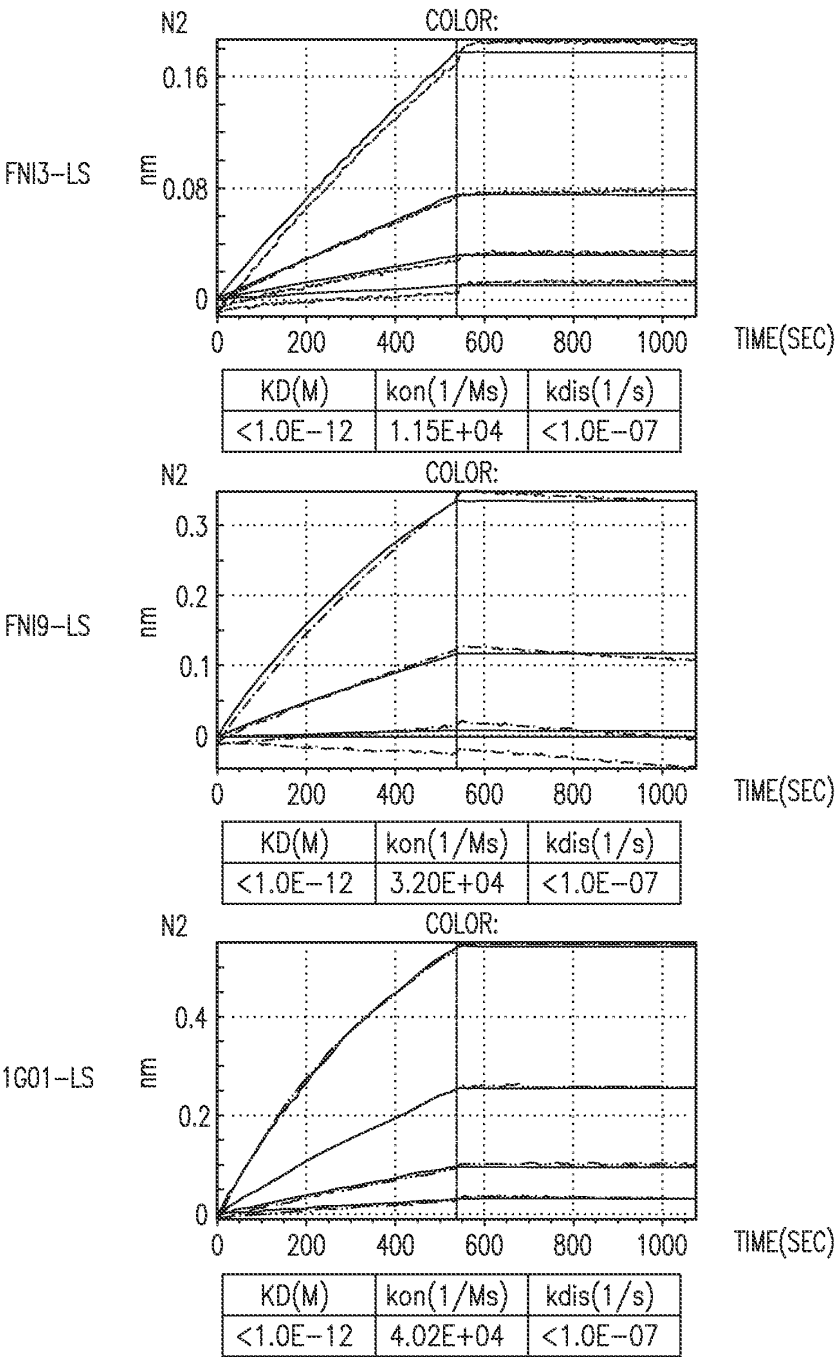


FIG. 4B

10/249

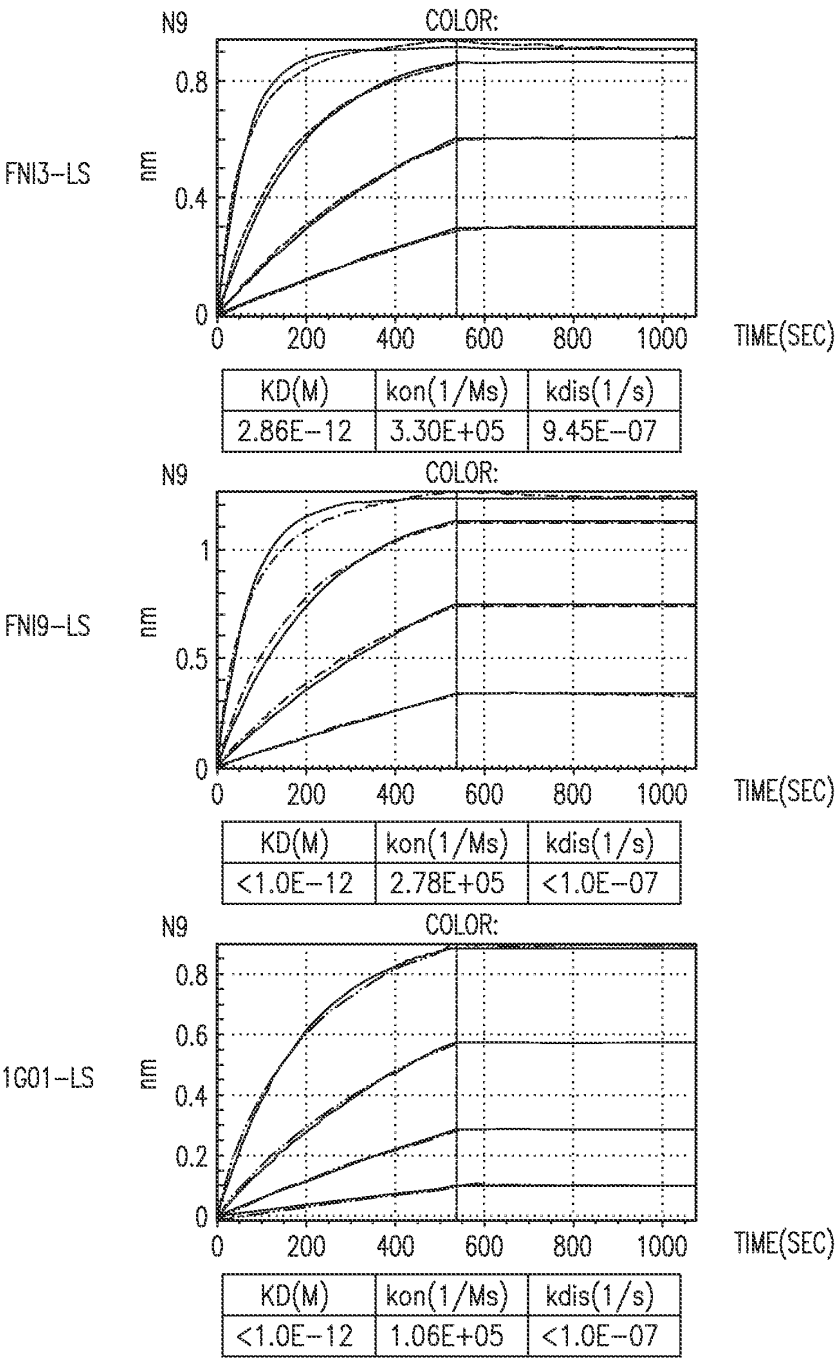


FIG. 4C

11/249

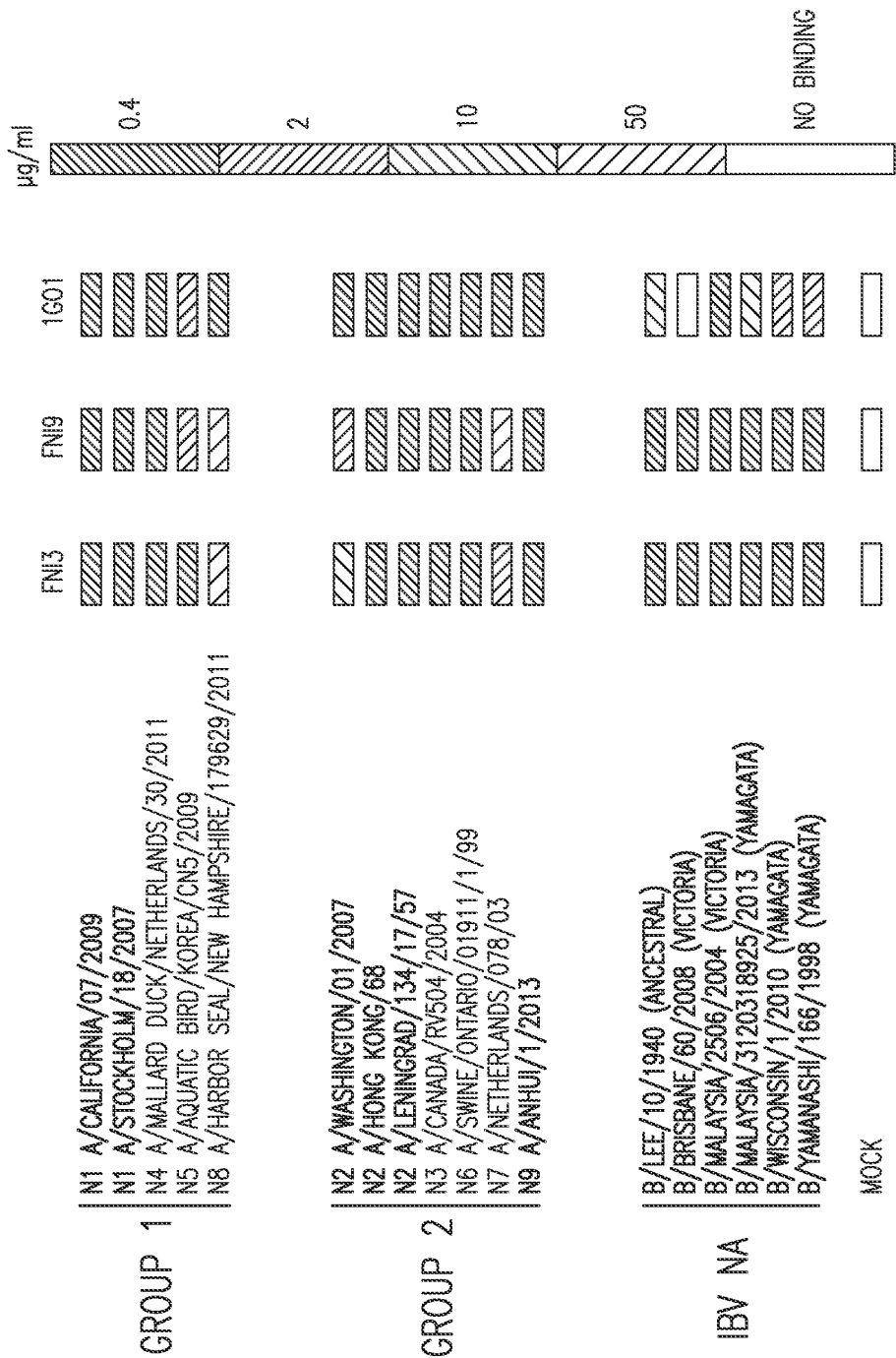


FIG. 5

12/249

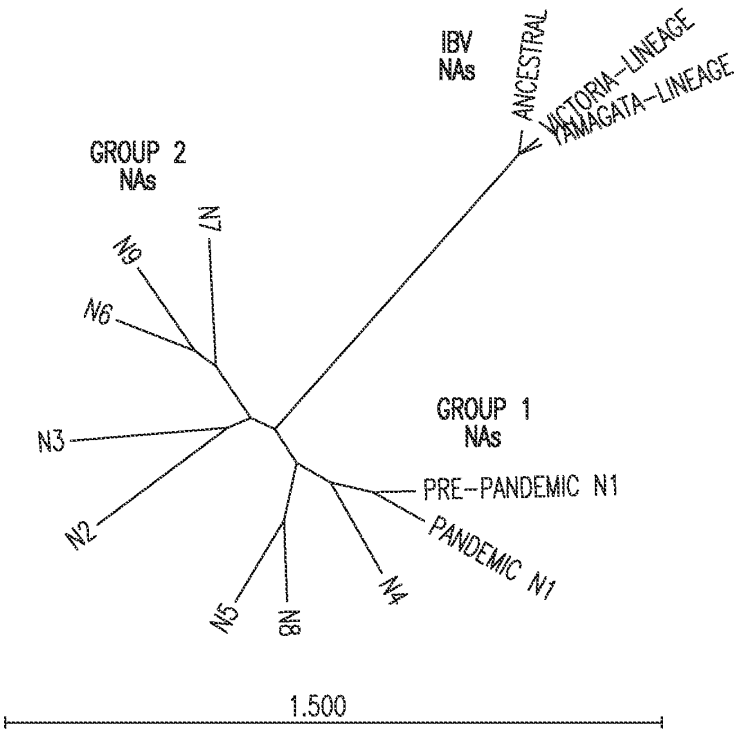


FIG. 6

13/249

		245		247	
A/SOUTH AUSTRALIA/34/2019	G	N	A	T	G
A/SWITZERLAND/8060/2017	G	N	A	T	G
A/SINGAPORE/INFIMH-16-0019/2016	G	N	A	T	G
A/SWITZERLAND/9715293/2013	G	S	A	S	G

FIG. 7A

		FNI3 NAI (μg/ml)	FNI9 NAI (μg/ml)
H3N2	A/SWITZERLAND/8060/2017	9.49	3.84
	A/SINGAPORE/INFIMH-16-0019/2016	18.39	2.21
	A/SWITZERLAND/9715293/2013	1.63	1.21

FIG. 7B

14/249

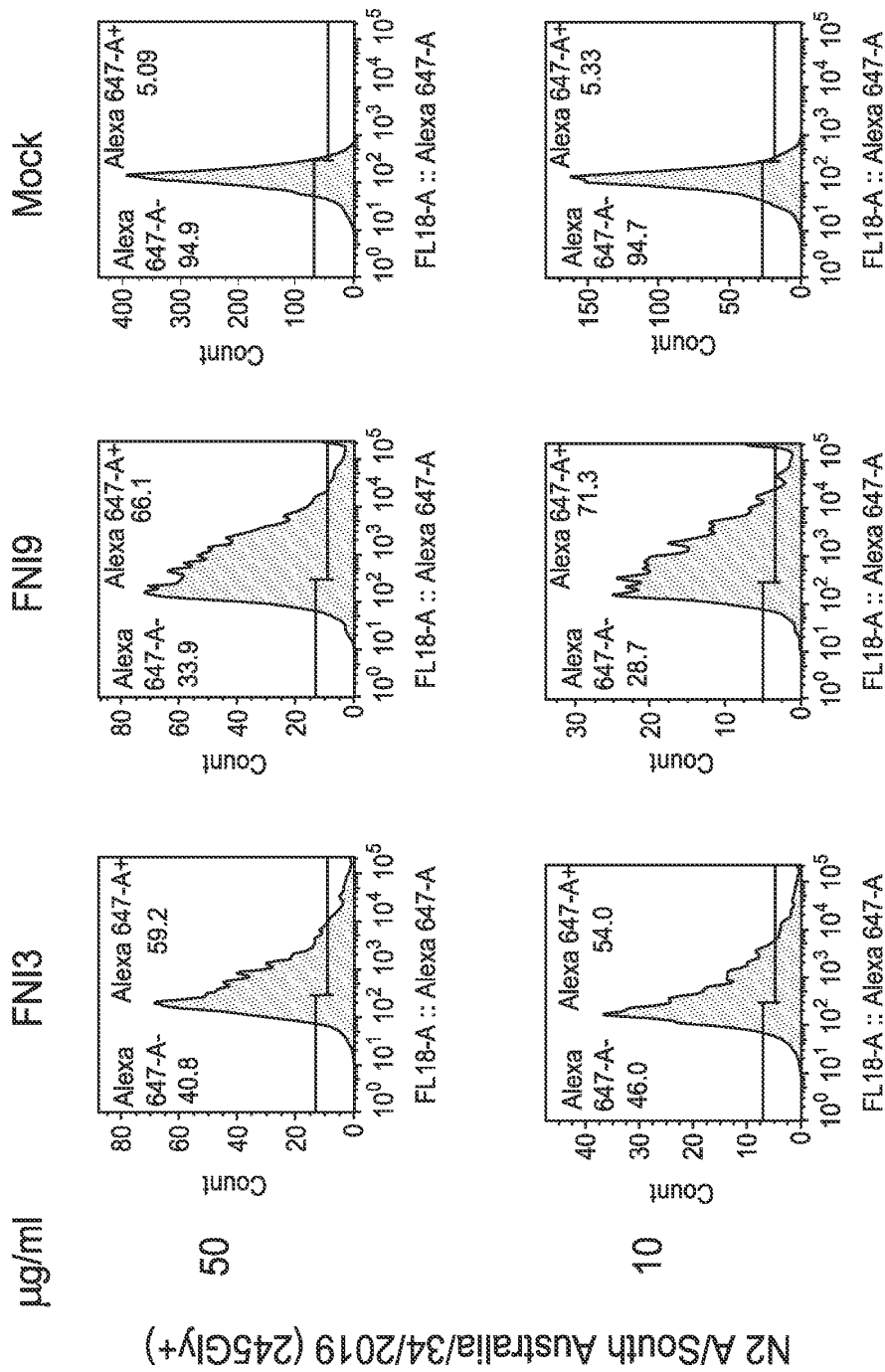


FIG. 7C

15/249

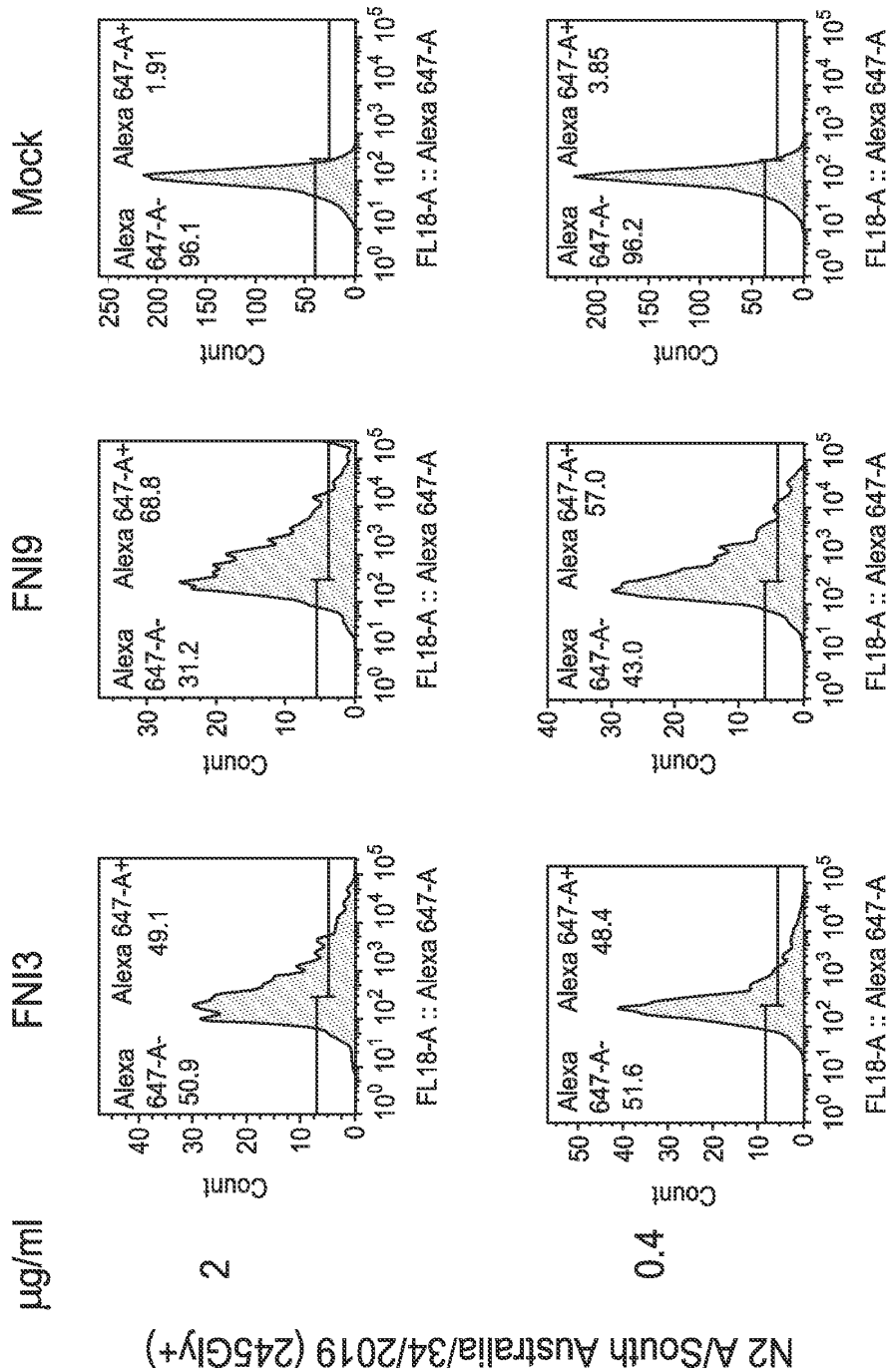


FIG. 7C (cont'd)

16/249

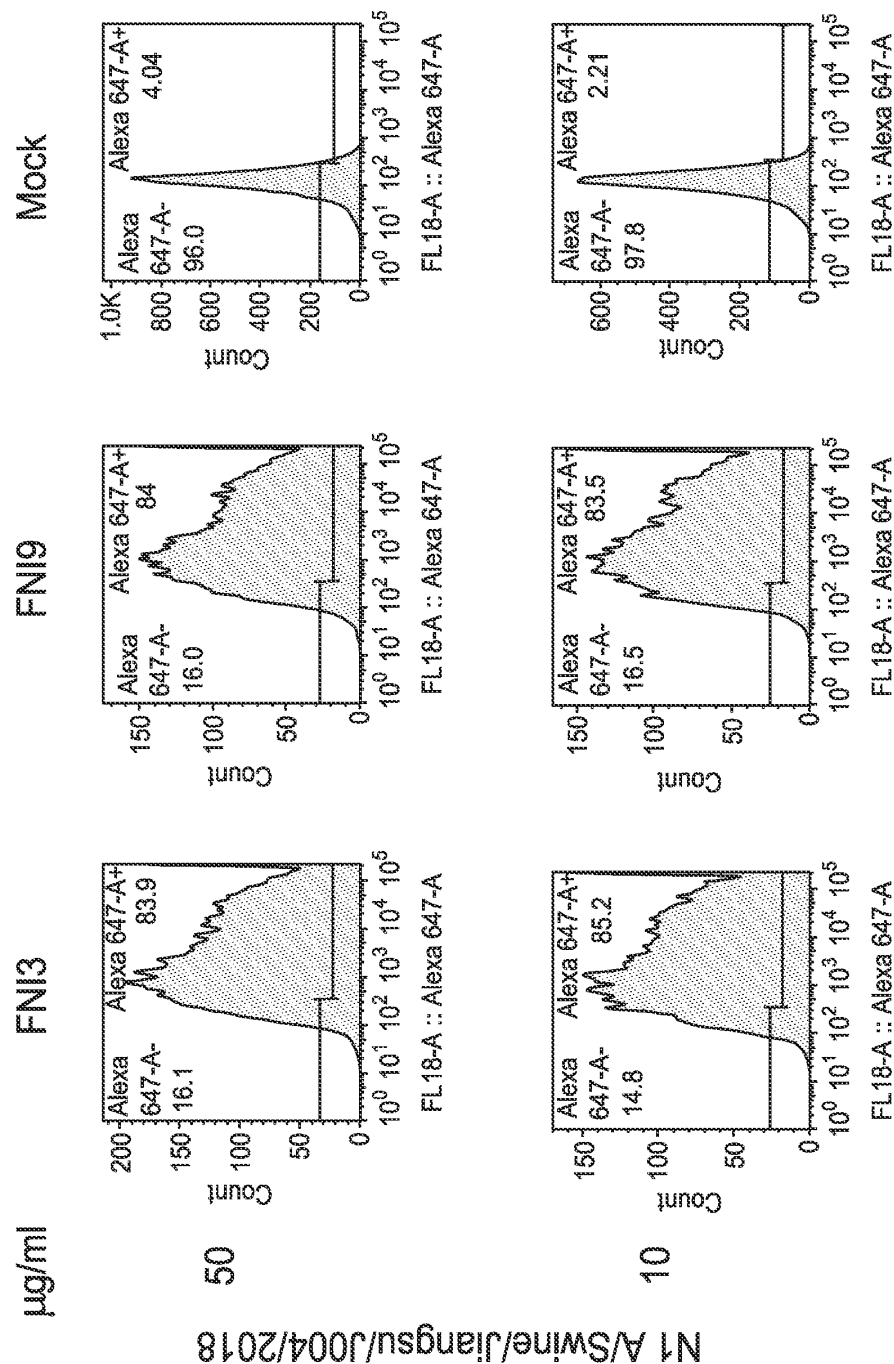


FIG. 8

17/249

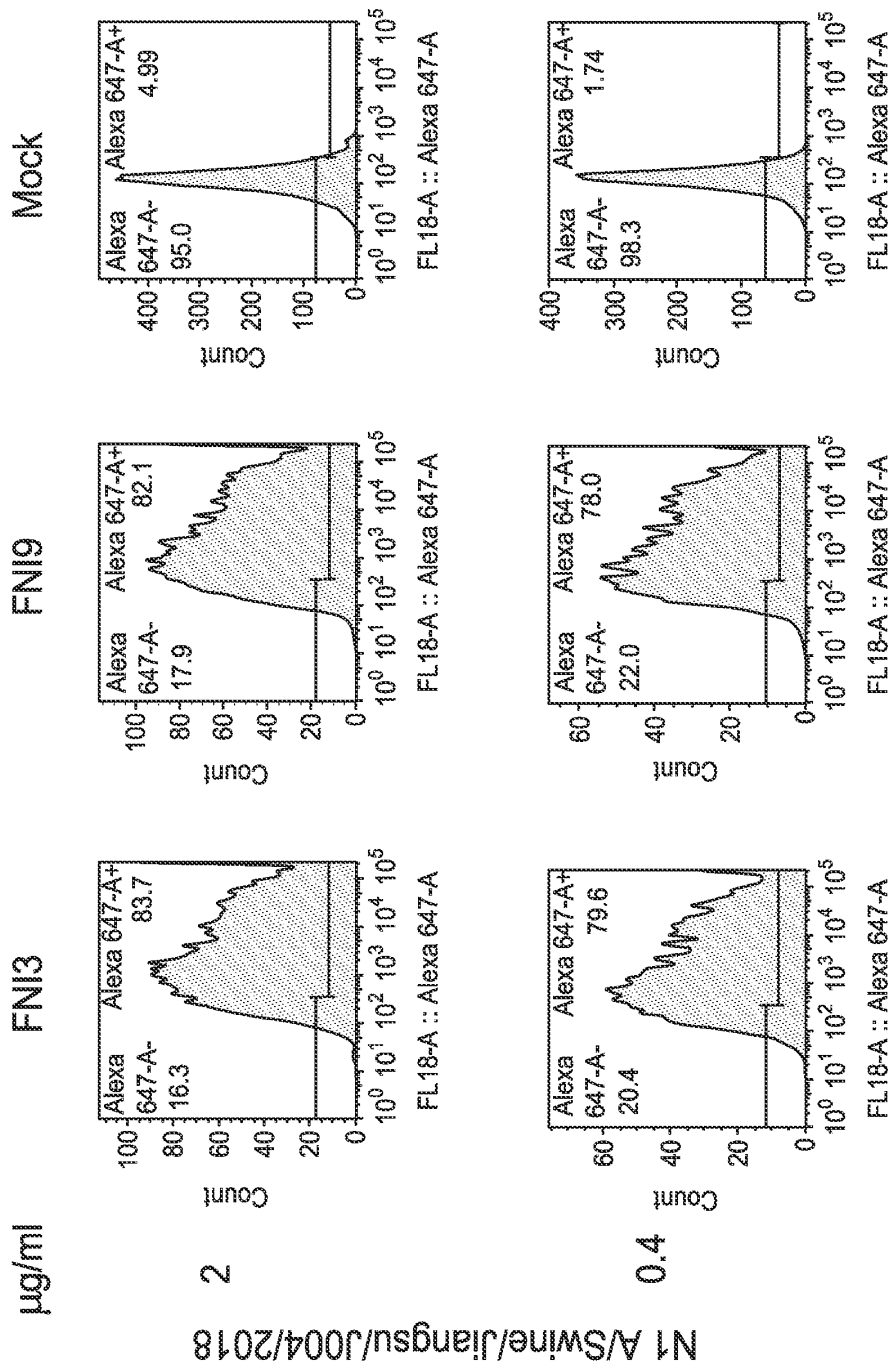


FIG. 8 (cont'd)

18/249

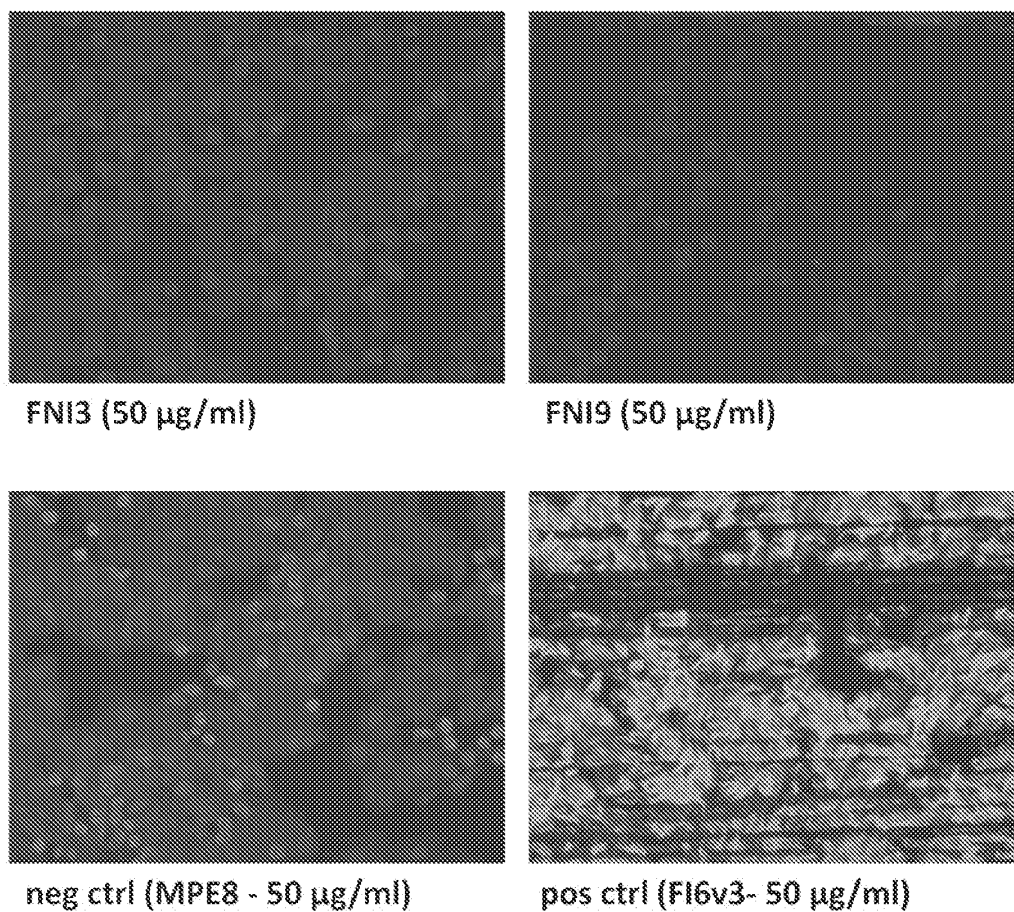


FIG. 9

19/249

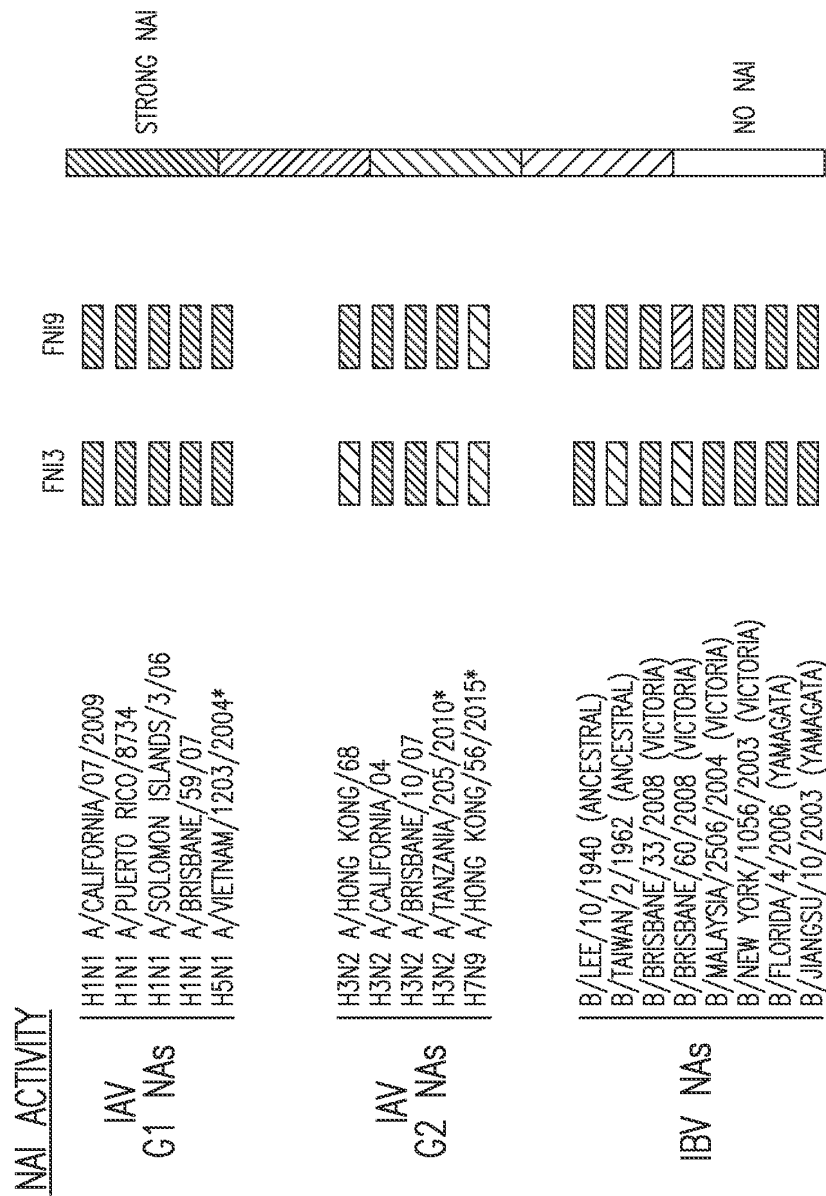
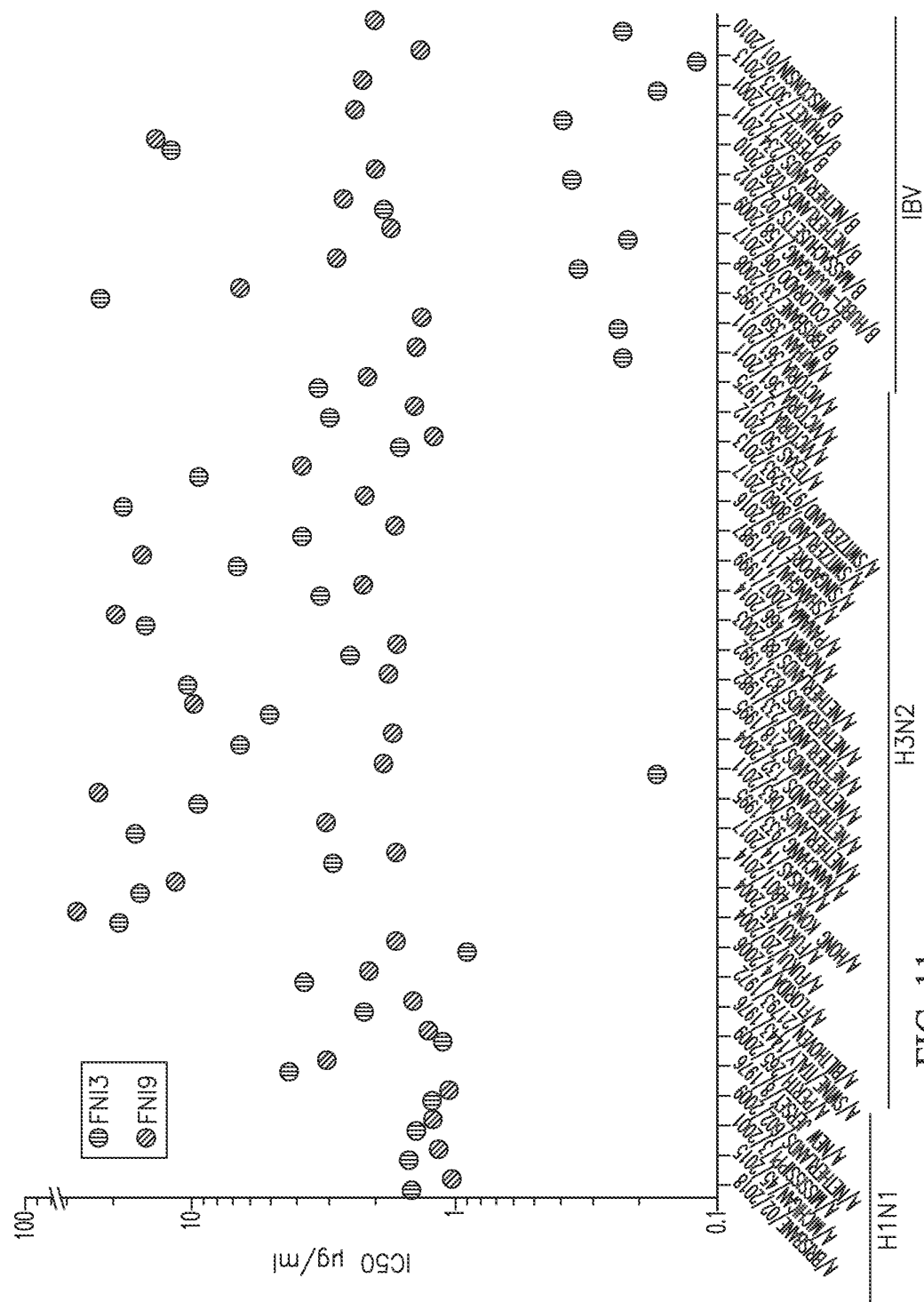


FIG. 10

20/249



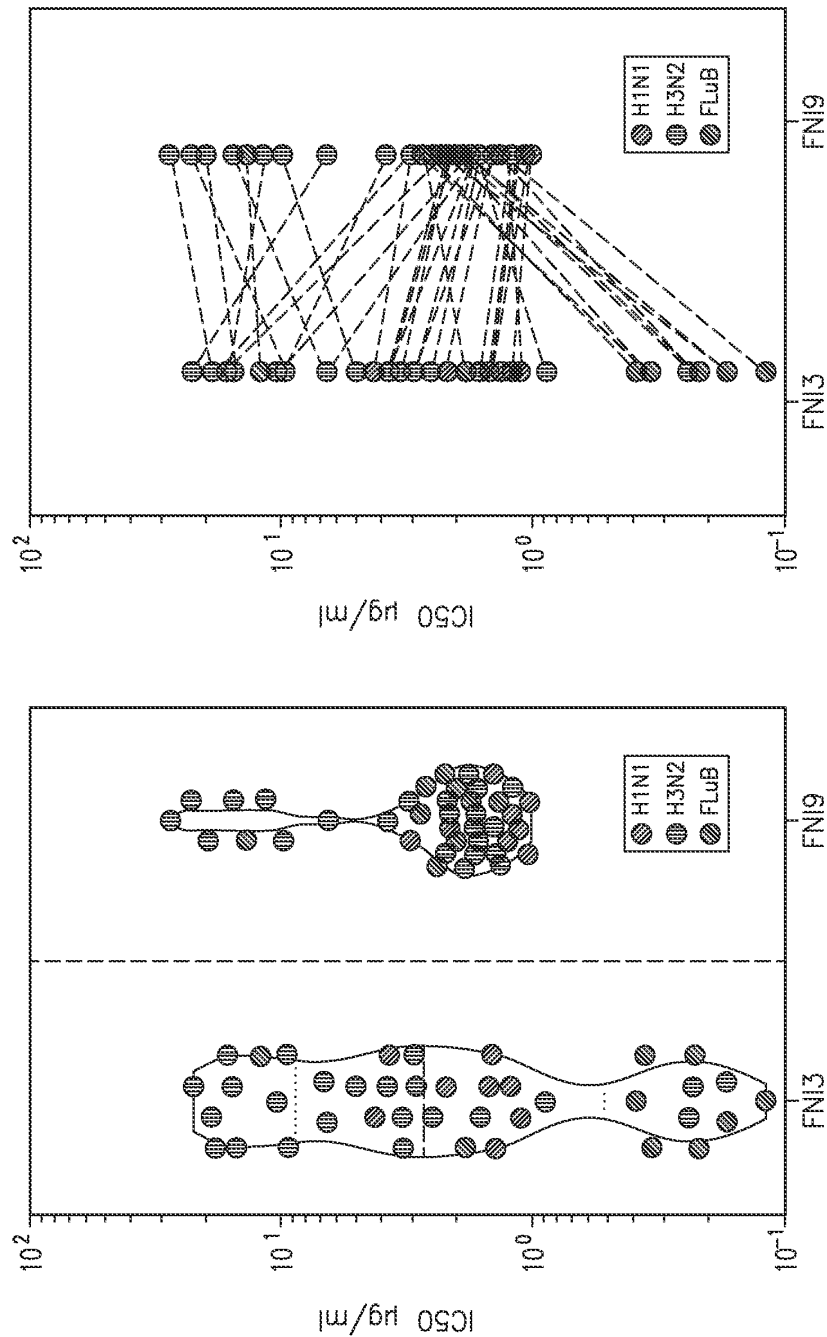


FIG. 12A

22/249

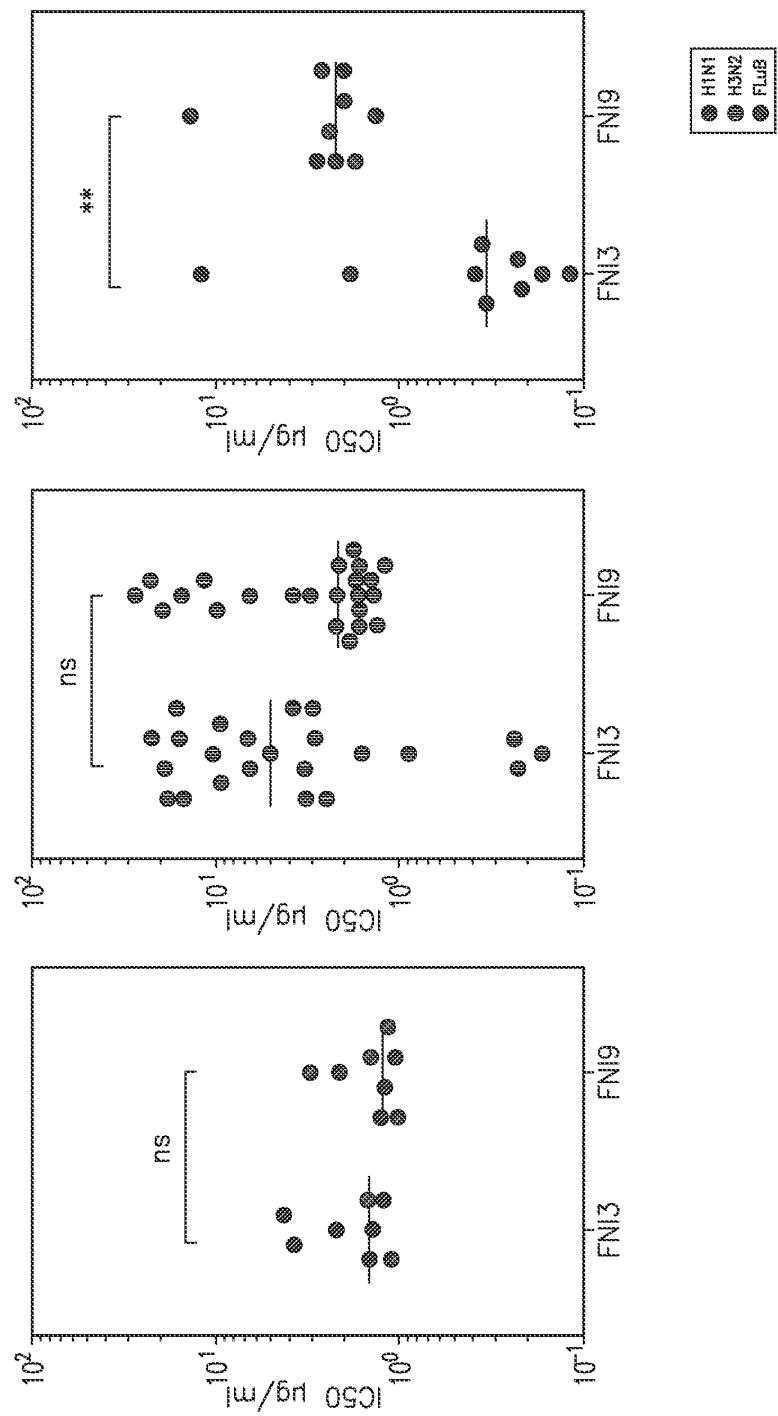


FIG. 12B

23/249

A, H1N1	A/BRISBANE/02/2018
A, H1N1	A/MICHIGAN/45/2015
A, H1N1	A/MISSISSIPPI/3/2001
A, H1N1	A/NETHERLANDS/602/2009
A, H1N1	A/NEW JERSEY/8/1976
A, H3N2	A/FLORIDA/4/2006
A, H3N2	A/NETHERLANDS/823/1992
A, H3N2	A/NORWAY/466/2014
A, H3N2	A/SINGAPORE/INFIMH-16-0019/2016
A, H3N2	A/SWITZERLAND/8060/2017
A, H3N2	A/TEXAS/50/2012
A, H3N2	A/VICTORIA/361/2011
B	B/BRISBANE/33/2008
B	B/COLORADO/06/2017
B	B/HUBEI-WUJIAGANG/158/2009
B	B/MASSACHUSETTS/02/2012
B	B/NETHERLANDS/234/2011
B	B/PERTH/211/2001
B	B/PHUKET/3073/2013
B	B/WISCONSIN/01/2010

*A/SINGAPORE/INFIMH-16-0019/2016 AND
A/SWITZERLAND/8060/2017 PRESENT A GLY SITE IN POSITION 245

FIG. 13A

24/249

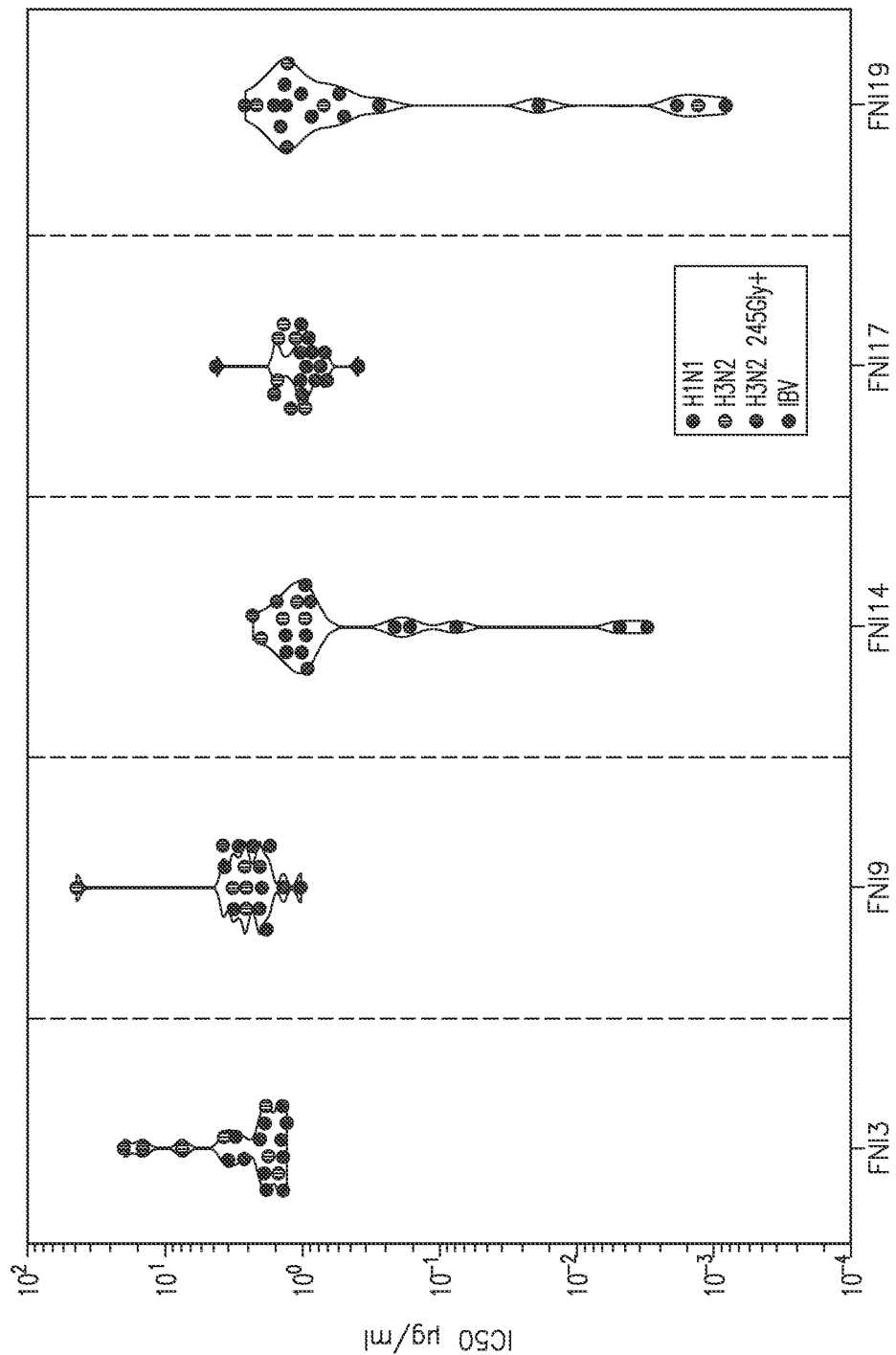


FIG. 13B

25/249

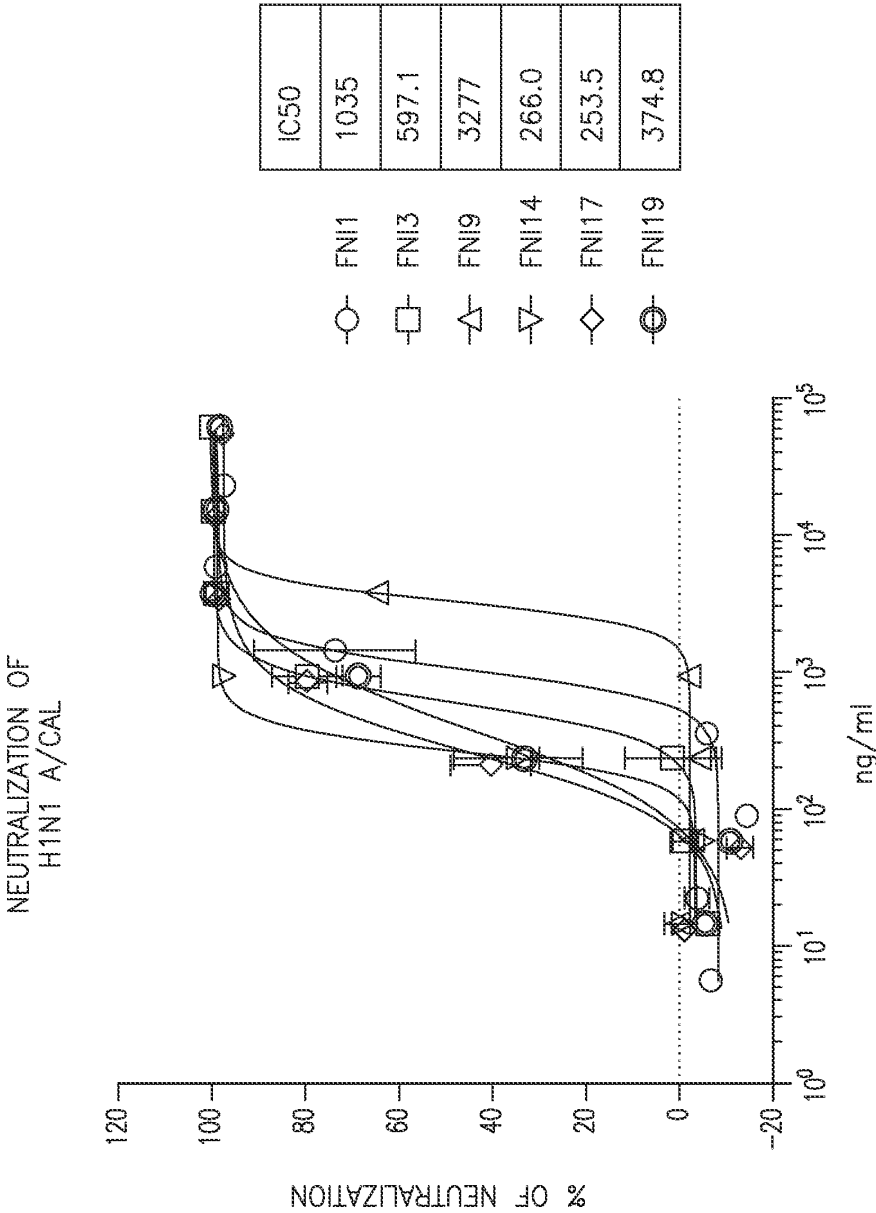


FIG. 14A

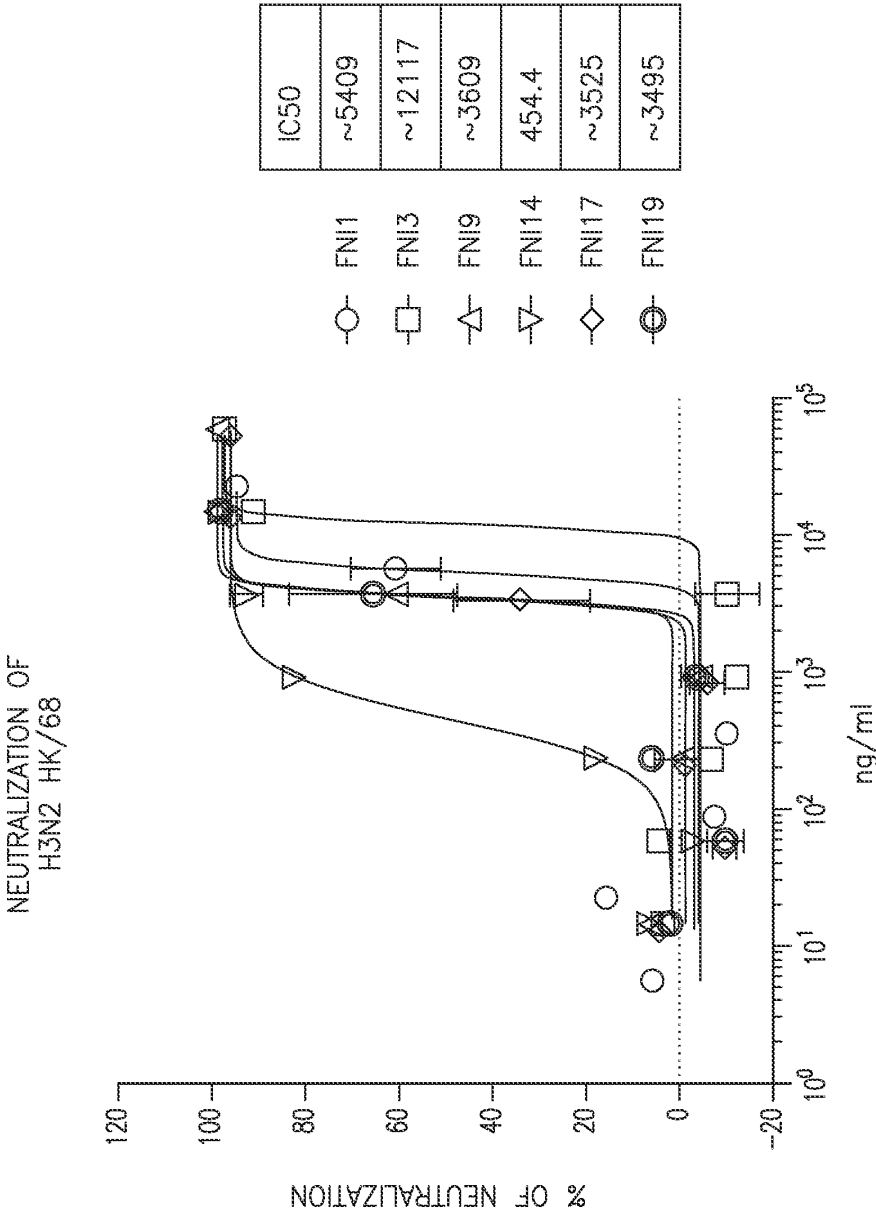
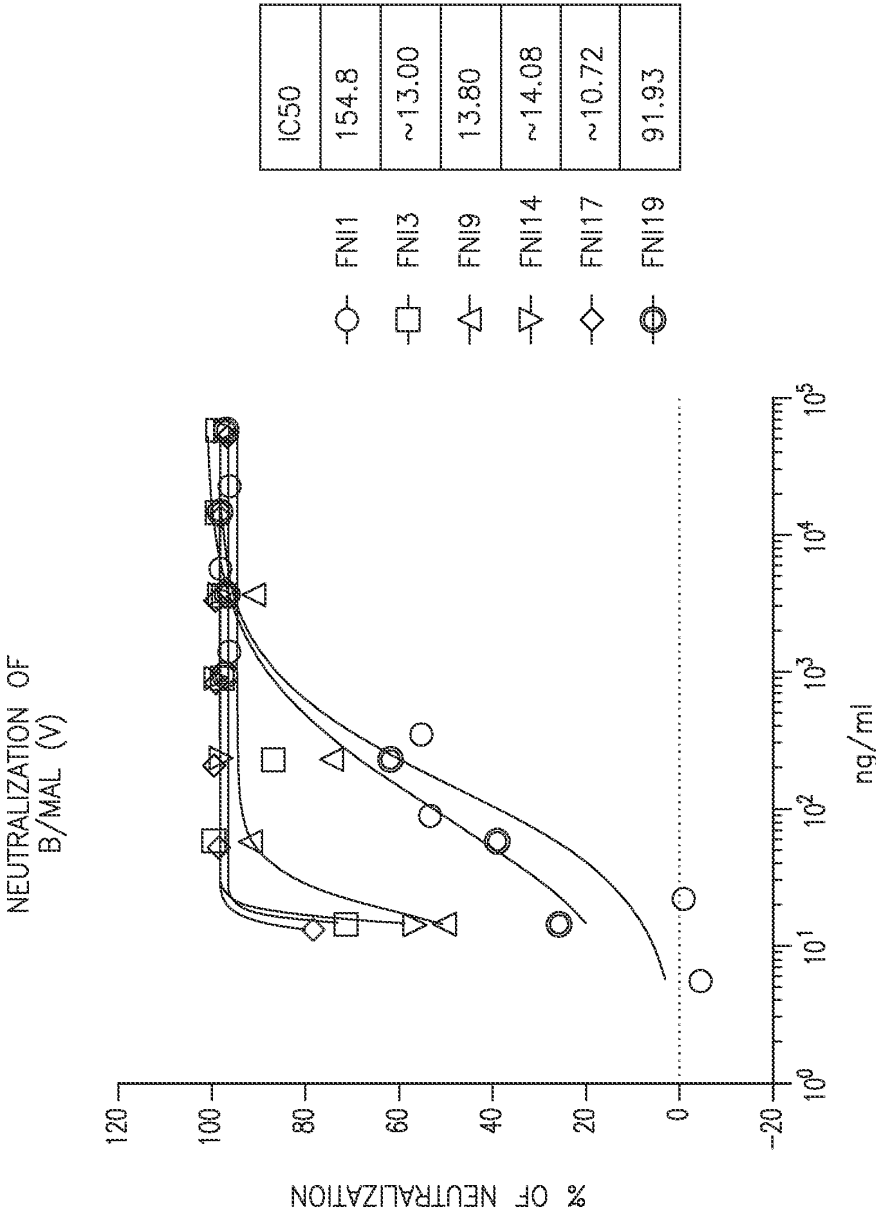


FIG. 14B

27/249



28/249

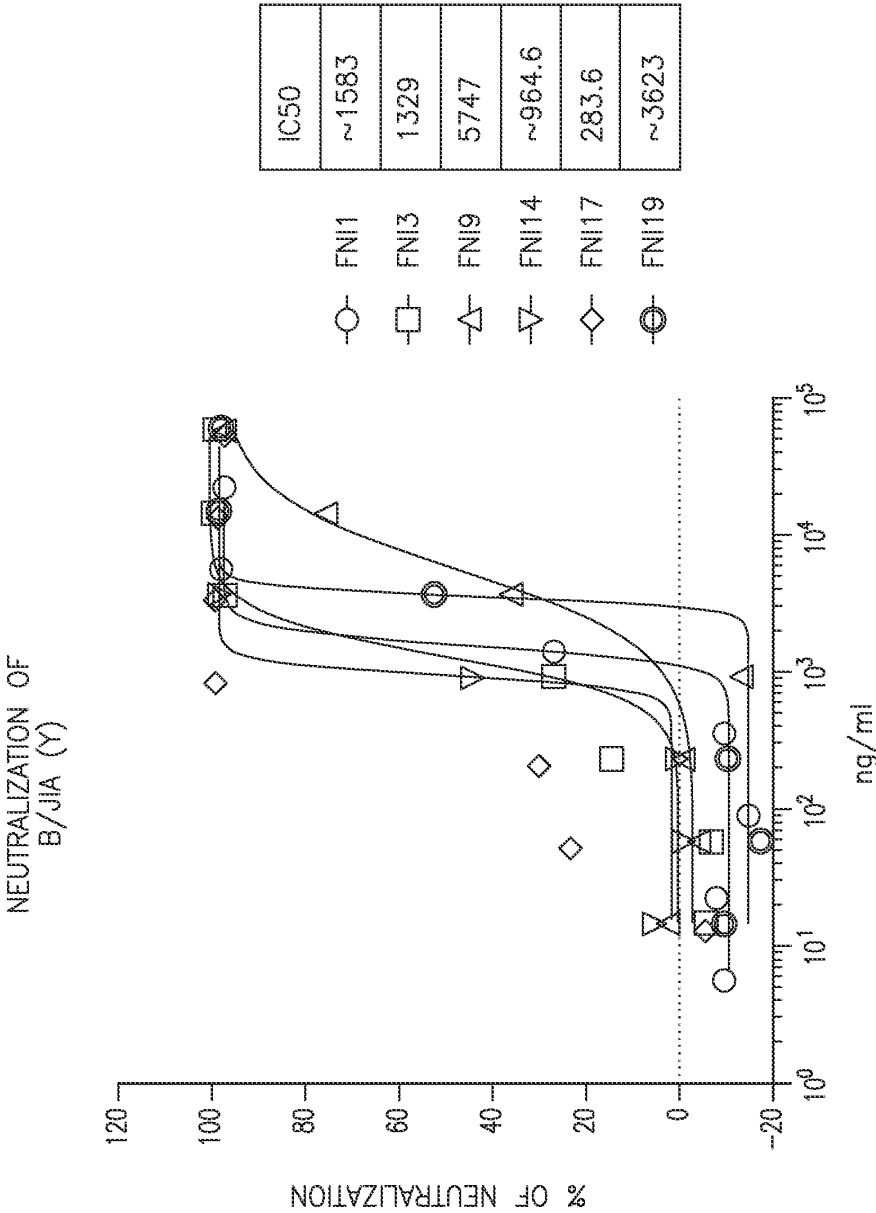


FIG. 14D

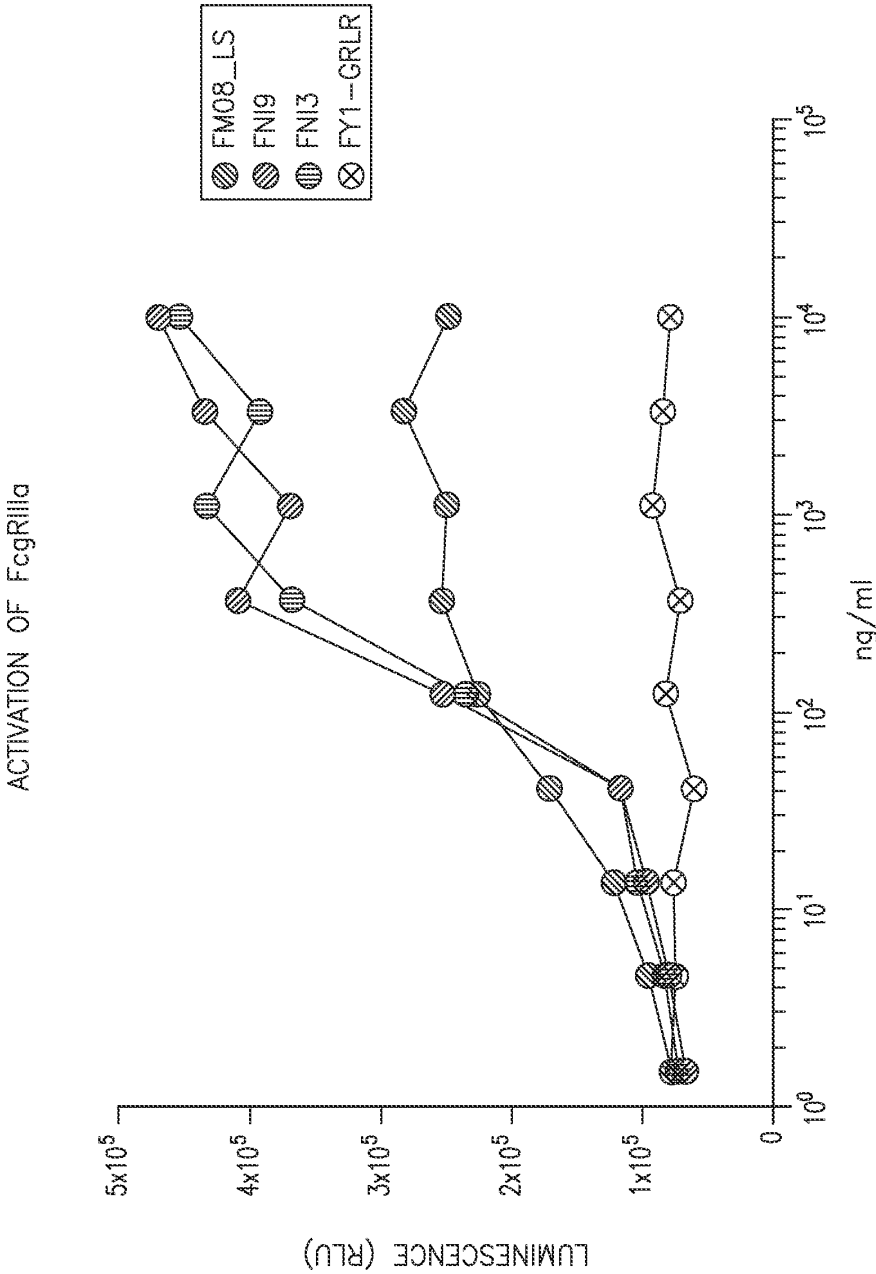


FIG. 15A

30/249

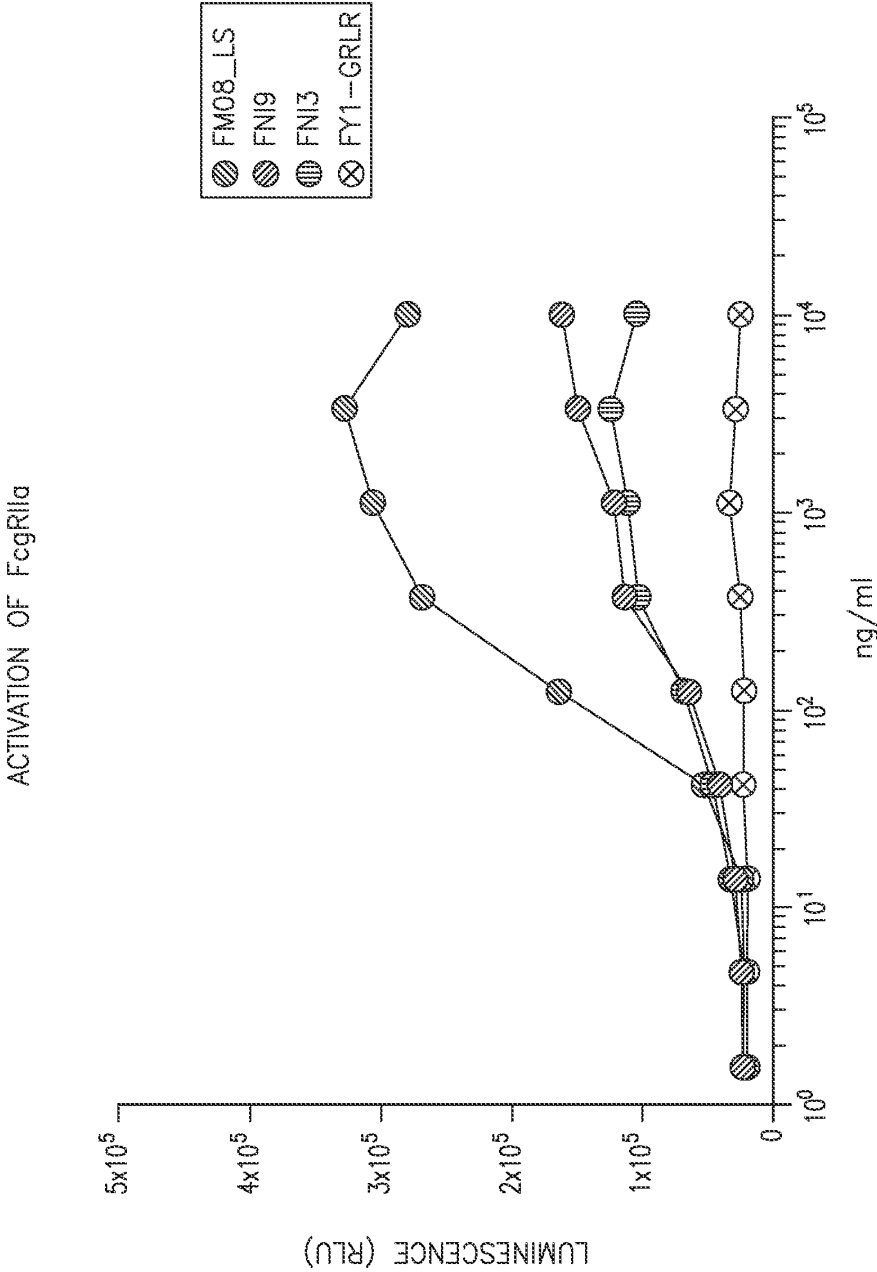


FIG. 15B

31/249

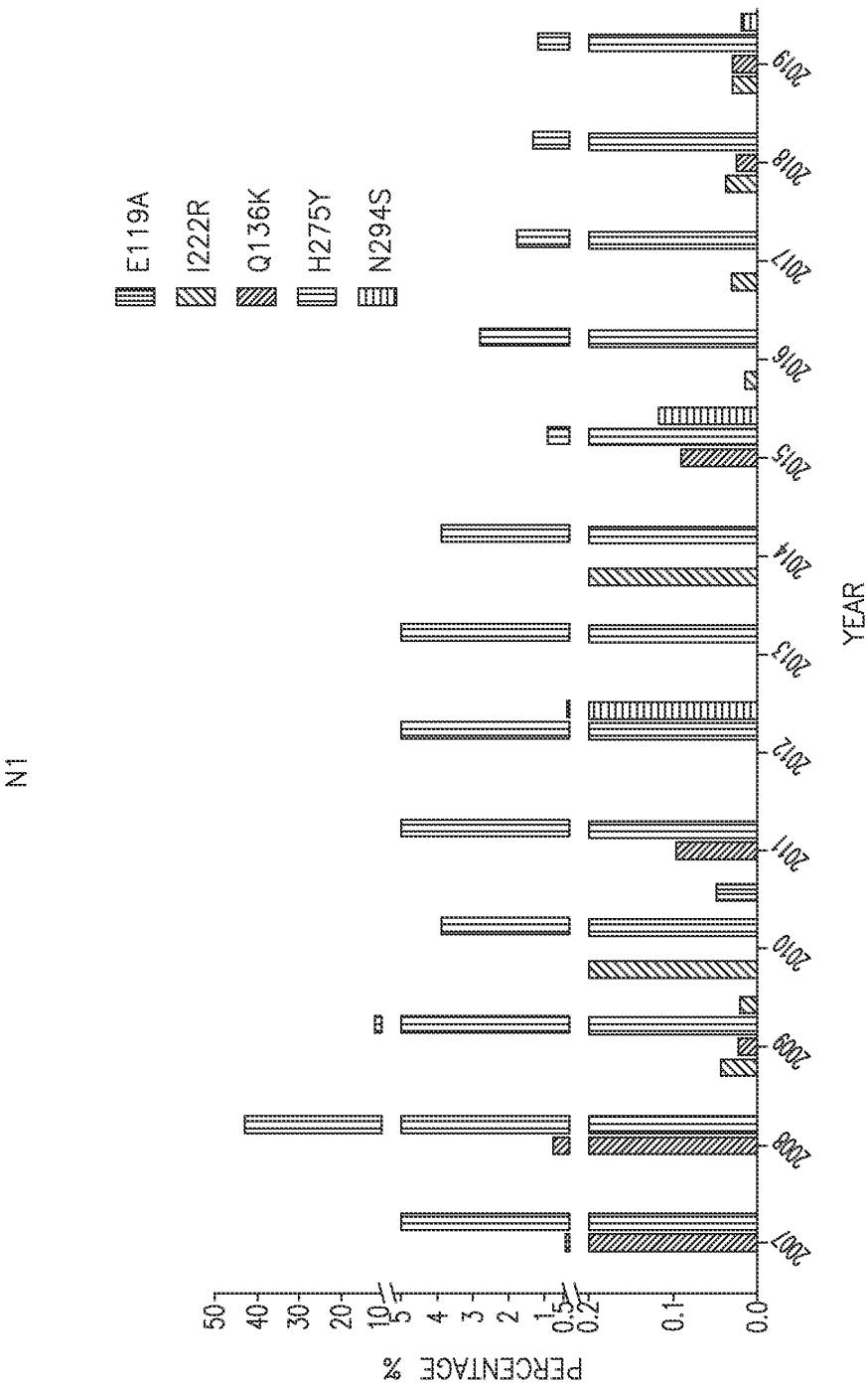


FIG. 16A

32/249

N2

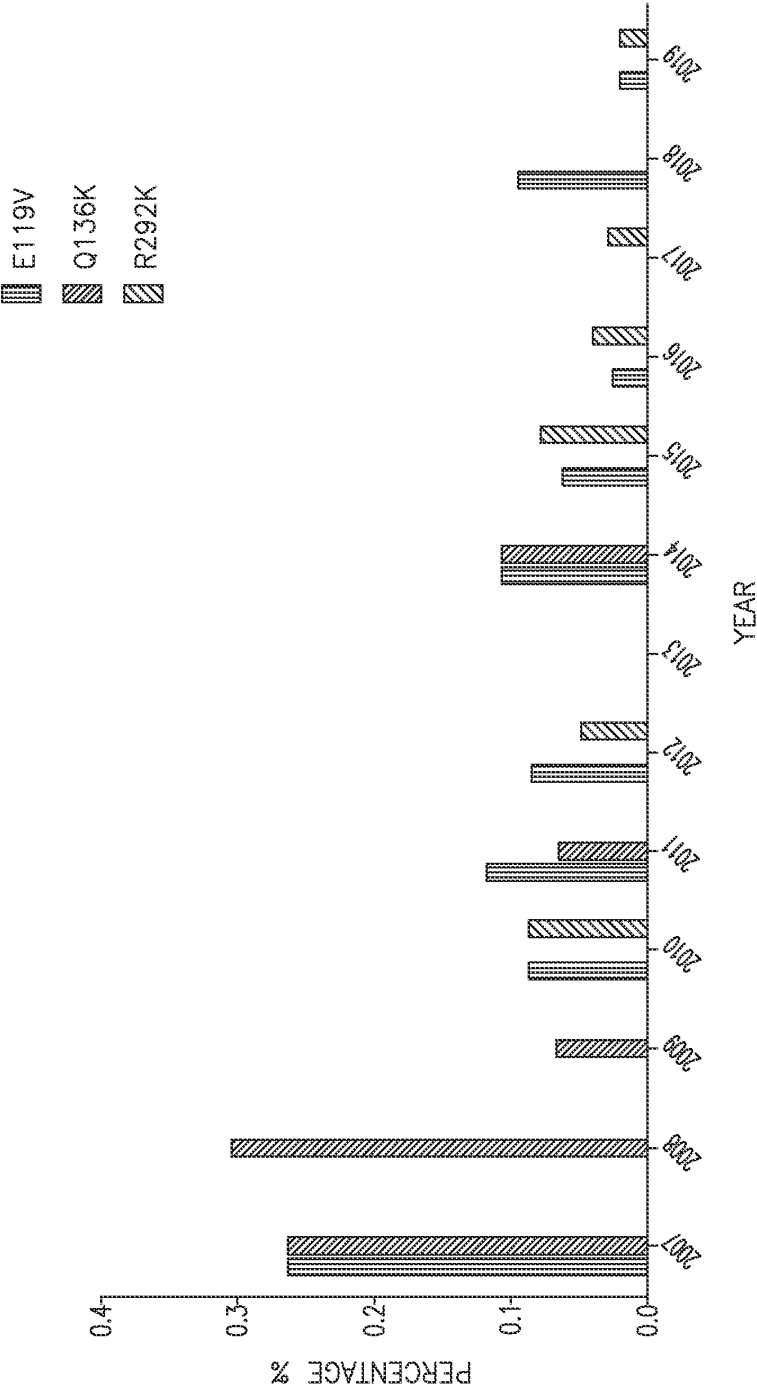


FIG. 16B

33/249

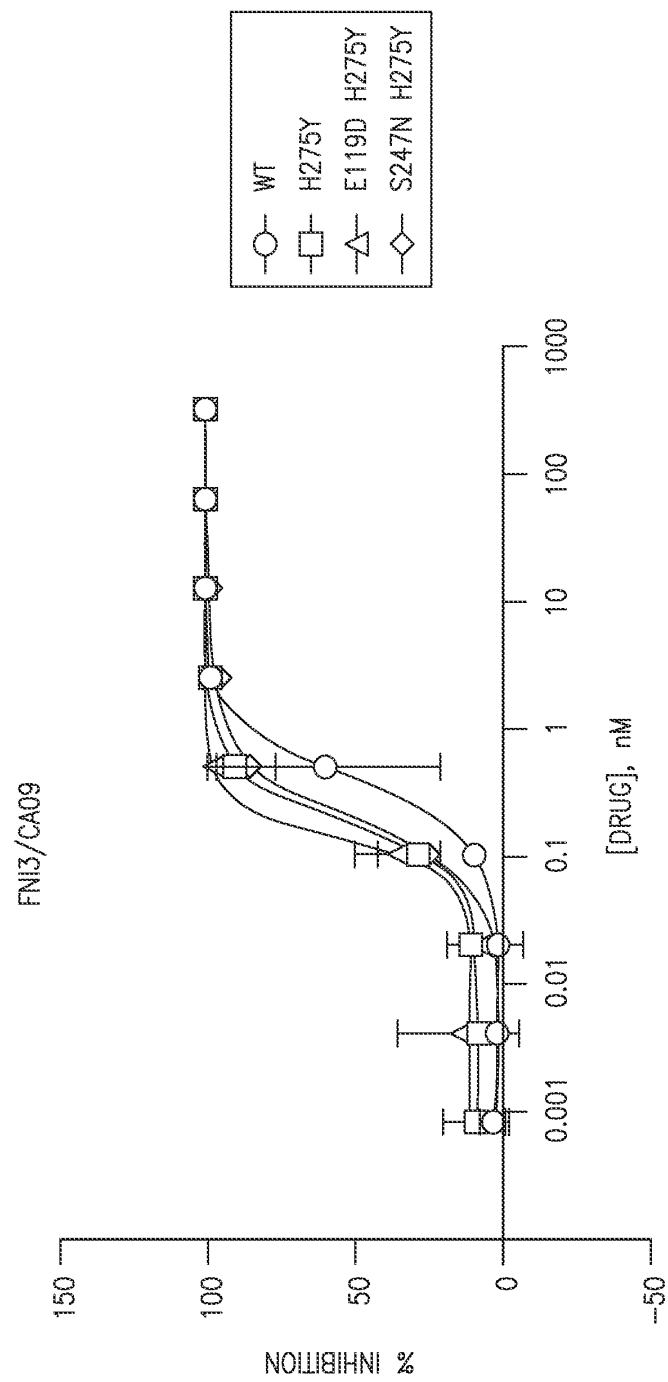


FIG. 17A

34/249

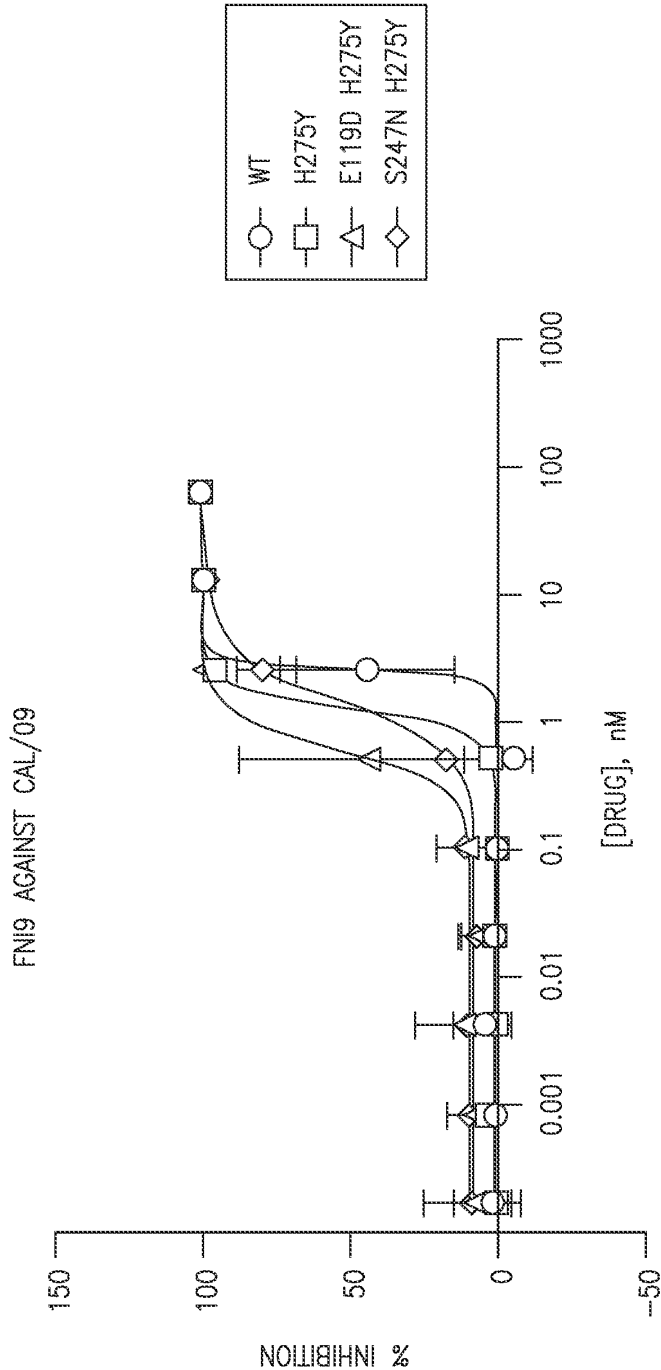


FIG. 17B

35/249

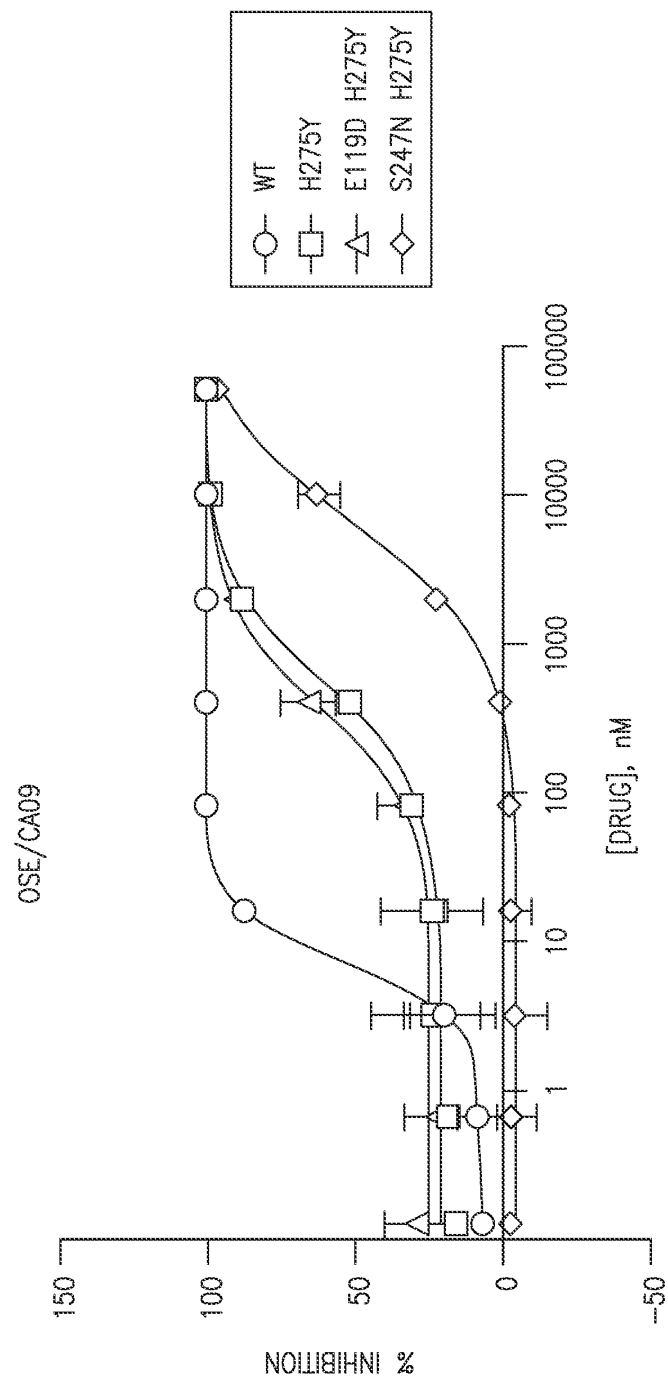


FIG. 17C

36/249

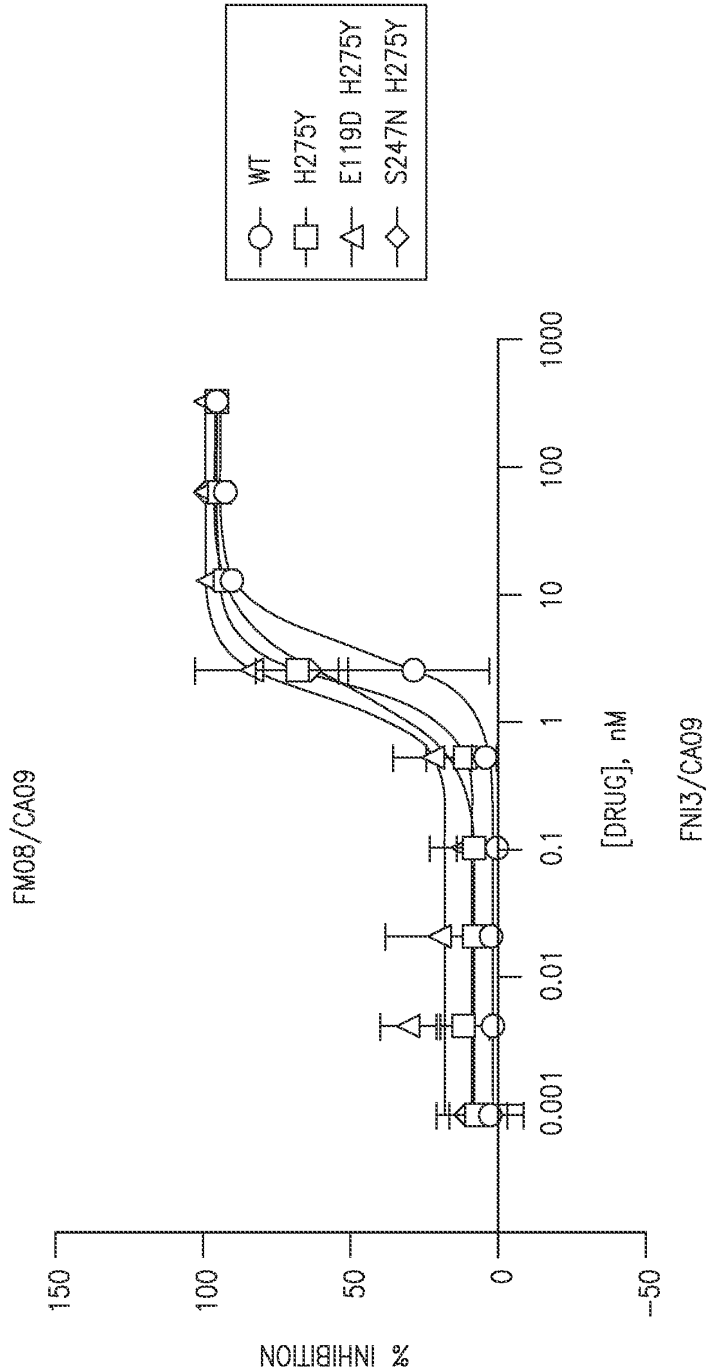


FIG. 17D

37/249

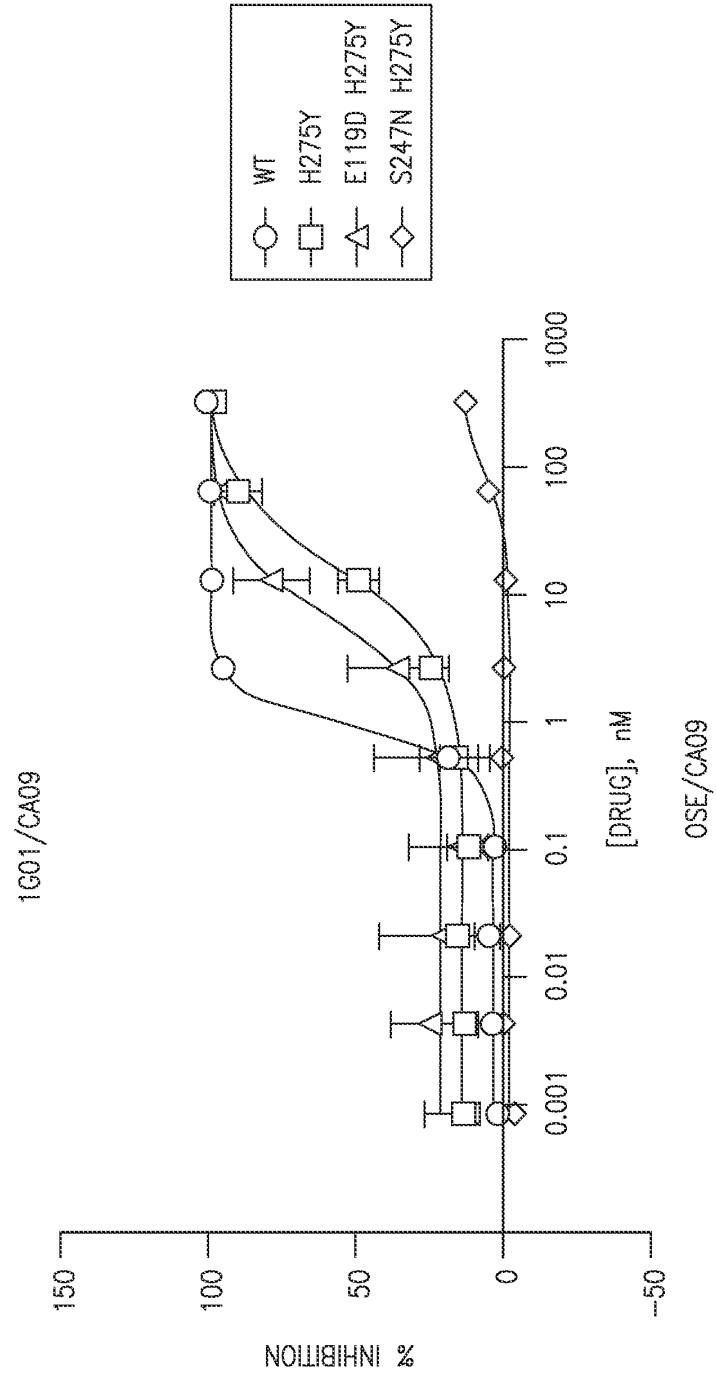
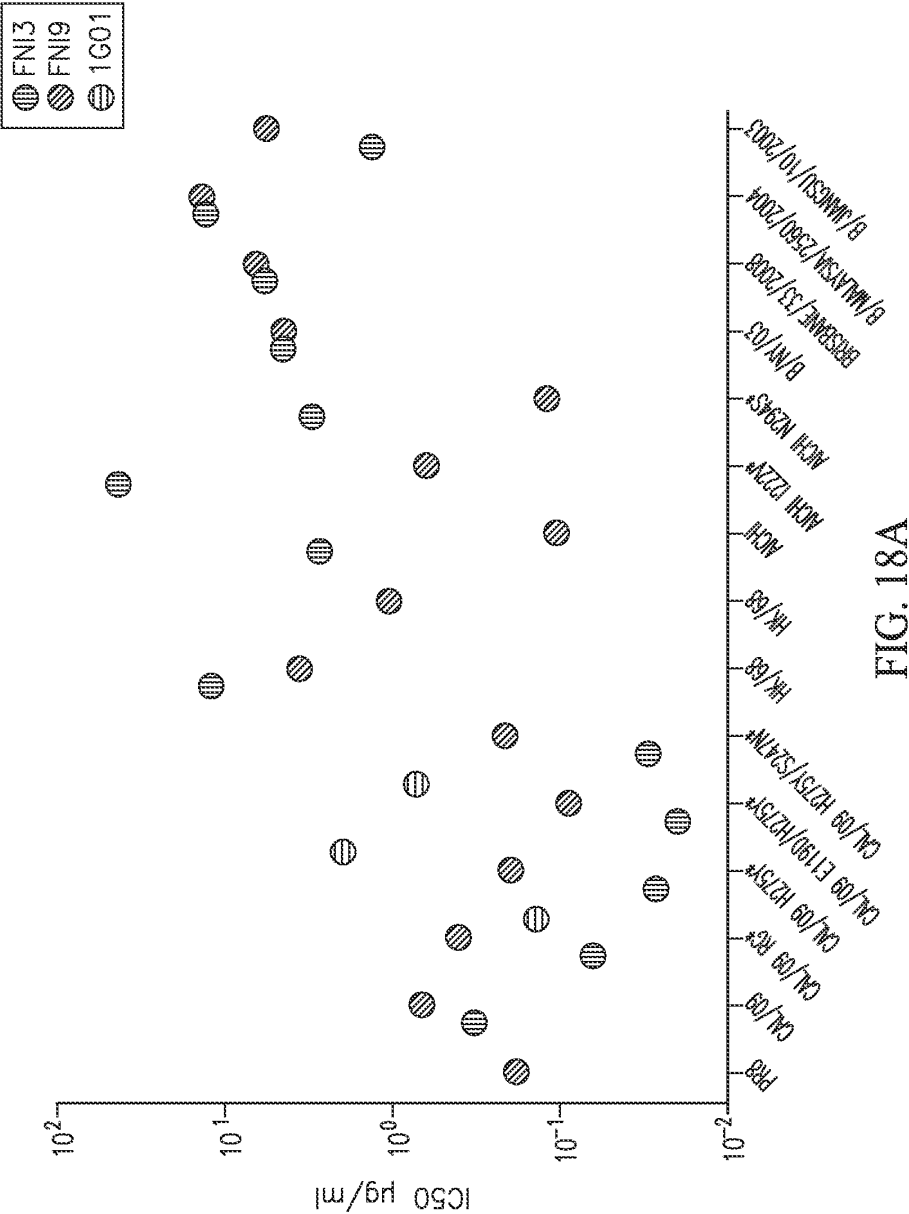


FIG. 17E

38/249



39/249

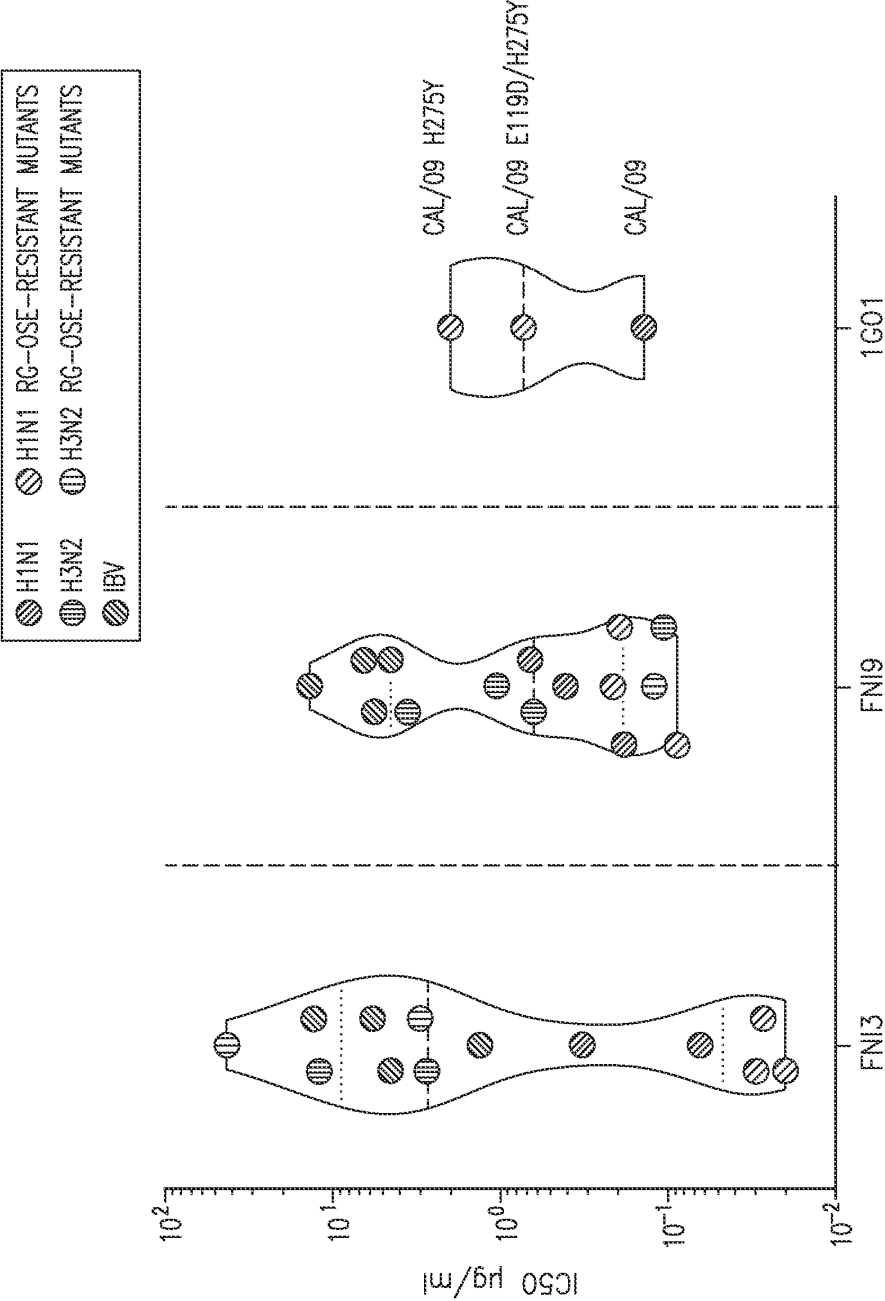


FIG. 18B

40/249

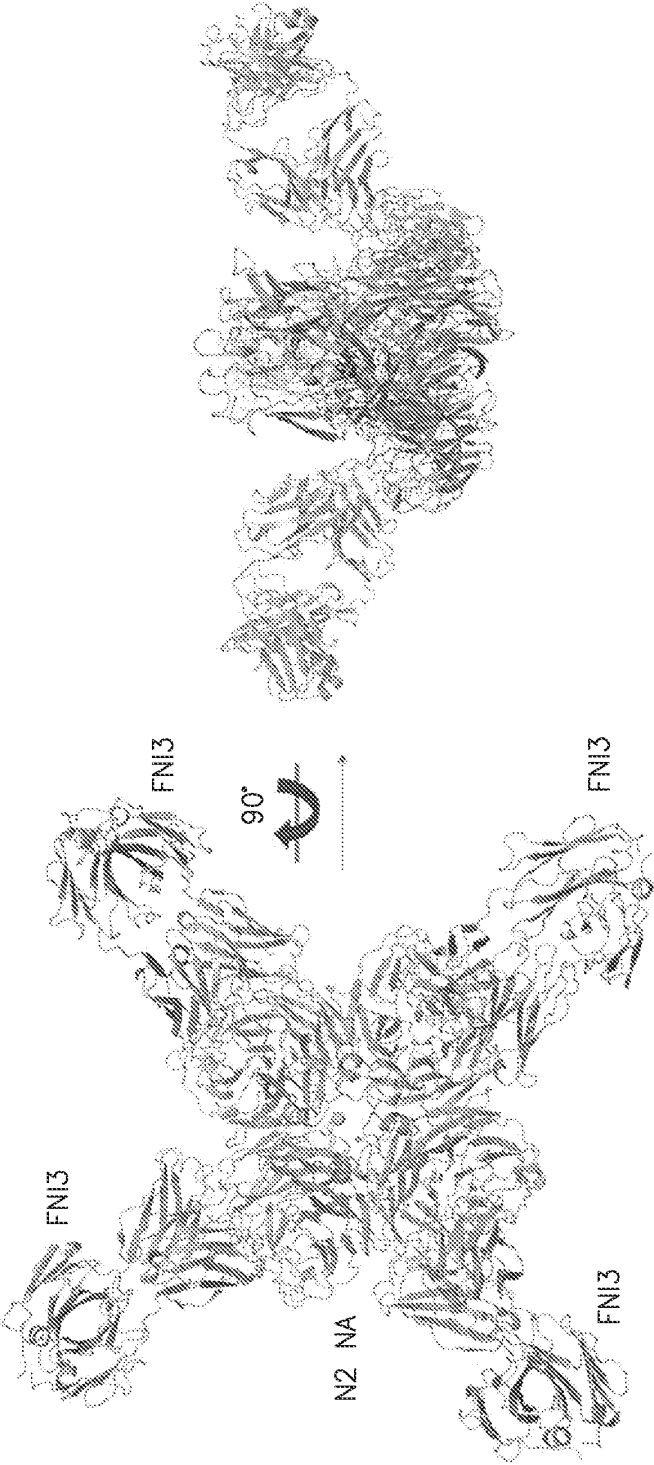
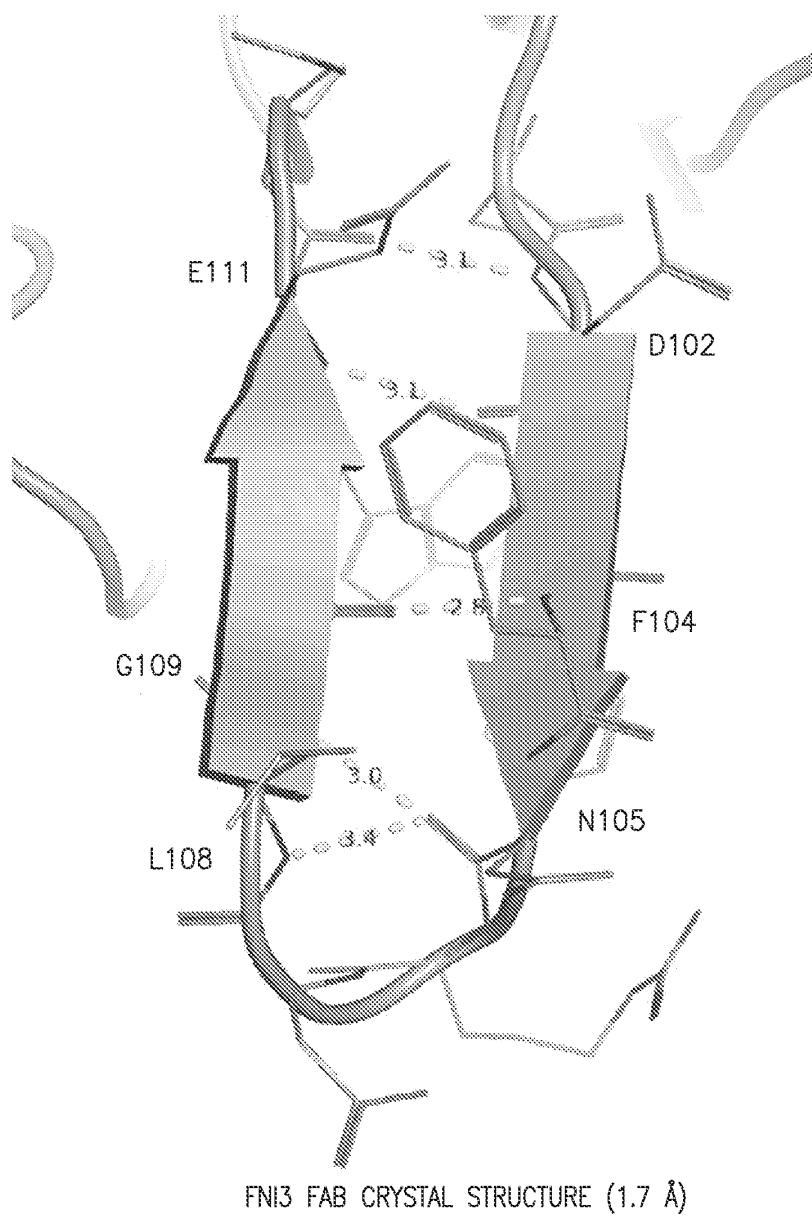


FIG. 19

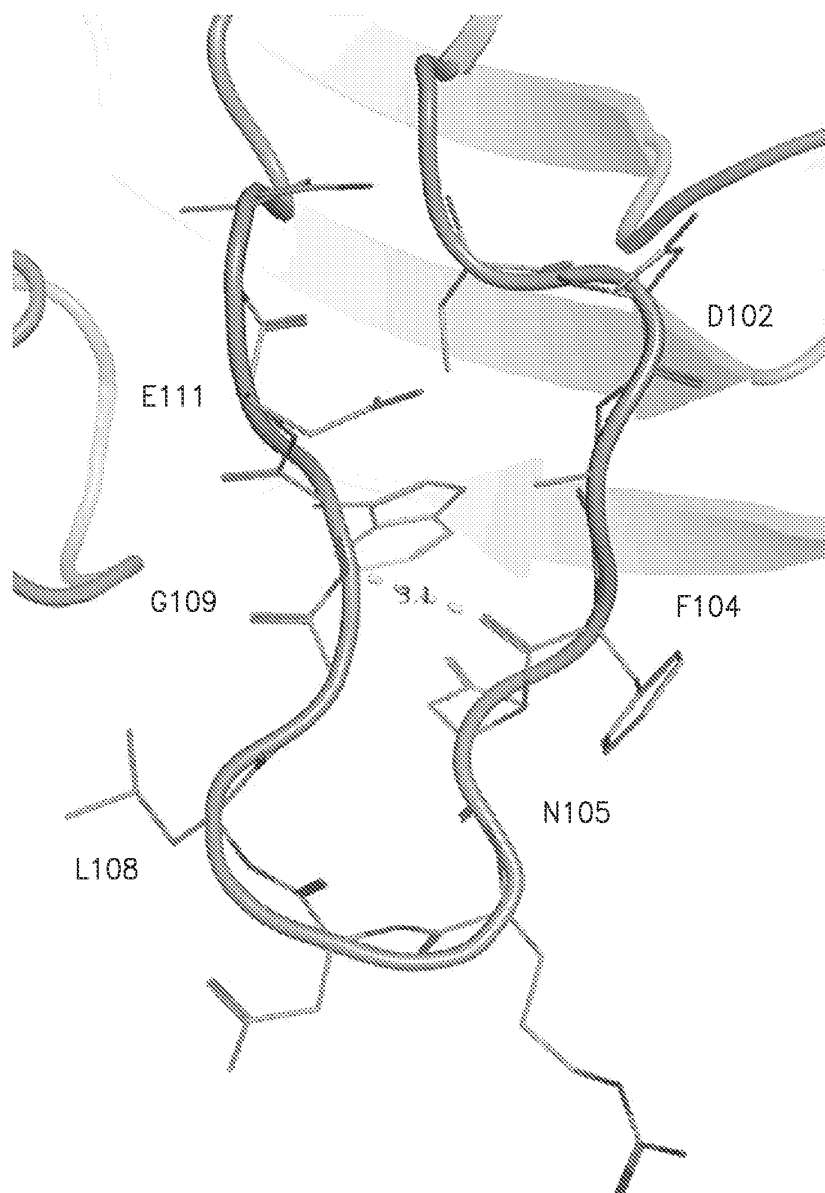
41/249



FNI3 FAB CRYSTAL STRUCTURE (1.7 Å)

FIG. 20A

42/249



FNI3-N2 CRYSTAL STRUCTURE (3.7 Å)

FIG. 20B

43/249

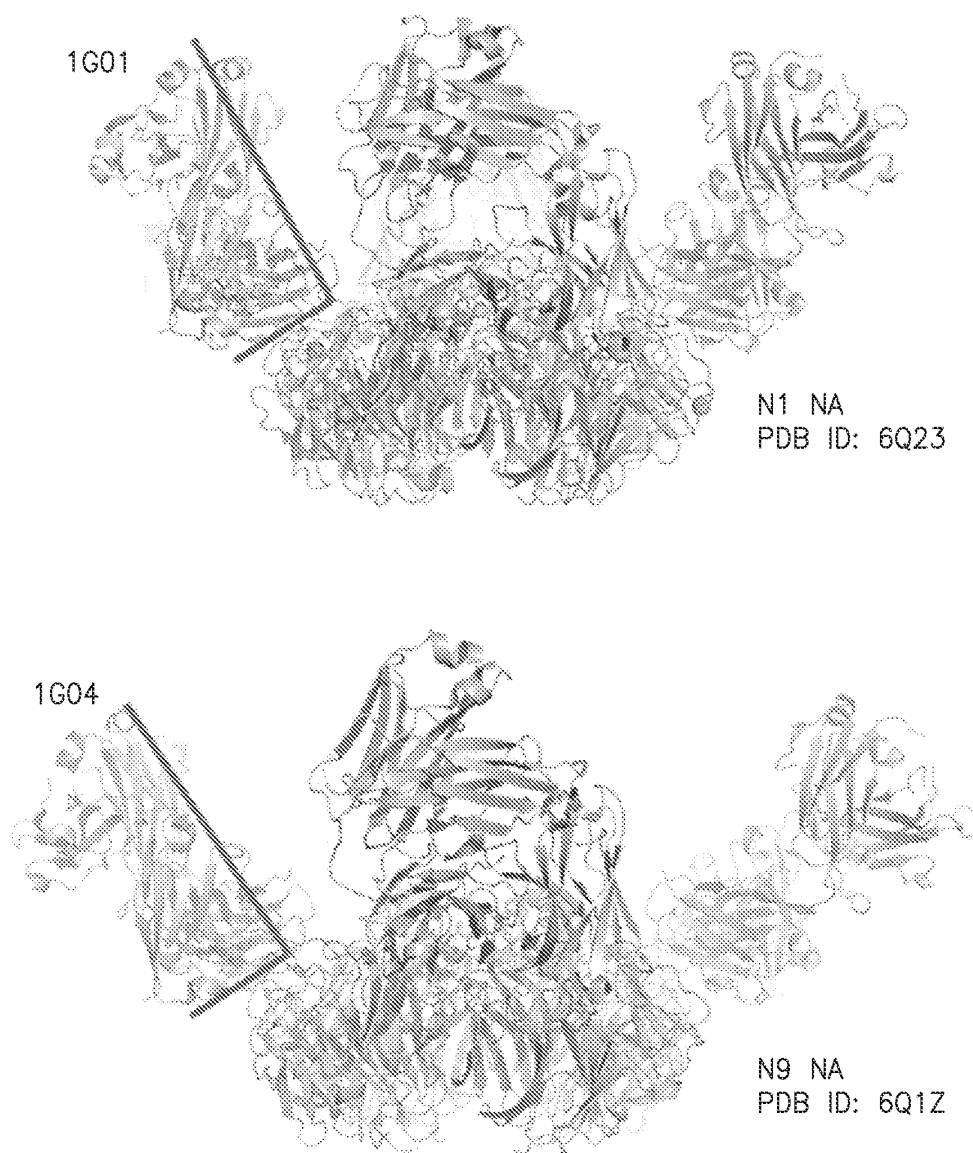


FIG. 21A

44/249

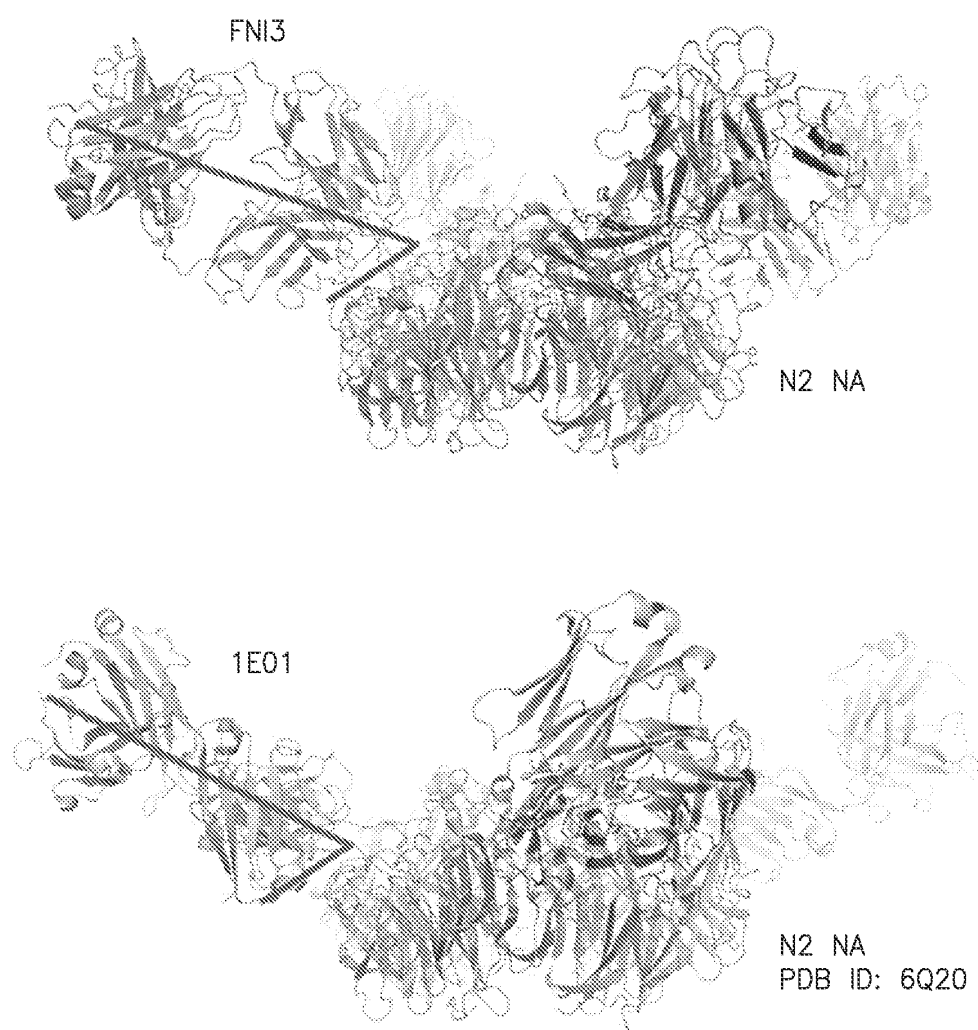


FIG. 21B

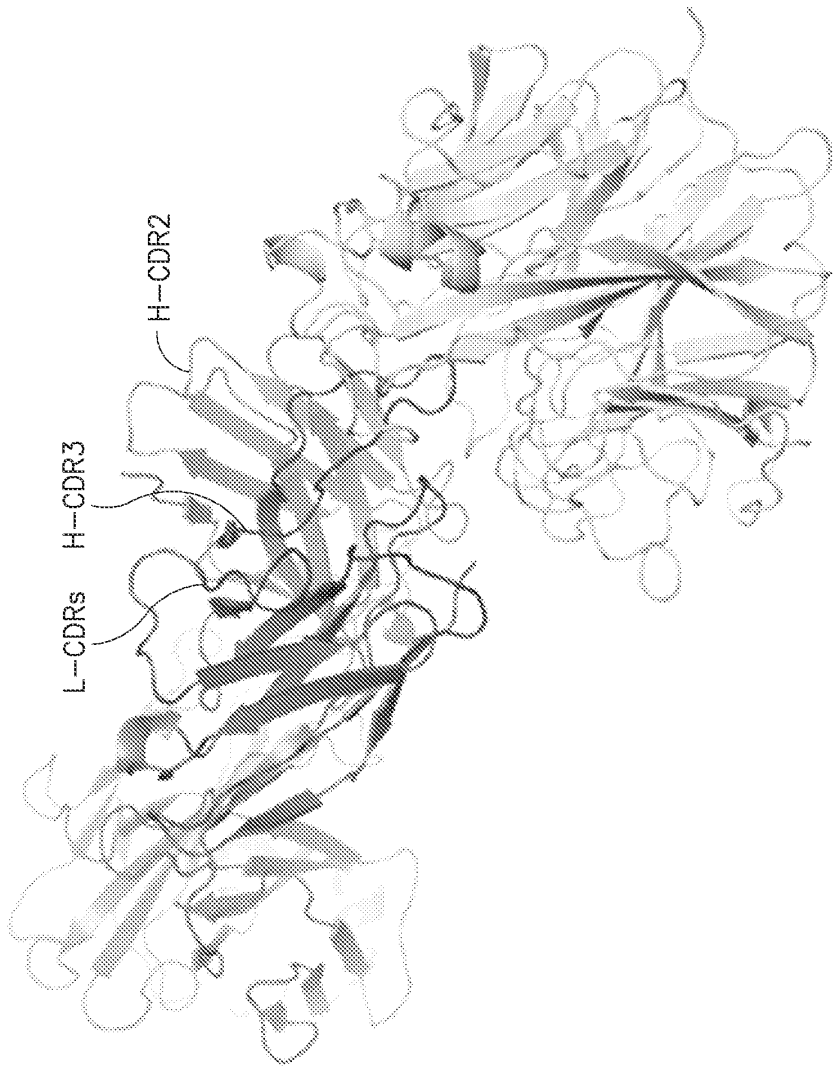
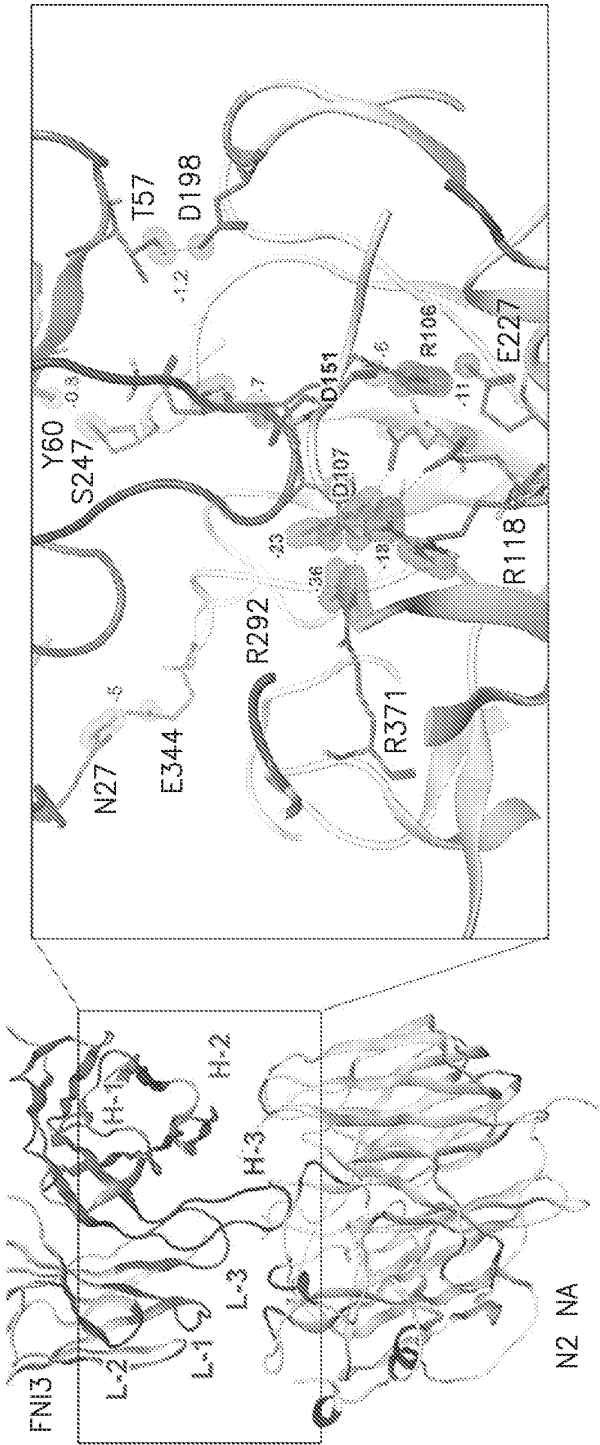


FIG. 22



47/249

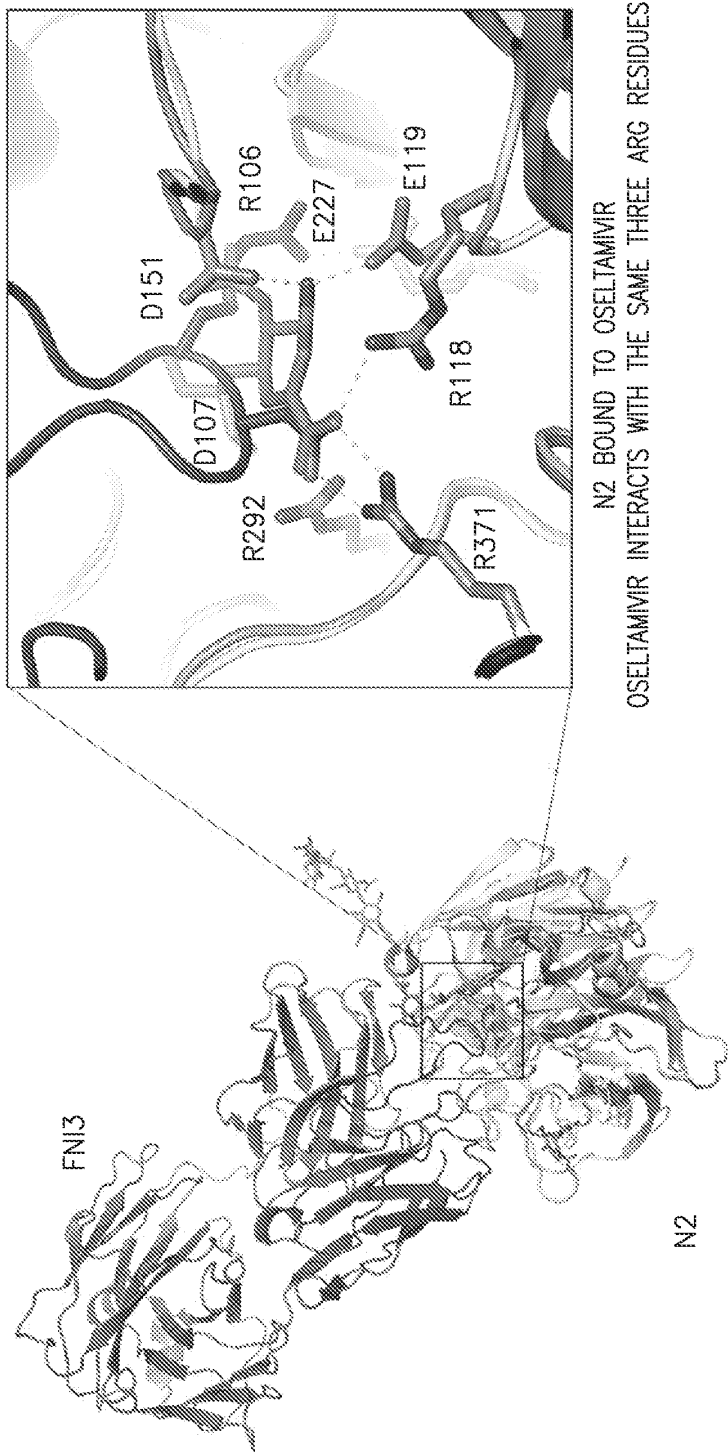


FIG. 24

48/249

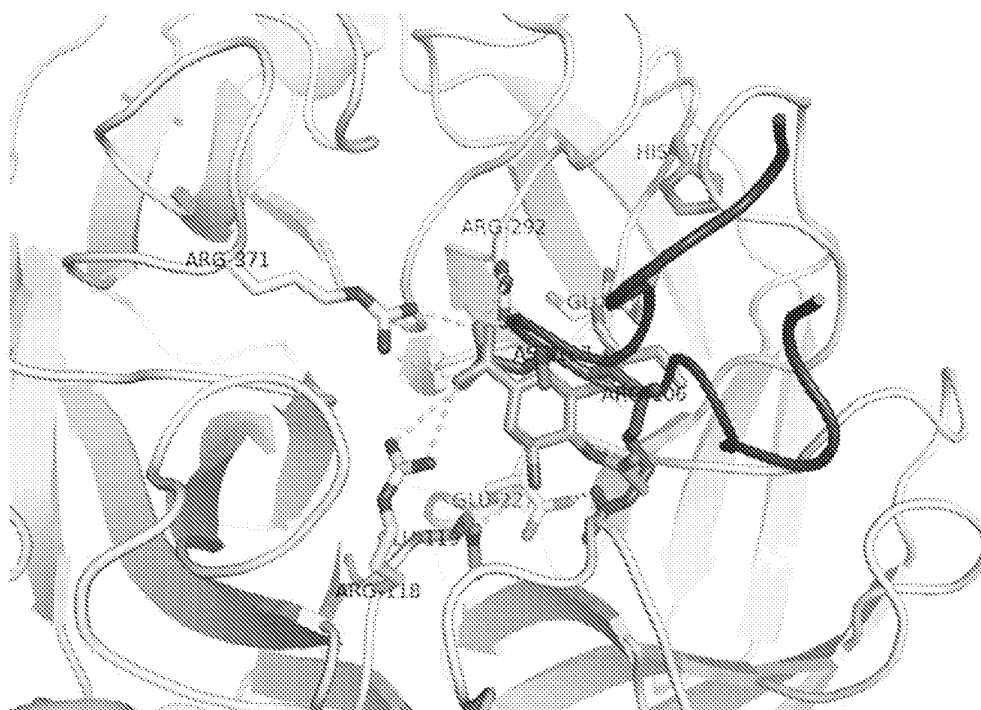


FIG. 25

Arg118	Glu119	Leu134	Asn147	Val149	Arg150	Asp151	Arg152	Arg156	Trp178
100	99.94	100	94.24	88.44	94.44	98.81	100	100	100
Ser179	Asp198	Lys199	Glu221	Ile222	Arg224	Glu227	Ser245	Ala246	Ser247
99.99	99.95	98.67	17.41	99.55	99.97	100	33.69	99.95	36.16
Gly248	Glu276	Glu277	Arg292	Asn294	Trp295	Glu344	Gly346	His347	Gly348
99.93	100	100	99.98	100	100	80.93	93.42	99.73	100
Thr369	Arg371	Tyr406	Lys431	Glu432	INTRODUCTION OF A GLYCOSYLATION S245N SINCE 2014/2015 SEASON				
90.19	99.99	99.99	99.80	96.13					

FIG. 26A

50/249

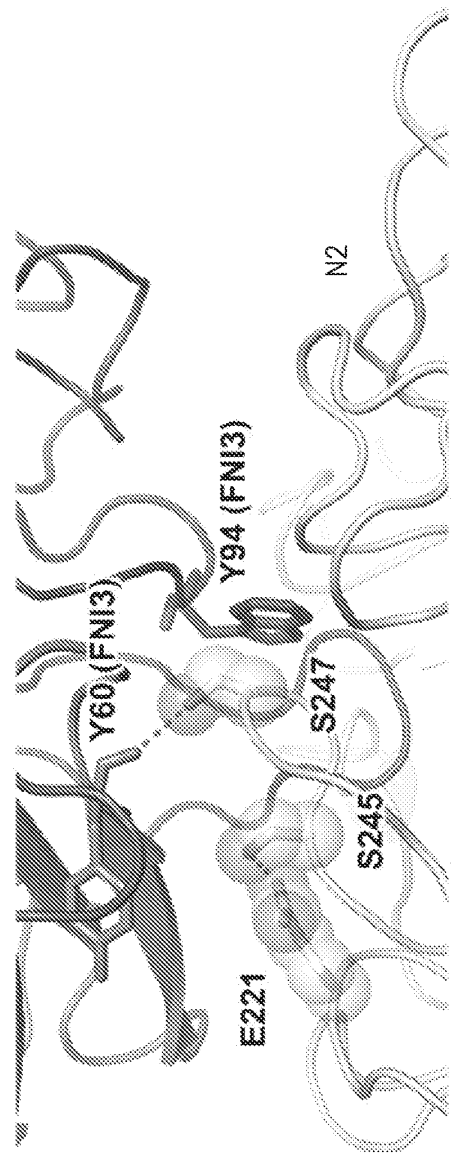
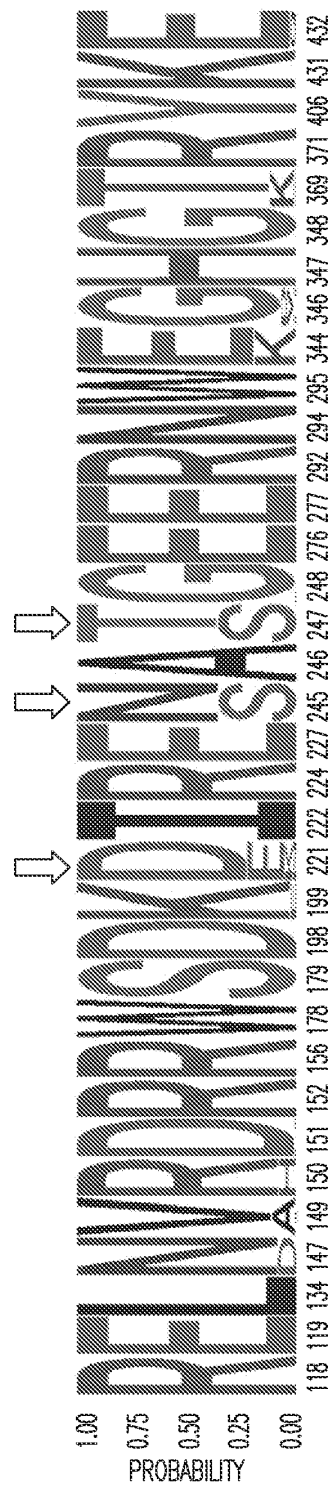
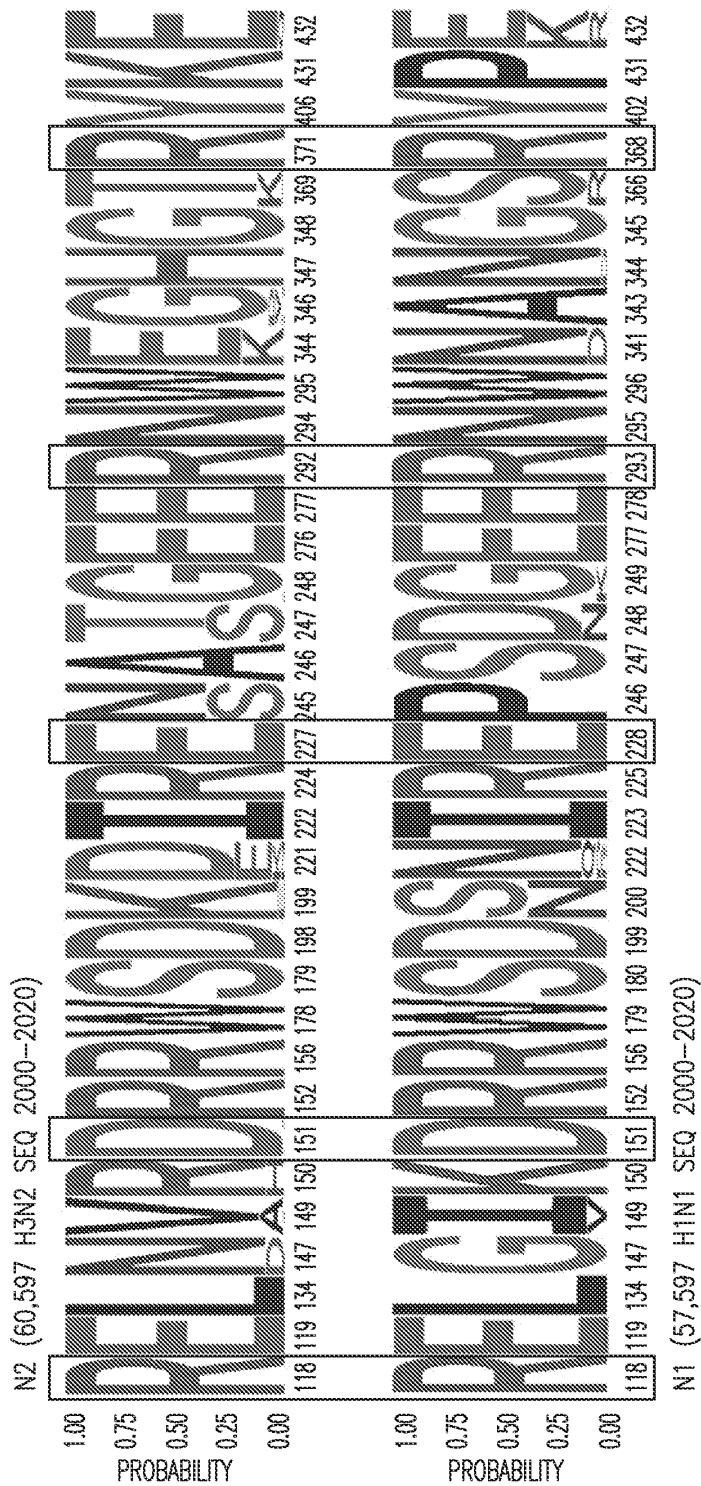


FIG. 26B



MAJOR INTERACTING RESIDUES ON THE NA	CORRESPONDING INTERACTING RESIDUES WITHIN FN13 HCDR3
R371	D107
R292	D107
R118	D107
D151	R106
E227	R106

FIG. 27

GROUP	MOUSE STRAIN	TREATMENT	INFLUENZA INFECTION	ENDPOINTS
CONTROL	BALB/c	VEHICLE CONTROL	A/PUERTO RICO/8/34	BODYWEIGHT, MORTALITY
mAB-03	BALB/c	6 mg/kg	A/PUERTO RICO/8/34	
mAB-03	BALB/c	2 mg/kg	A/PUERTO RICO/8/34	
mAB-03	BALB/c	0.6 mg/kg	A/PUERTO RICO/8/34	
mAB-03	BALB/c	0.2 mg/kg	A/PUERTO RICO/8/34	
mAB-09	BALB/c	6 mg/kg	A/PUERTO RICO/8/34	
mAB-09	BALB/c	2 mg/kg	A/PUERTO RICO/8/34	
mAB-09	BALB/c	0.6 mg/kg	A/PUERTO RICO/8/34	
mAB-09	BALB/c	0.2 mg/kg	A/PUERTO RICO/8/34	
54 MICE TOTAL				
CONTROL	BALB/c	VEHICLE CONTROL	A/HONG KONG/8/68	BODYWEIGHT, MORTALITY
mAB-03	BALB/c	6 mg/kg	A/HONG KONG/8/68	
mAB-03	BALB/c	2 mg/kg	A/HONG KONG/8/68	
mAB-03	BALB/c	0.6 mg/kg	A/HONG KONG/8/68	
mAB-03	BALB/c	0.2 mg/kg	A/HONG KONG/8/68	
mAB-09	BALB/c	6 mg/kg	A/HONG KONG/8/68	
mAB-09	BALB/c	2 mg/kg	A/HONG KONG/8/68	
mAB-09	BALB/c	0.6 mg/kg	A/HONG KONG/8/68	
mAB-09	BALB/c	0.2 mg/kg	A/HONG KONG/8/68	
54 MICE TOTAL				

mAB-03 = FNI3-r1gG
mAB-09 = FNI9-r1gG

FIG. 28A

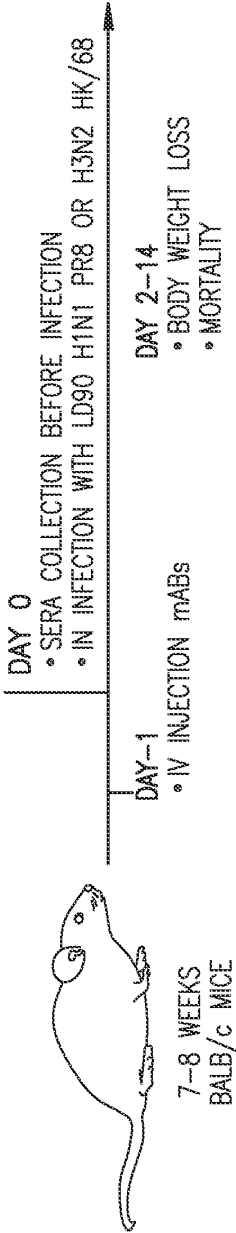


FIG. 28B

54/249

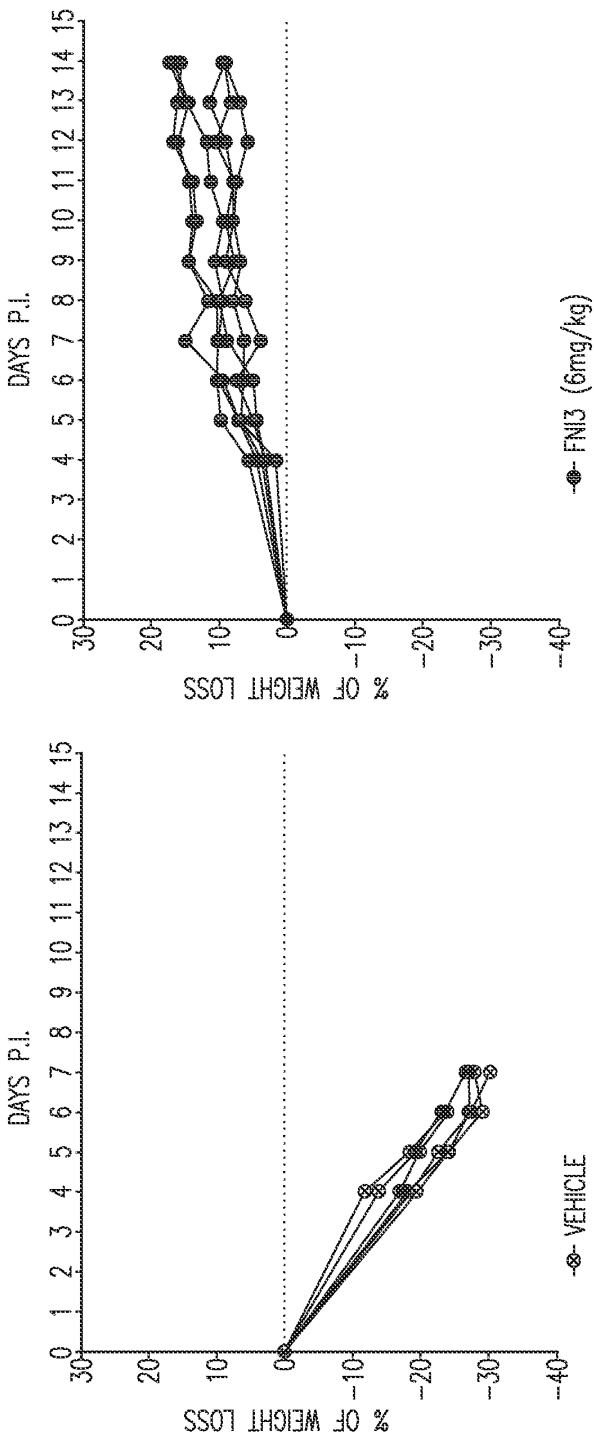


FIG. 29A

55/249

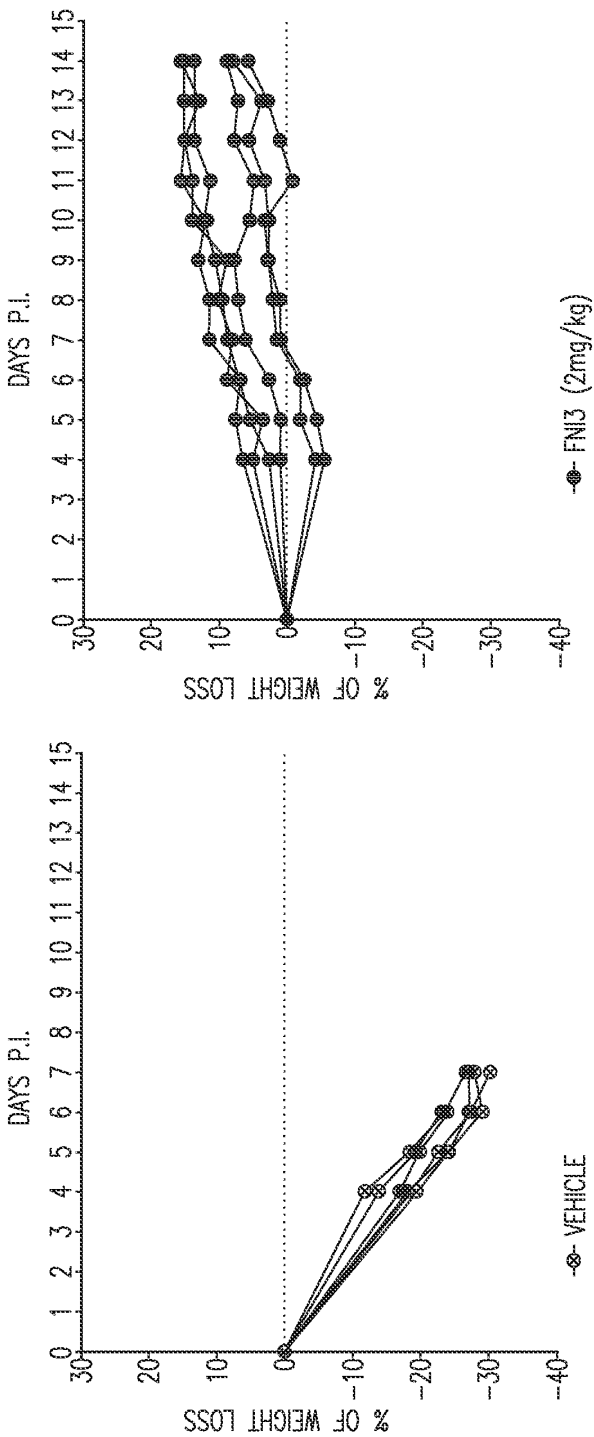


FIG. 29B

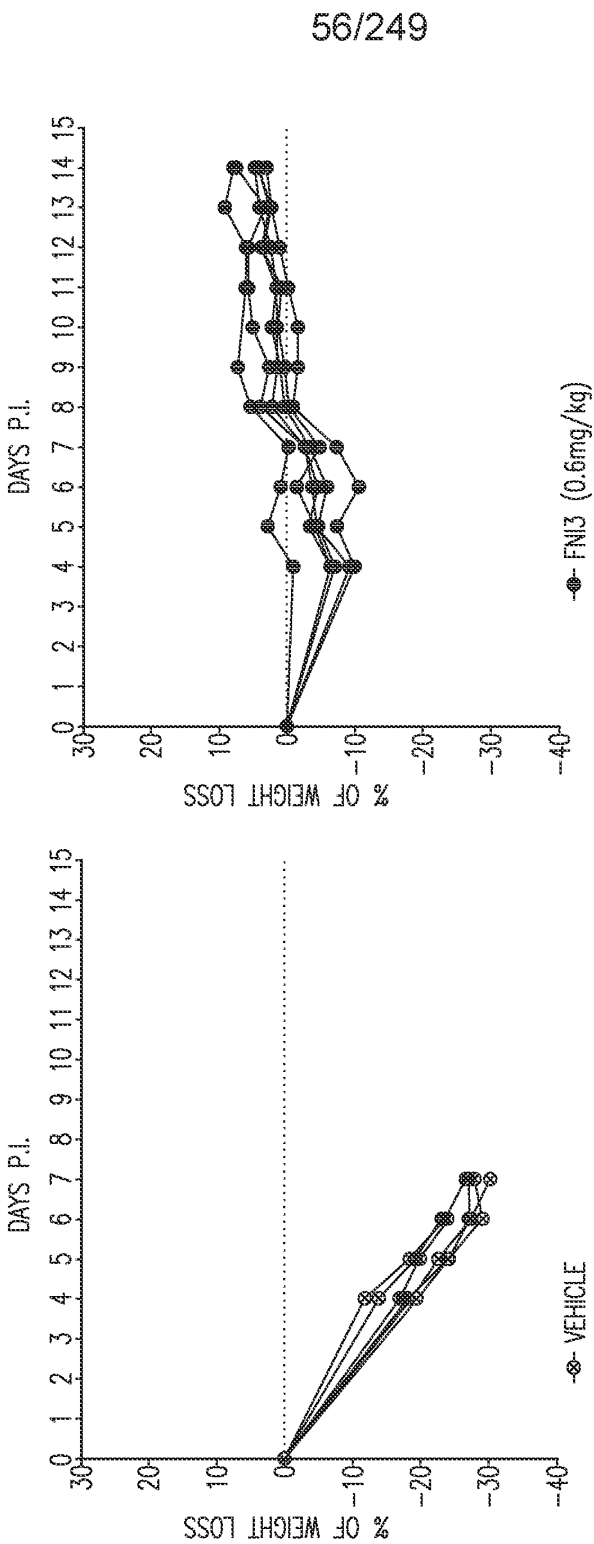


FIG. 29C

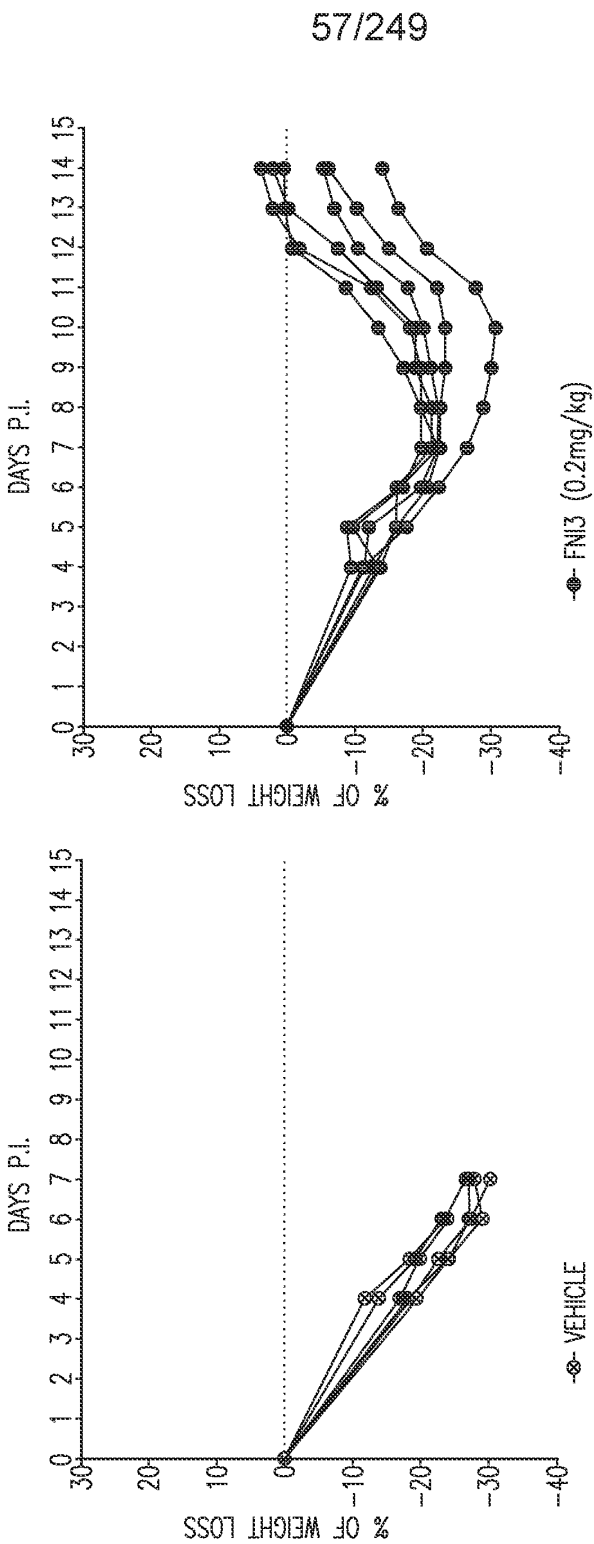


FIG. 29D

58/249

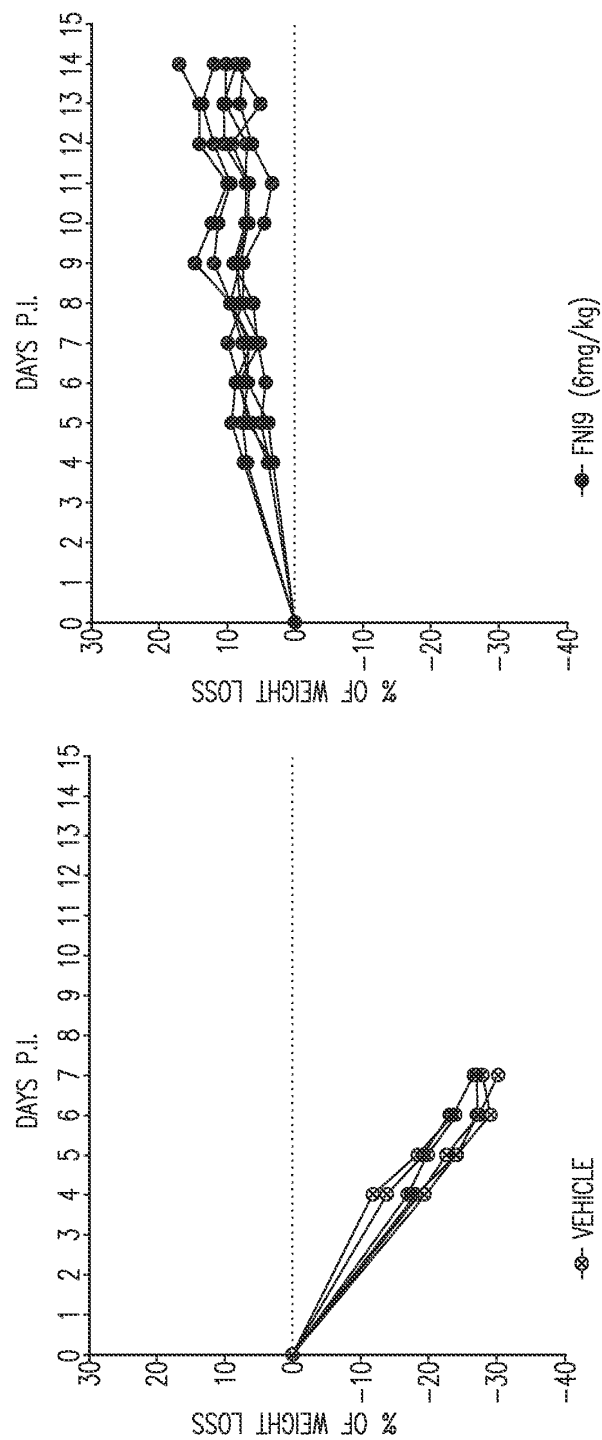


FIG. 30A

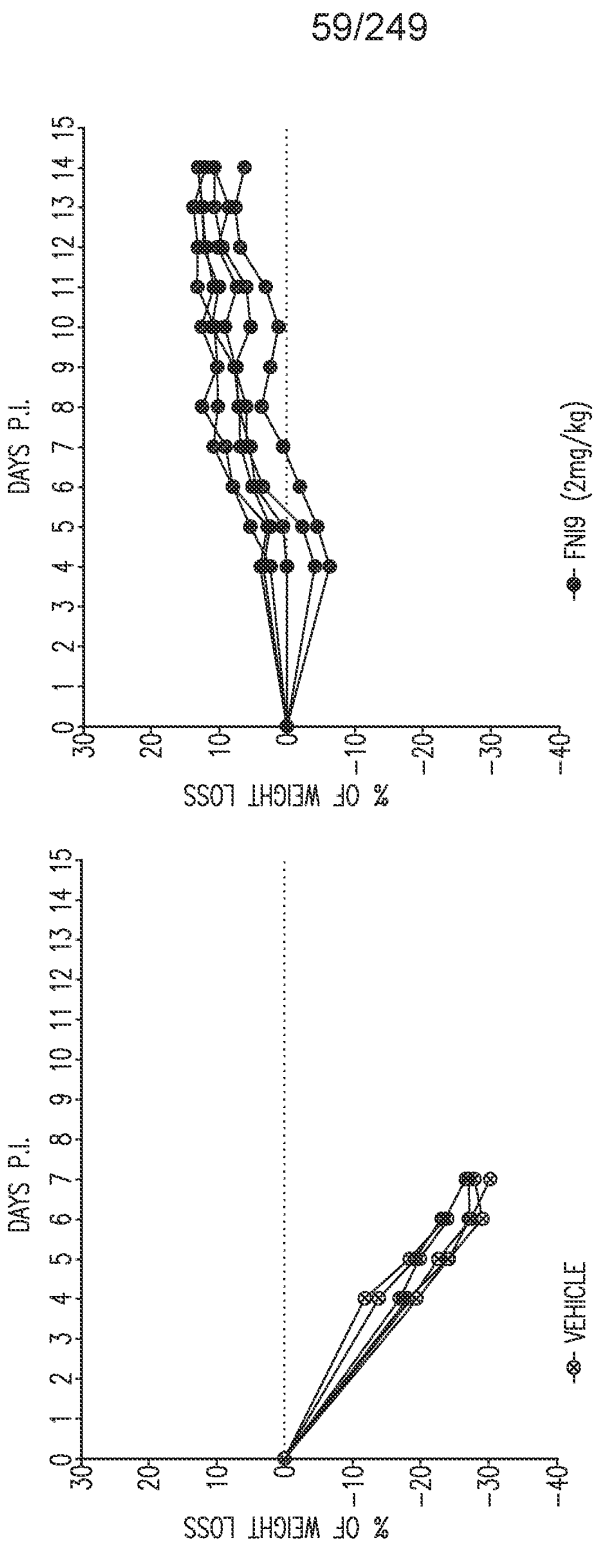


FIG. 30B

60/249

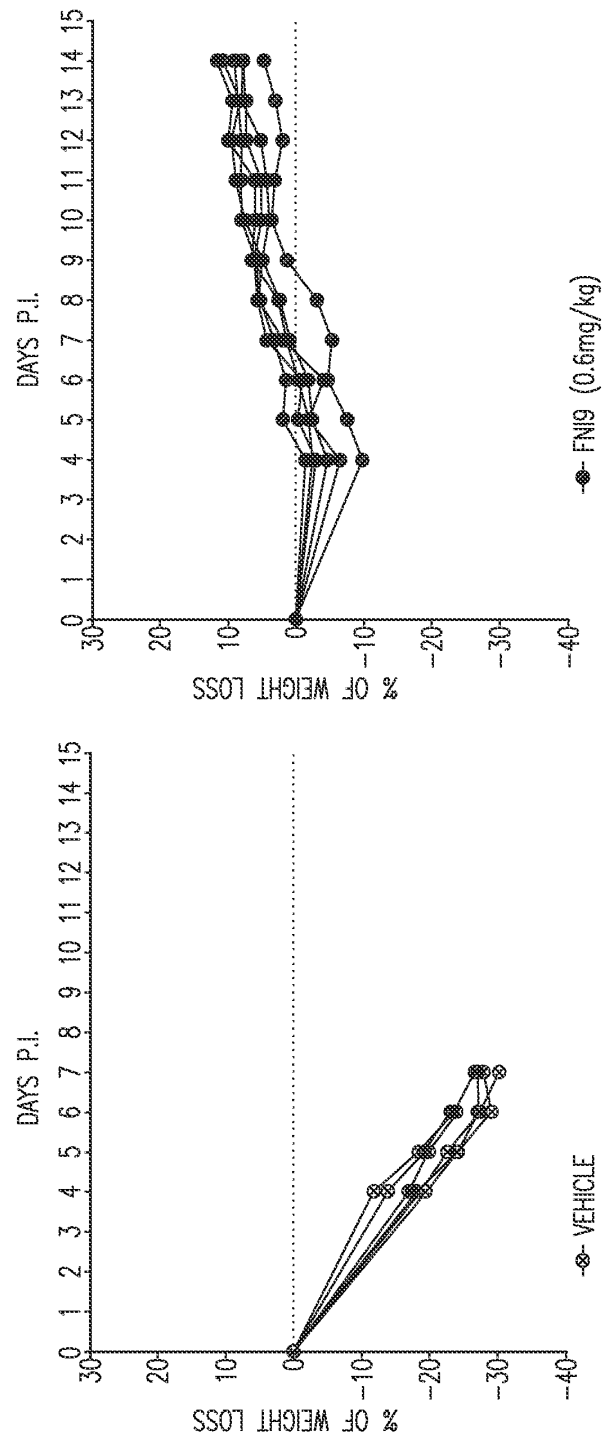


FIG. 30C

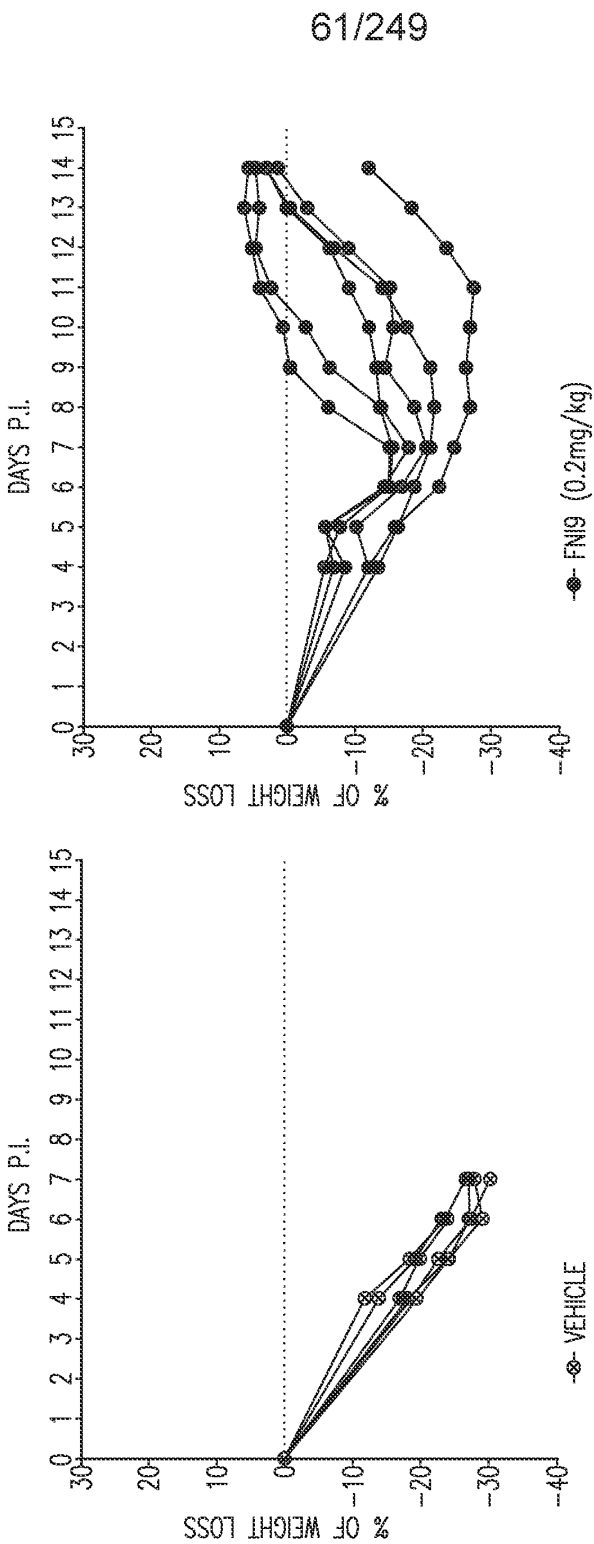


FIG. 30D

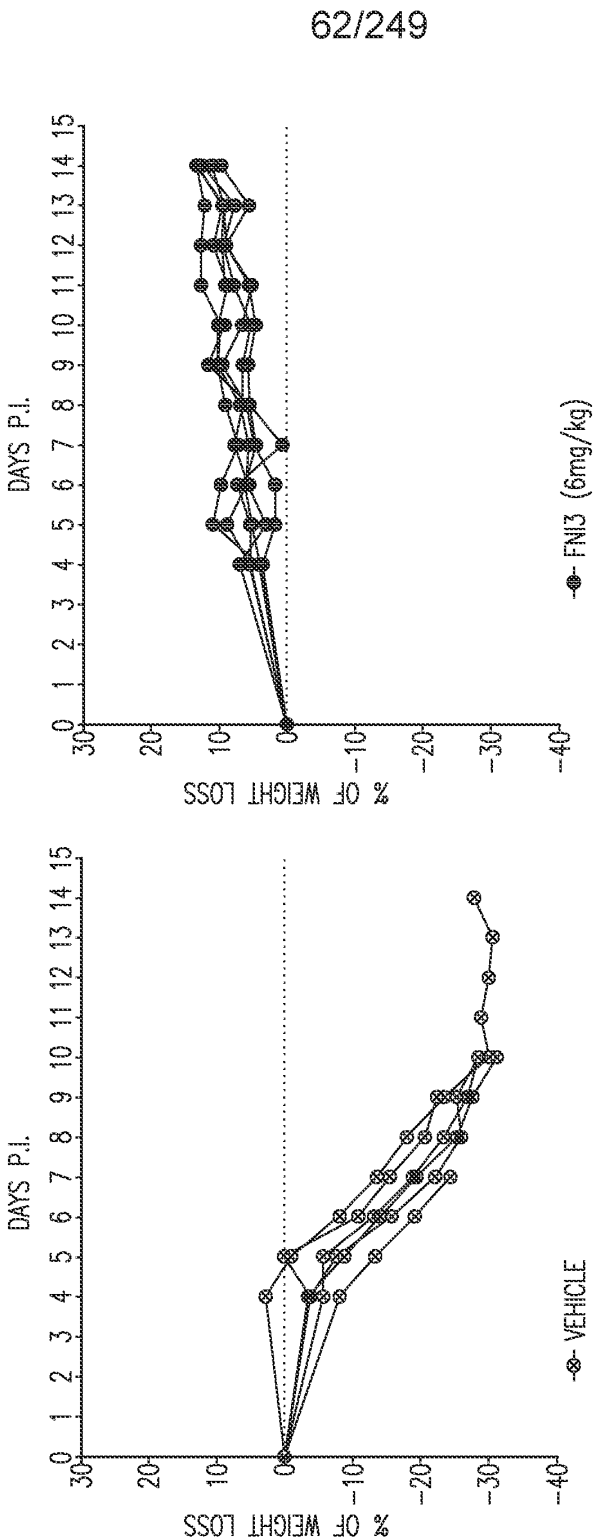


FIG. 31A

63/249

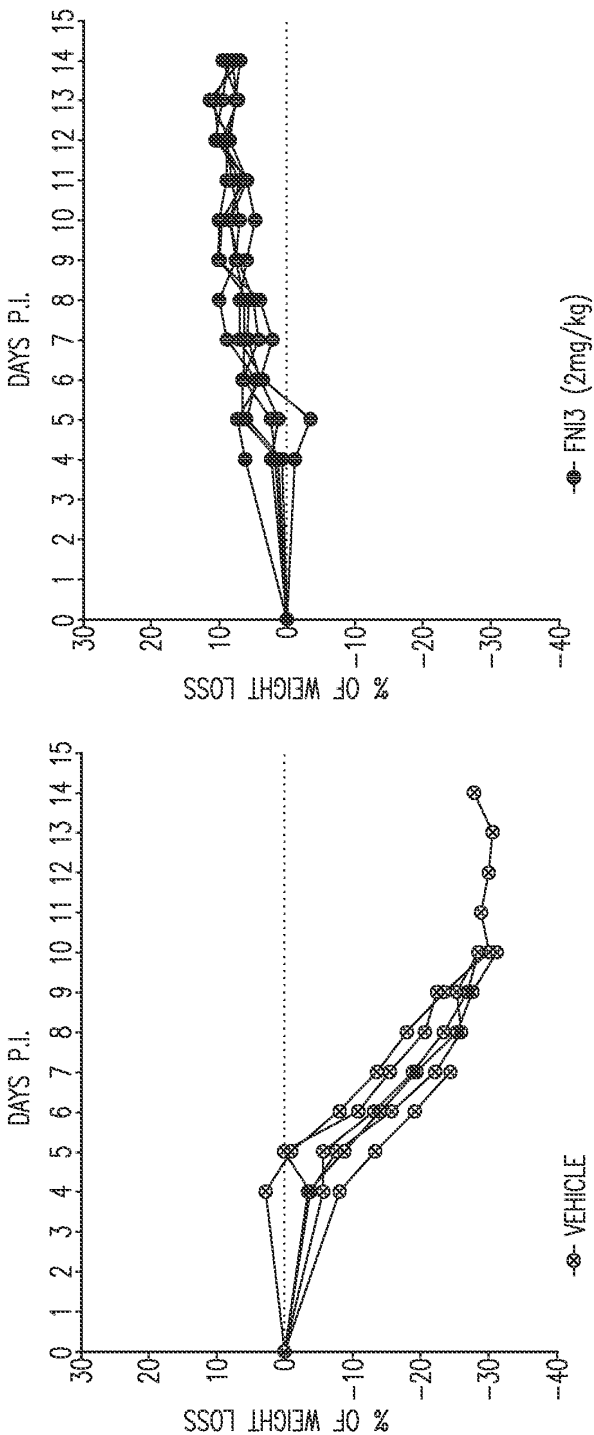


FIG. 31B

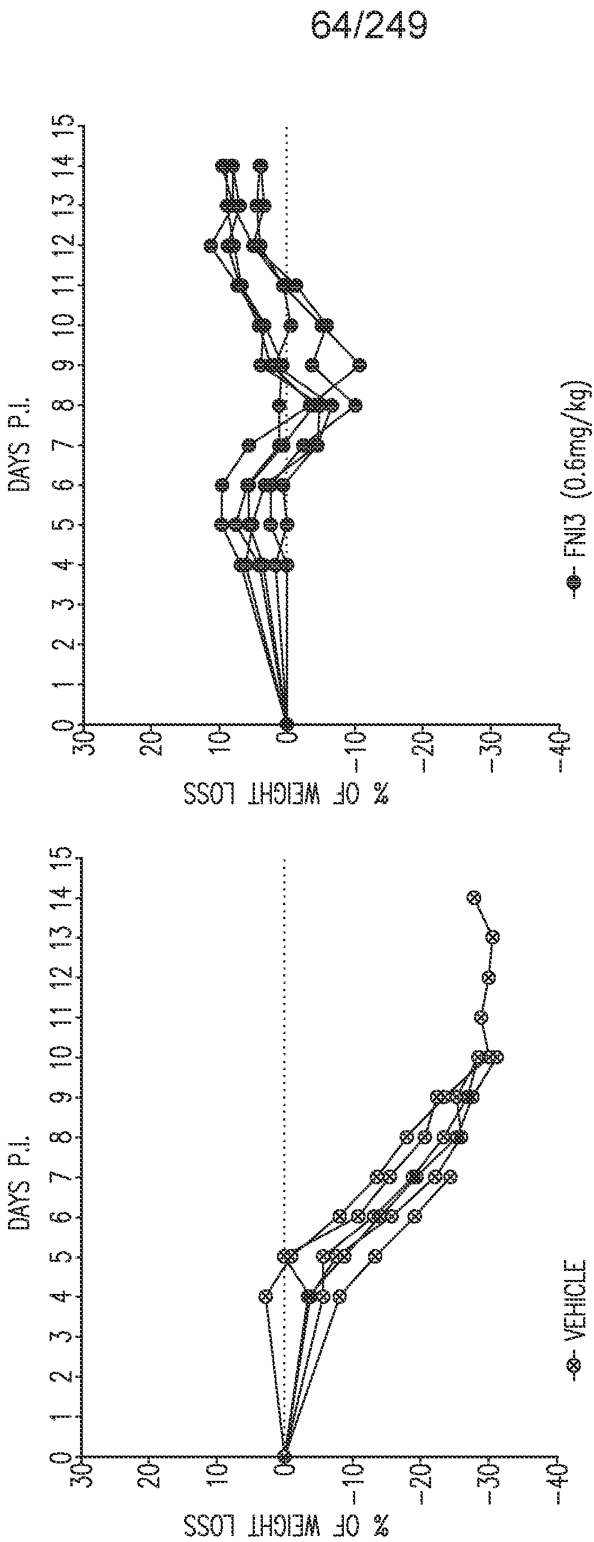


FIG. 31C

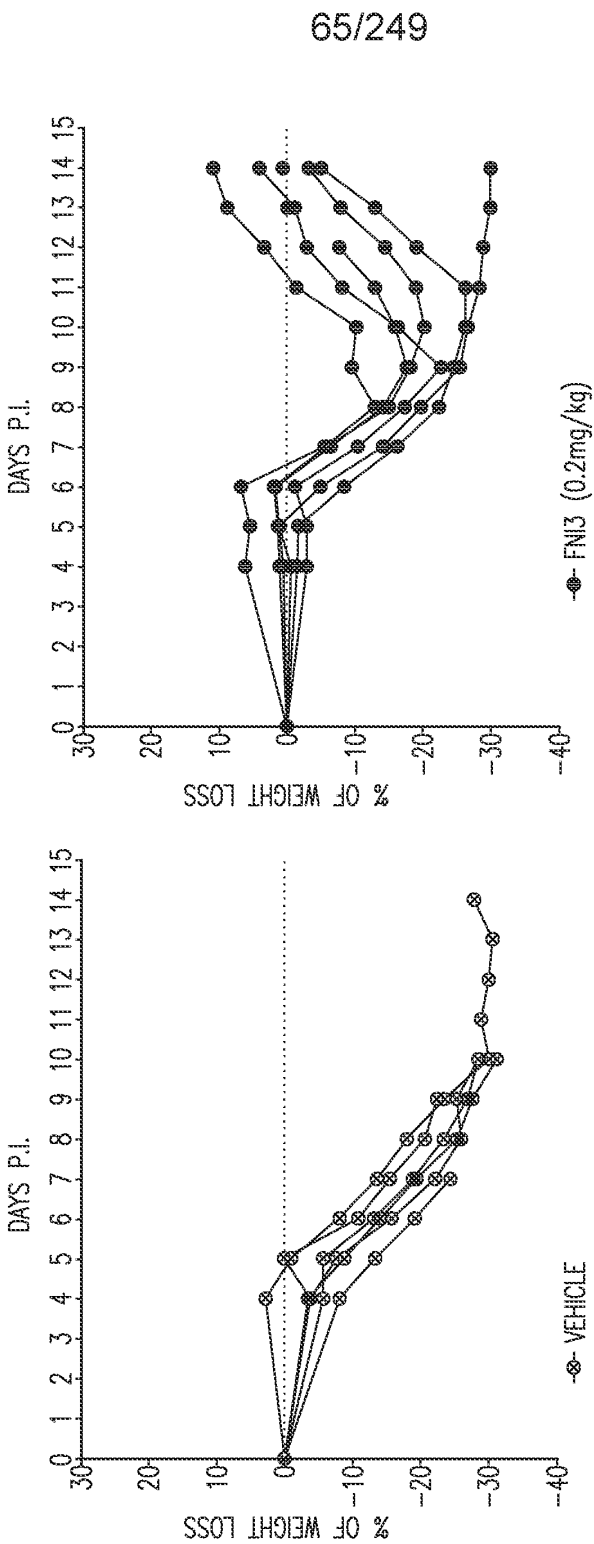


FIG. 31D

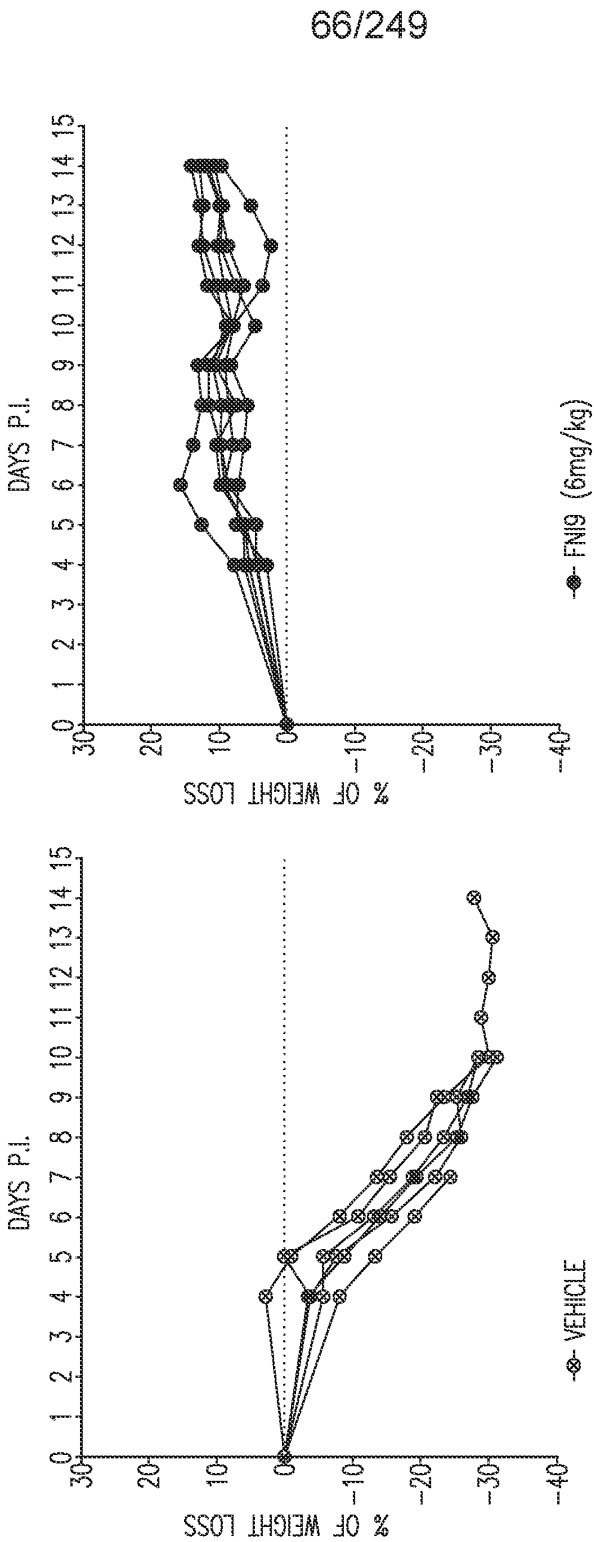


FIG. 32A

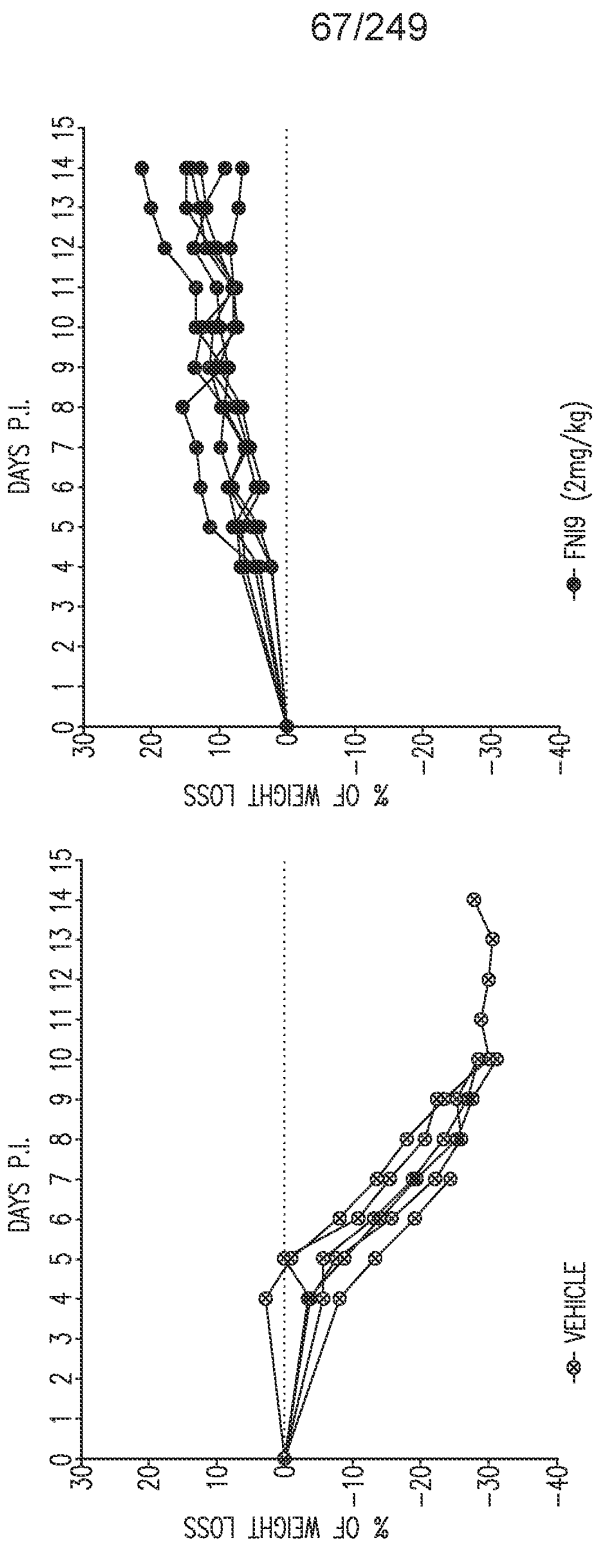


FIG. 32B

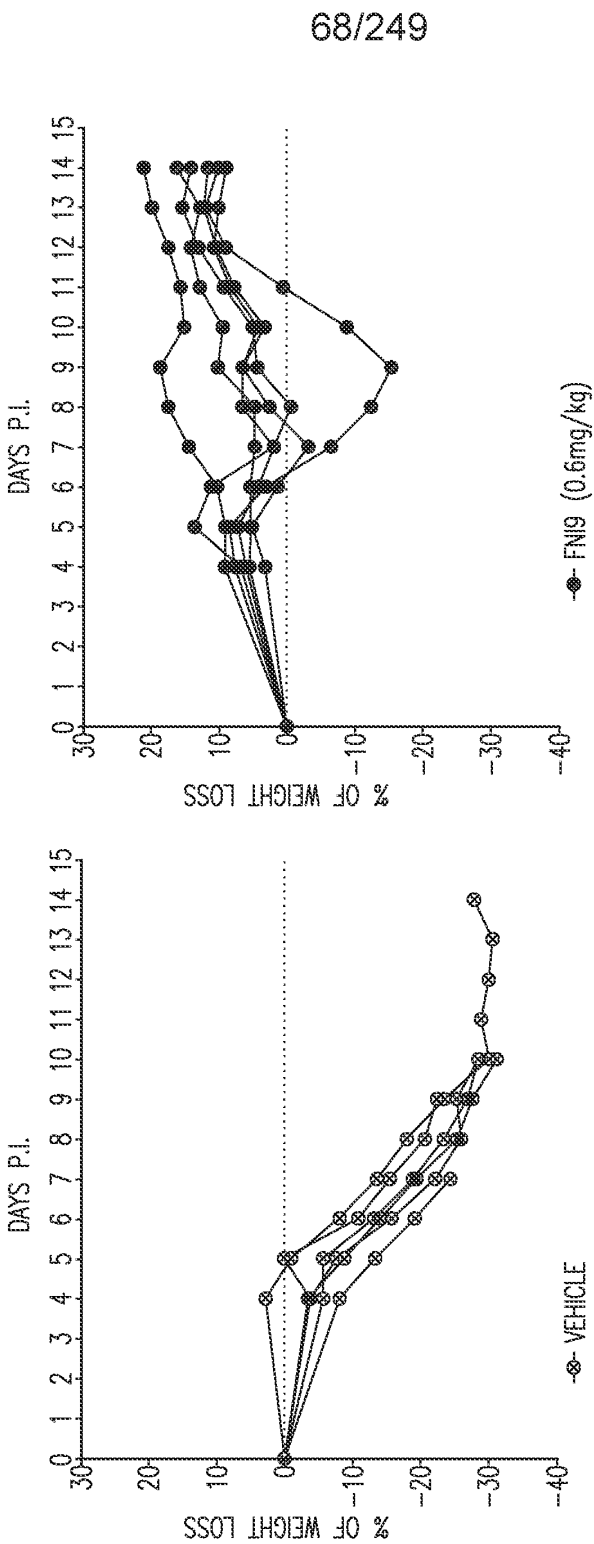


FIG. 32C

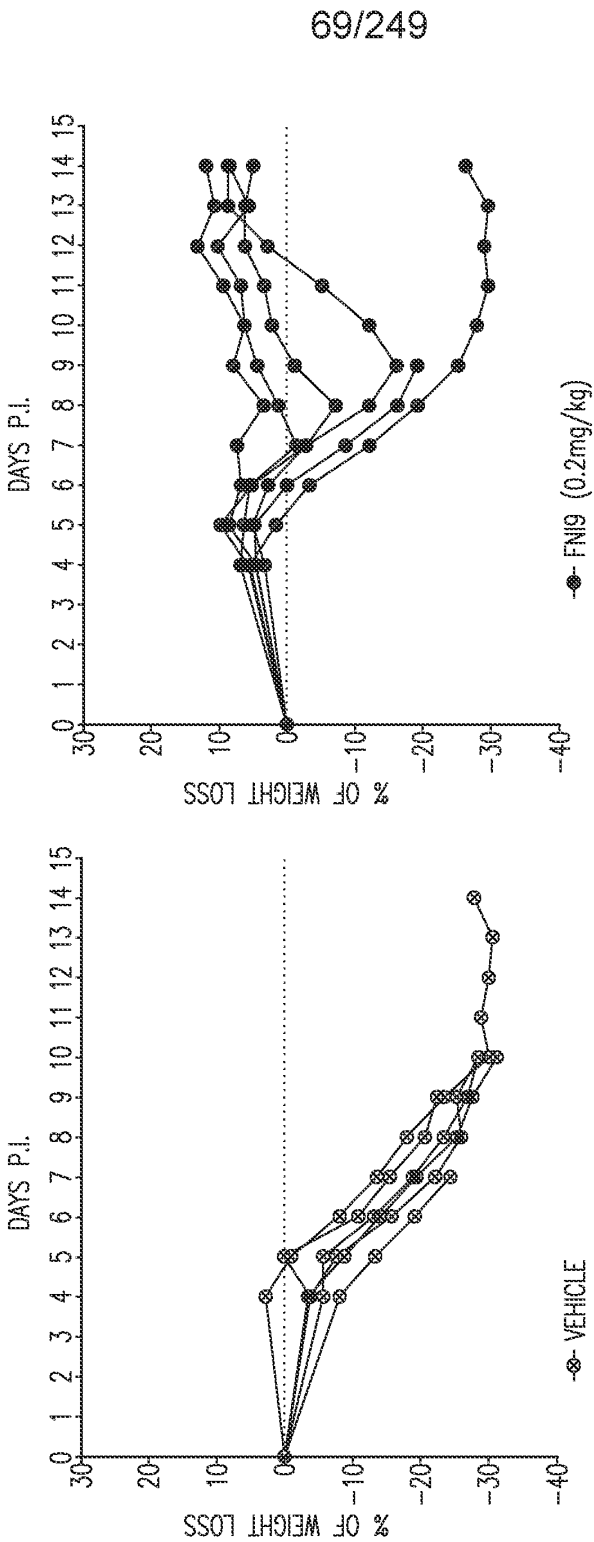


FIG. 32D

70/249

H1N1 A/PUERTO RICO/8/1934

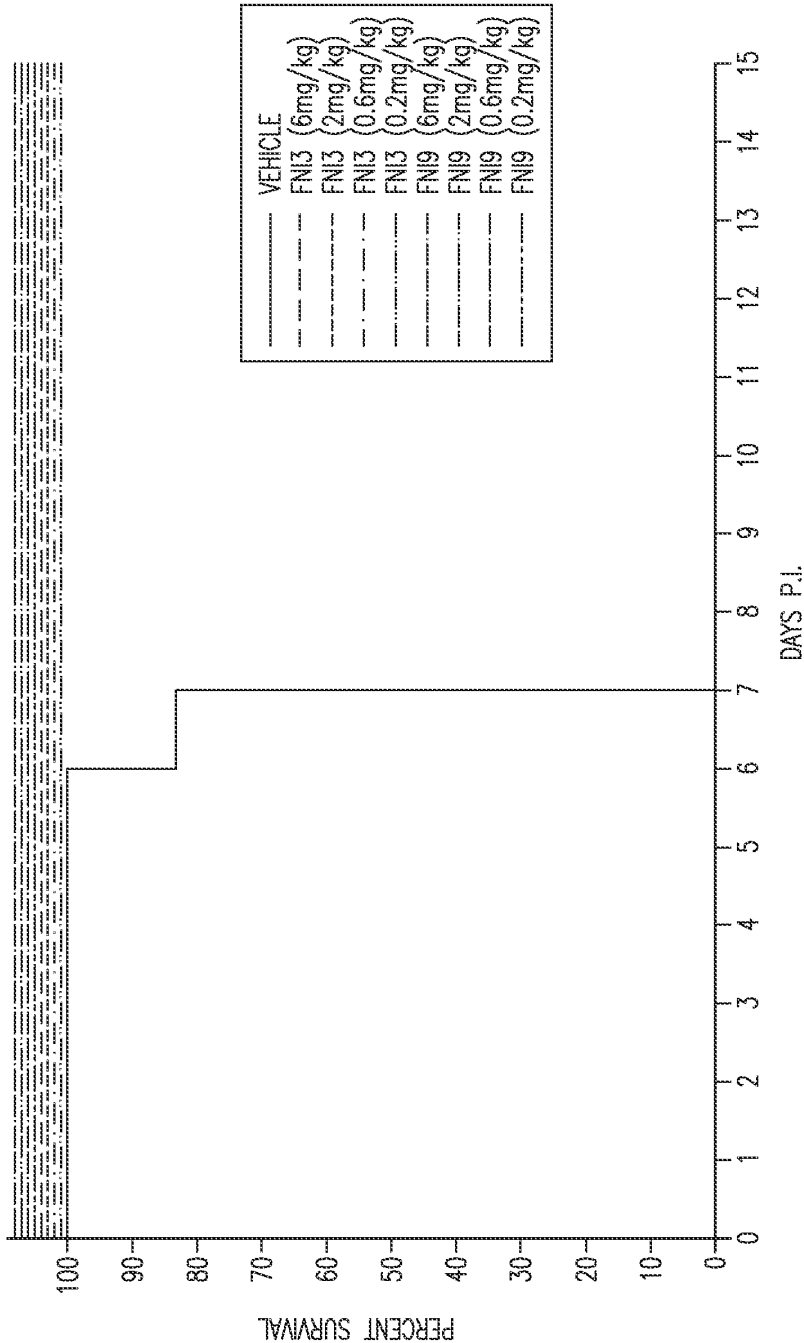


FIG. 33A

71/249

H3N2 A/HONG KONG/8/1968

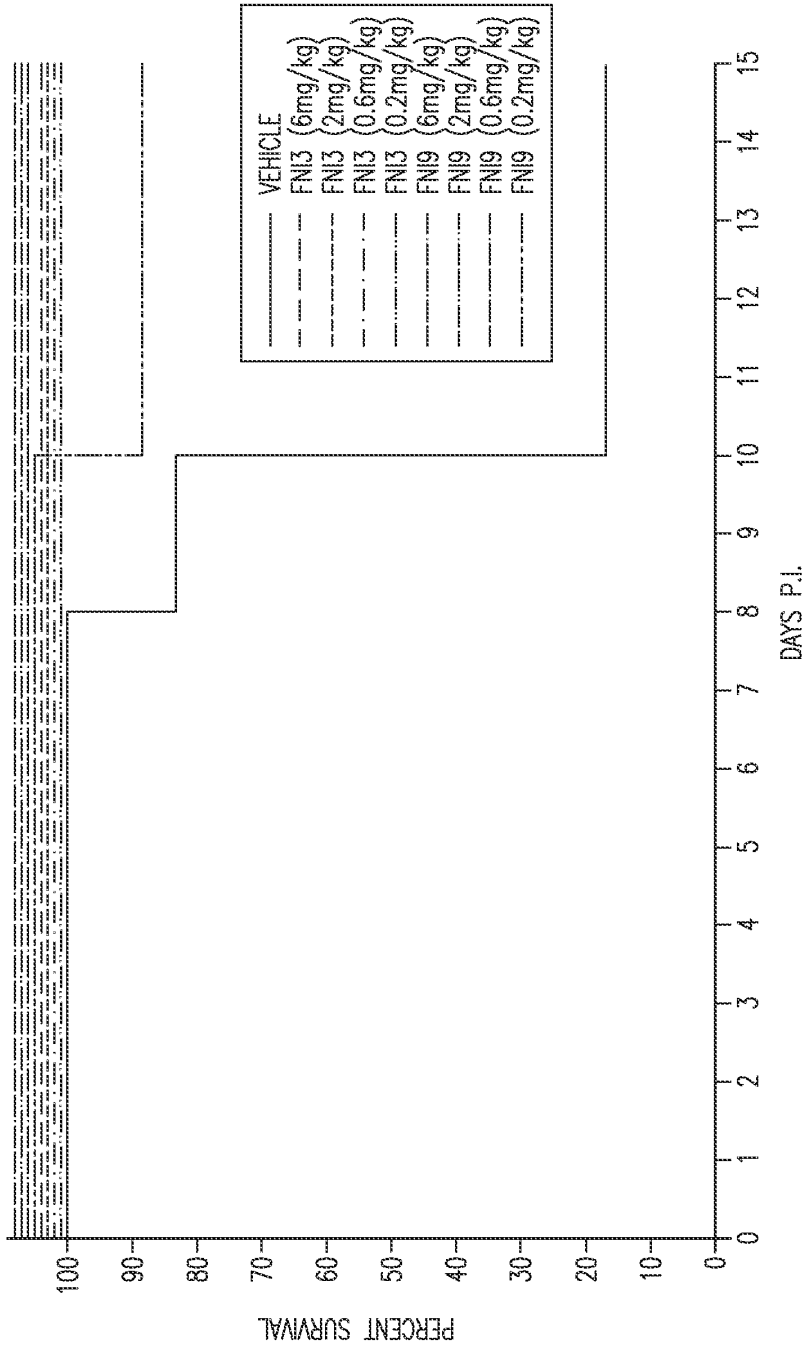


FIG. 33B

72/249

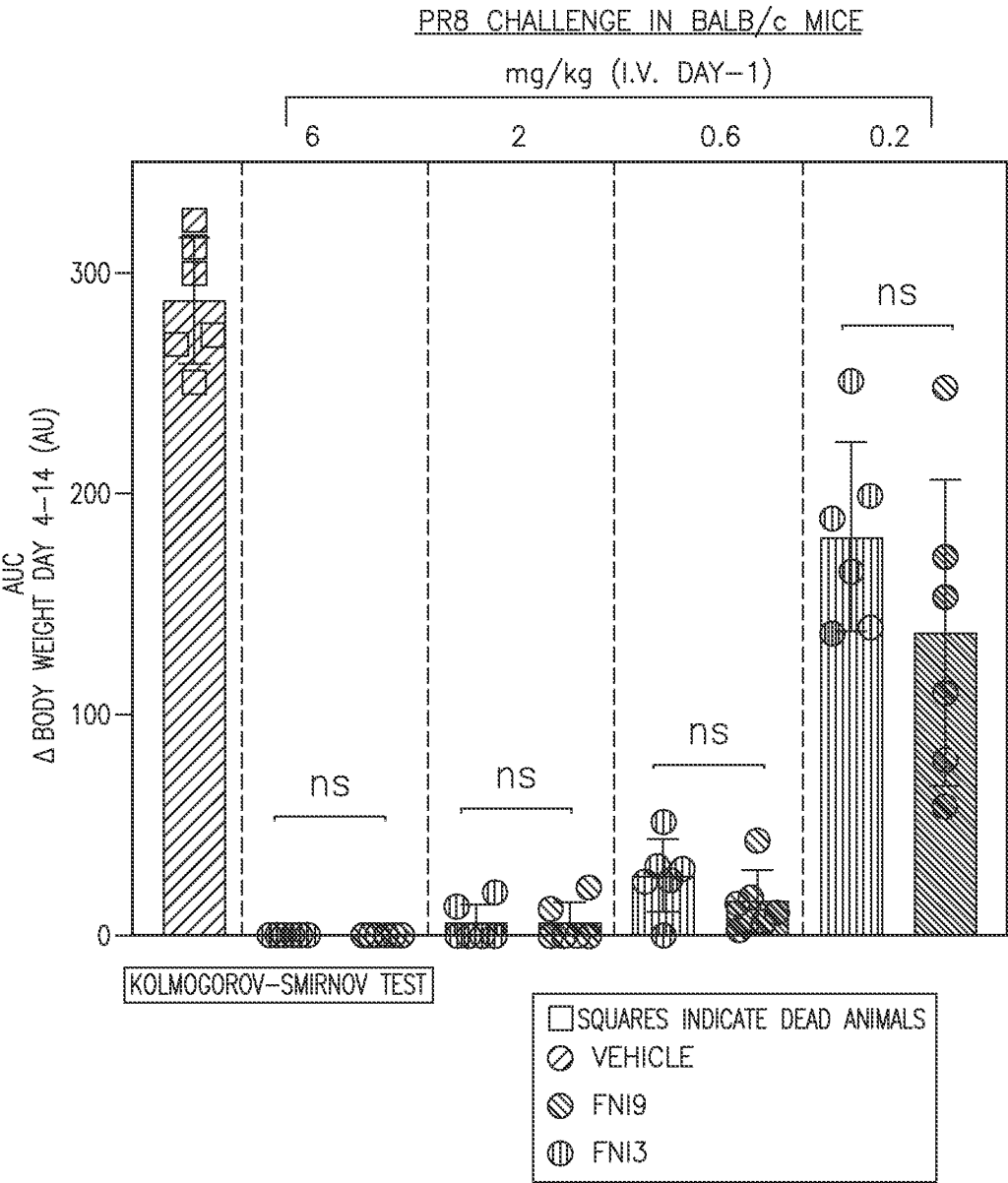


FIG. 34A

73/249

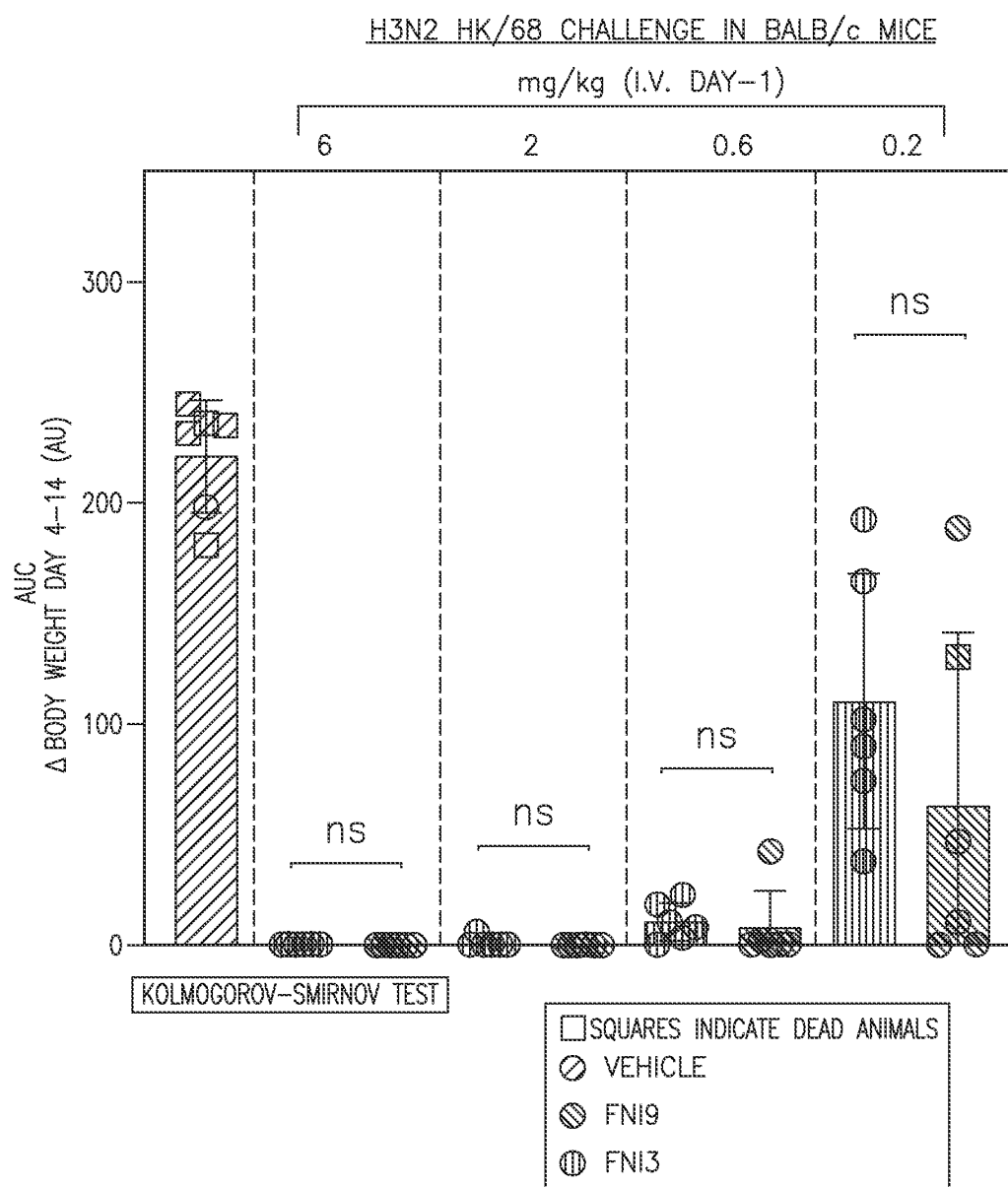


FIG. 34B

74/249

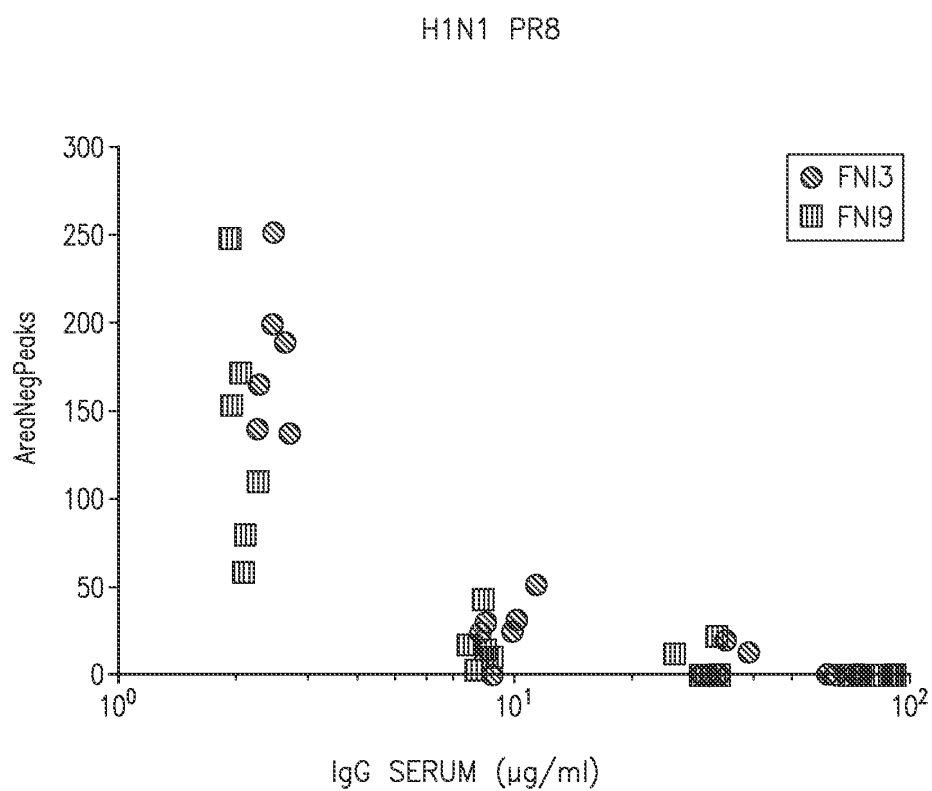


FIG. 35A

76/249

GROUP	DOSE (μ g)	Rsq	POINTS FITS	LAMBDA_Z (1/DAY)	HALF-LIFE (DAY)	AUCLAST (DAY* μ g/mL)	Vz (mL)	CLss (mL/DAY)
FNI3-LS	60.3	0.88	5	0.05	15.1	337.88	30.22	1.39
	61	0.93	5	0.06	11.49	191.19	46.84	2.83
	60.3	0.84	5	0.06	11.4	237.19	26.22	1.6
	70.8	0.96	5	0.06	11.73	291.55	29.39	1.74
	47.5	0.95	5	0.07	10.46	174.68	29.67	1.97
MEAN	59.98	0.911	5	0.058	12.034	253.697	32.47	1.902
SD	8.277	0.052	0	0.008	1.781	69.01	8.183	0.558
FNI9-LS	54.8	0.92	5	0.05	14.23	242.18	38.36	1.87
	52.3	0.95	5	0.06	11.04	249.53	23.68	1.49
	56	0.85	4	0.04	16.64	299.93	45.24	1.88
	53.3	0.84	5	0.05	14.65	233.35	53.54	2.53
	53.3	0.79	5	0.05	14.42	247.92	40.58	1.95
MEAN	53.94	0.87	4.8	0.05	14.198	254.583	40.281	1.944
SD	1.457	0.062	0.447	0.008	2.014	26.131	10.952	0.376
FM08_LS	53.5	0.87	4	0.07	10.29	204.54	17.44	1.17
	52.8	0.93	5	0.08	8.58	275.51	12.72	1.03
	54.5	0.87	5	0.09	8	275.84	12.57	1.09
	51.3	0.97	5	0.12	6	173.86	12.02	1.39
	51.3	0.91	5	0.09	7.49	204.07	17.16	1.59
MEAN	52.68	0.91	4.8	0.089	8.072	226.764	14.381	1.253
SD	1.397	0.043	0.447	0.018	1.567	46.348	2.677	0.231

FIG. 36

77/249

GROUP	ID	DOSE (µg)	Rsq_ADJUSTED	POINTS	LAMBDA_Z FIT	AU (1/DAY)	CLAST (DAY*µg/mL)	AUCINF_obs (DAY*µg/mL)	CLAST (µg/mL)	MRTINF_obs (DAY)	Vz (mL)	CLss (mL/DAY)	HALF-LIFE (DAY)
1G01-LS		165	0.89	5	0.04	417.16	746.65	14.14	14.45	14.45	77.3	3.32	16.15
		145	0.99	5	0.06	421.18	618.57	12.66	8.17	8.17	31.91	2.05	10.8
		160	0.93	5	0.05	429.26	685.83	13.16	9.94	9.94	47.82	2.45	13.52
		115	0.93	5	0.06	453.66	725.08	16.88	12.9	12.9	34.37	2.14	11.15
		136	0.87	5	0.06	454.1	706.12	15.11	11.55	11.55	39	2.34	11.56
	MEAN	144.2	0.923	5	0.056	435.073	696.451	14.39	11.401	11.401	46.079	2.458	12.636
	SD	20.017	0.047	0	0.009	17.714	49.02	1.679	2.456	2.456	18.479	0.506	2.23

FIG. 36(cont'd)

78/249

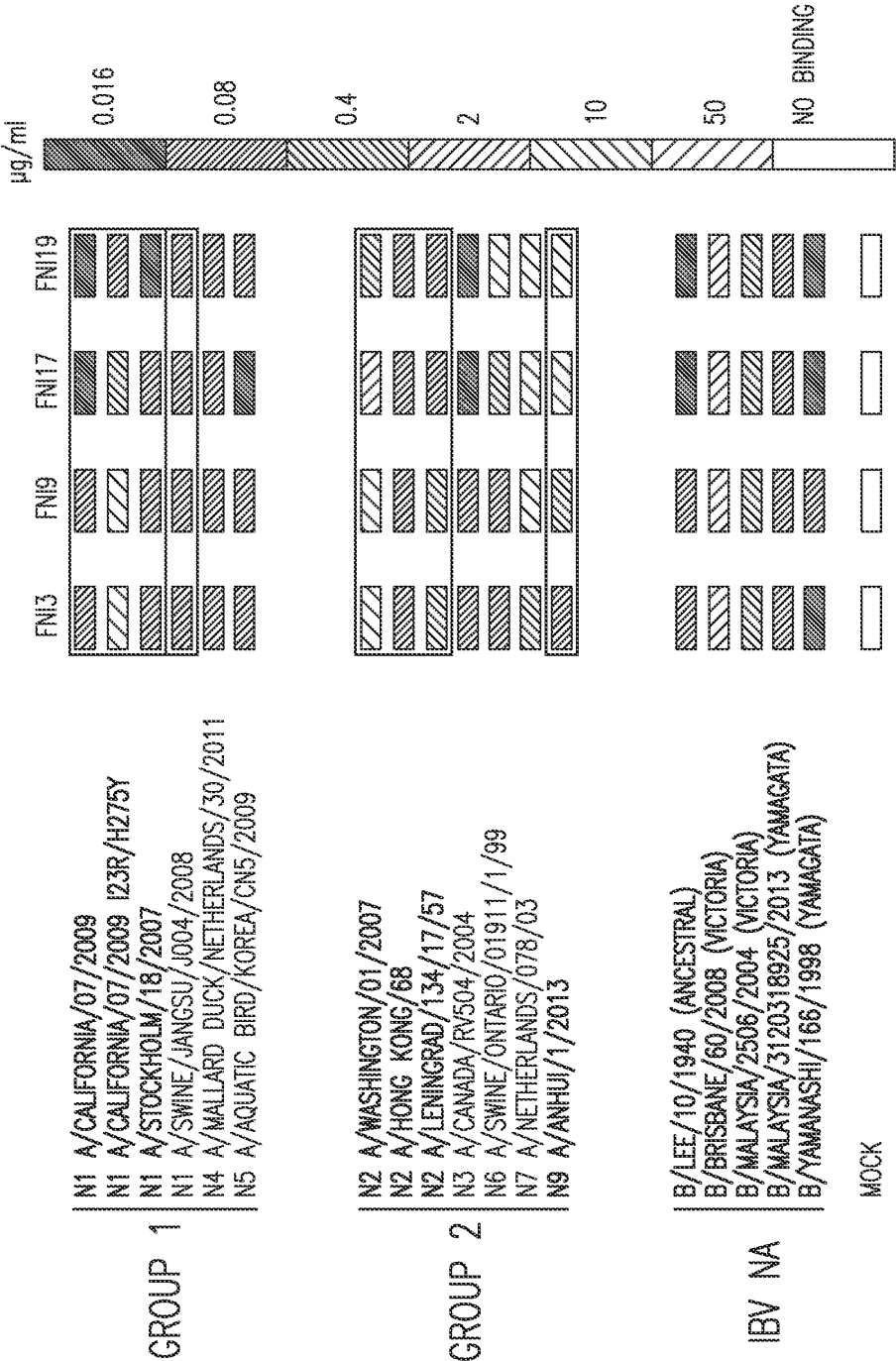
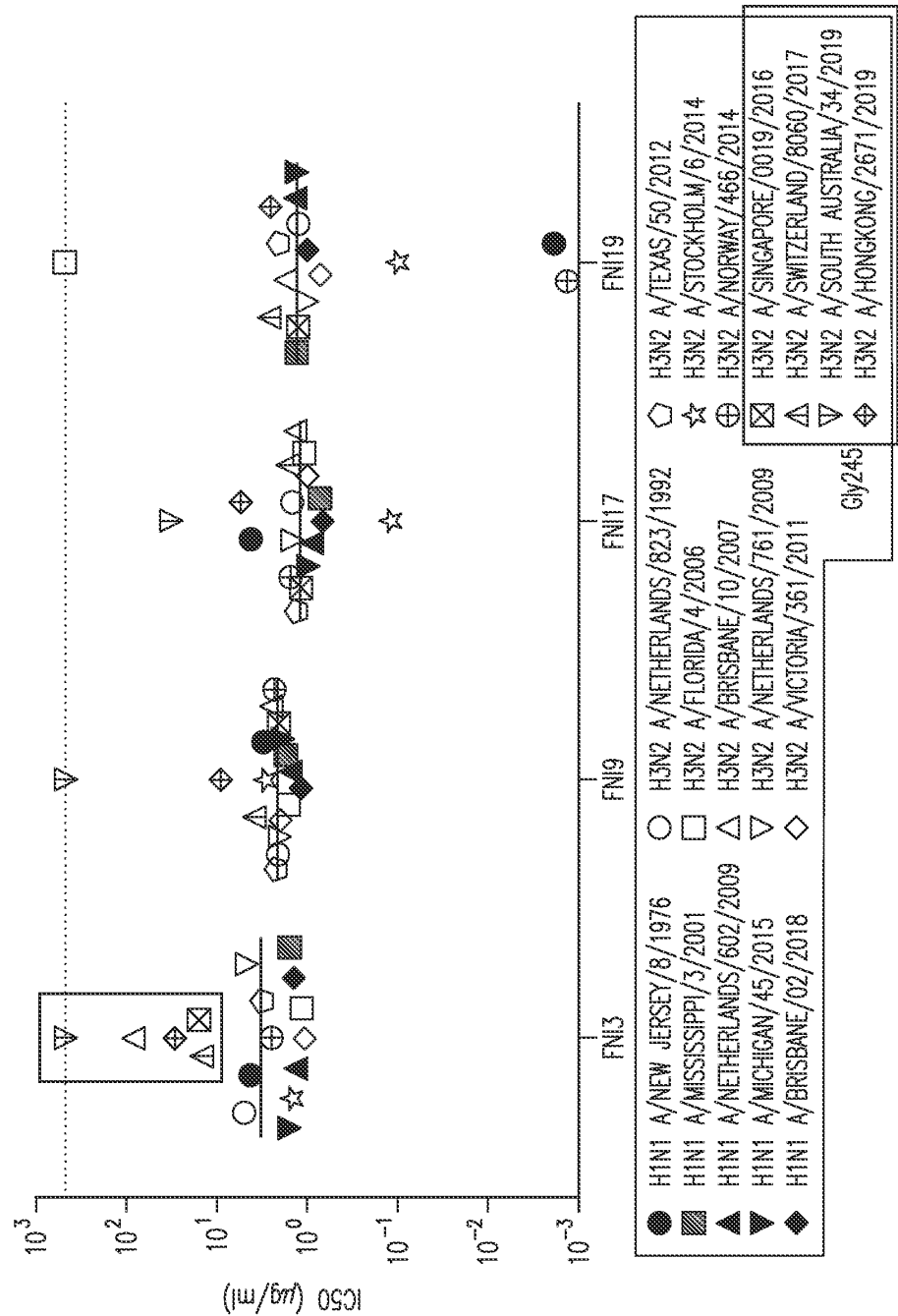


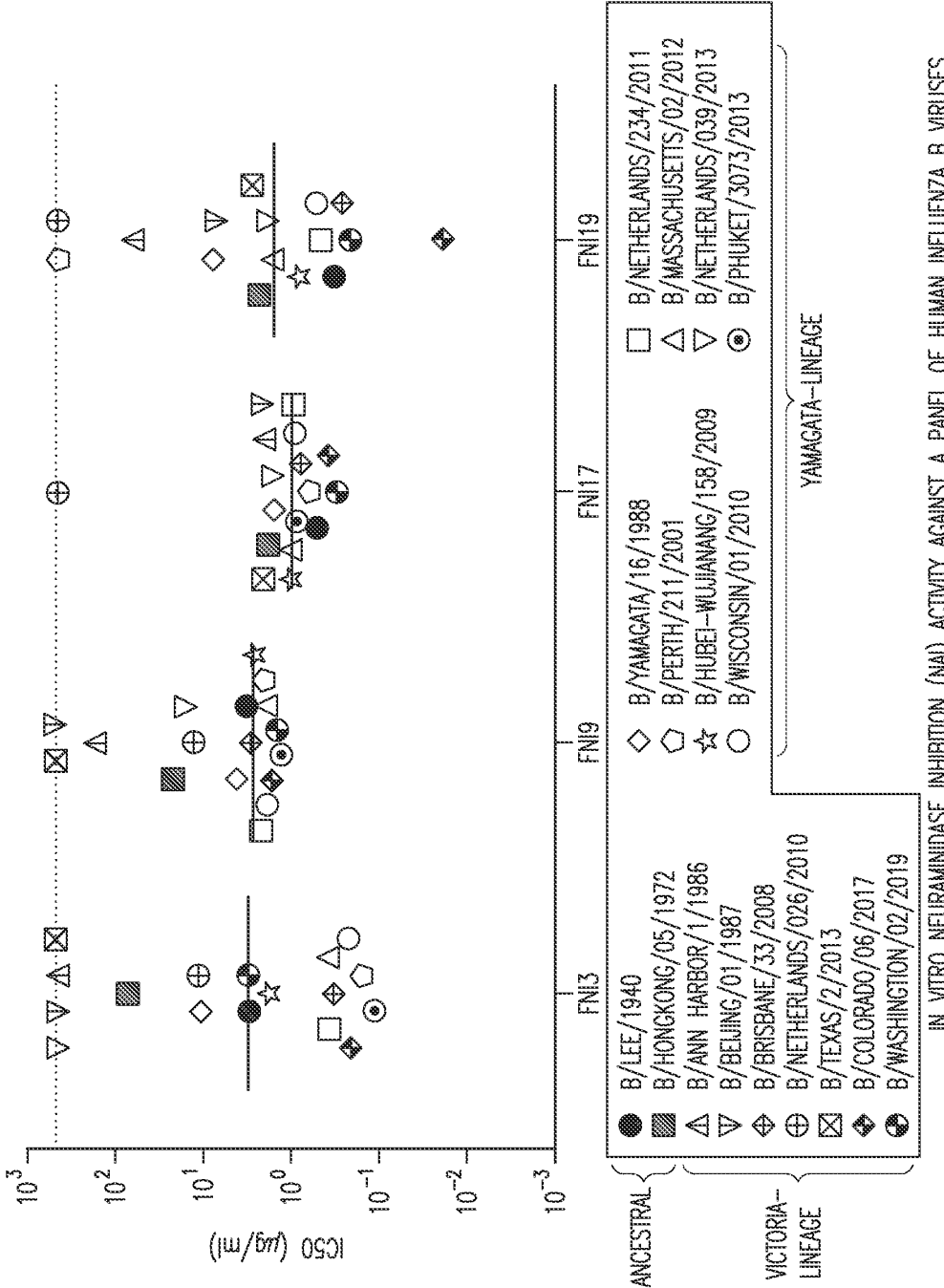
FIG. 37

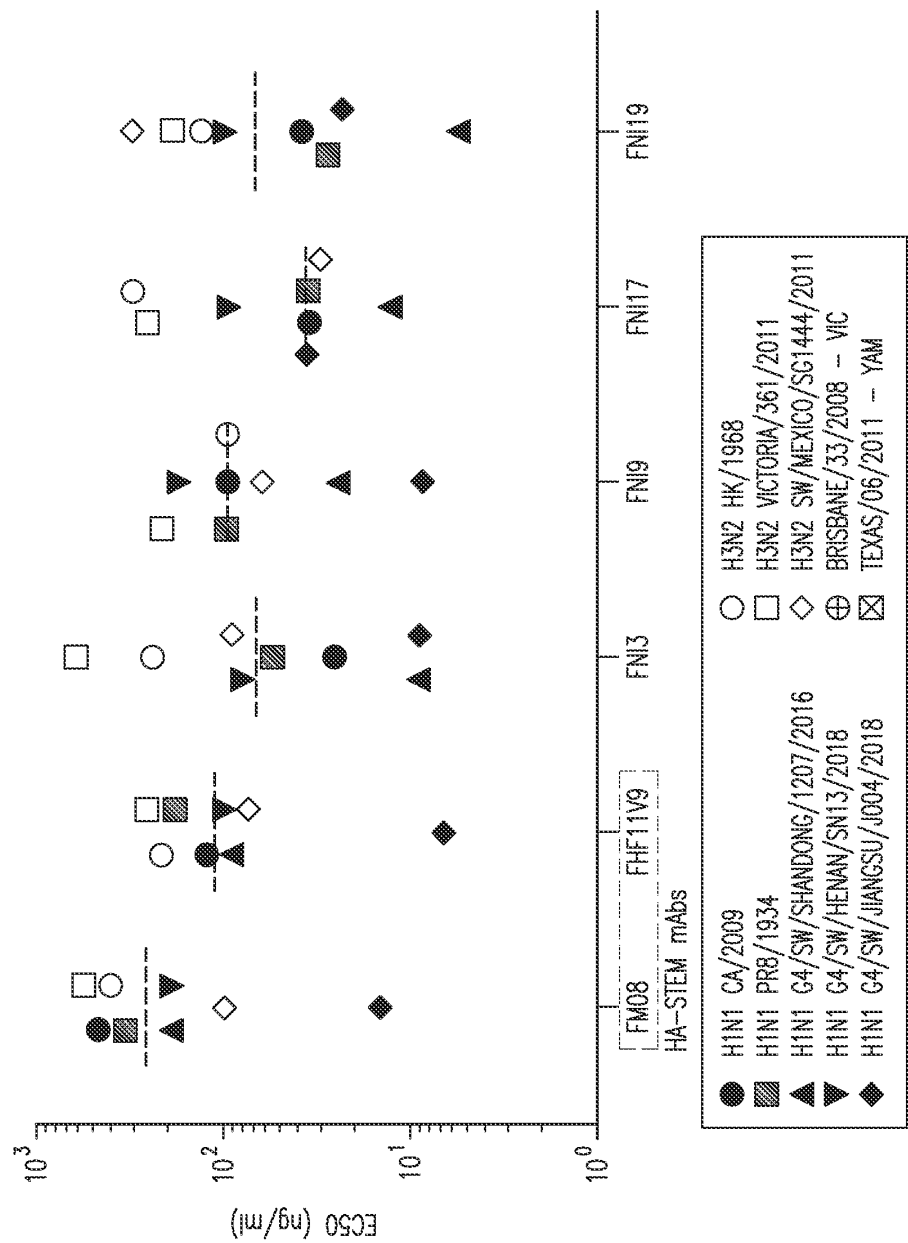


IN VITRO NEURAMINIDASE INHIBITION (NAI) ACTIVITY AGAINST A PANEL OF H1N1, H3N2 HUMAN INFLUENZA A VIRUSES

FIG. 38

80/249

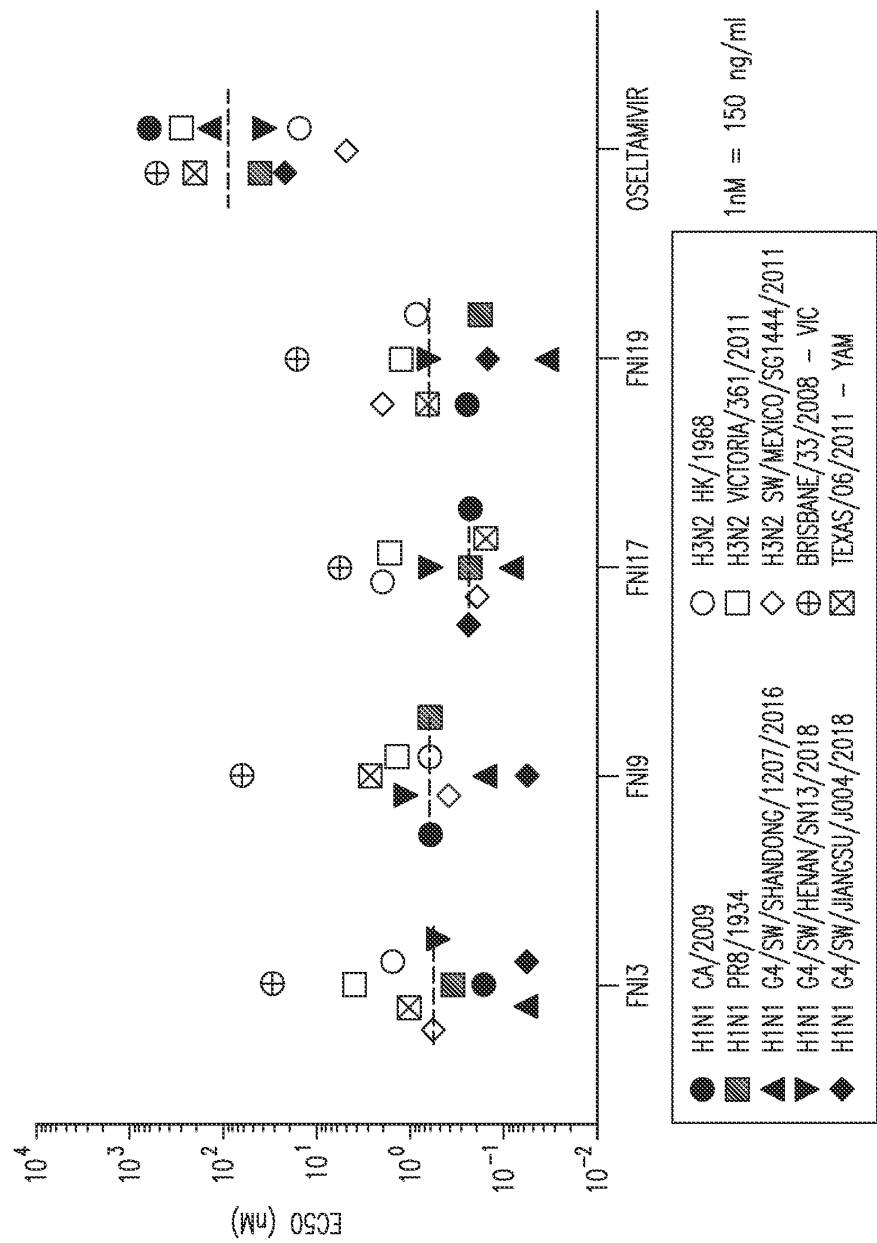




NEUTRALIZING ACTIVITY OF FNIS VS FM08_MLNS AGAINST H1N1 AND H3N2 VIRUSES MEASURED BY NP STAINING

FIG. 40

82/249



NEUTRALIZING ACTIVITY OF FNIS VS OSE AGAINST H1N1 AND H3N2 VIRUSES MEASURED BY NP STAINING

FIG. 41

83/249

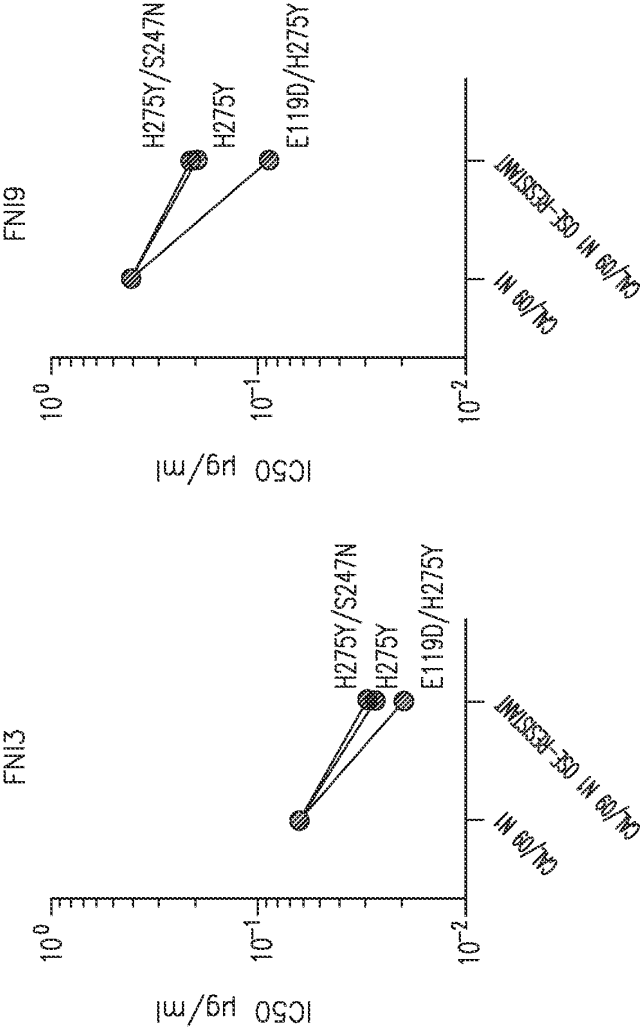


FIG. 42A

84/249

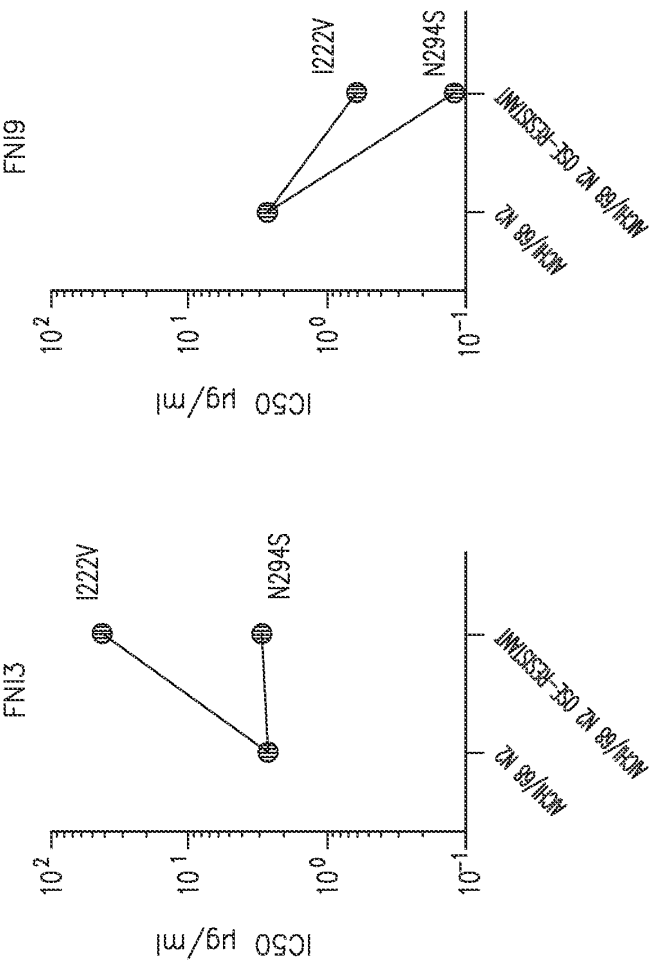


FIG. 42B

85/249

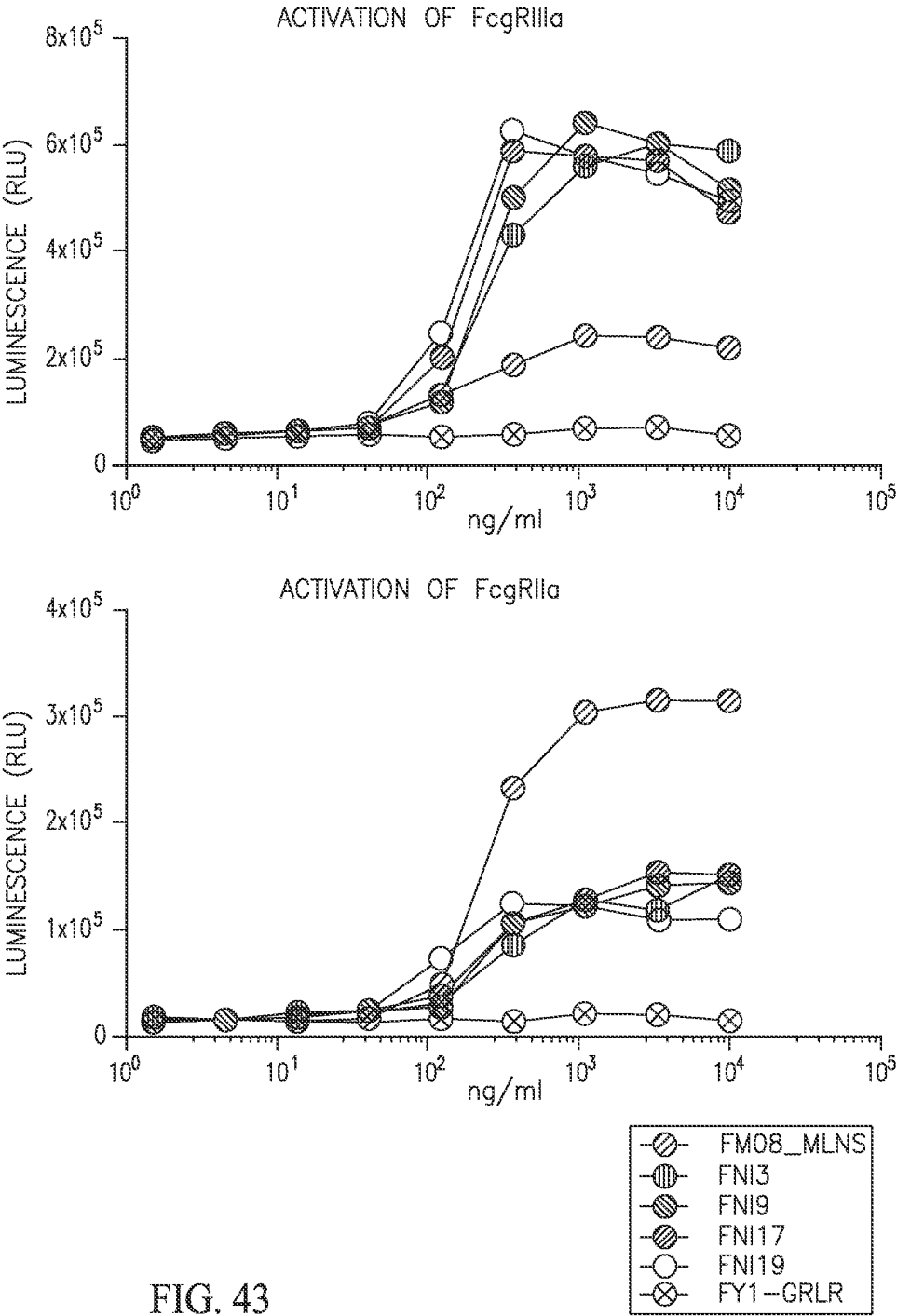


FIG. 43

86/249

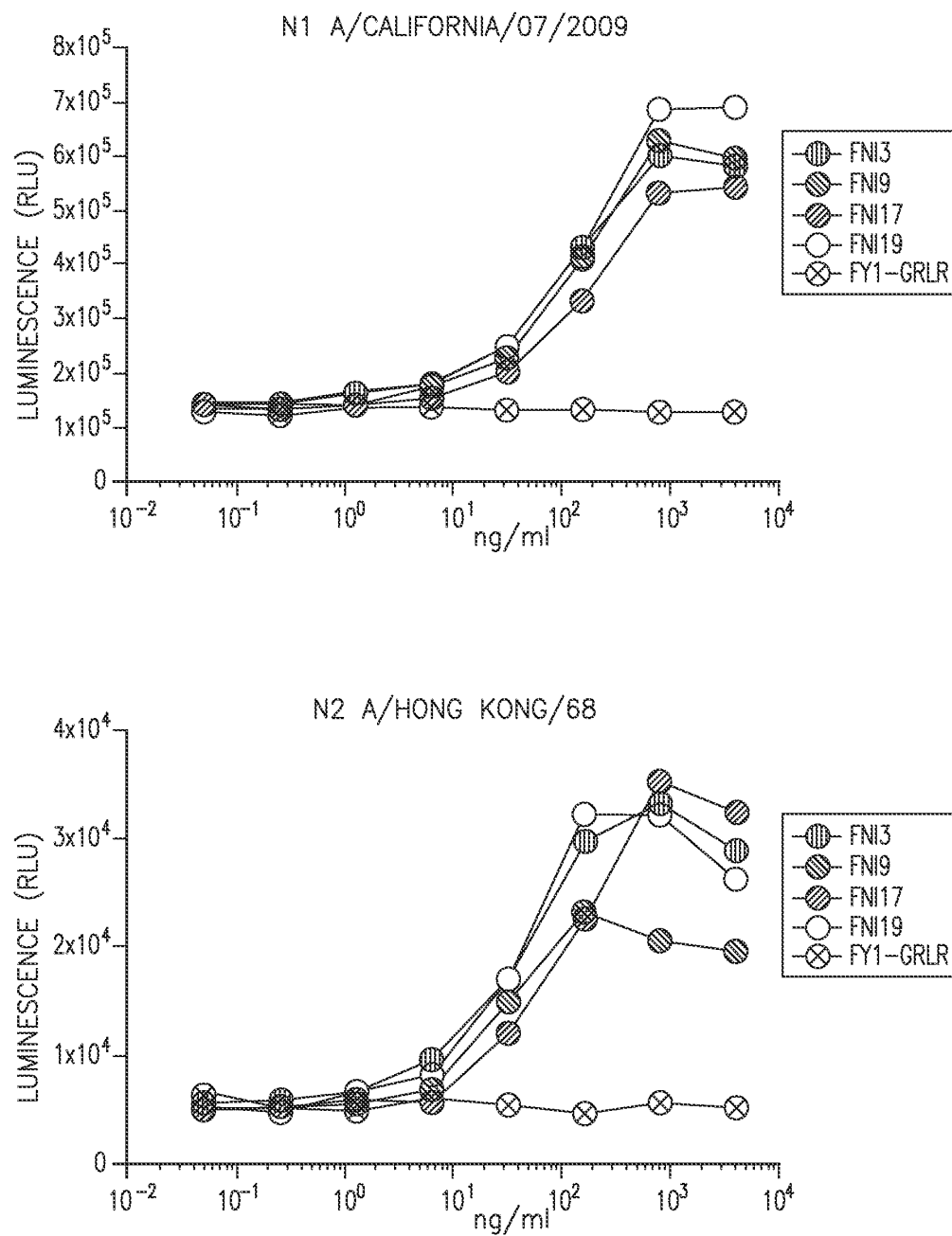


FIG. 44A

87/249

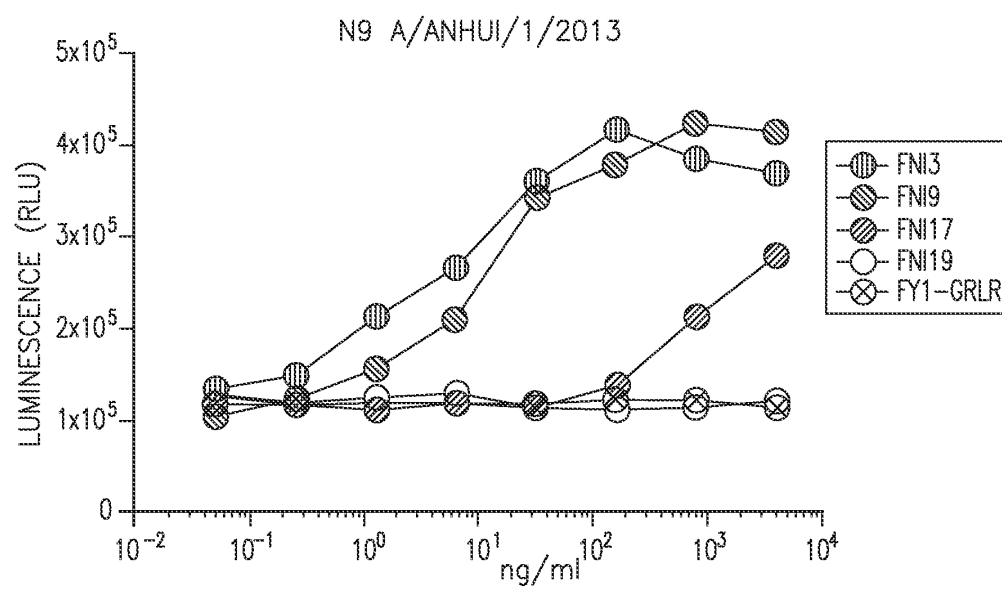


FIG. 44A(cont'd)

88/249

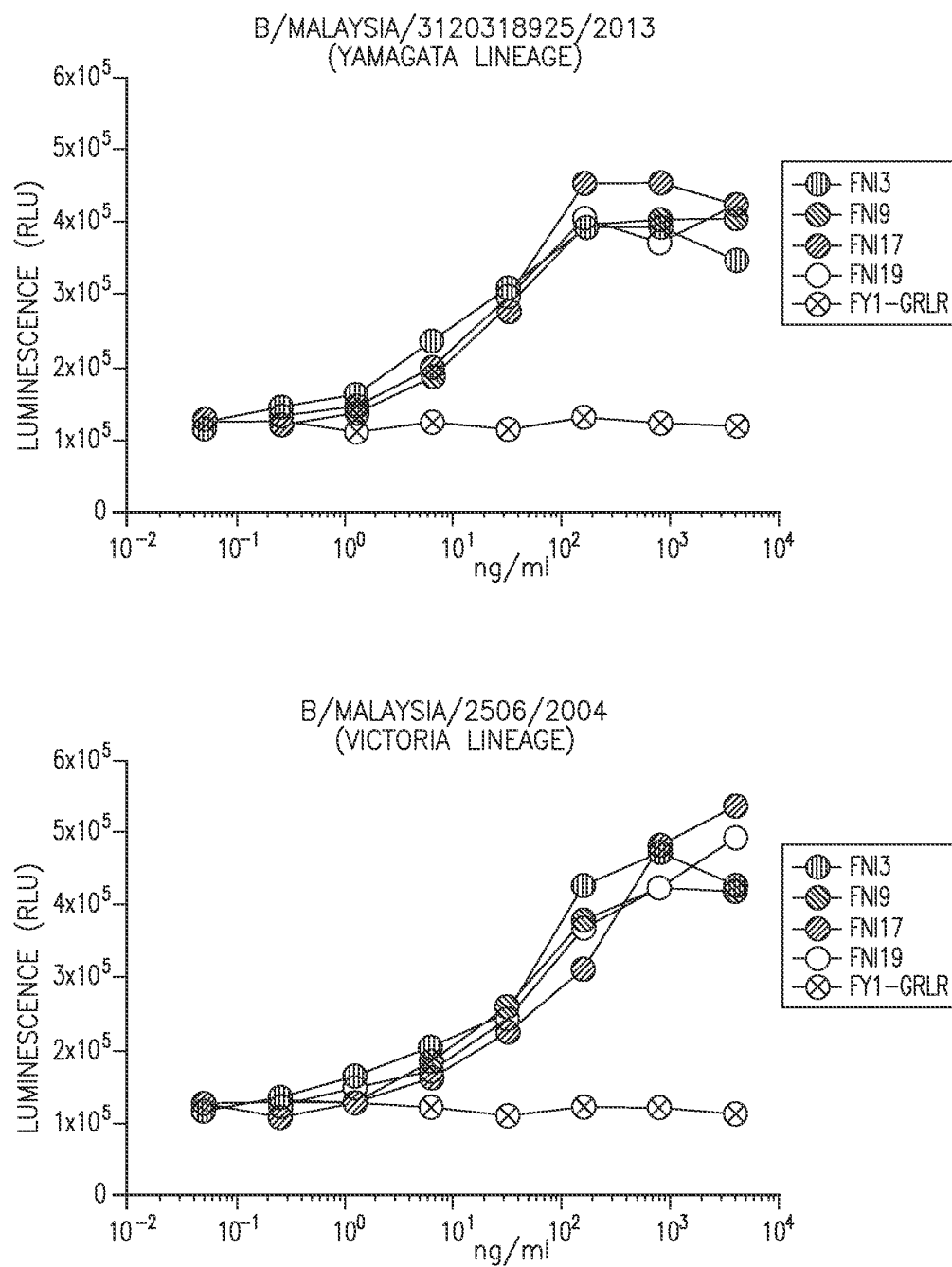


FIG. 44B

89/249

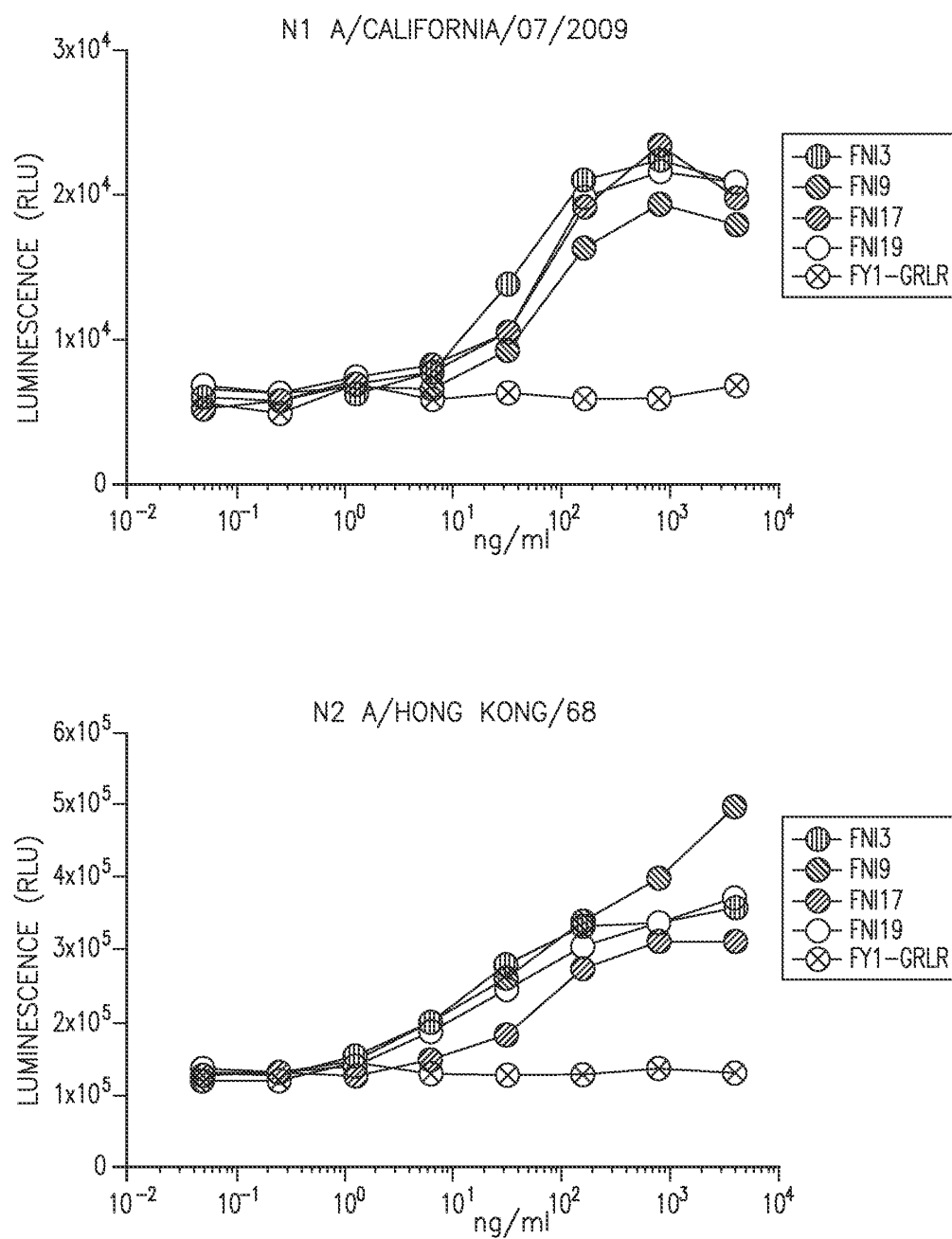


FIG. 45A

90/249

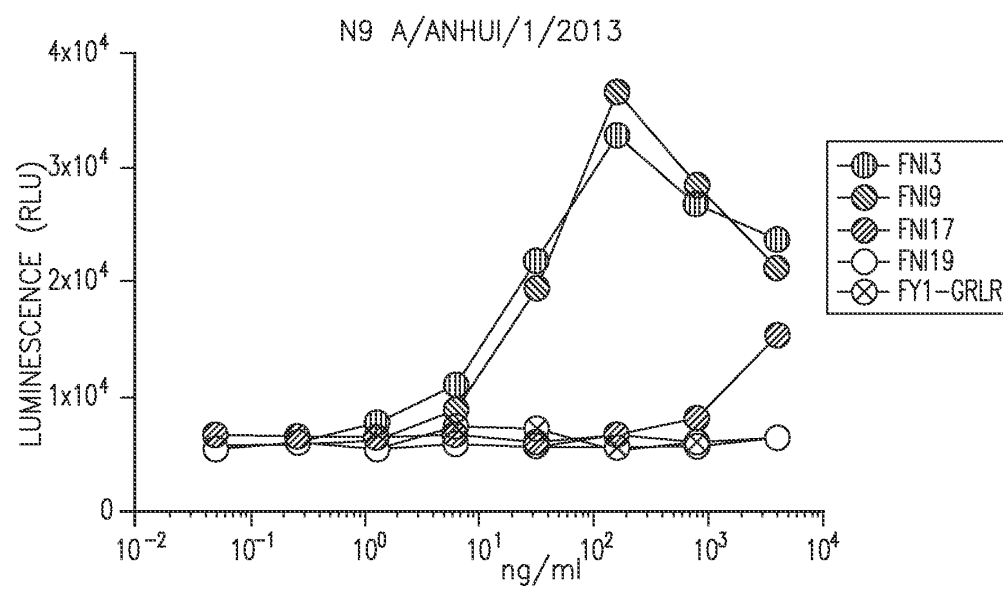


FIG. 45A(cont'd)

91/249

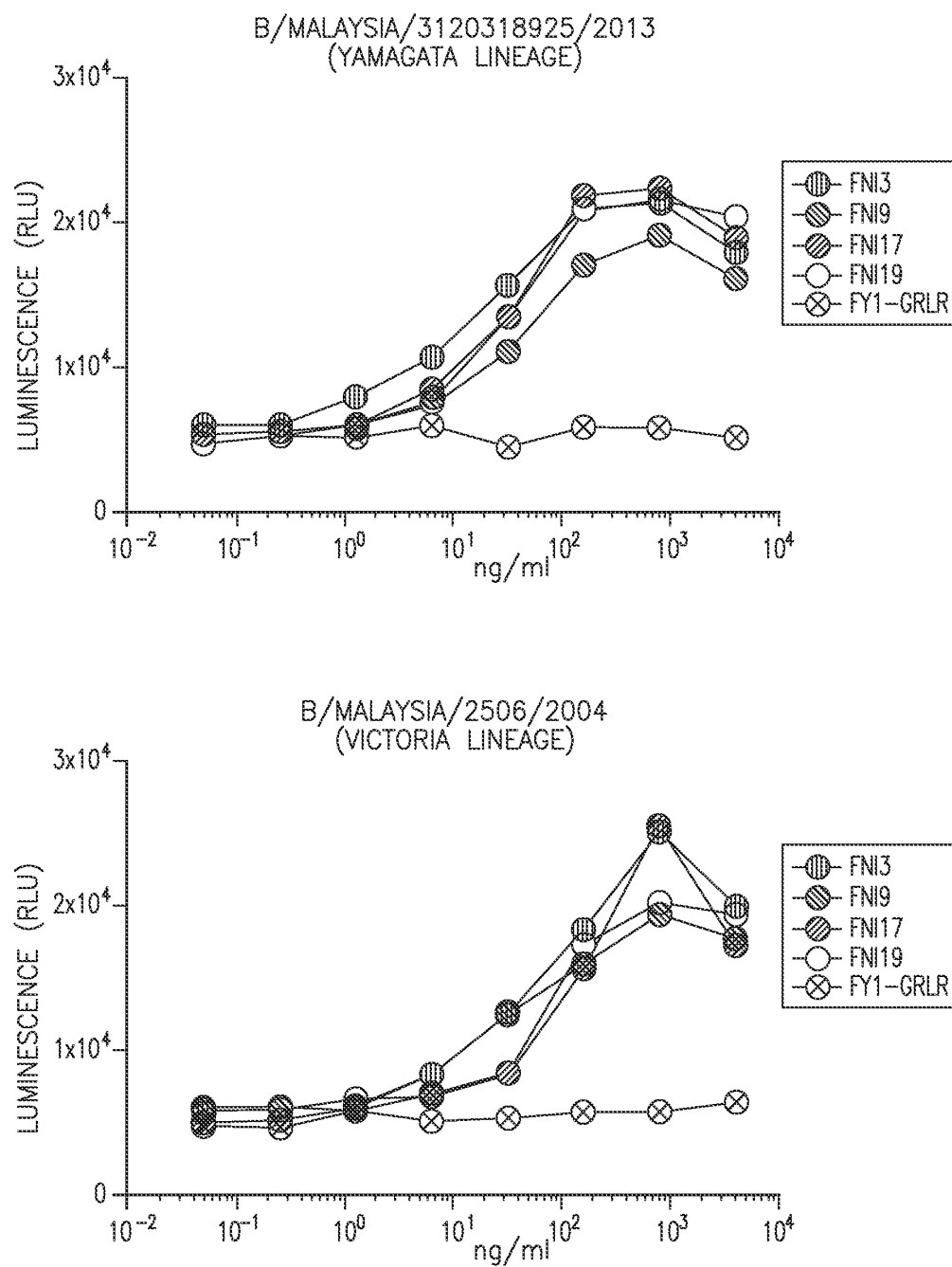


FIG. 45B

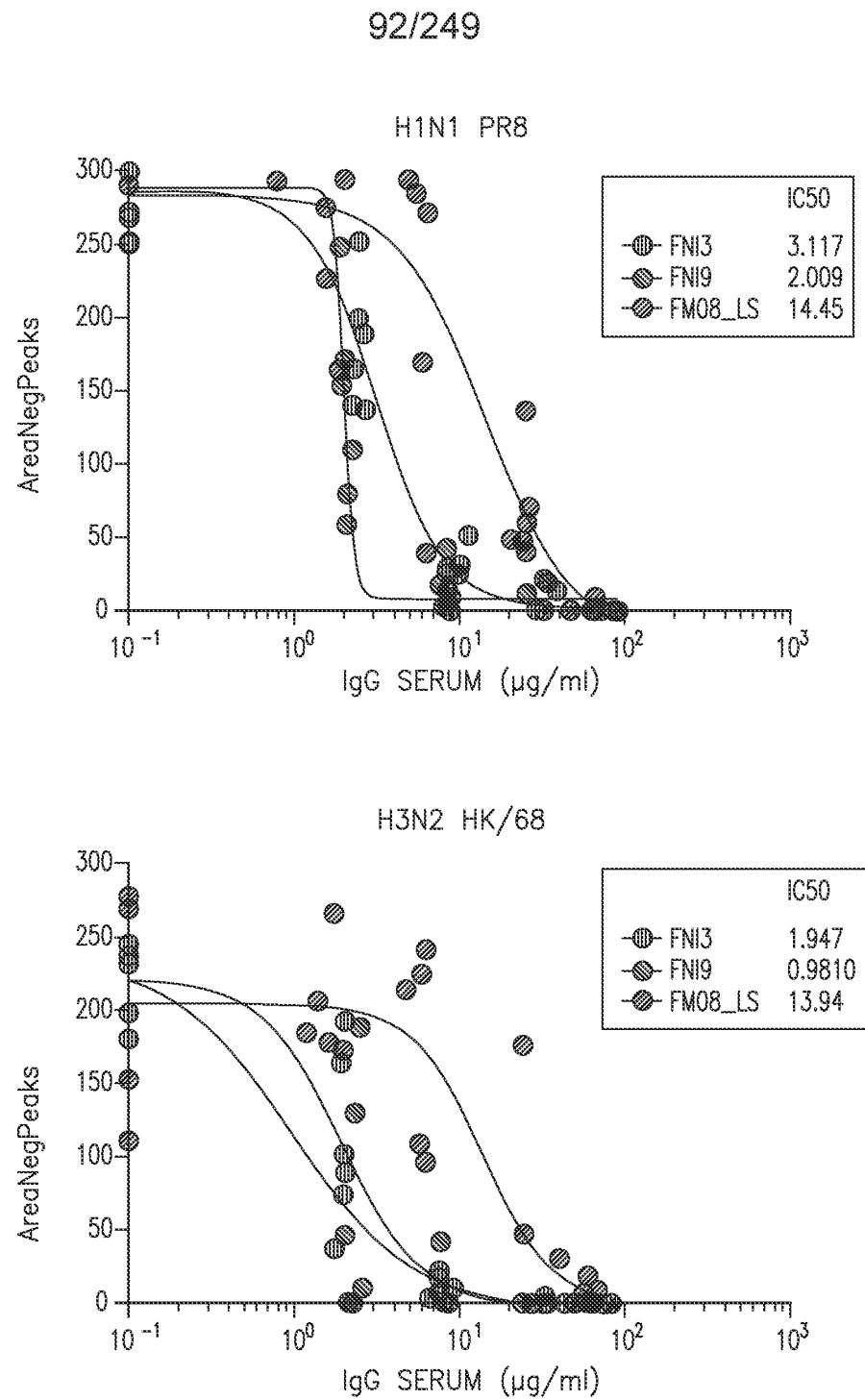


FIG. 46

GROUP	MOUSE STRAIN	TREATMENT	INFLUENZA INFECTION	ENDPOINTS
CONTROL	DBA2/J	VEHICLE CONTROL	A/VICTORIA/504/2000	BODYWEIGHT, MORTALITY
mAB-03	DBA2/J	6 mg/kg	A/VICTORIA/504/2000	
mAB-03	DBA2/J	2 mg/kg	A/VICTORIA/504/2000	
mAB-03	DBA2/J	0.6 mg/kg	A/VICTORIA/504/2000	
mAB-03	DBA2/J	0.2 mg/kg	A/VICTORIA/504/2000	
mAB-09	DBA2/J	6 mg/kg	A/VICTORIA/504/2000	
mAB-09	DBA2/J	2 mg/kg	A/VICTORIA/504/2000	
mAB-09	DBA2/J	0.6 mg/kg	A/VICTORIA/504/2000	
mAB-09	DBA2/J	0.2 mg/kg	A/VICTORIA/504/2000	
54 MICE TOTAL				
CONTROL	DBA2/J	VEHICLE CONTROL	B/BRISBANE/60/2008	BODYWEIGHT, MORTALITY
mAB-03	DBA2/J	6 mg/kg	B/BRISBANE/60/2008	
mAB-03	DBA2/J	2 mg/kg	B/BRISBANE/60/2008	
mAB-03	DBA2/J	0.6 mg/kg	B/BRISBANE/60/2008	
mAB-03	DBA2/J	0.2 mg/kg	B/BRISBANE/60/2008	
mAB-09	DBA2/J	6 mg/kg	B/BRISBANE/60/2008	
mAB-09	DBA2/J	2 mg/kg	B/BRISBANE/60/2008	
mAB-09	DBA2/J	0.6 mg/kg	B/BRISBANE/60/2008	
mAB-09	DBA2/J	0.2 mg/kg	B/BRISBANE/60/2008	
54 MICE TOTAL				

mAB-03 = FNI3-r1gG-LG
mAB-09 = FNI9-r1gG-LG

FIG. 47A

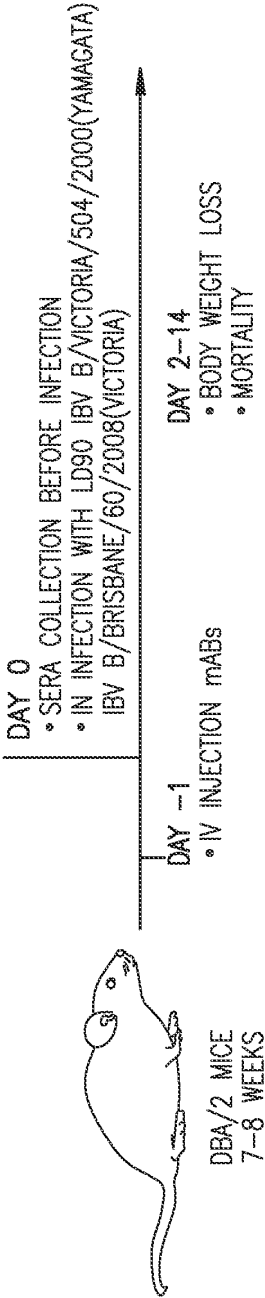


FIG. 47B

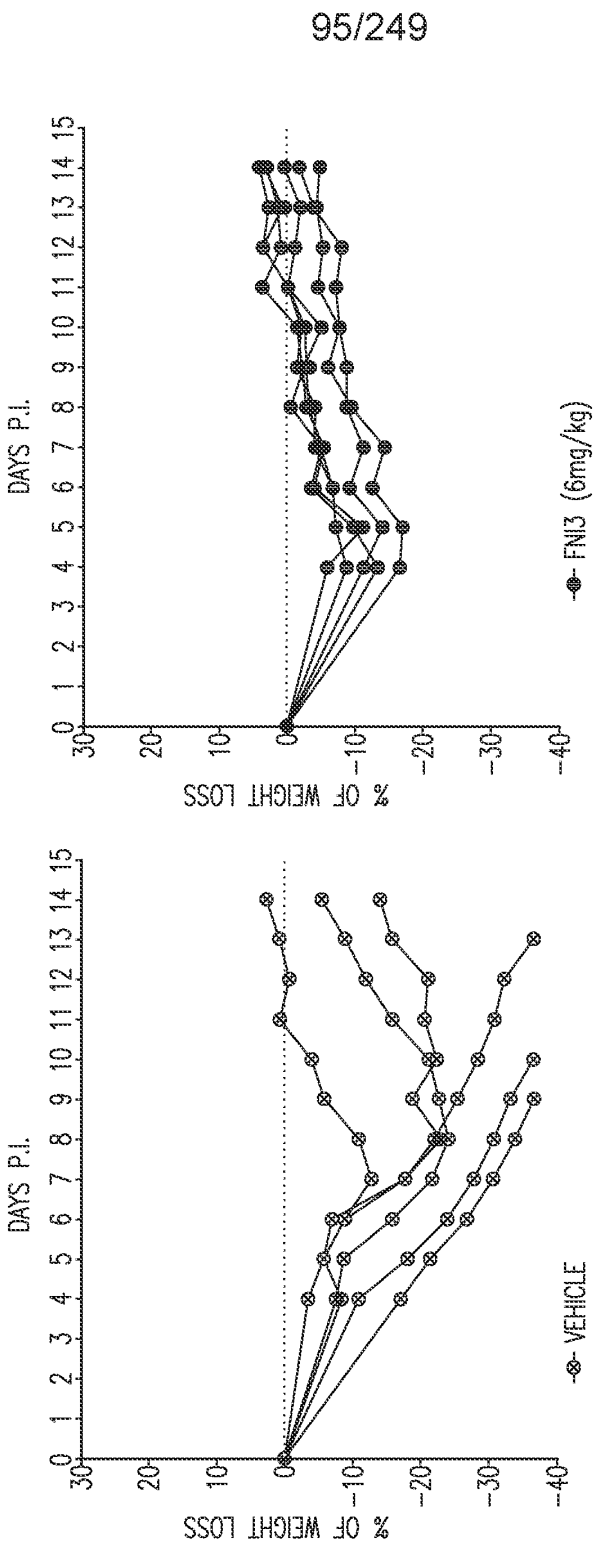


FIG. 48A

96/249

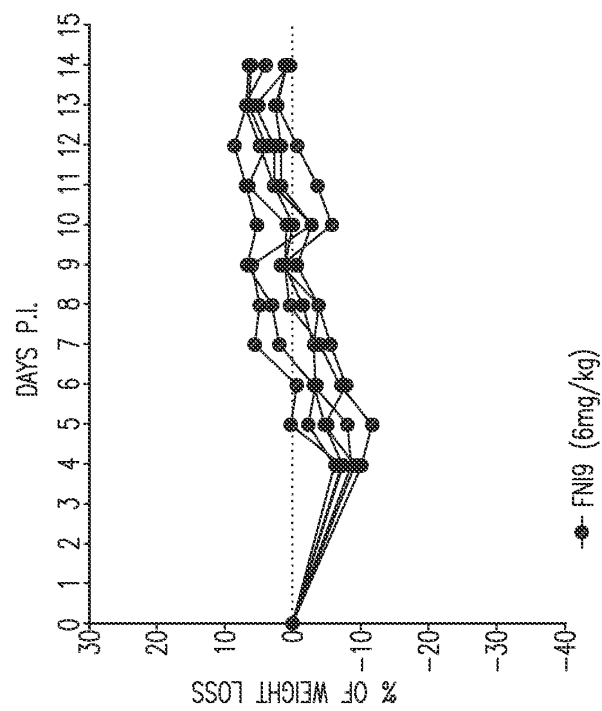


FIG. 48A(cont'd)

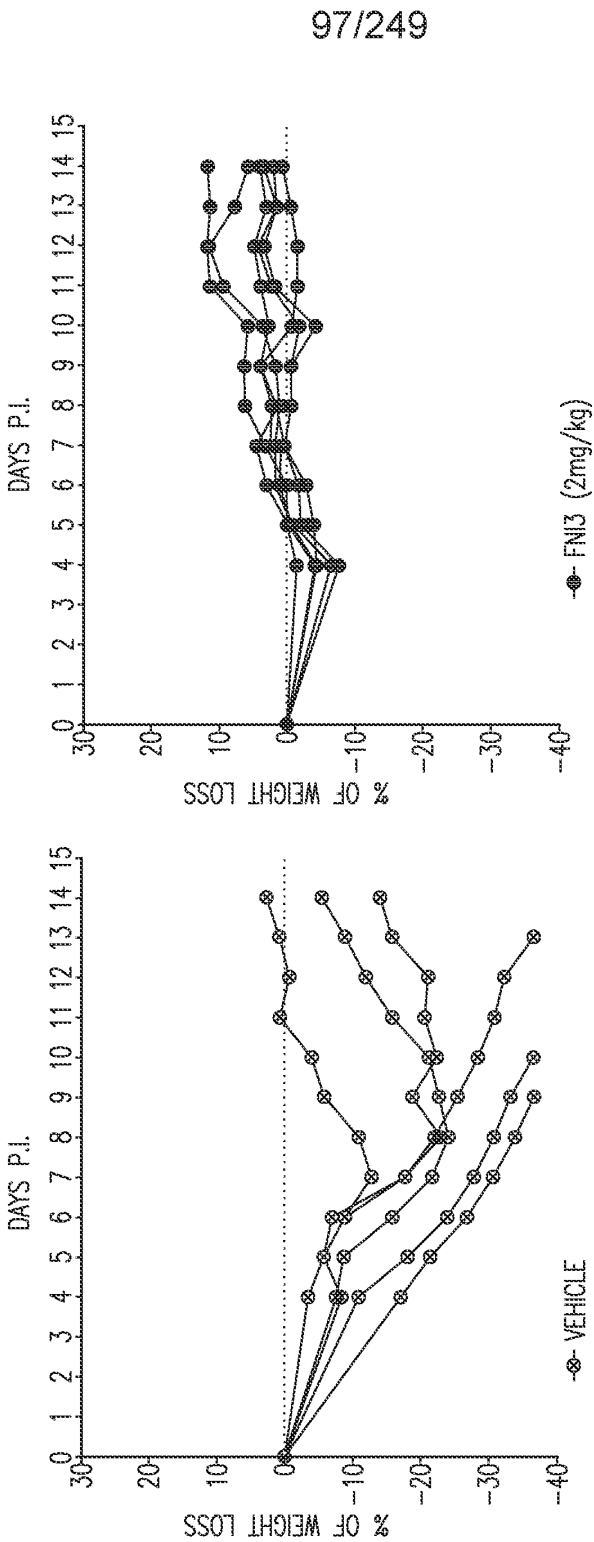


FIG. 48B

98/249

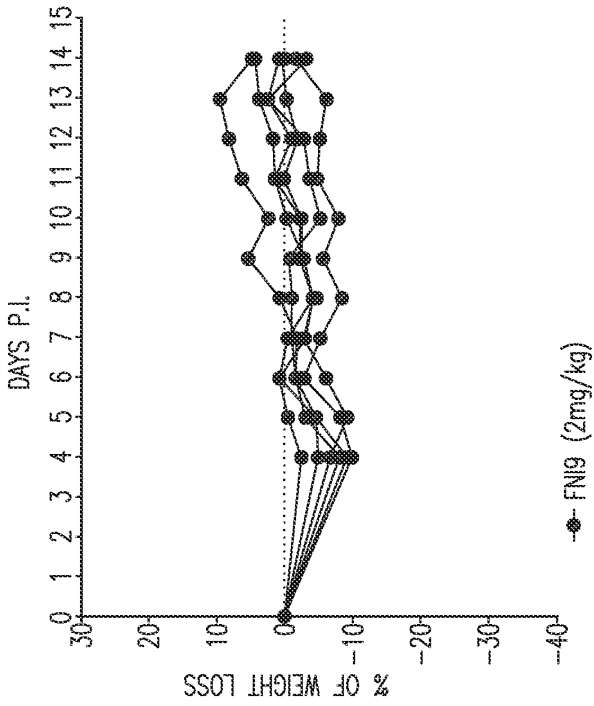


FIG. 48B(cont'd)

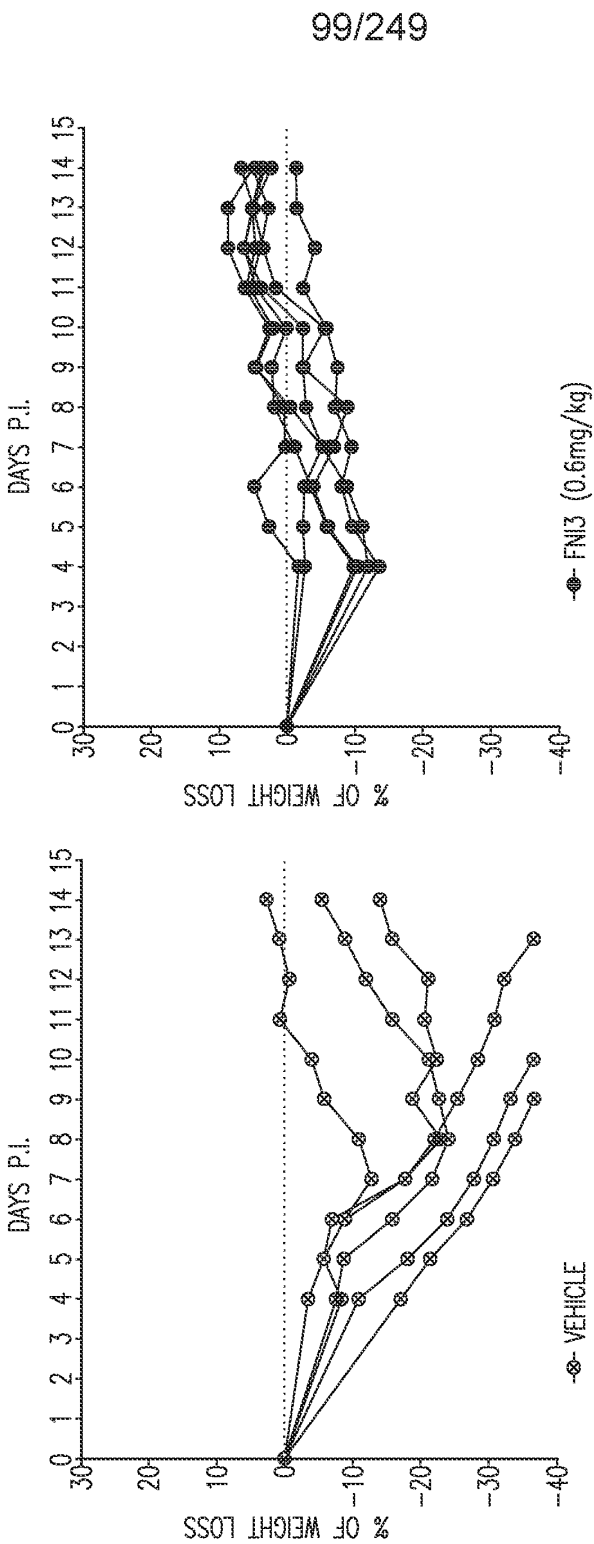


FIG. 48C

100/249

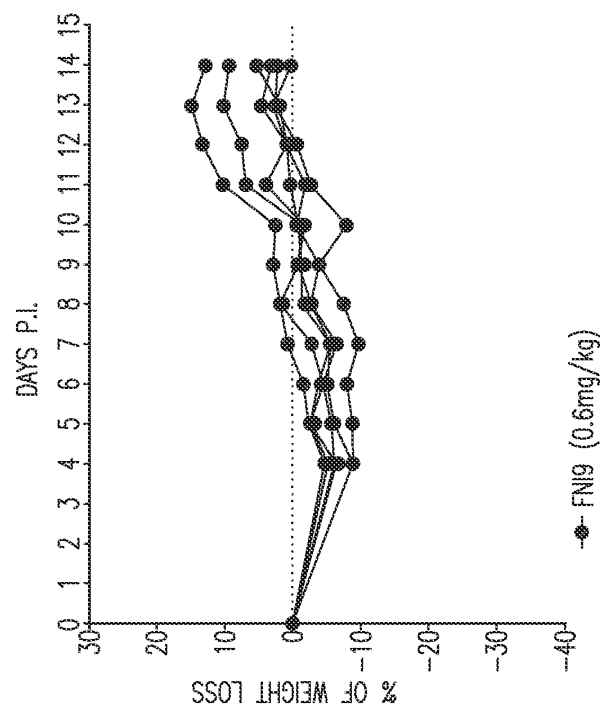


FIG. 48C(cont'd)

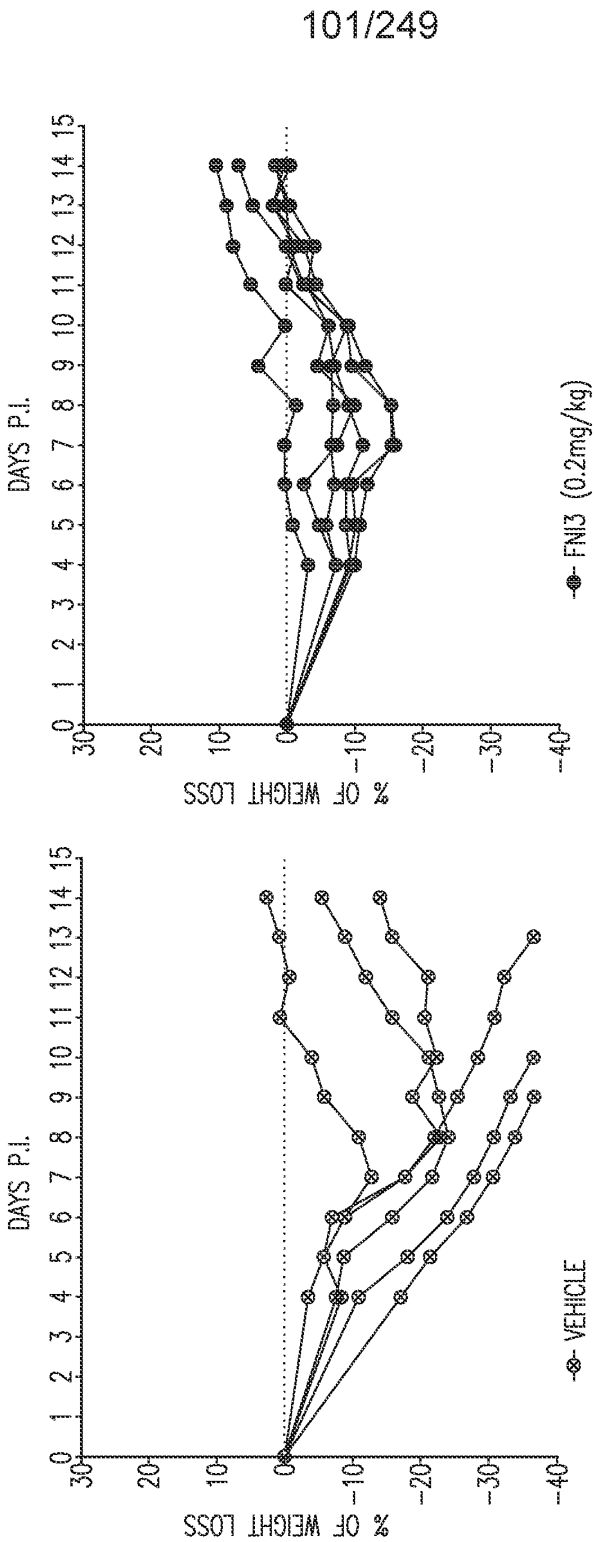


FIG. 48D

102/249

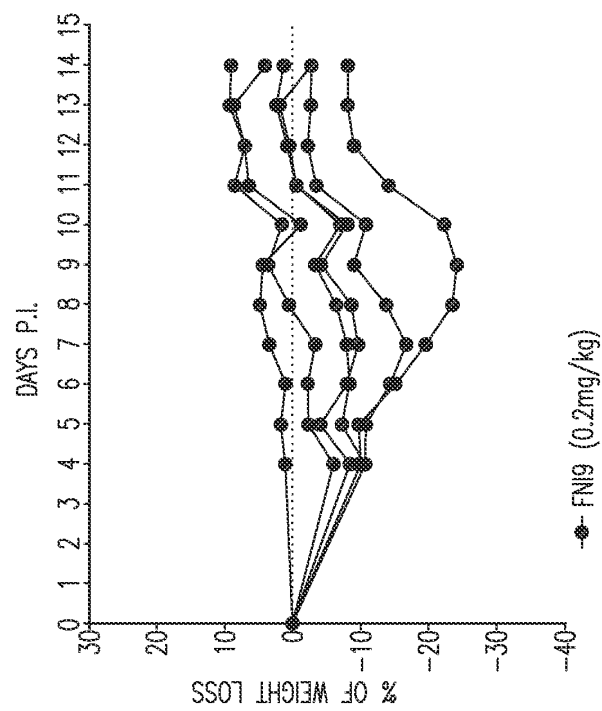


FIG. 48D(cont'd)

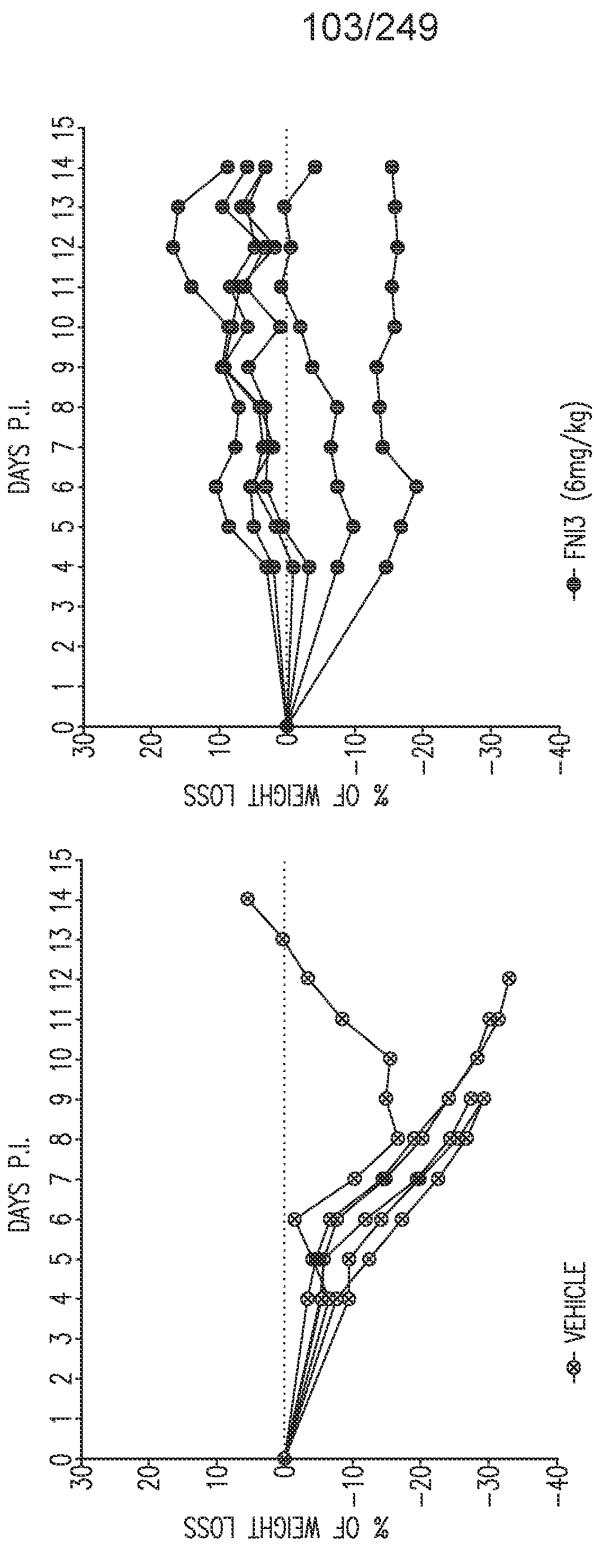


FIG. 49A

104/249

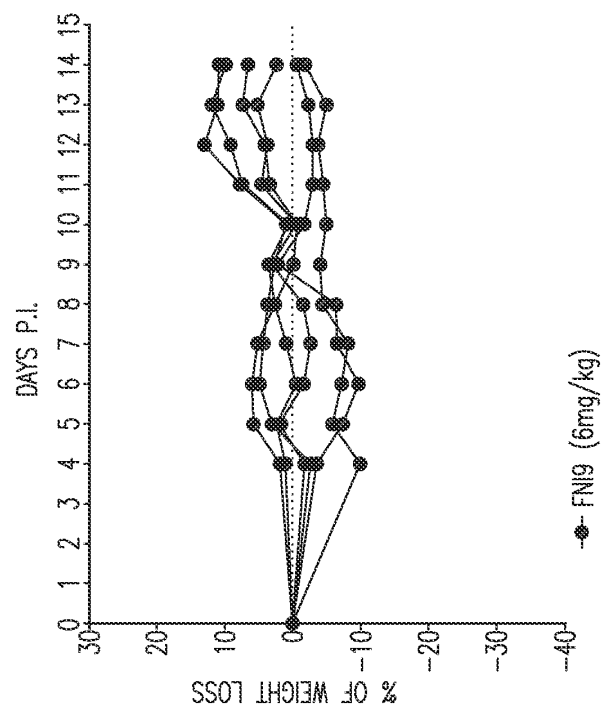


FIG. 49A(cont'd)

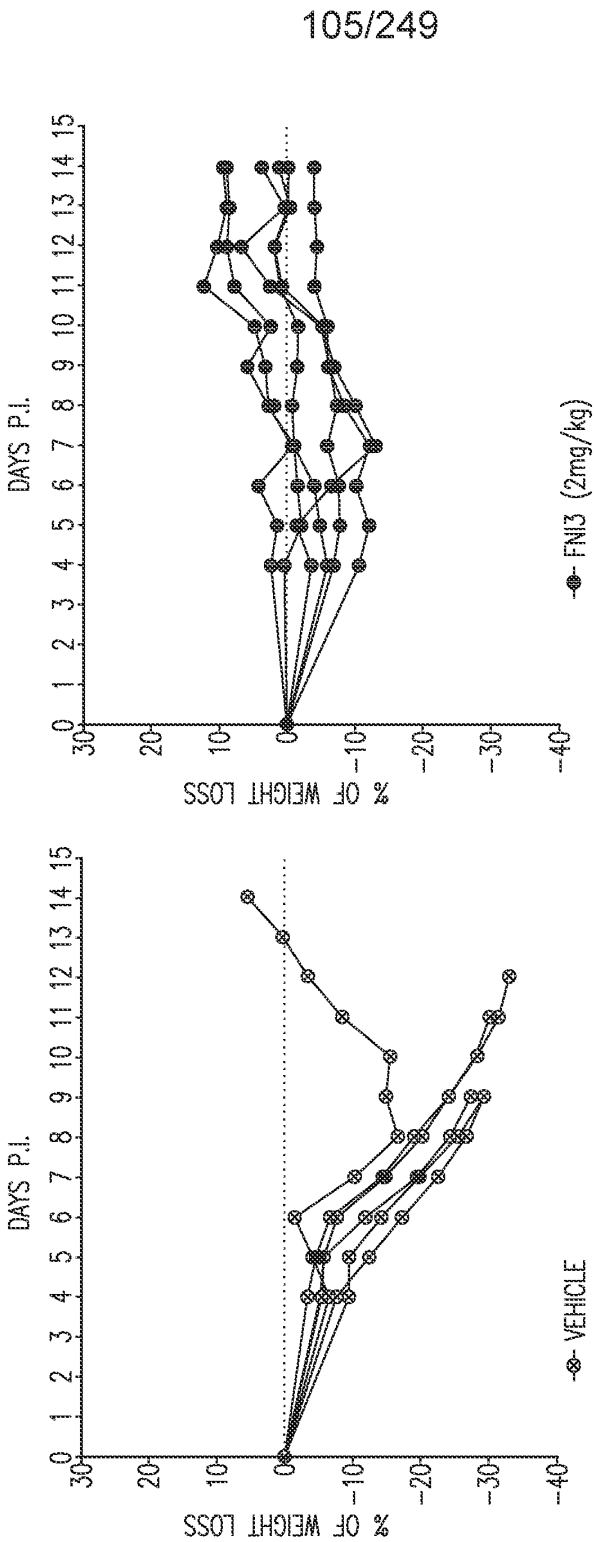


FIG. 49B

106/249

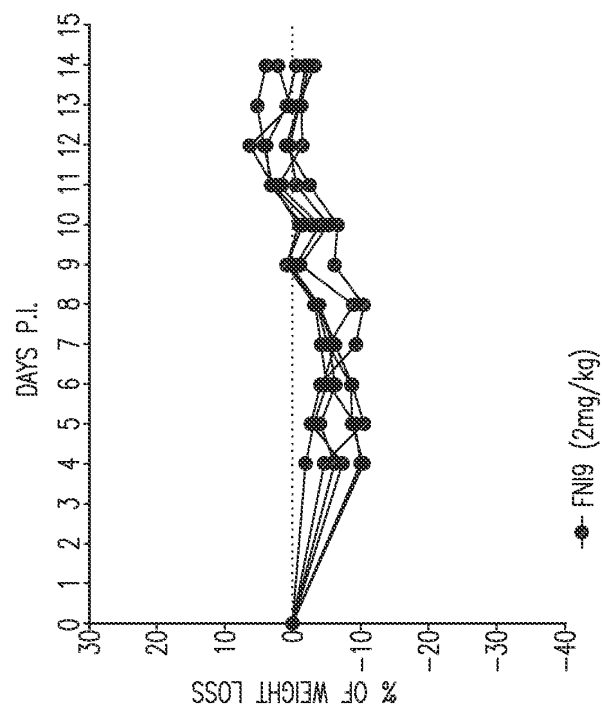


FIG. 49B(cont'd)

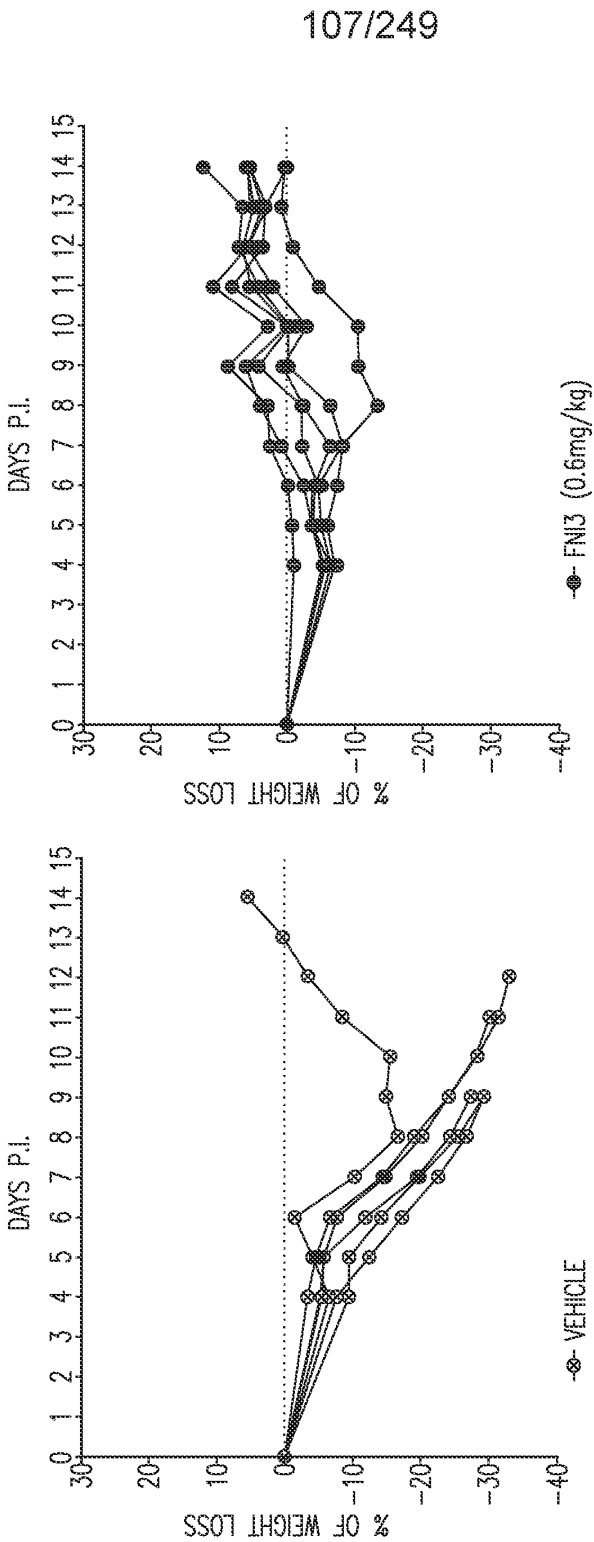


FIG. 49C

108/249

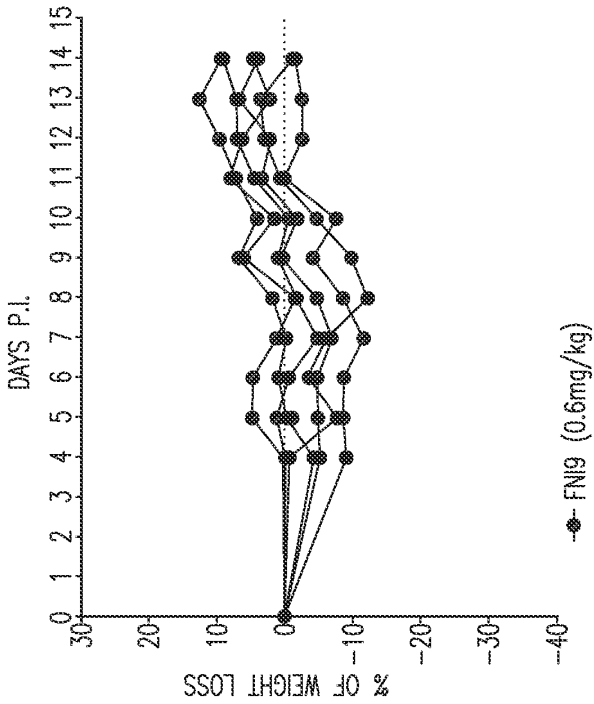


FIG. 49C(cont'd)

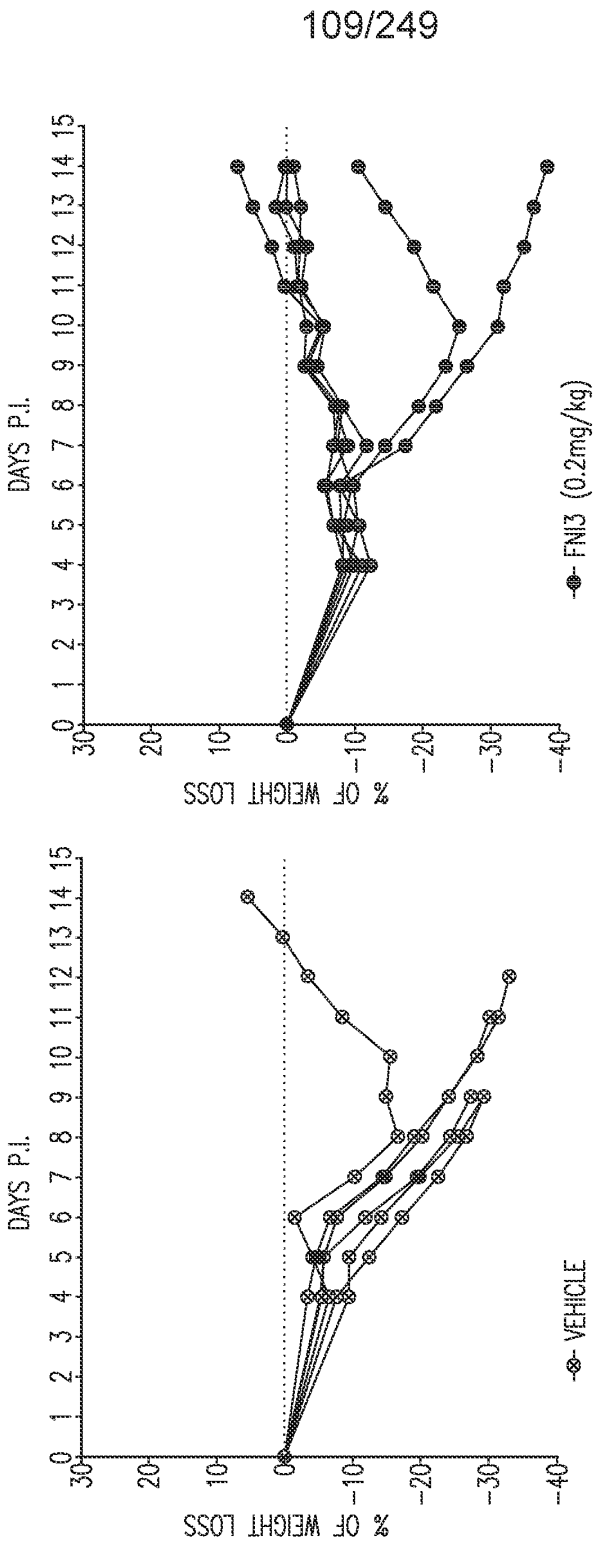


FIG. 49D

111/249

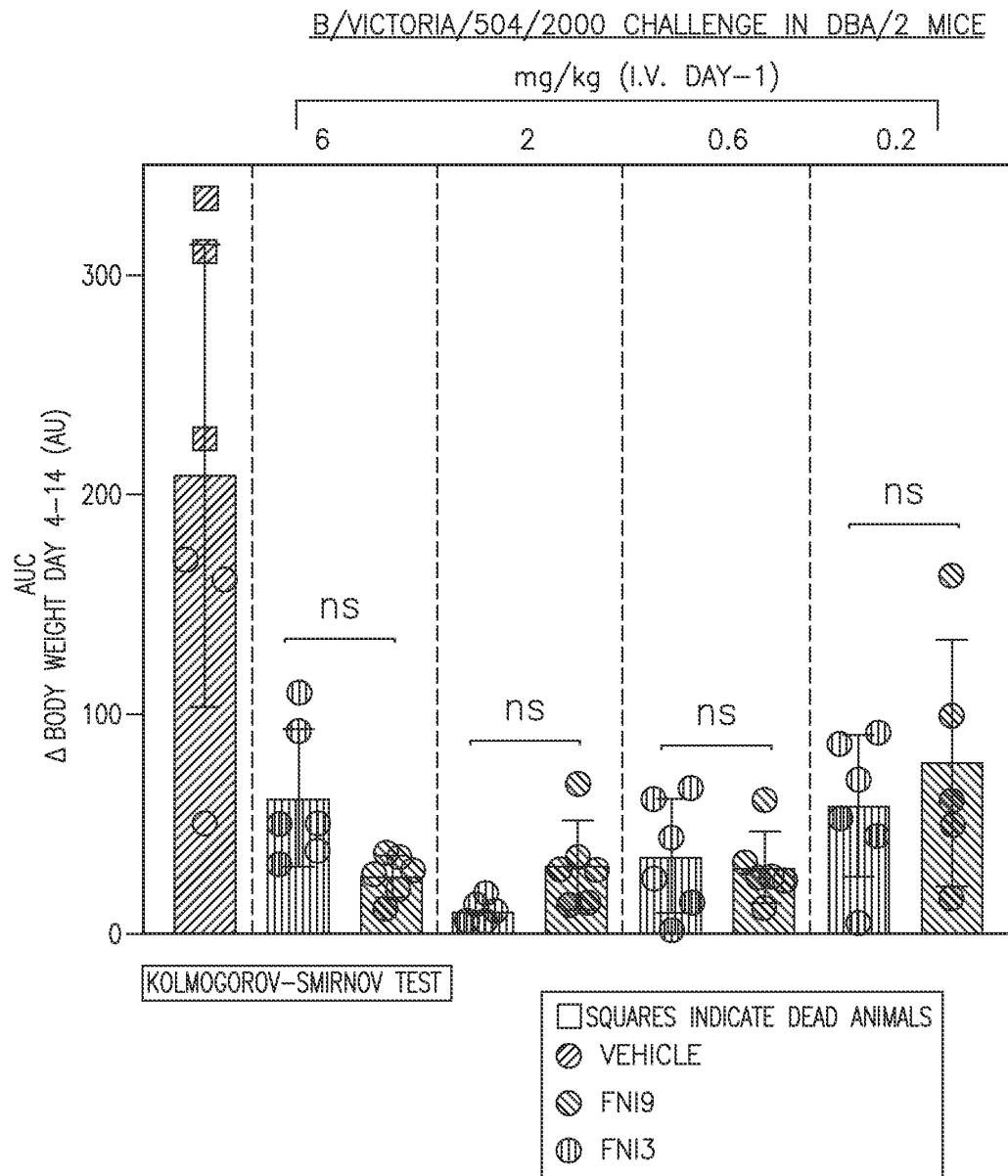


FIG. 50A

112/249

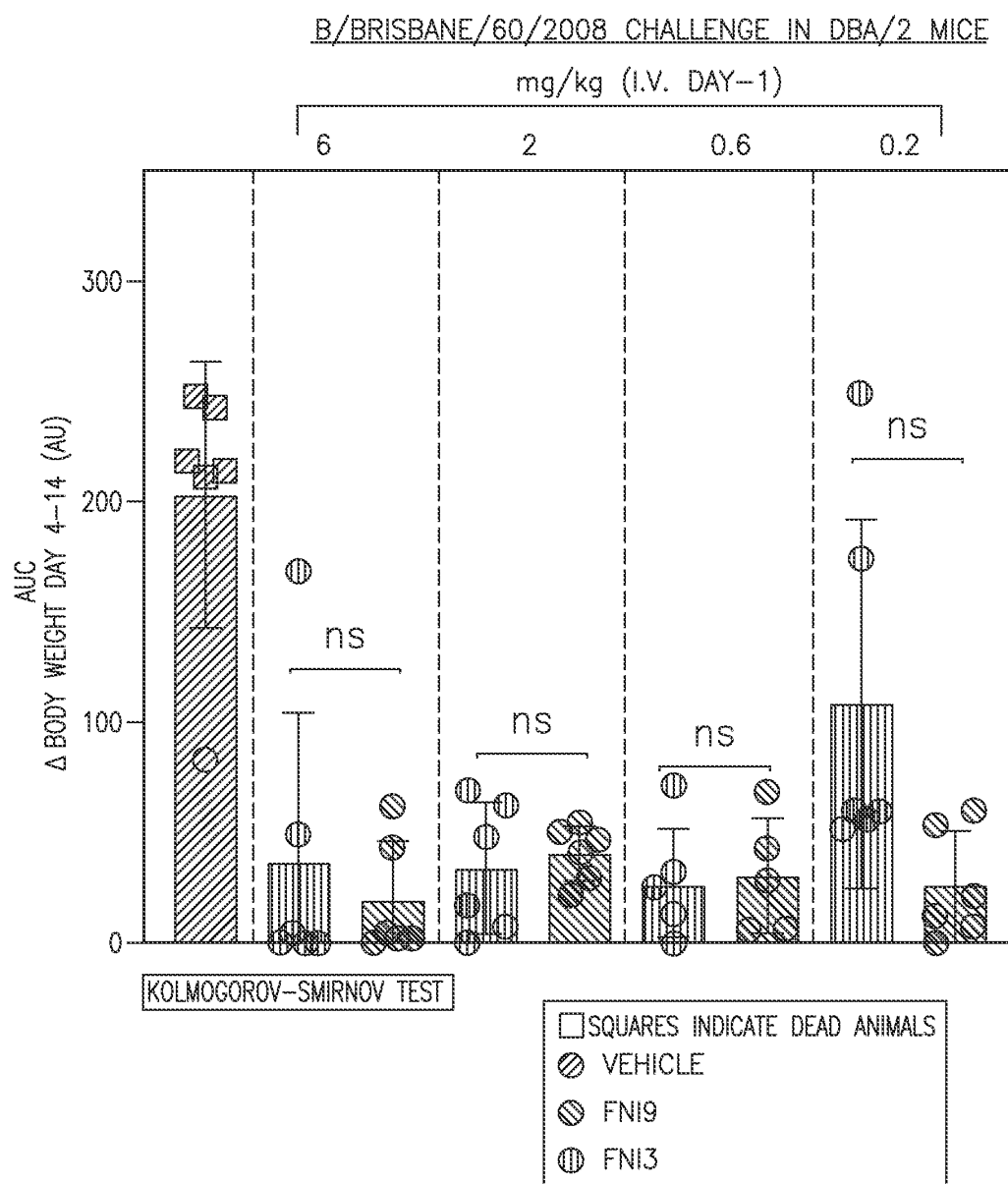


FIG. 50B

113/249

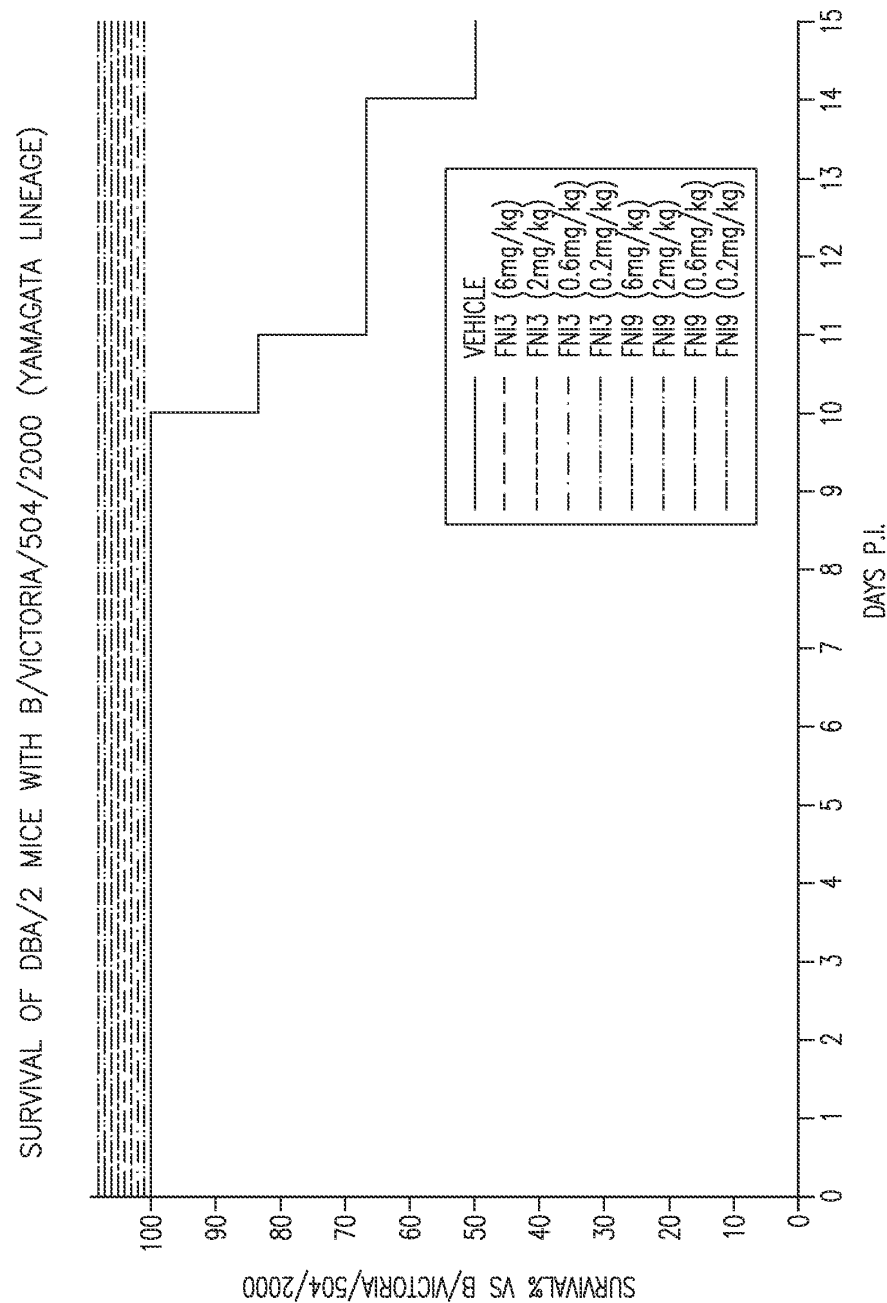


FIG. 51A

114/249

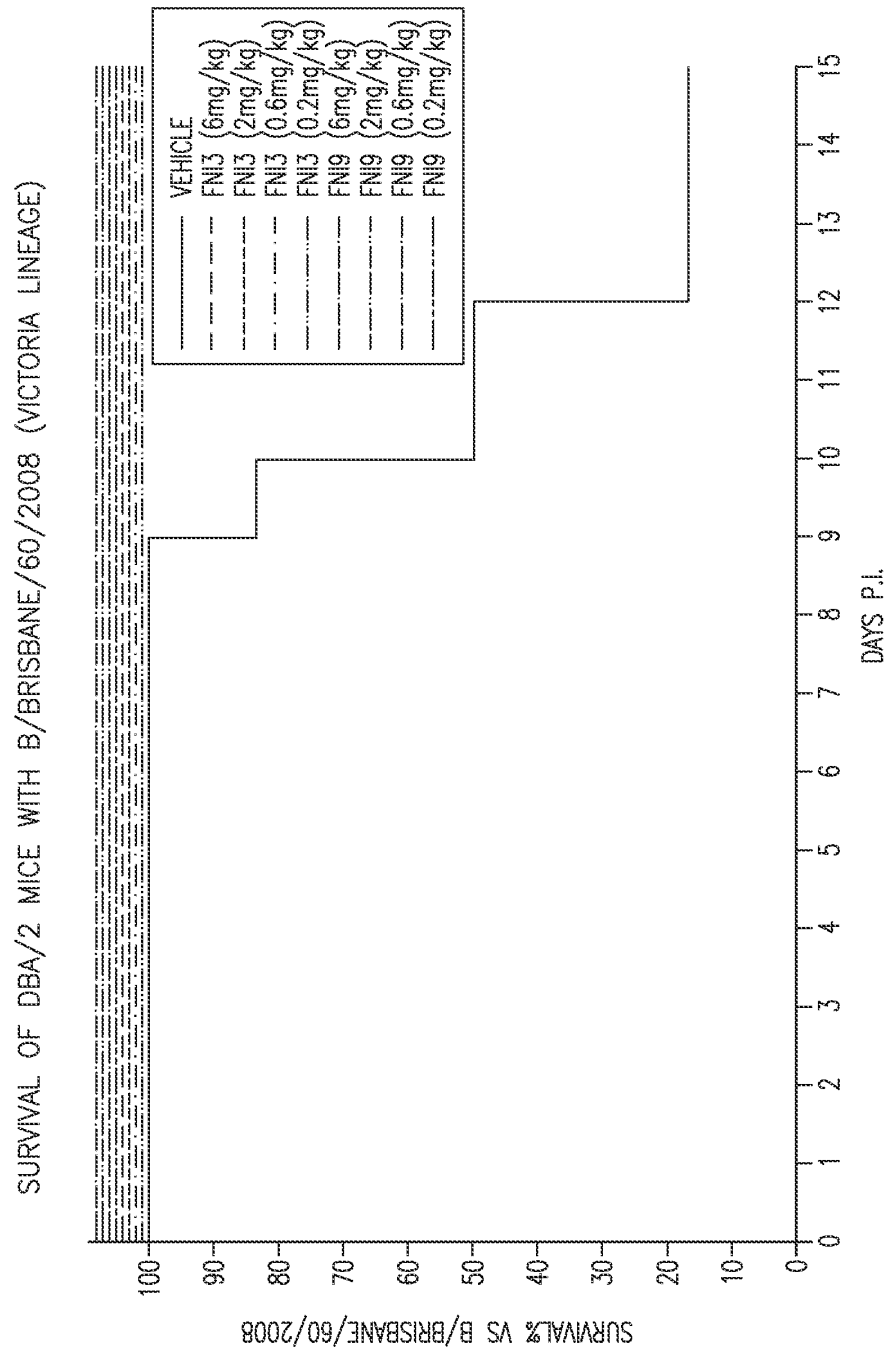


FIG. 51B

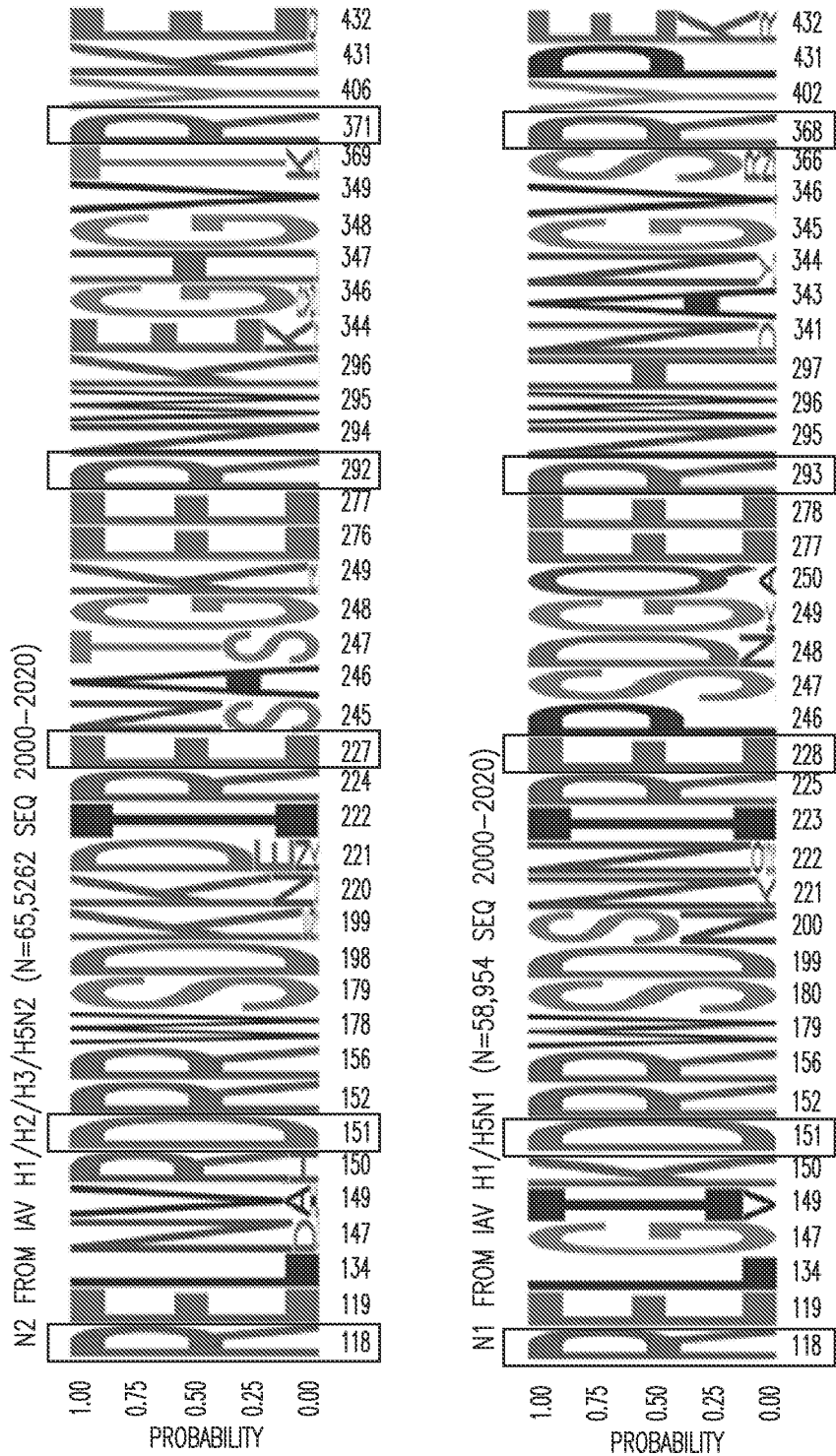


FIG. 52A

116/249

MAJOR INTERACTING RESIDUES ON THE N2	CORRESPONDING INTERACTING RESIDUES ON FN13 HCDR3
R118	D107
D151	R106
E227	R106
R292	D107
R371	D107

THE ENZYME ACTIVE SITE:

8 FUNCTIONAL AMINO ACIDS (R118, D151,
R152, R224, E276, R292, R371, AND Y406—
N2 NUMBERING THROUGHOUT) THAT FORM THE
CATALYTIC CORE AND DIRECTLY CONTACT THE
SIALIC ACID

11 STRUCTURAL AMINO ACIDS (E119, R156, W178,
S179, D/N198, I222, E227, H274, E277, D293, AND
E425) THAT FORM THE ACTIVE SITE FRAMEWORK

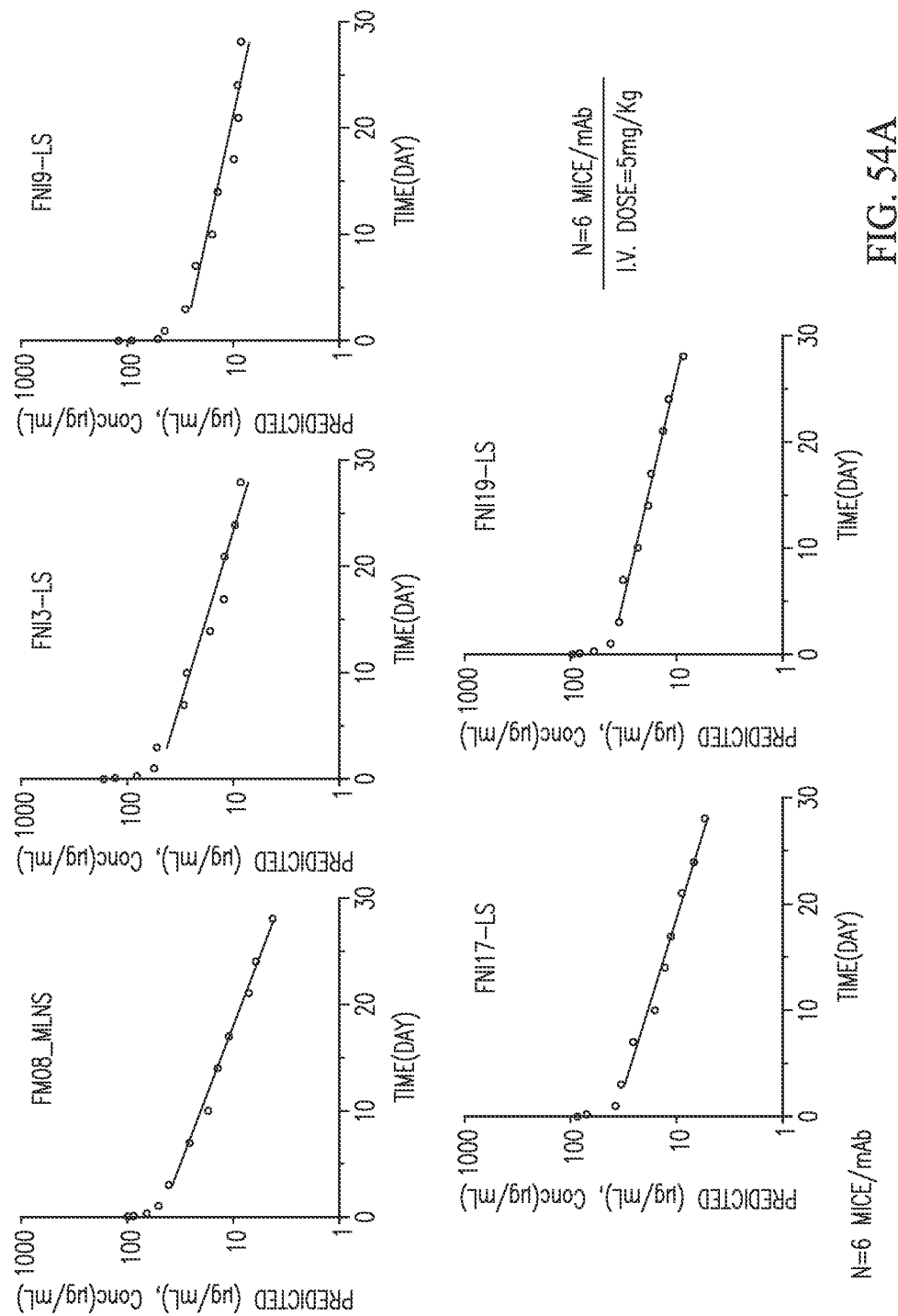
FIG. 52B

117/249



FIG. 53

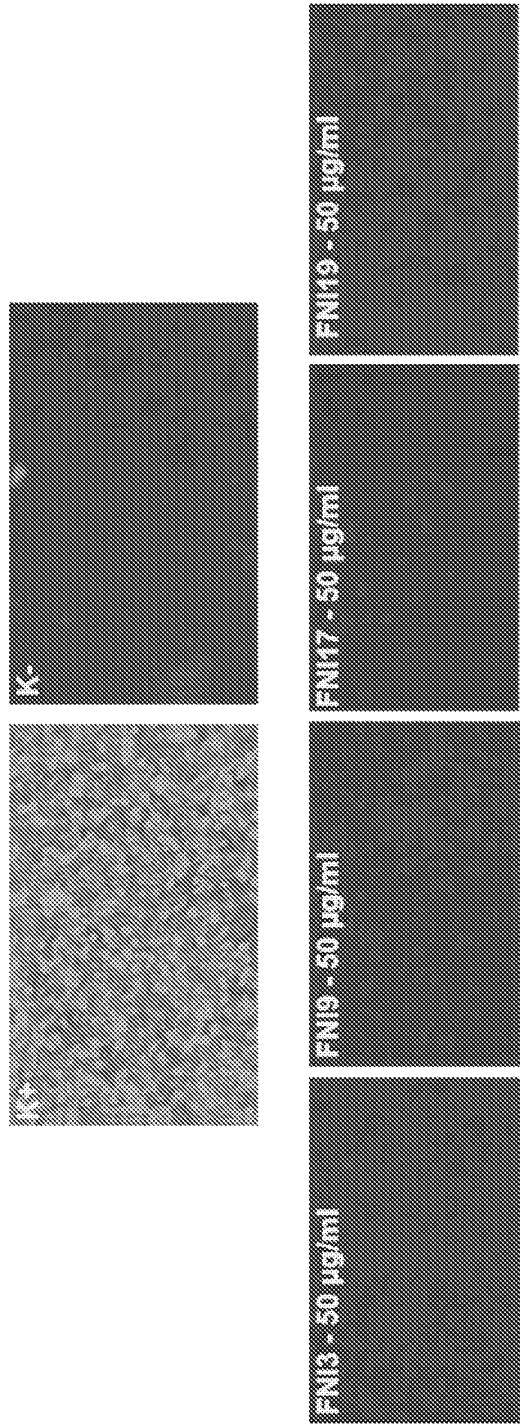
118/249



119/249

	HALF-LIFE (DAYS)	AUC (DAY*µg/ml)	CLEARANCE (µg/ml)	VOLUME (mL)
FM08_MLNS	7.56 ± 0.55	537.46 ± 92.58	1.671 ± 0.28	32.71 ± 9.08
FNI3-LS	9.12 ± 0.75	712.32 ± 56.41	1.088 ± 0.05	14.31 ± 1.374
FNI9-LS	13.37 ± 1.52	527.46 ± 75.92	1.47 ± 0.19	16.16 ± 3.09
FNI17-LS	8.86 ± 0.57	551.38 ± 74.42	1.24 ± 0.23	16.02 ± 3.88
FNI19-LS	11.57 ± 0.63	548.47 ± 77.01	1.512 ± 0.27	25.18 ± 4.10

FIG. 54B



EVALUATION OF NON-SPECIFIC BINDING OF FNI MABS TO HEP-2 CELLS AS OBSERVED BY MICROSCOPE IMAGE.

FIG. 55

121/249

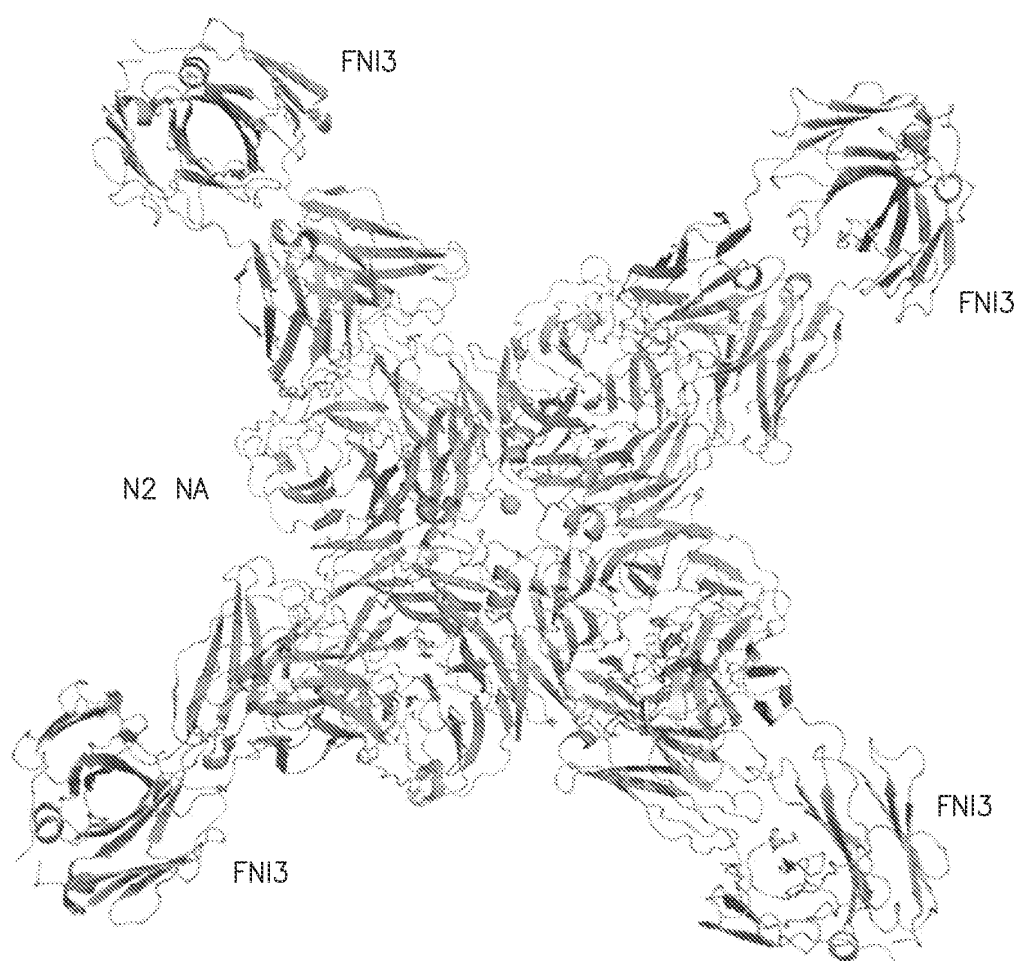
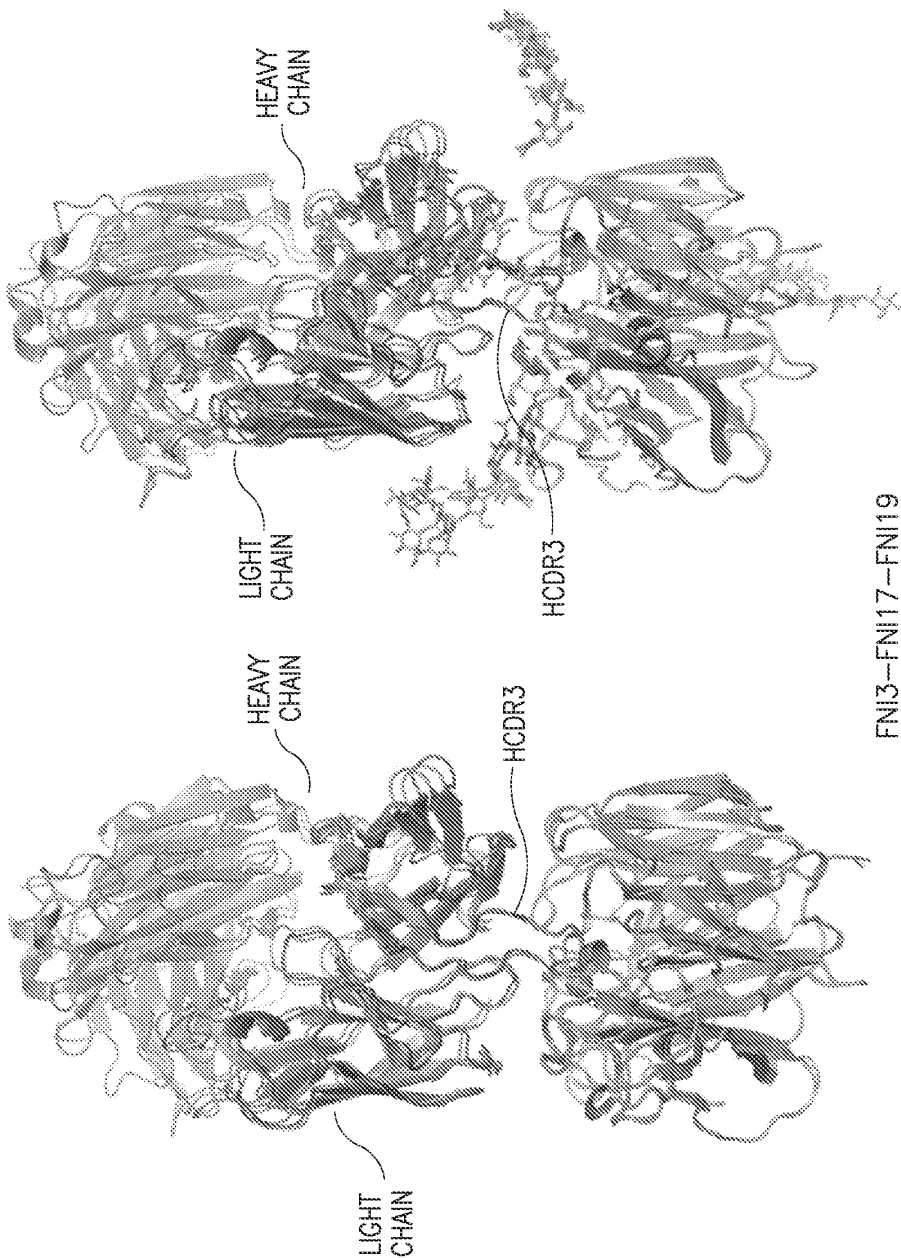


FIG. 56A



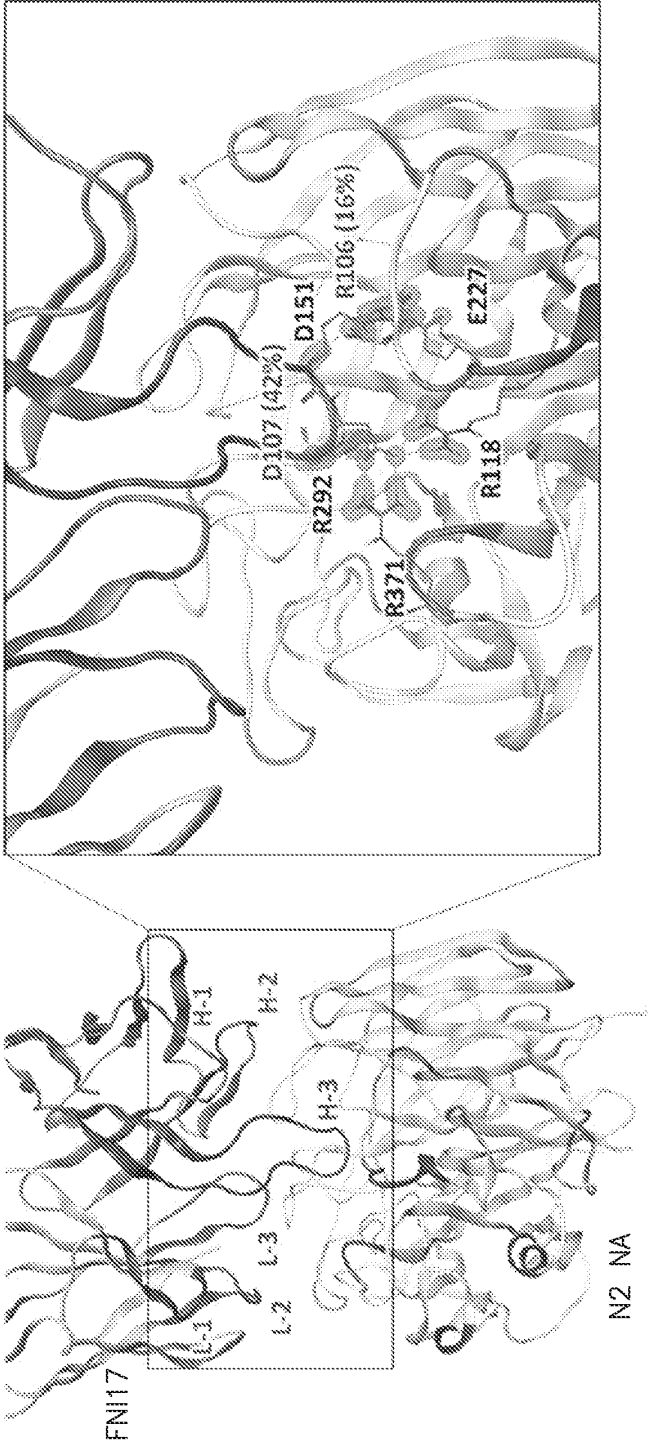


FIG. 57A

126/249

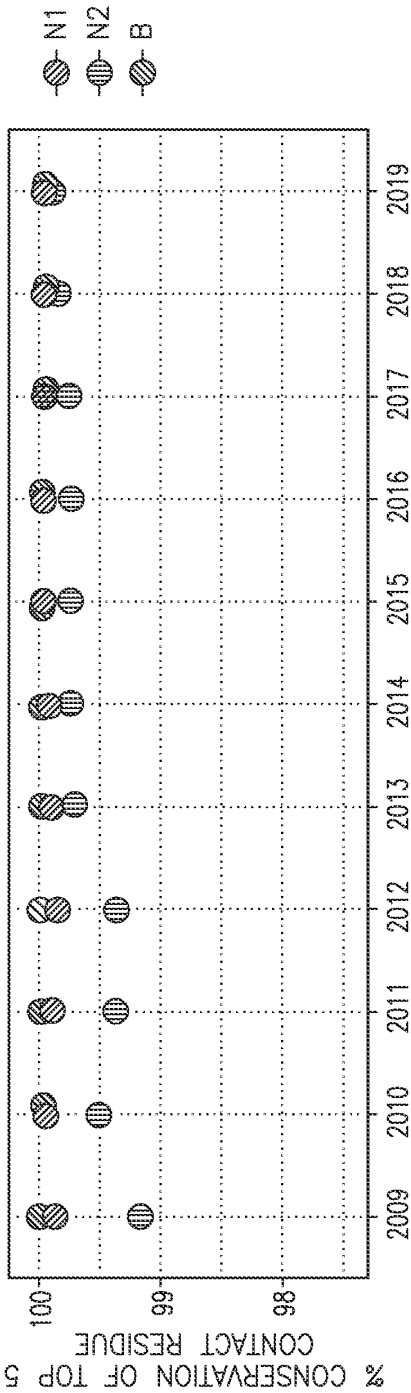
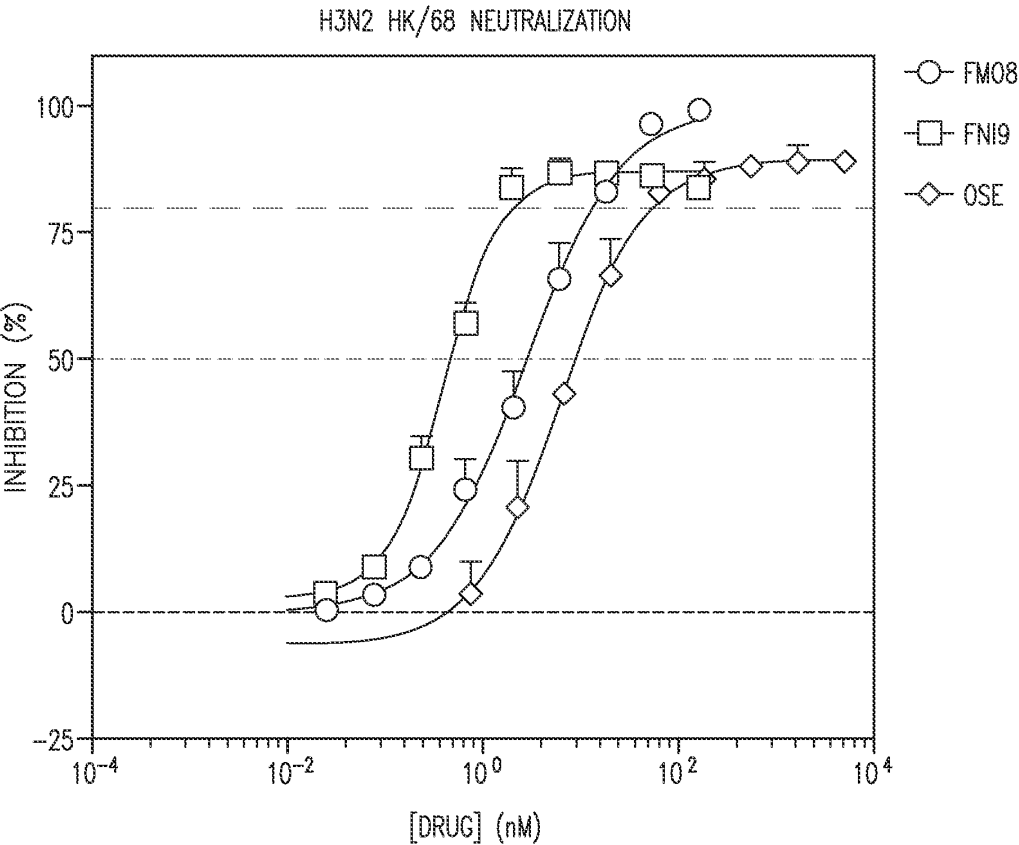


FIG. 58

127/249



	FM08	FNI9	OSE
EC50 (nM)	2.87	0.47	8.82
EC80 (nM)	13.45	2.06	56.17
MAX INHIBITION (%)	100	86	89

FIG. 59

128/249

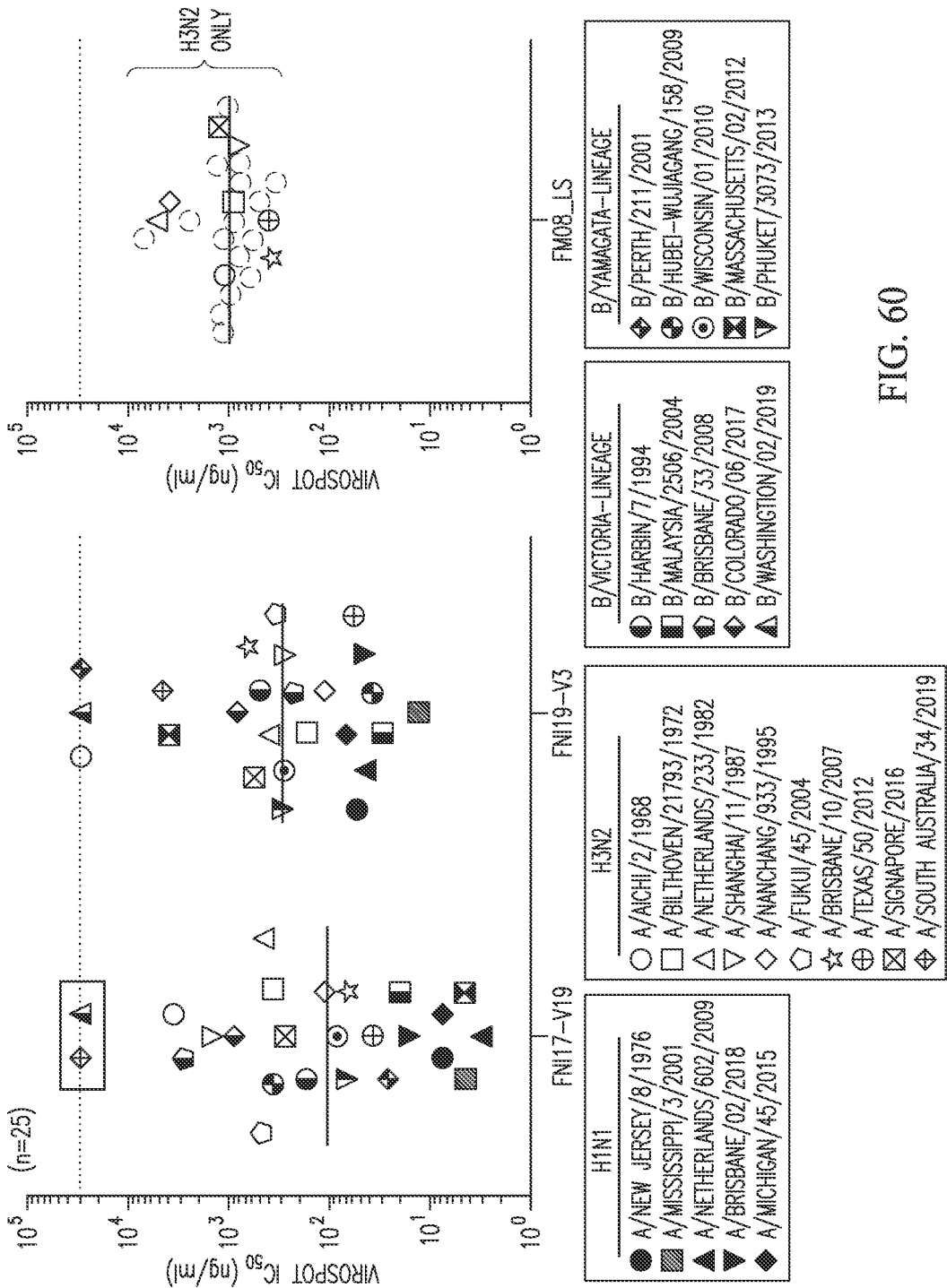
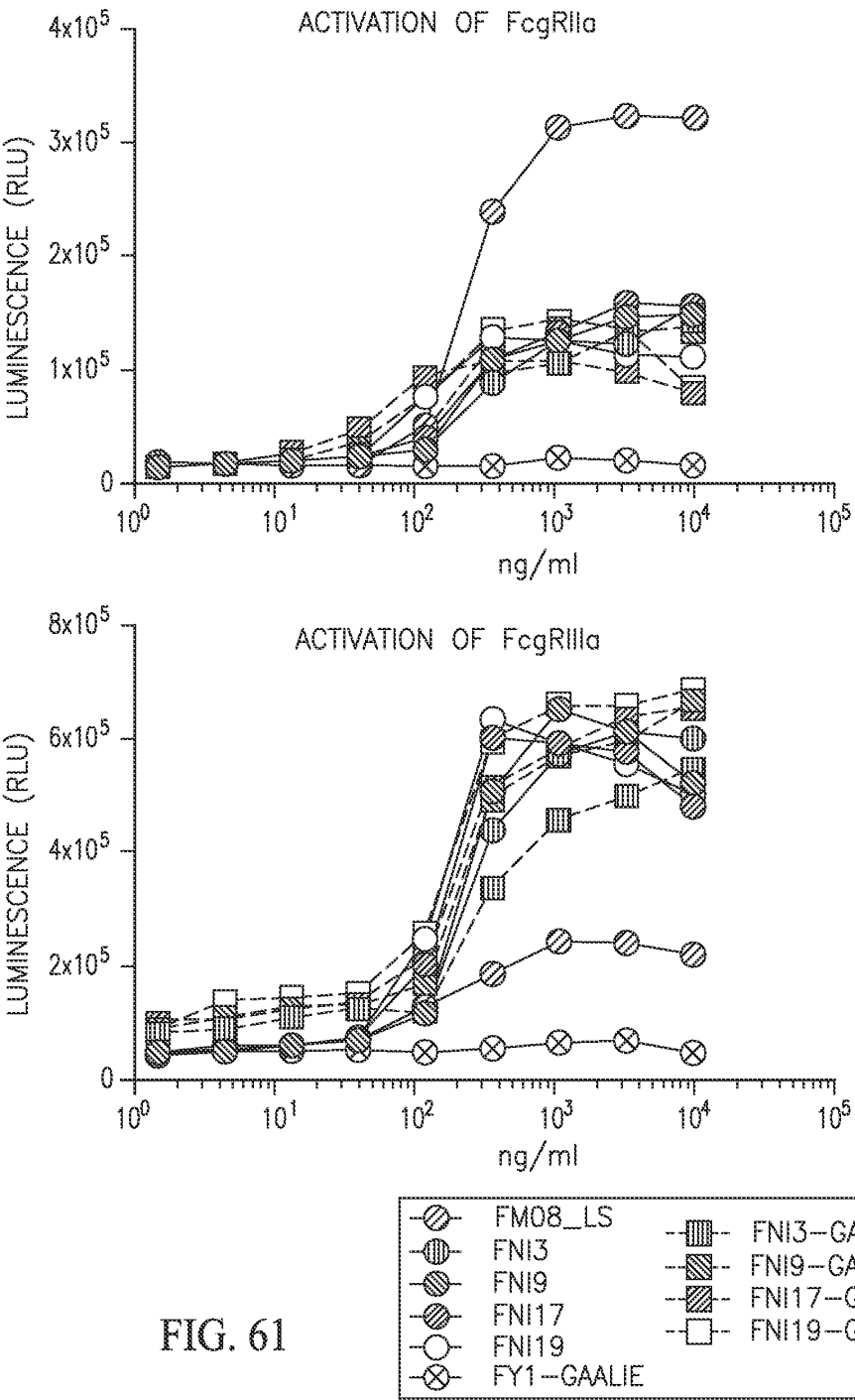


FIG. 60

129/249



130/249

EXP-A	EXP-B	TREATMENT	INFLUENZA INFECTION	ENDPOINTS
		VEHICLE CONTROL	A/PUERTO RICO/8/34	BODYWEIGHT, MORTALITY
FNI3-LS	FM08-LS	6 mg/kg	A/PUERTO RICO/8/34	
		2 mg/kg	A/PUERTO RICO/8/34	
		0.6 mg/kg	A/PUERTO RICO/8/34	
		0.2 mg/kg	A/PUERTO RICO/8/34	
FNI9-LS		6 mg/kg	A/PUERTO RICO/8/34	
		2 mg/kg	A/PUERTO RICO/8/34	
		0.6 mg/kg	A/PUERTO RICO/8/34	
		0.2 mg/kg	A/PUERTO RICO/8/34	
		54 MICE TOTAL		
		VEHICLE CONTROL	A/HONG KONG/8/68	BODYWEIGHT, MORTALITY
FNI3-LS	FM08-LS	6 mg/kg	A/HONG KONG/8/68	
		2 mg/kg	A/HONG KONG/8/68	
		0.6 mg/kg	A/HONG KONG/8/68	
		0.2 mg/kg	A/HONG KONG/8/68	
FNI9-LS		6 mg/kg	A/HONG KONG/8/68	
		2 mg/kg	A/HONG KONG/8/68	
		0.6 mg/kg	A/HONG KONG/8/68	
		0.2 mg/kg	A/HONG KONG/8/68	
		54 MICE TOTAL		

FIG. 62

131/249

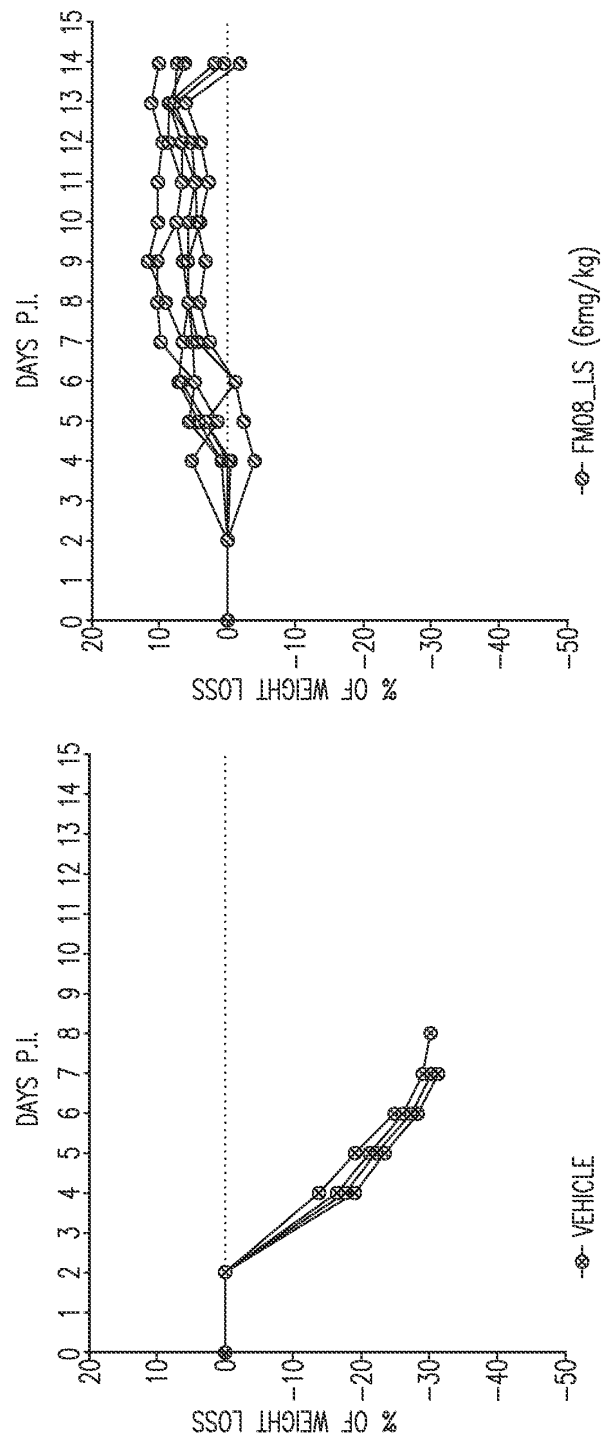


FIG. 63A

132/249

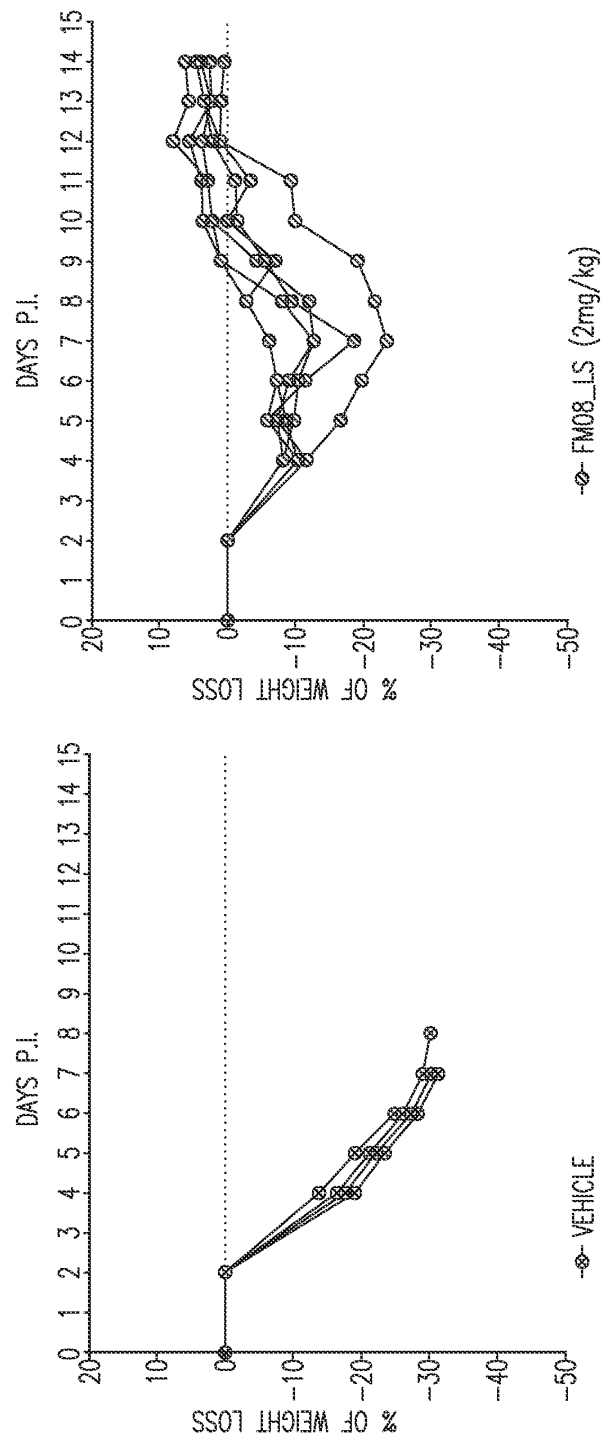


FIG. 63B

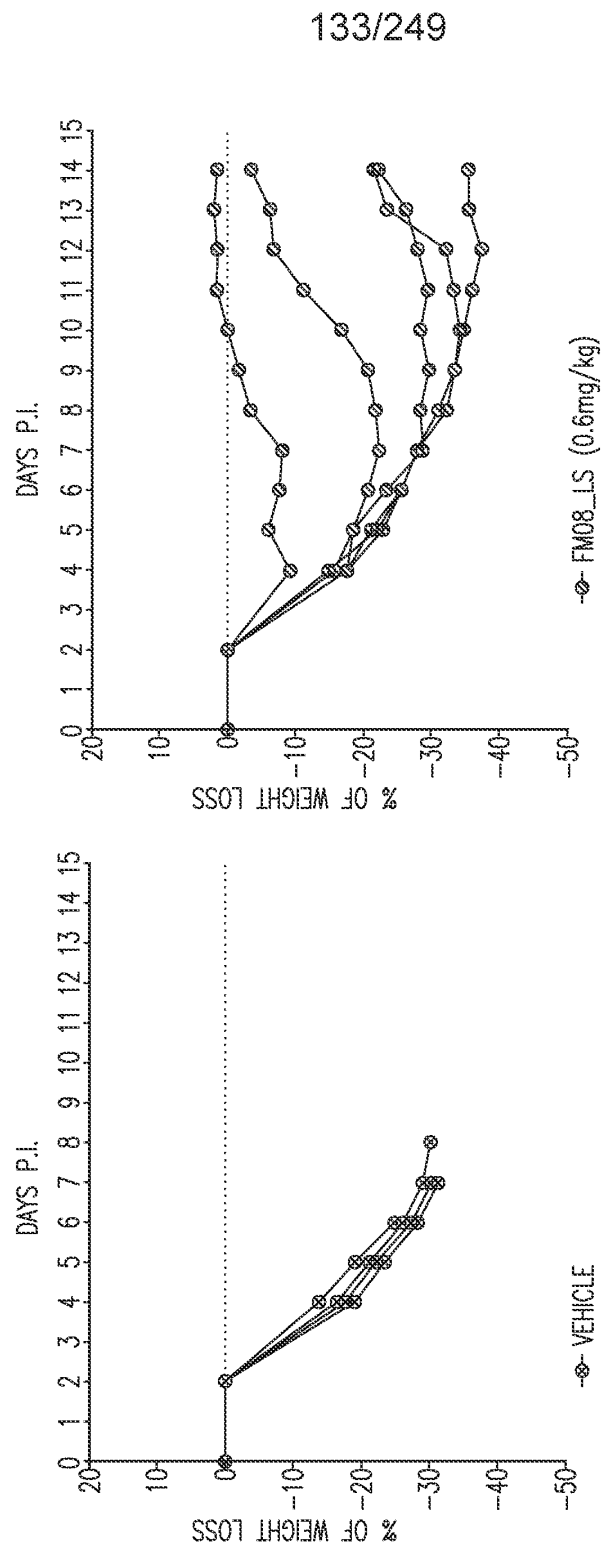


FIG. 63C

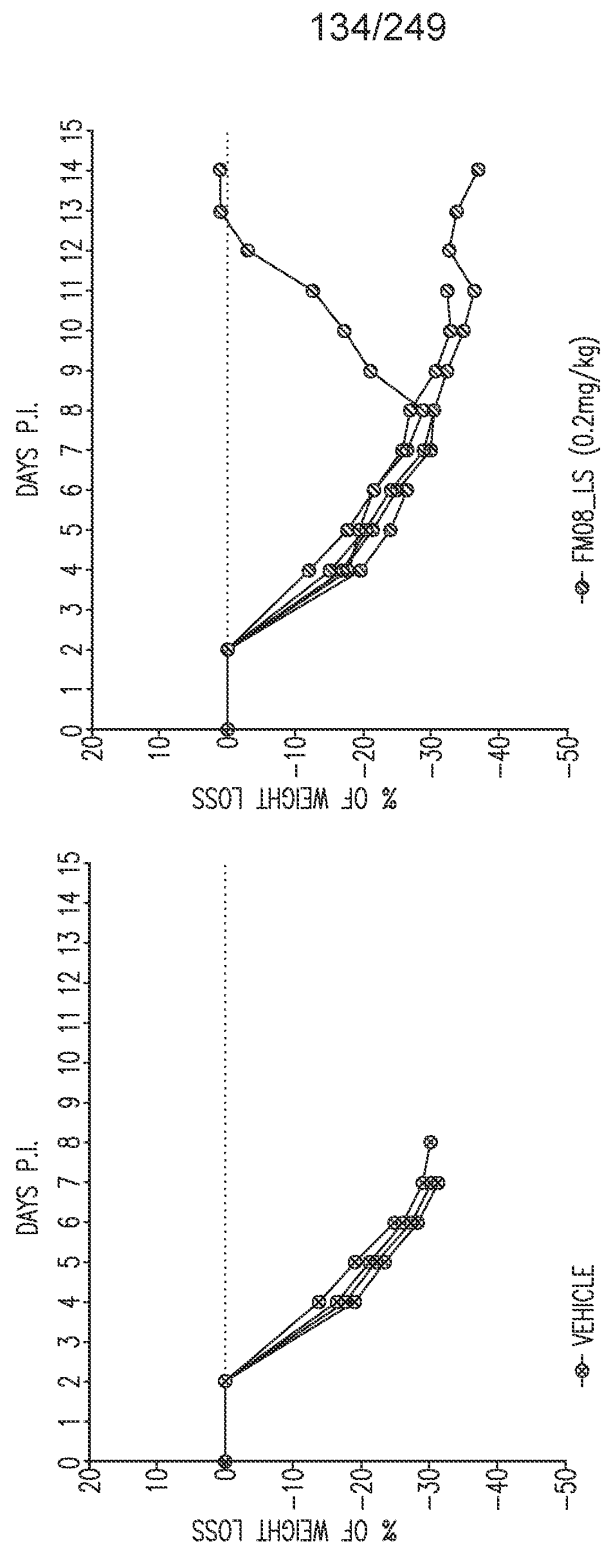


FIG. 63D

135/249

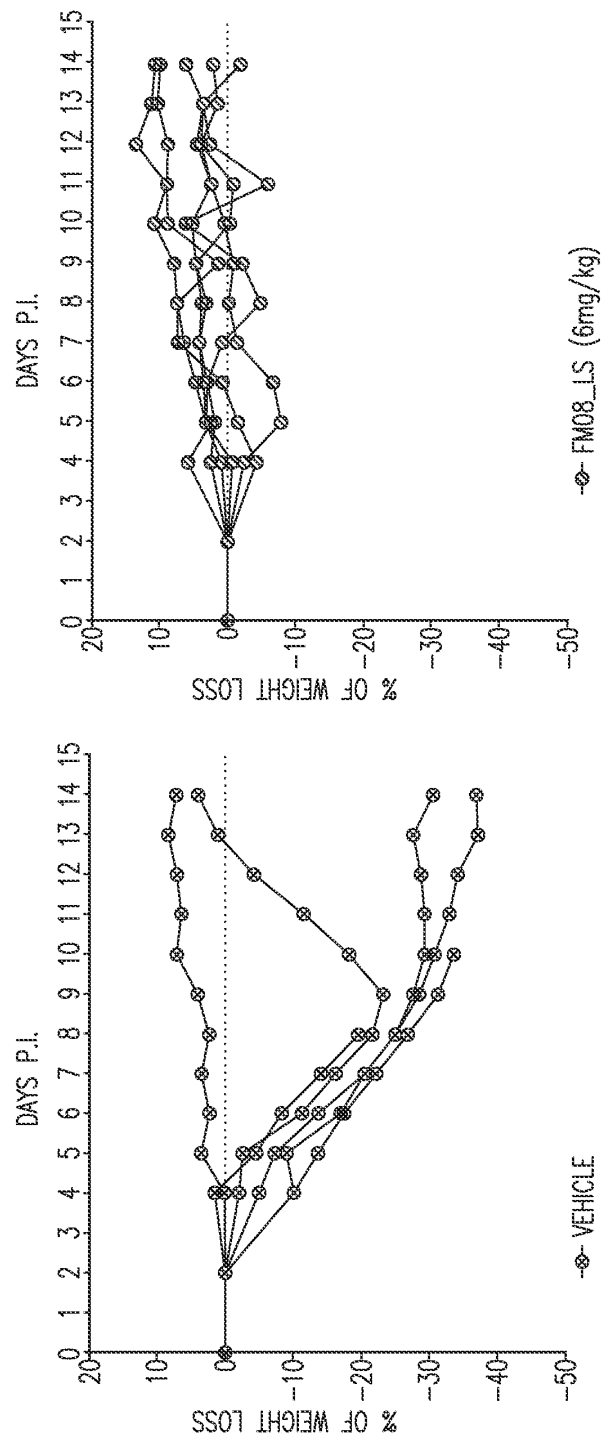


FIG. 64A

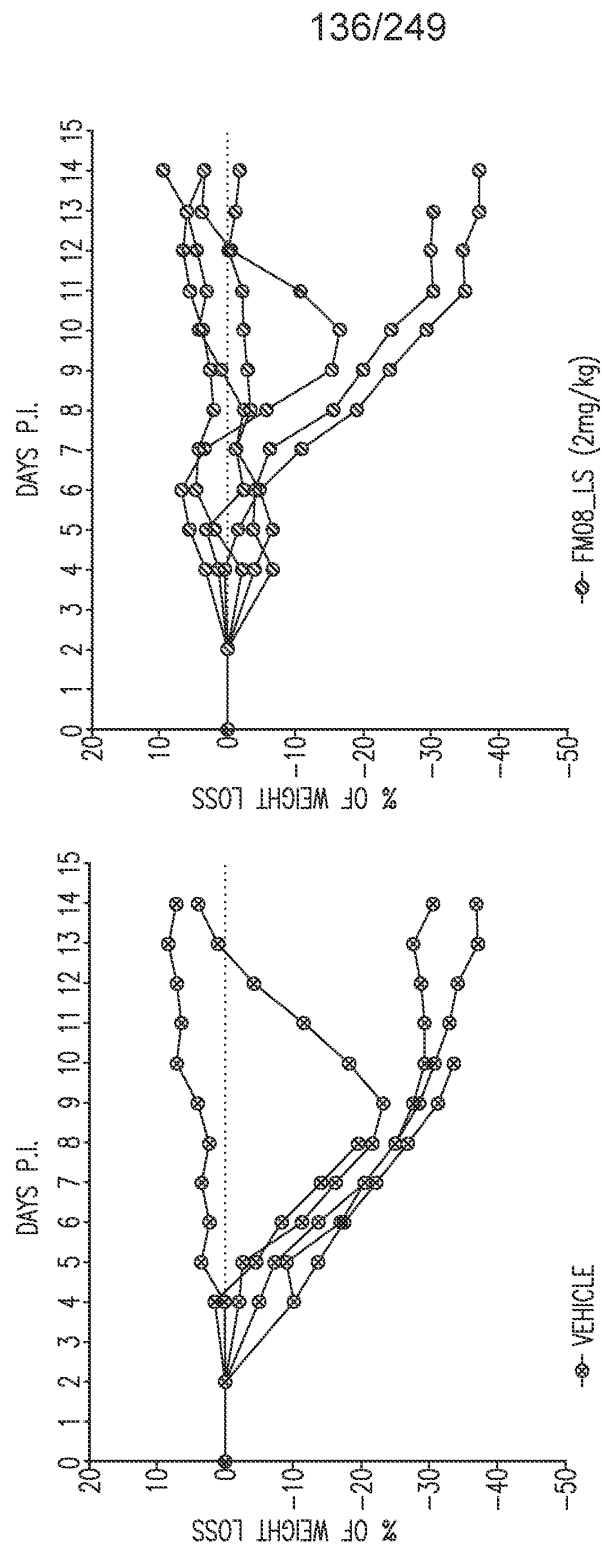


FIG. 64B

137/249

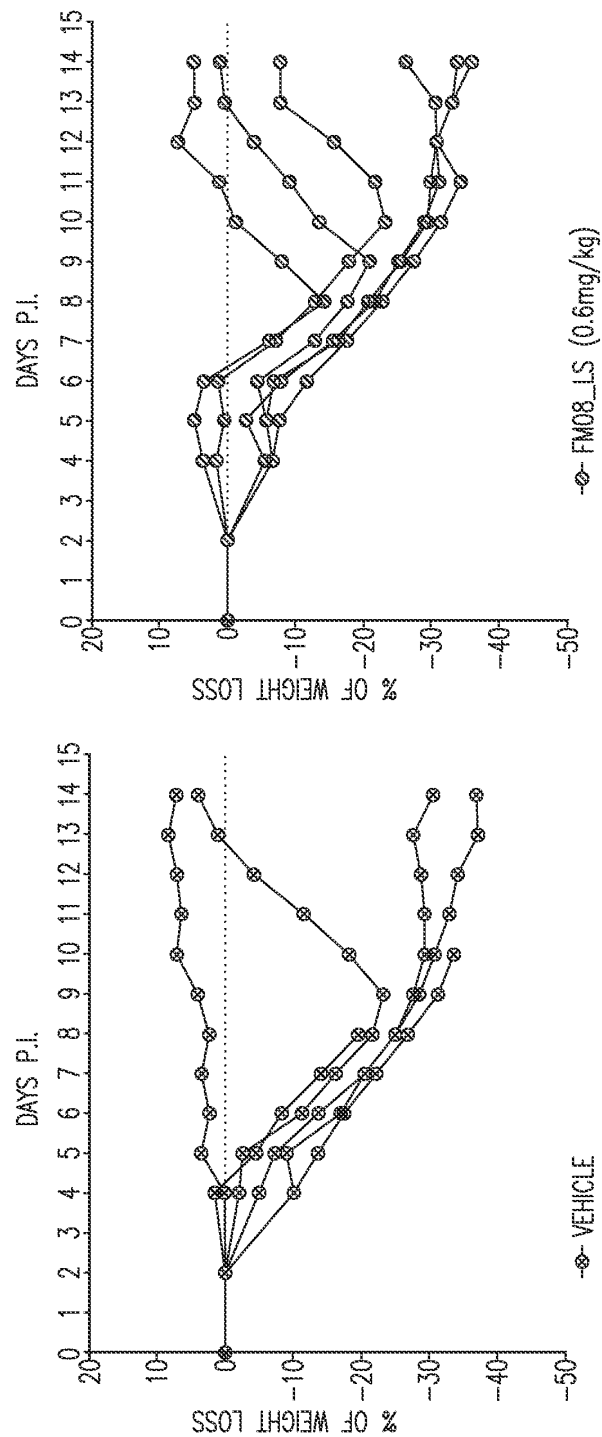


FIG. 64C

138/249

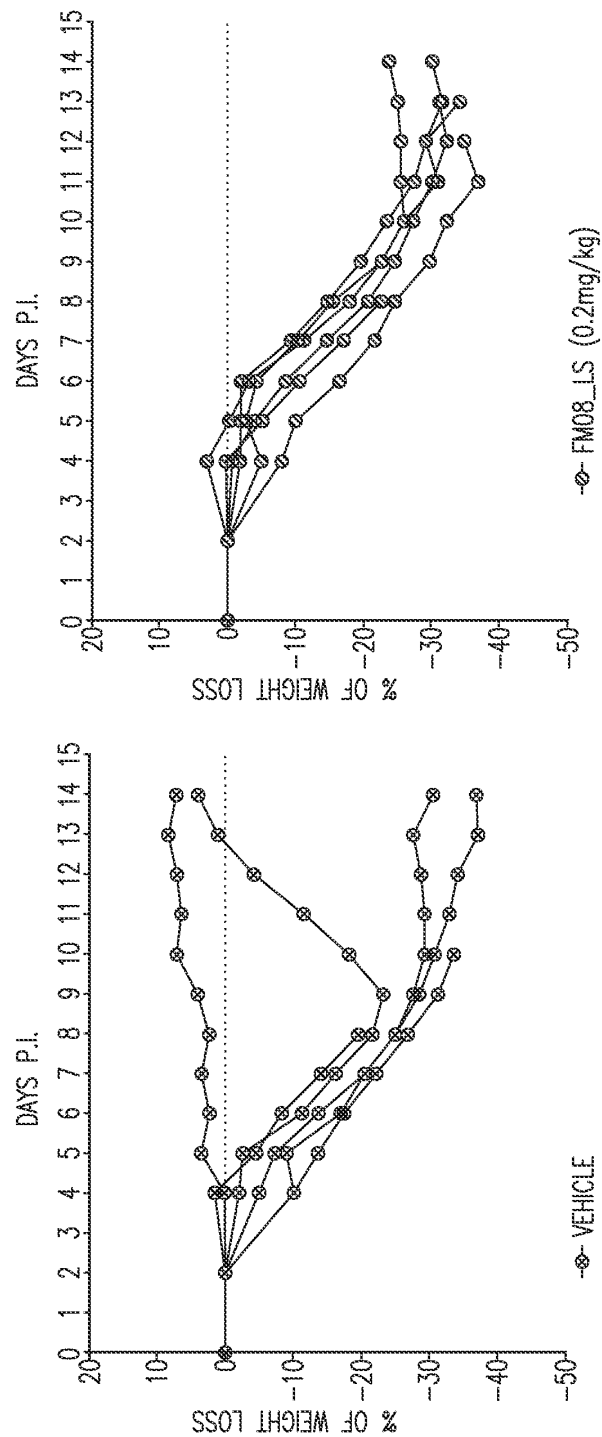


FIG. 64D

139/249

TREATMENT GROUP	DOSE	N
VEHICLE	—	6
FM08_LS	1mg/kg	6
FM08_LS	0.5mg/kg	6
FM08_LS	0.25mg/kg	6
FM08_LS	0.125mg/kg	6
FNI17_LS	1mg/kg	6
FNI17_LS	0.5mg/kg	6
FNI17_LS	0.25mg/kg	6
FNI17_LS	0.125mg/kg	6

FIG. 65

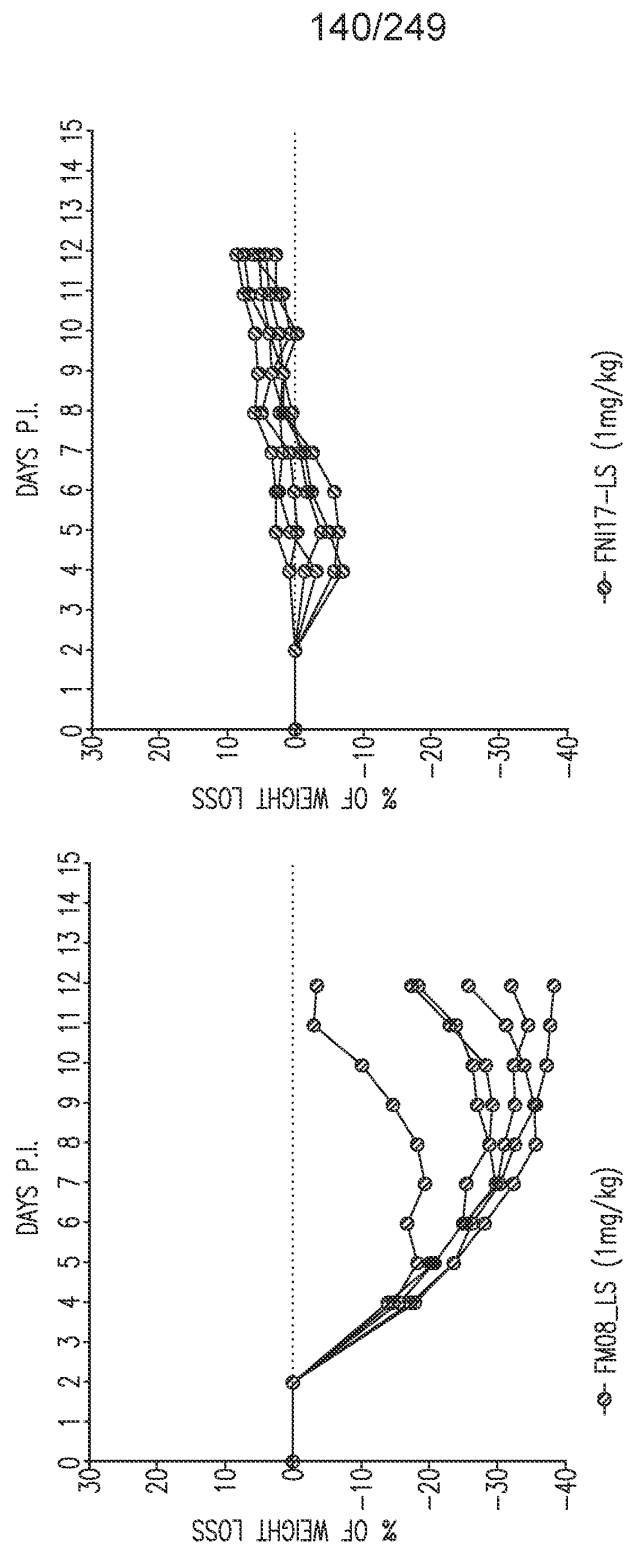


FIG. 66A

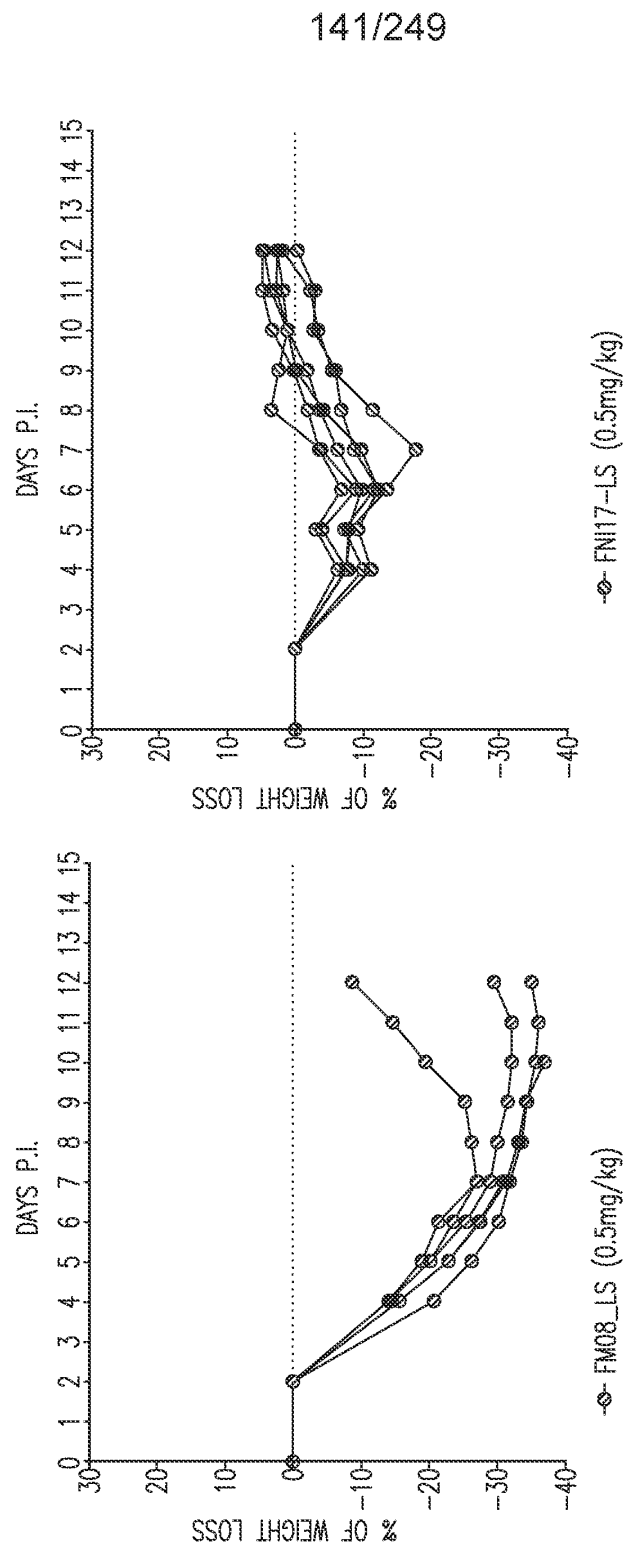


FIG. 66B

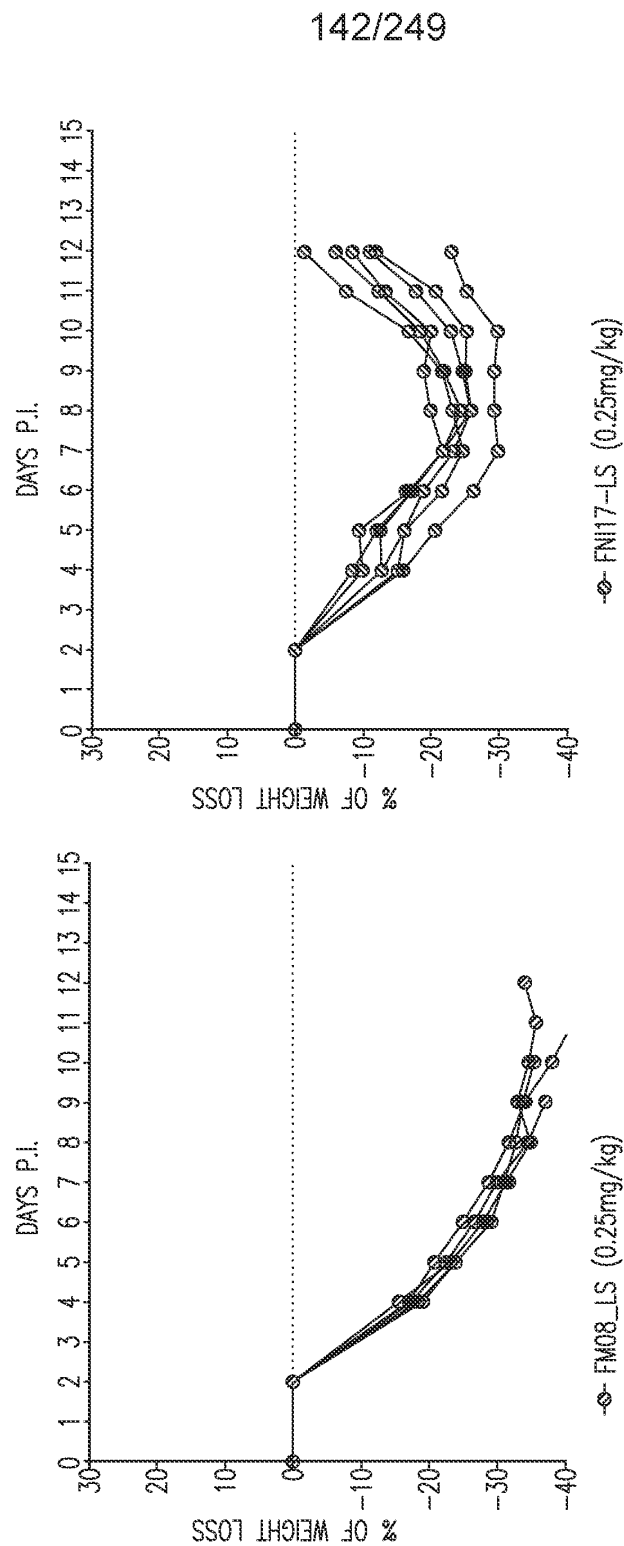


FIG. 66C

143/249

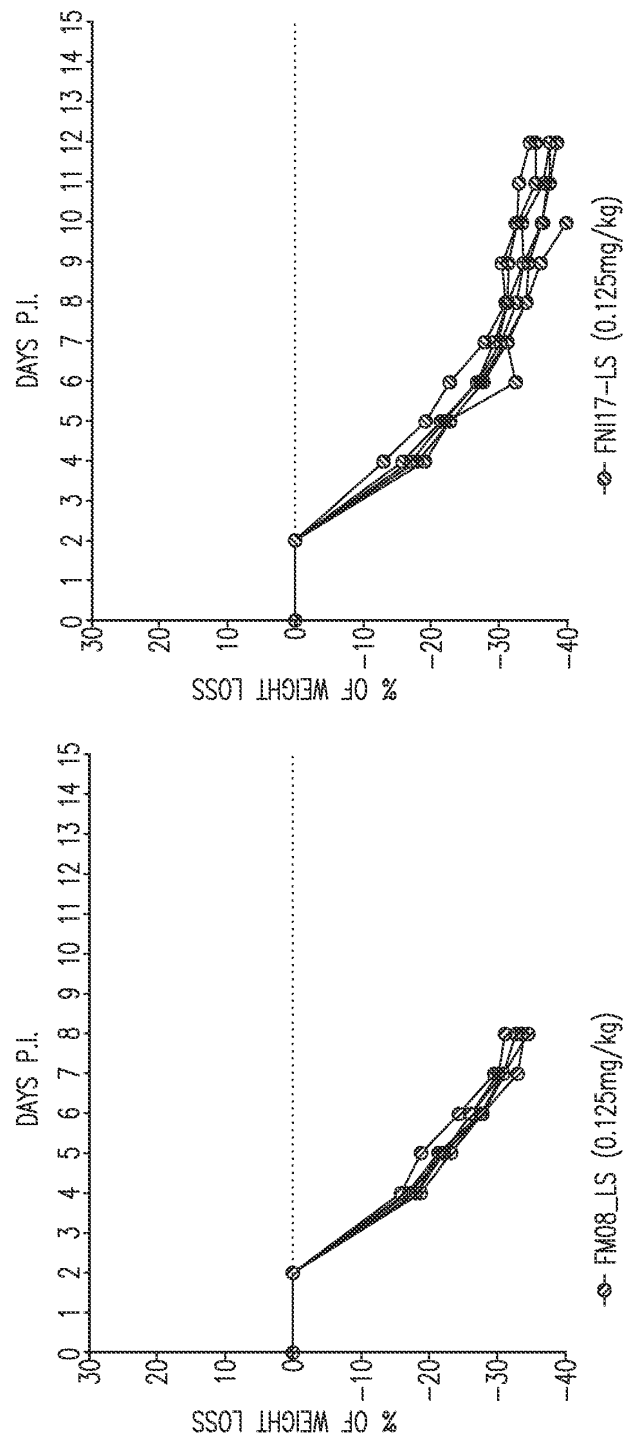


FIG. 66D

144/249

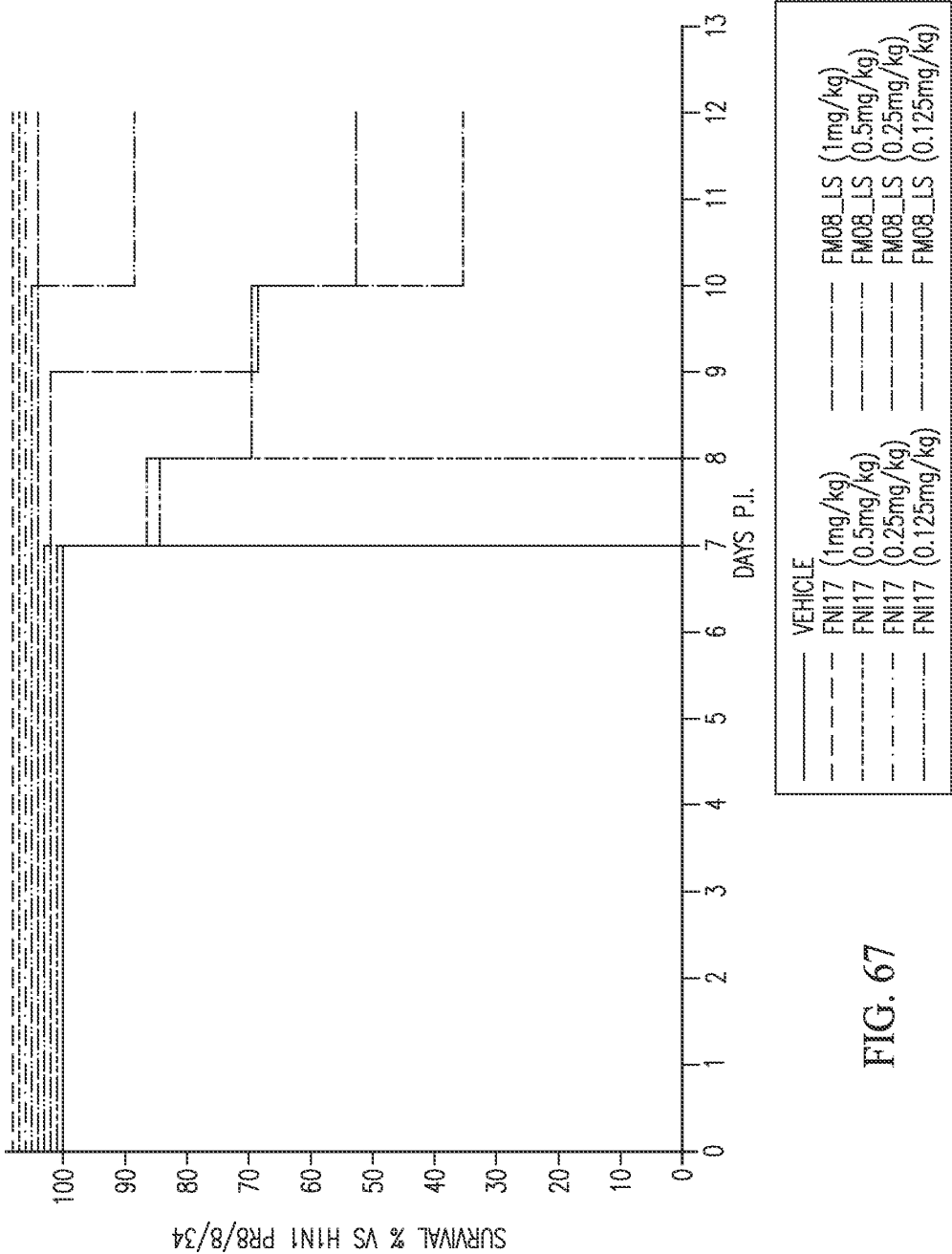


FIG. 67

145/249

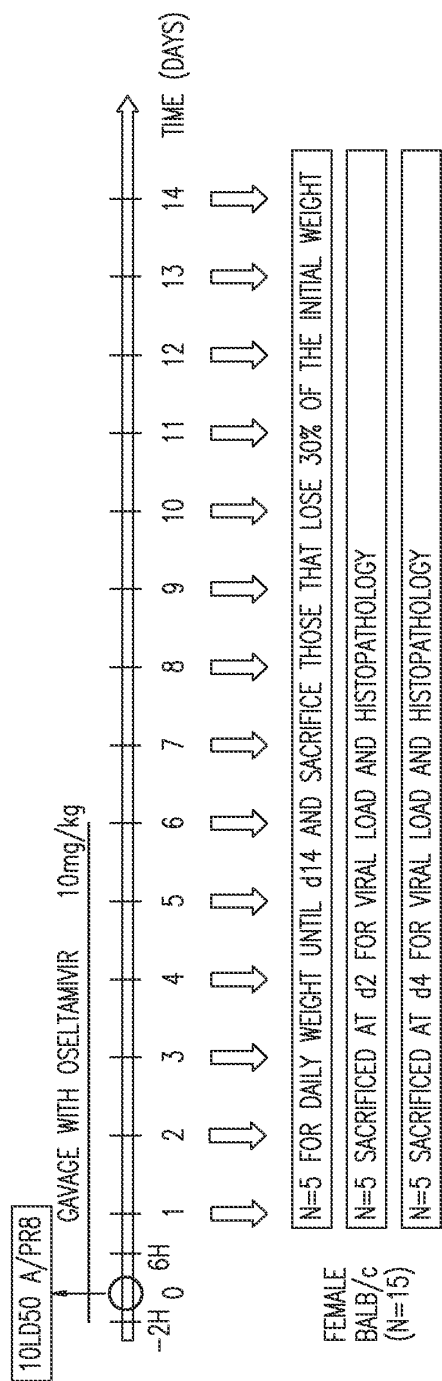


FIG. 68

146/249

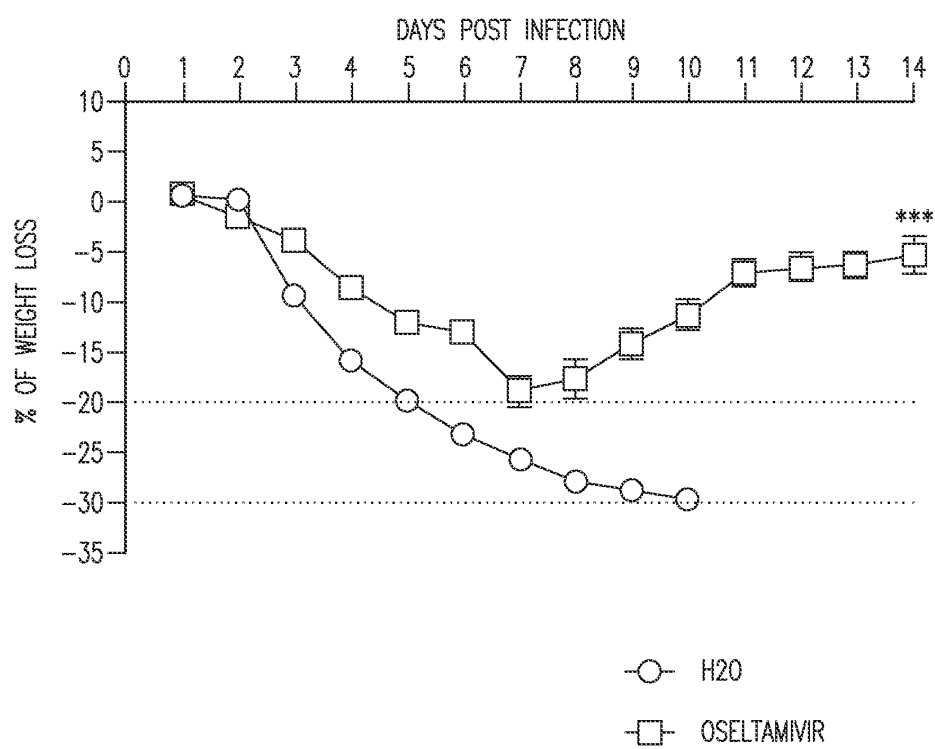


FIG. 69

147/249

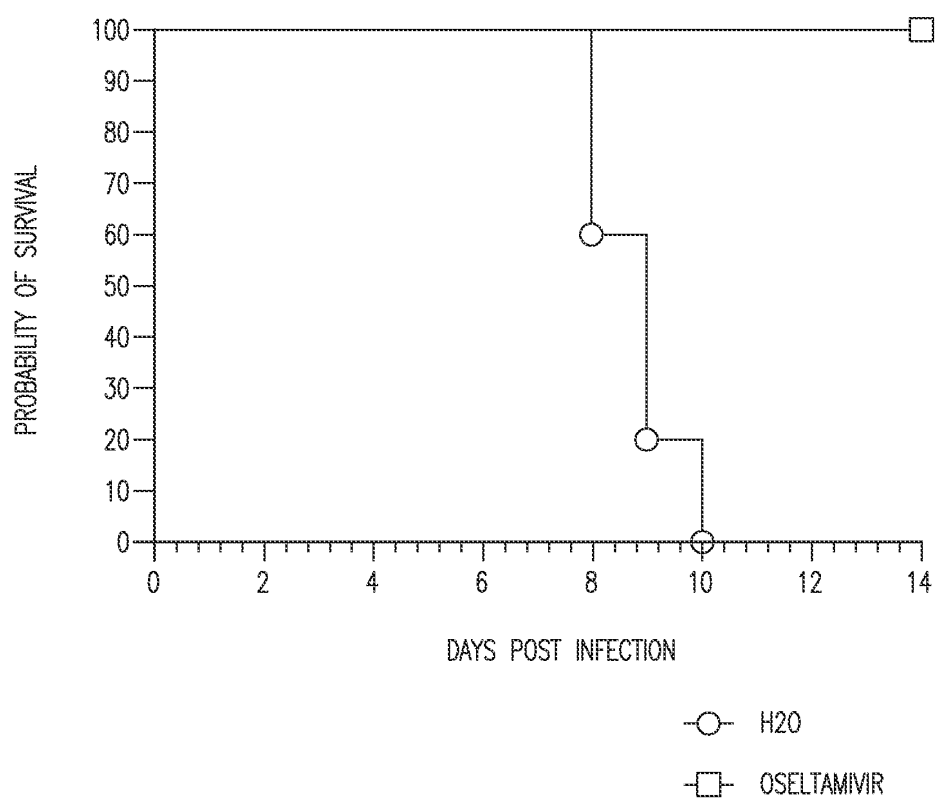


FIG. 70

148/249

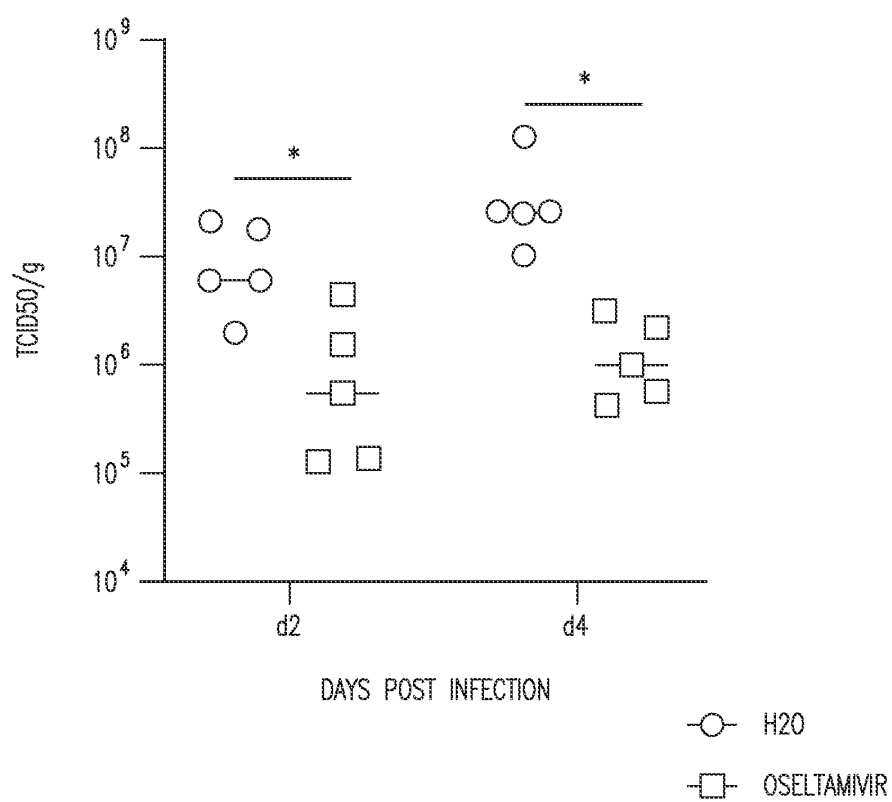


FIG. 71

	20	40	60
UUA--VH	QVQLVQSGAEVKKPGSSVKVSCKAS	GGTFSSYAISWVRQAPGQGLEWMGG	IPIFGTANYAQKFGQ
FNI3	R.....	.A..NNV.A	H...SA..I
FNI9	H.....T.....	..S.NNQ...	F...S...PTS..R...
FNI17	R.....P.....	NNV...	TS..I
FNI19	R.....R.....	E..NK..T..I..T	S..I

	80	100	120
UUA--VH	RVTITADESTAYMELSSLRSEDTAVYYCAR	AGSDYFNRLDGLWENYYFDY	WGQGLTVTVSS
FNI3	..A.A...L...NG...S...	S	128
FNI9	...F...T.V..D...D...	AS	128
FNI17	..A.I...K...V.A...S..F...	R...D...EN	128
FNI19	..A...T...T...S...S...T.V...	D...D...PF	A..128

FIG. 72A

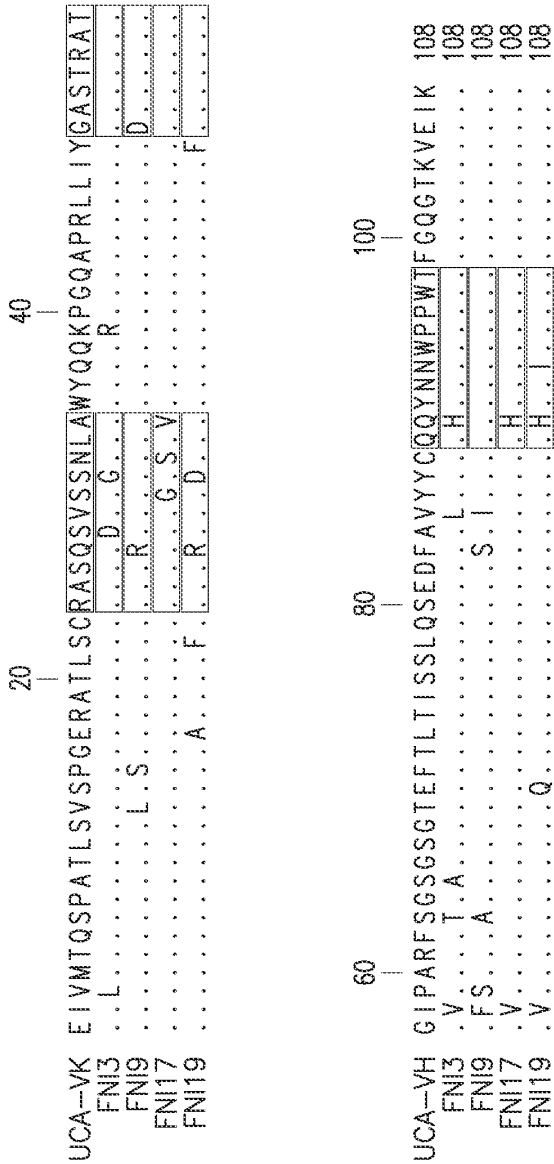
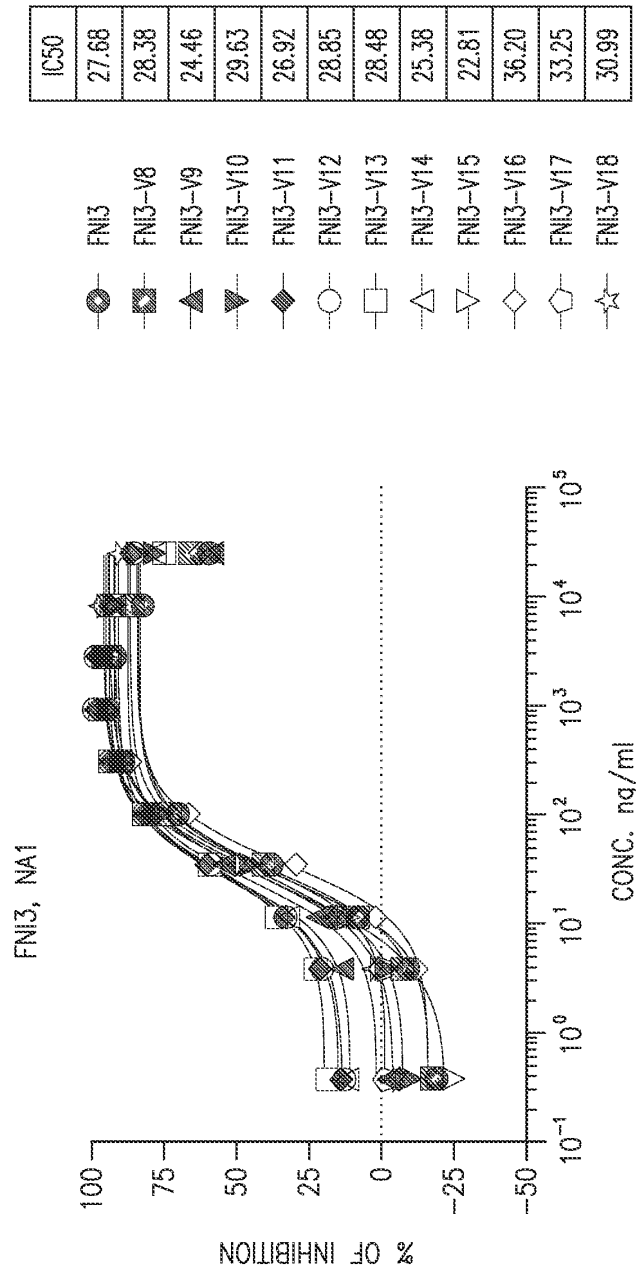


FIG. 72B

151/249



152/249

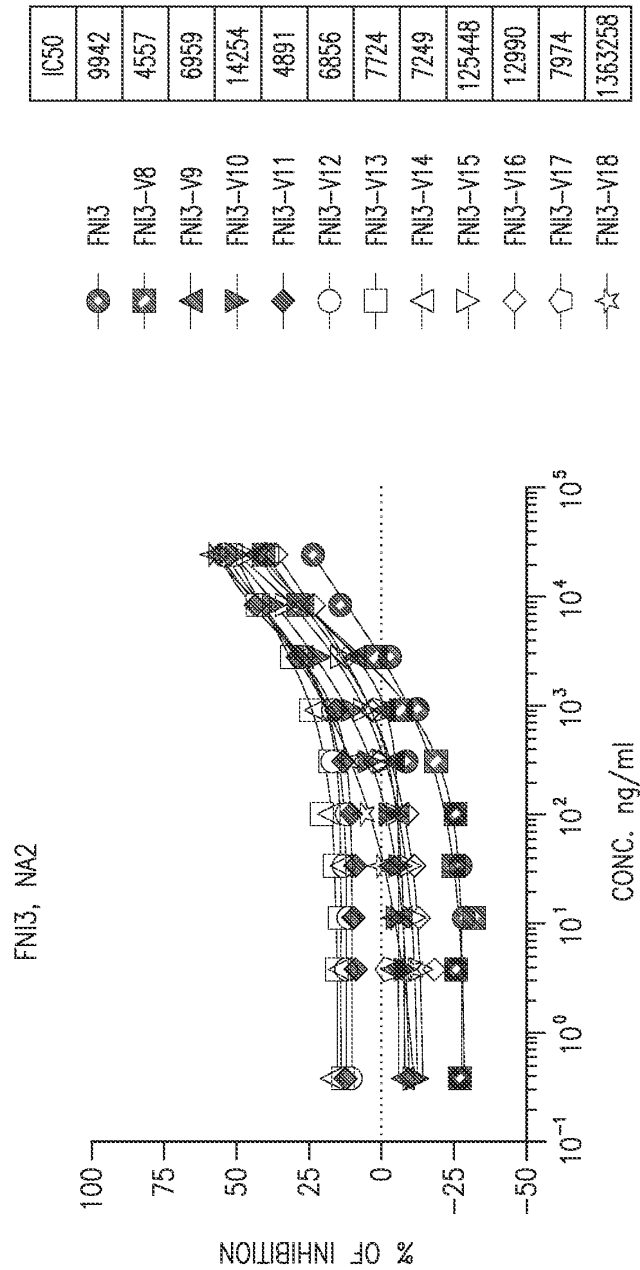
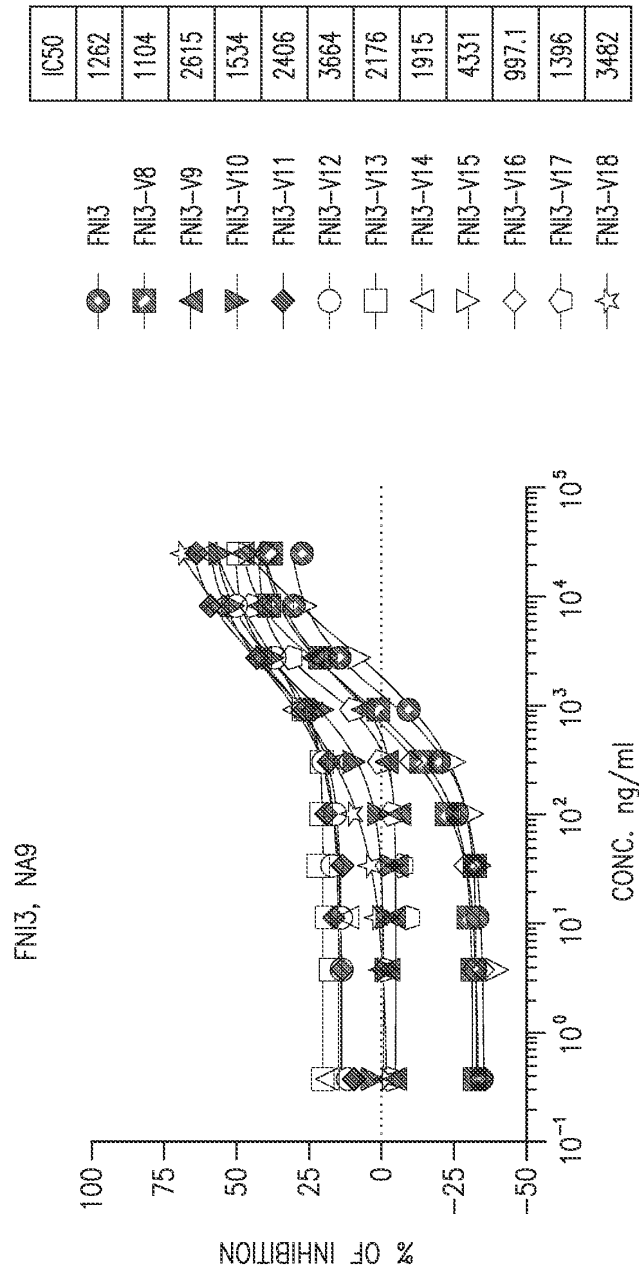


FIG. 73B

153/249



154/249

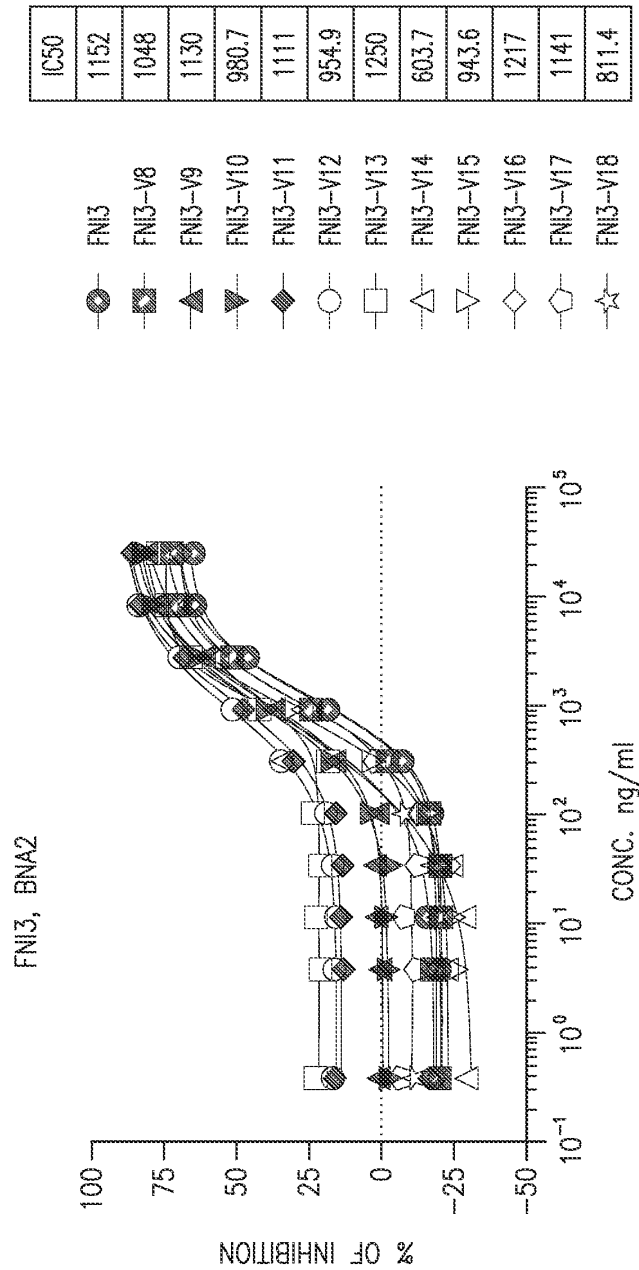


FIG. 73D

155/249

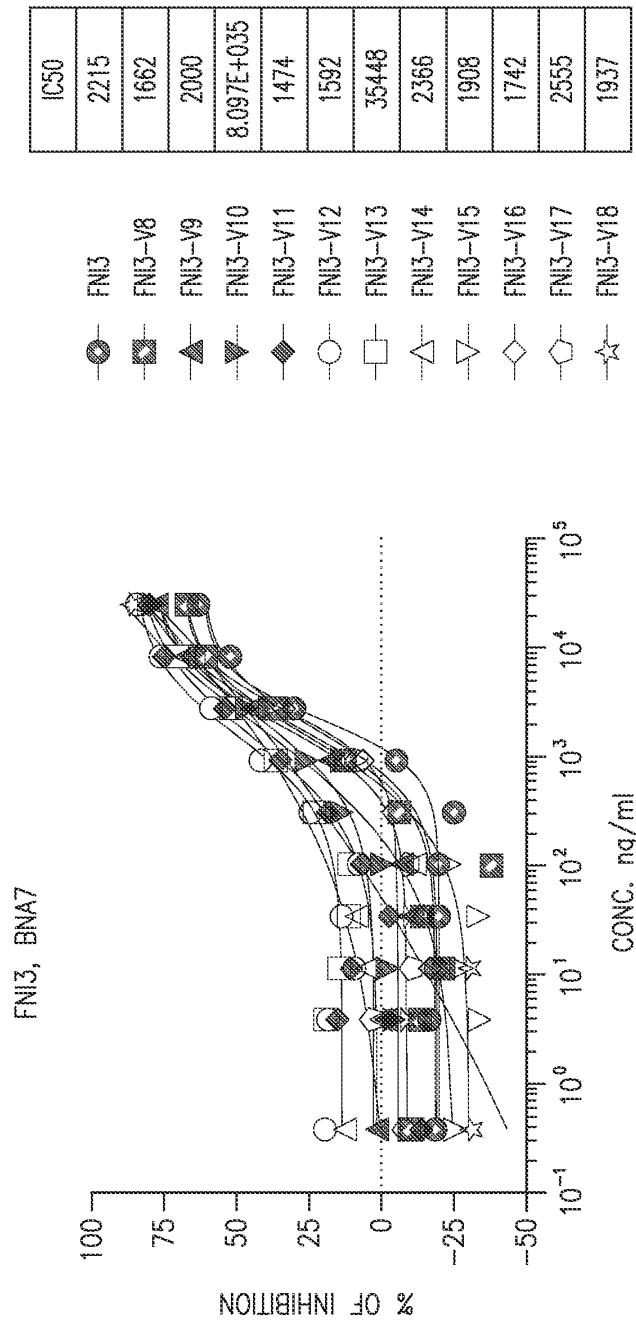


FIG. 73E

156/249

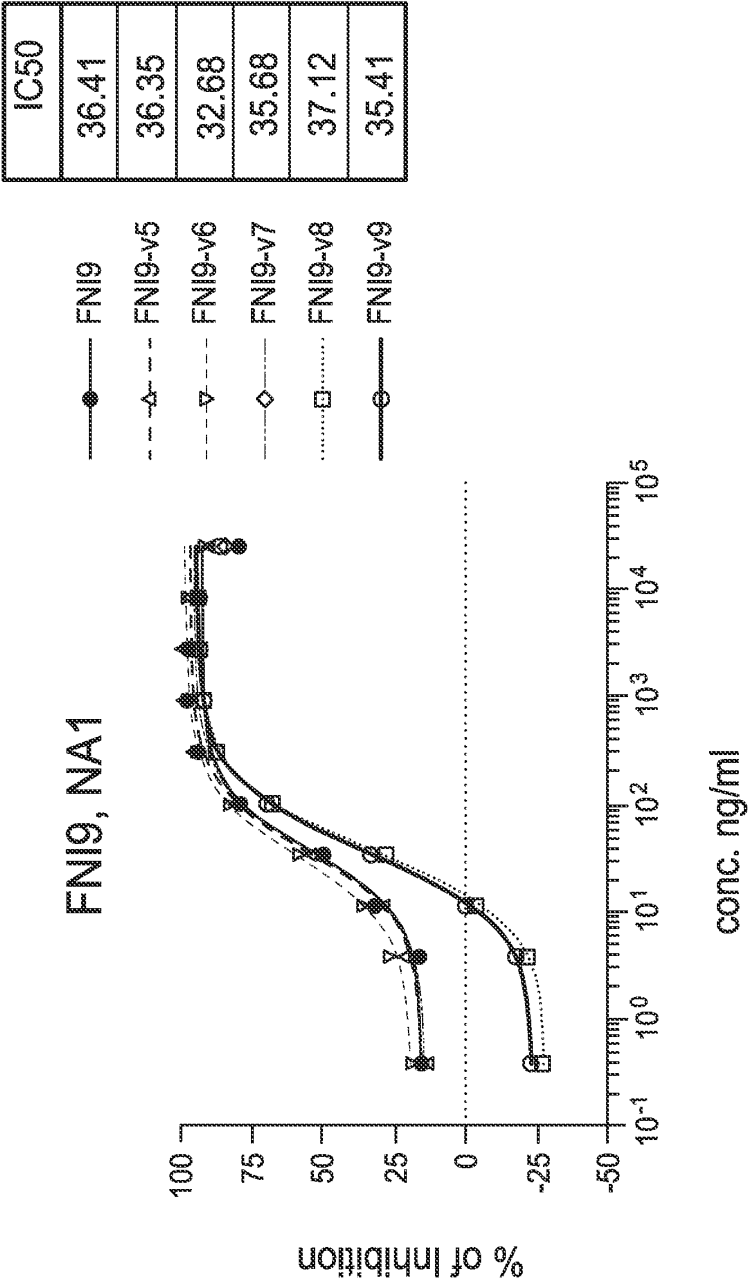


FIG. 74A

157/249

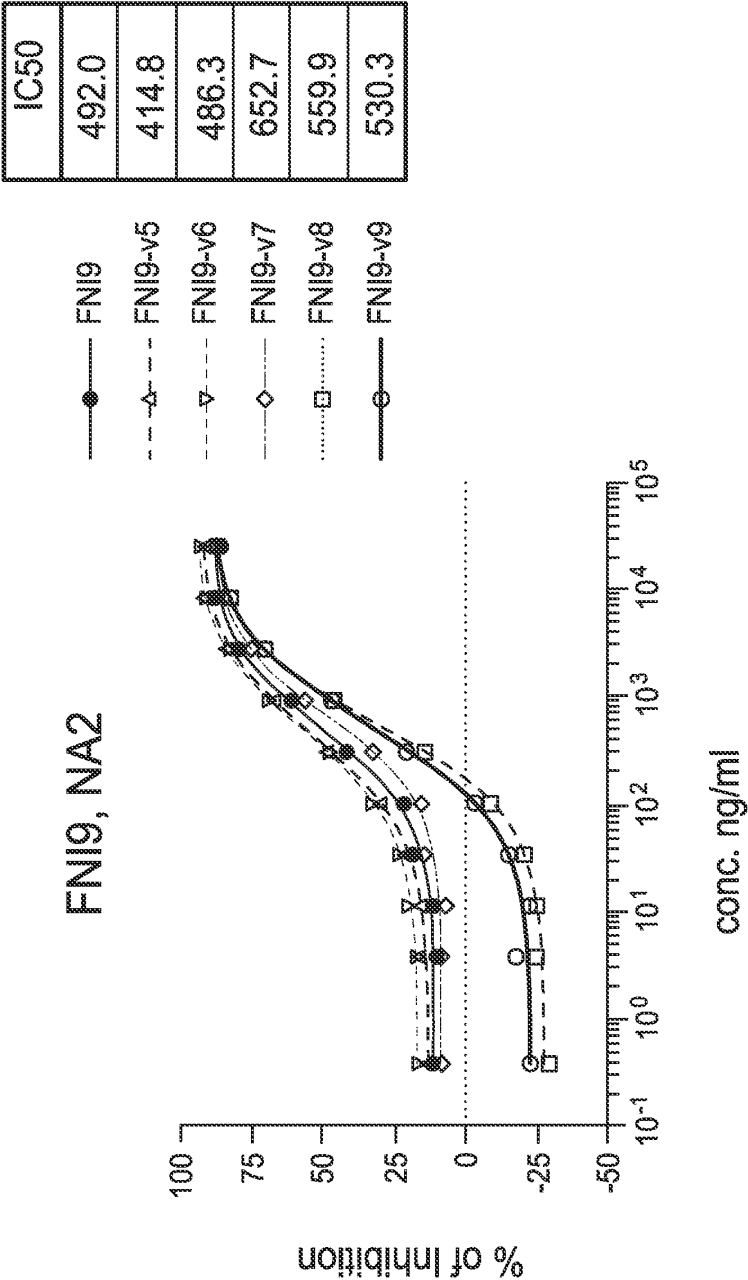


FIG. 74B

158/249

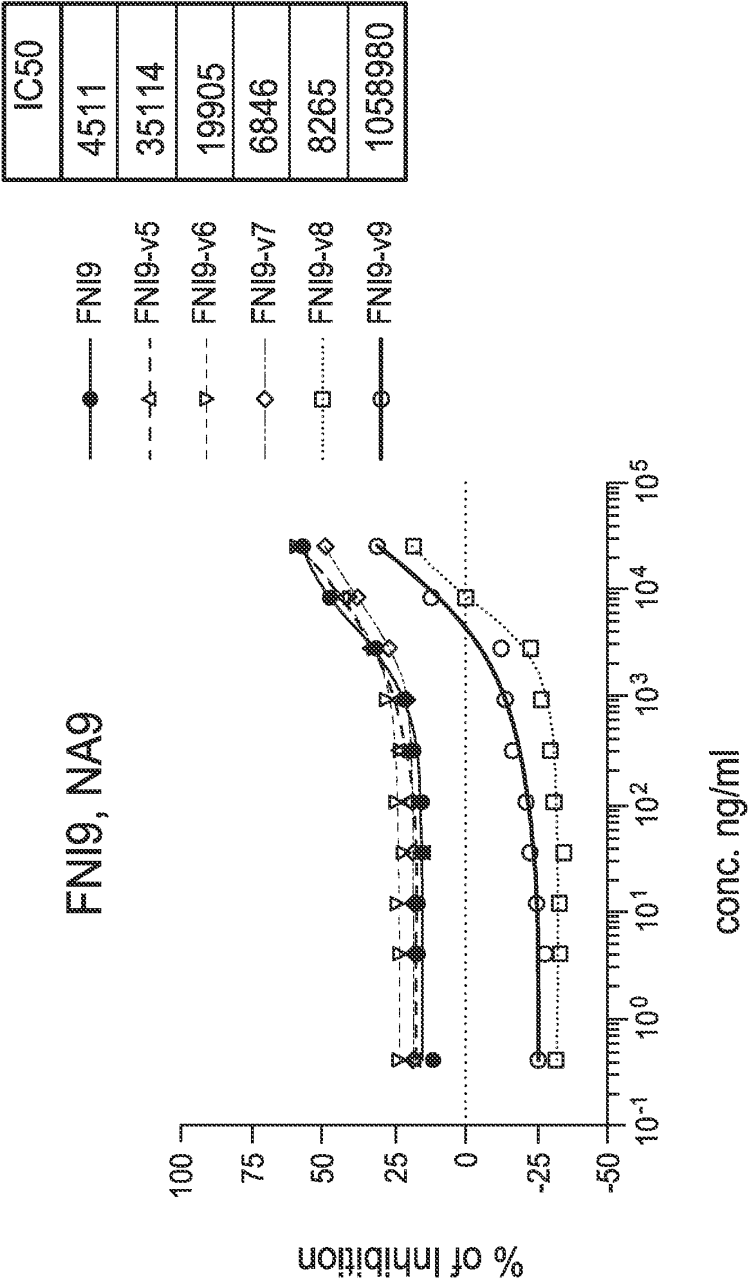


FIG. 74C

159/249

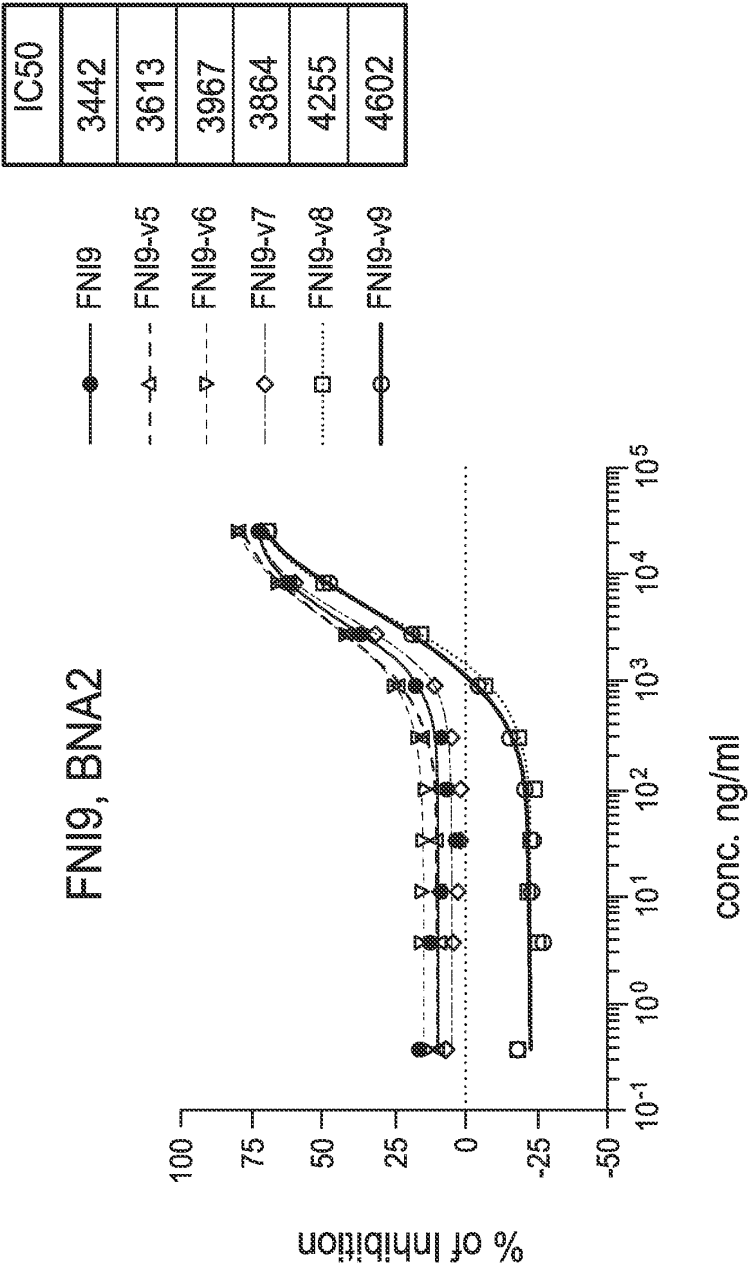


FIG. 74D

160/249

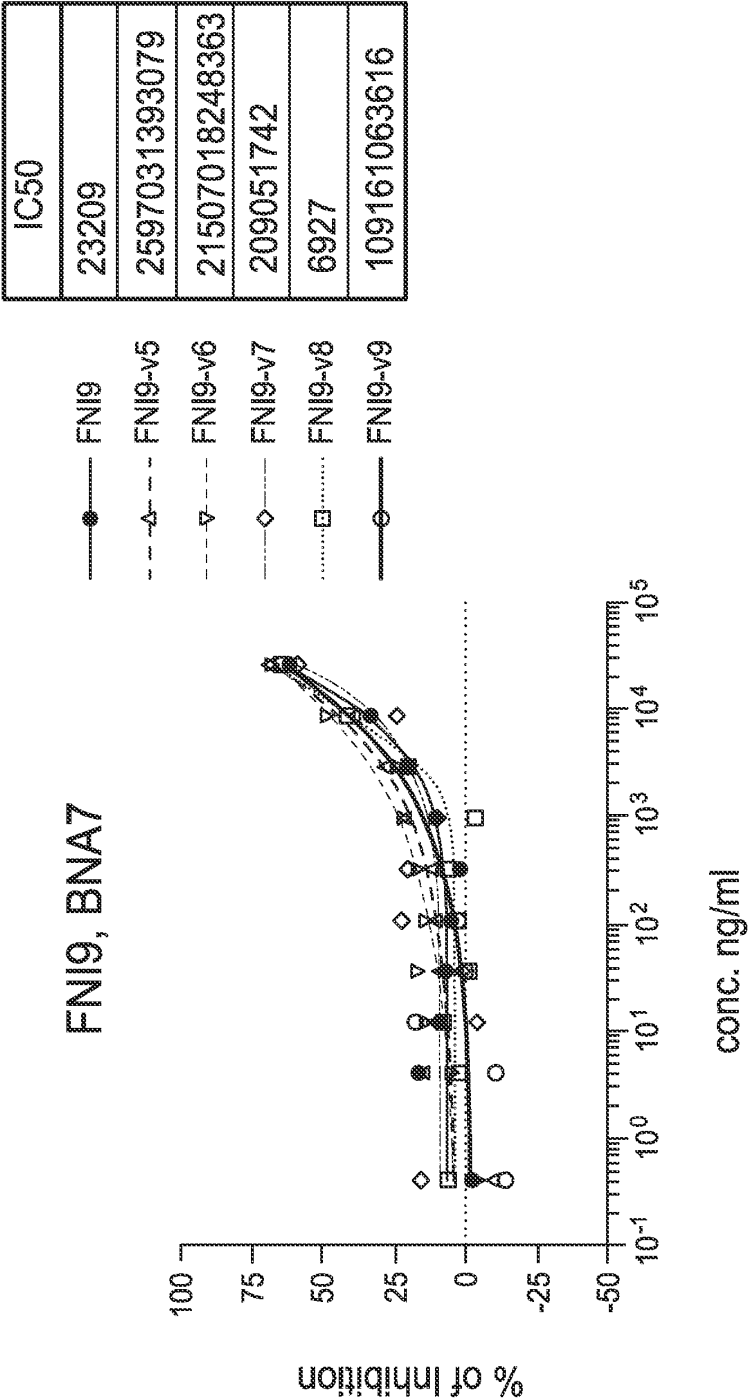


FIG. 74E

161/249

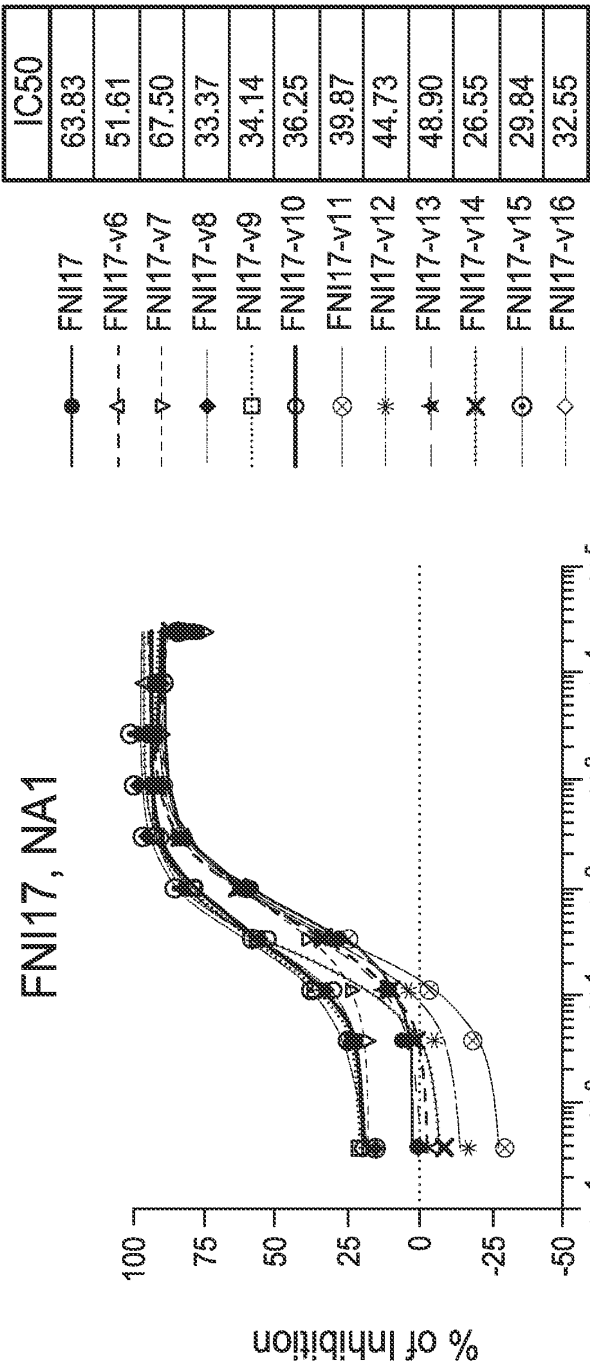


FIG. 75A

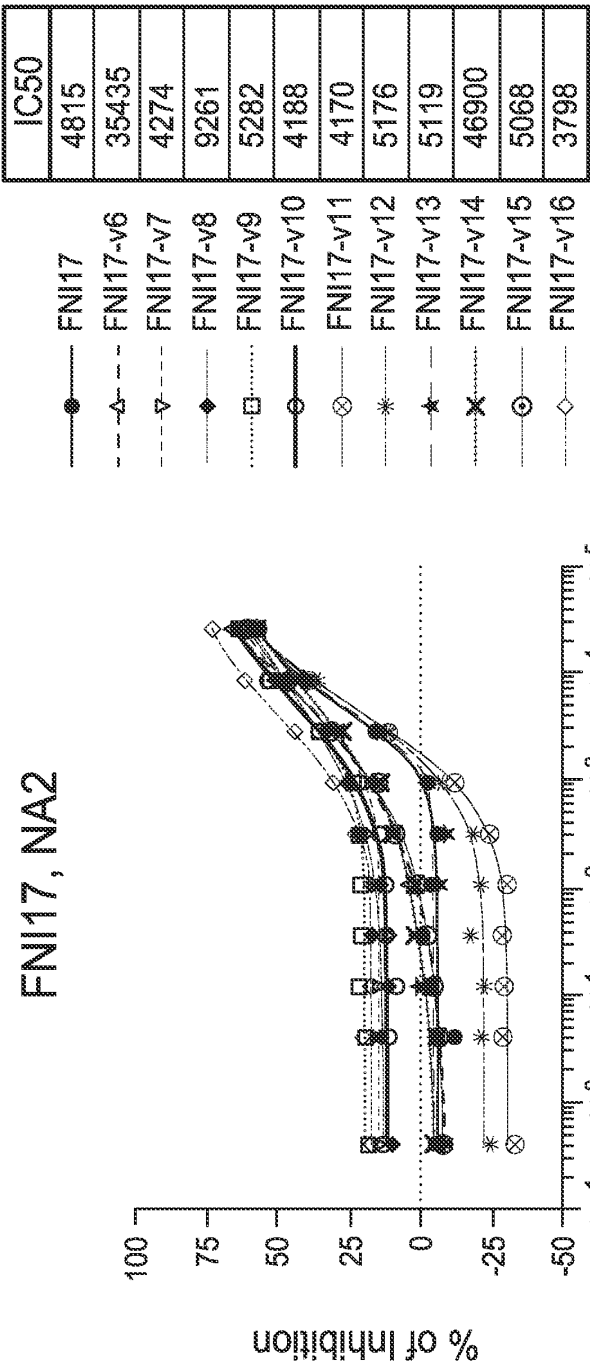


FIG. 75B

163/249

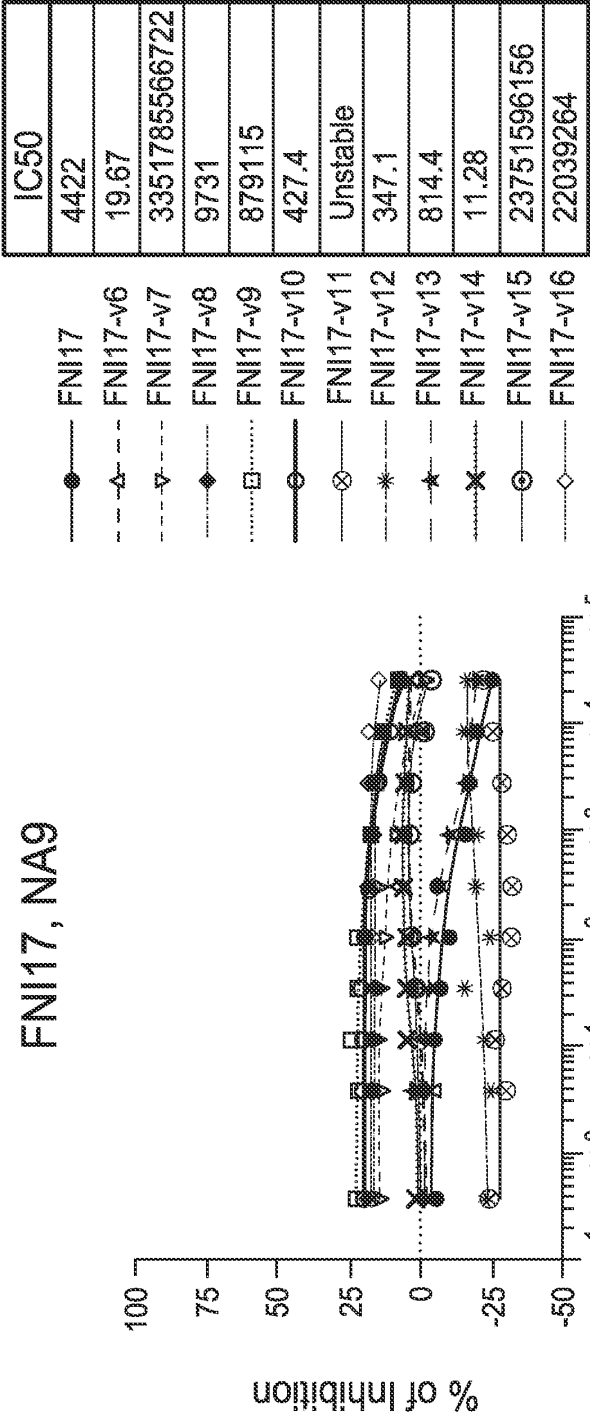


FIG. 75C

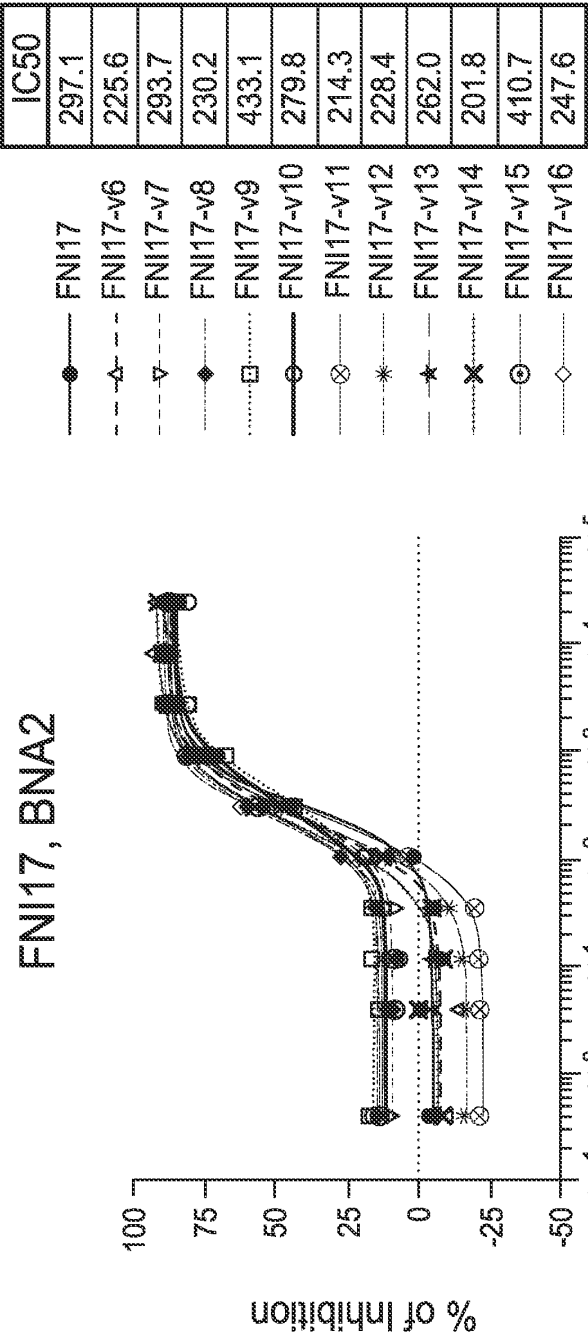


FIG. 75D

165/249

	IC50
FNI17	362.5
FNI17-v6	431.8
FNI17-v7	656.5
FNI17-v8	302.7
FNI17-v9	687.7
FNI17-v10	682.0
FNI17-v11	412.3
FNI17-v12	355.5
FNI17-v13	418.0
FNI17-v14	271.6
FNI17-v15	1463
FNI17-v16	558.2

FNI17, BNA7

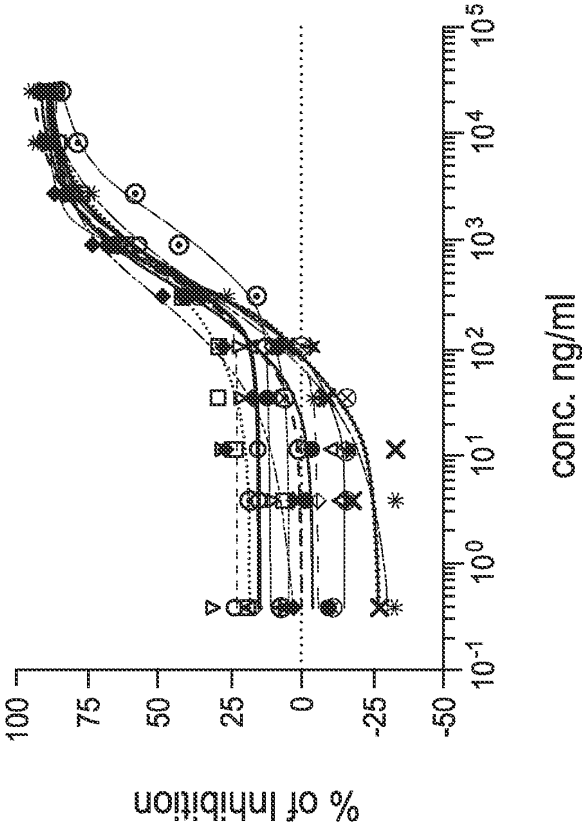


FIG. 75E

166/249

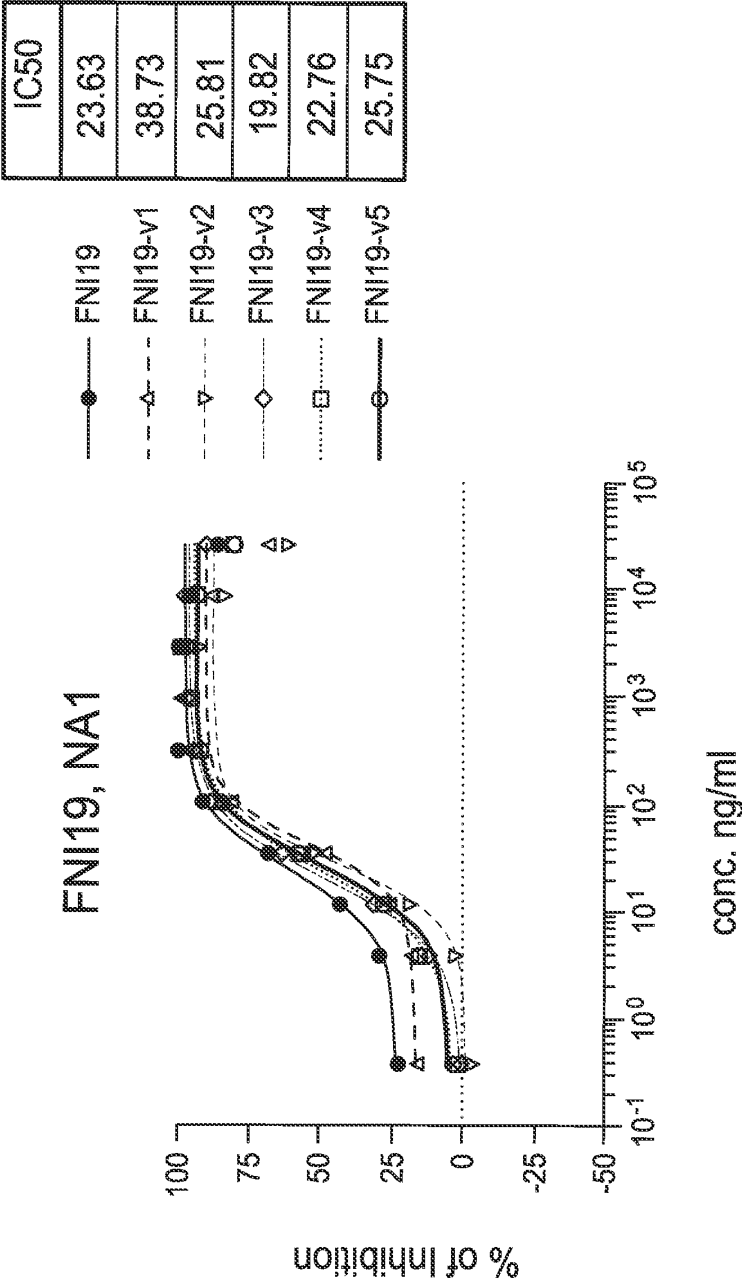


FIG. 76A

167/249

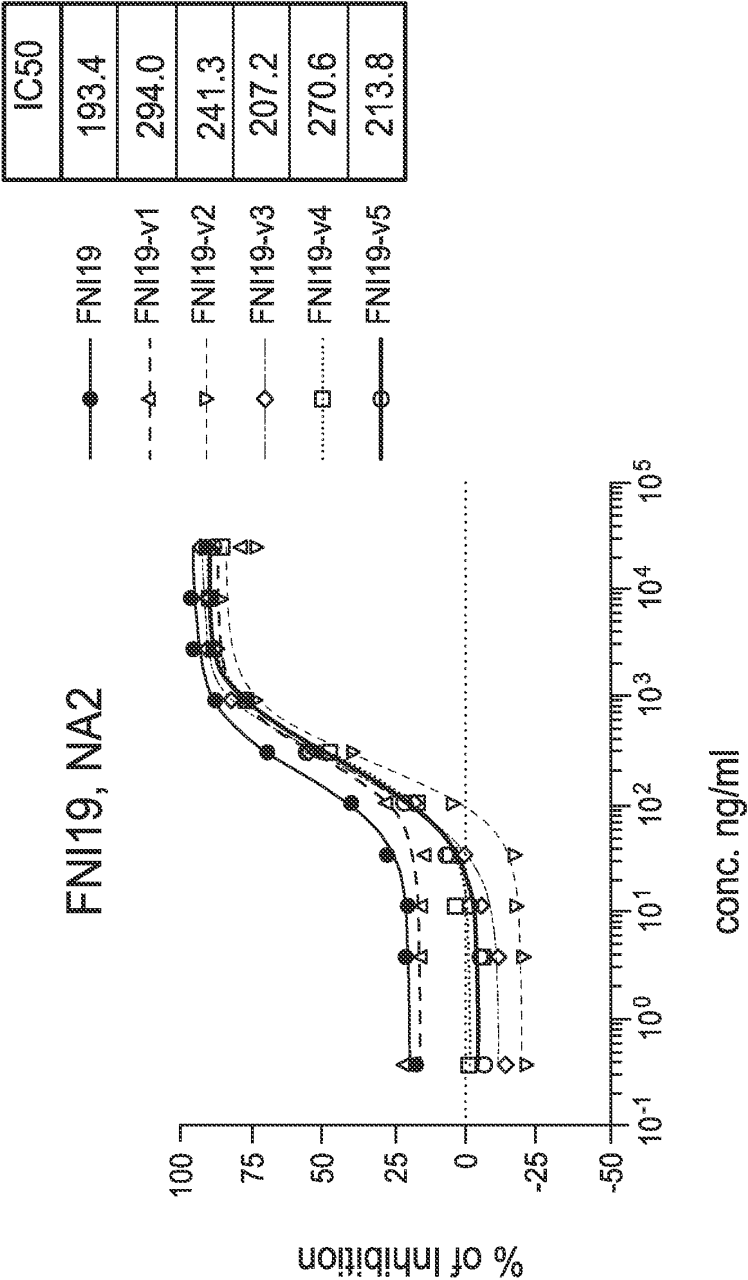


FIG. 76B

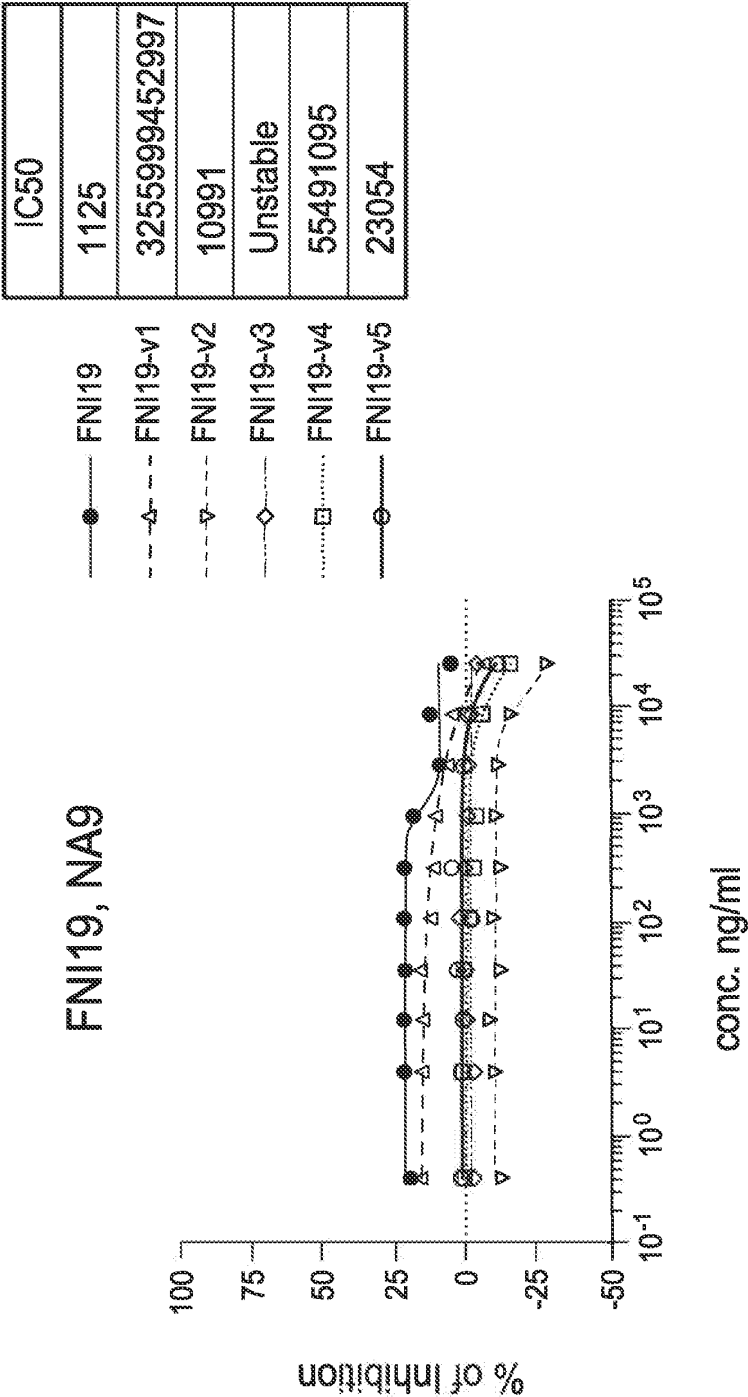


FIG. 76C

169/249

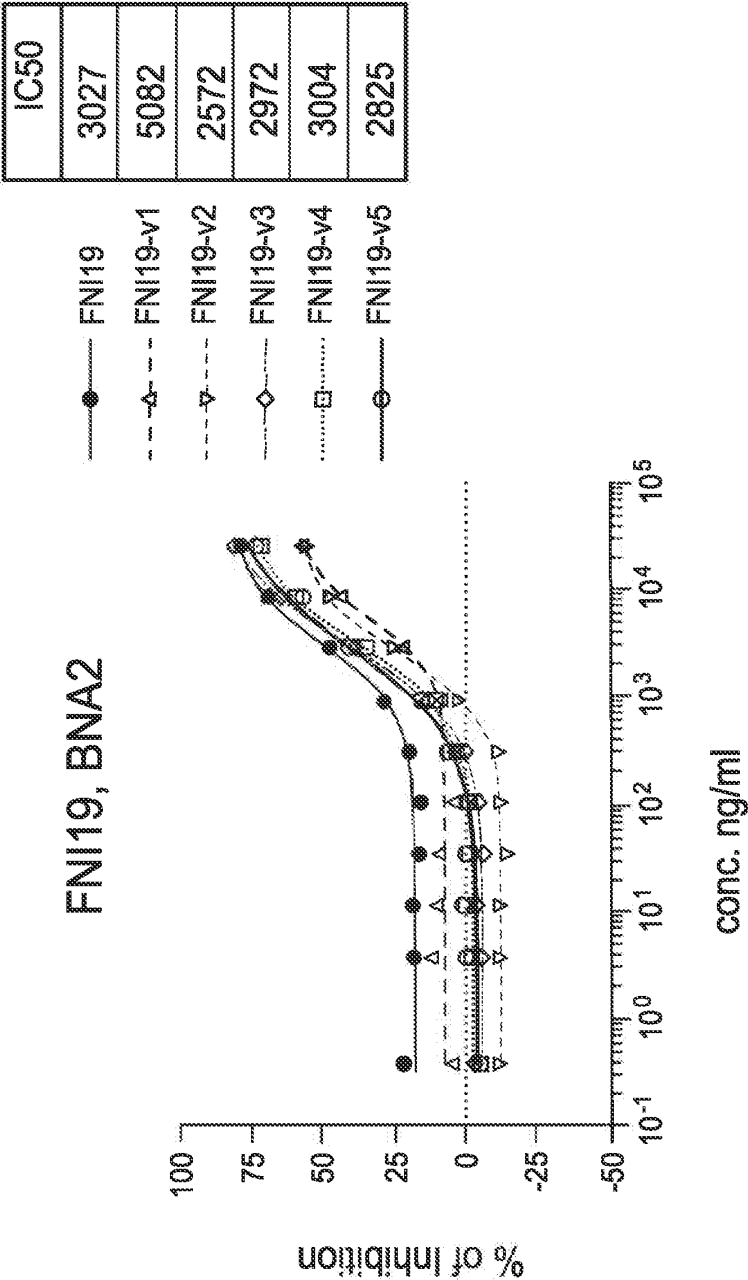


FIG. 76D

170/249

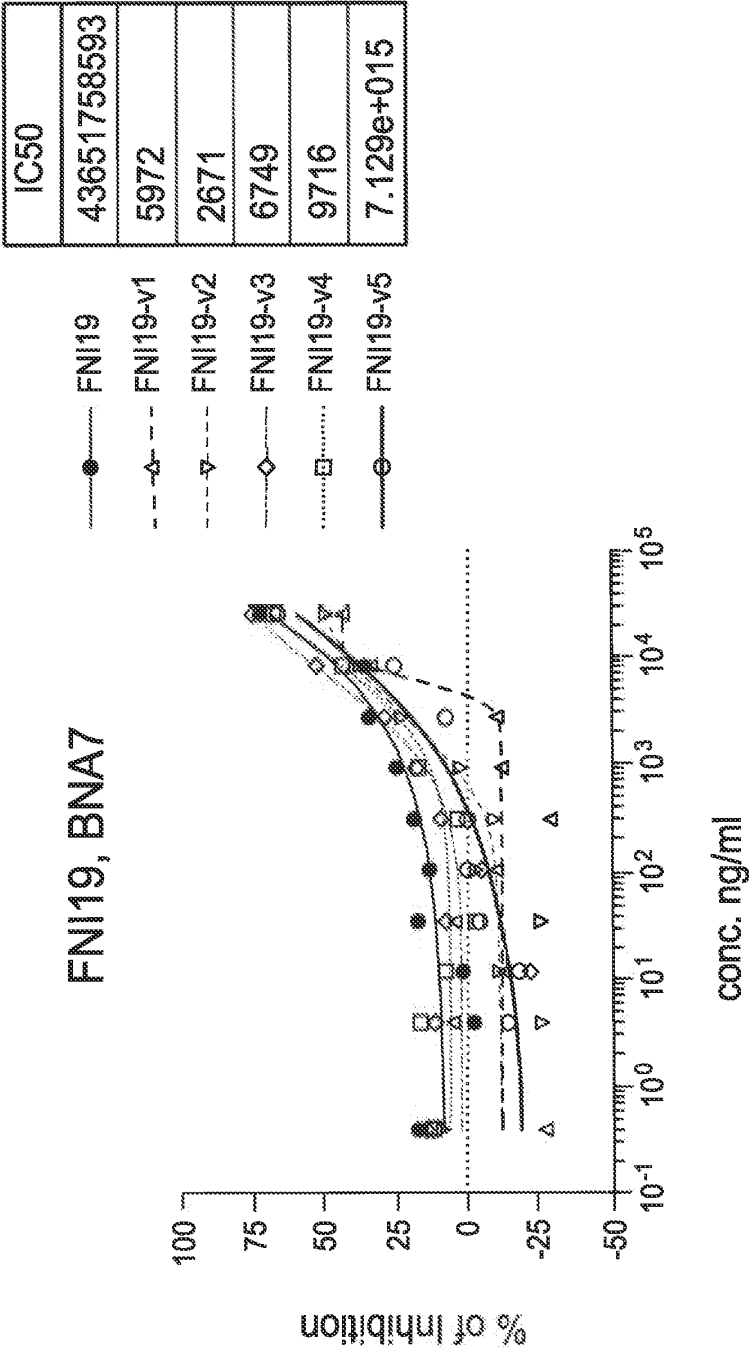
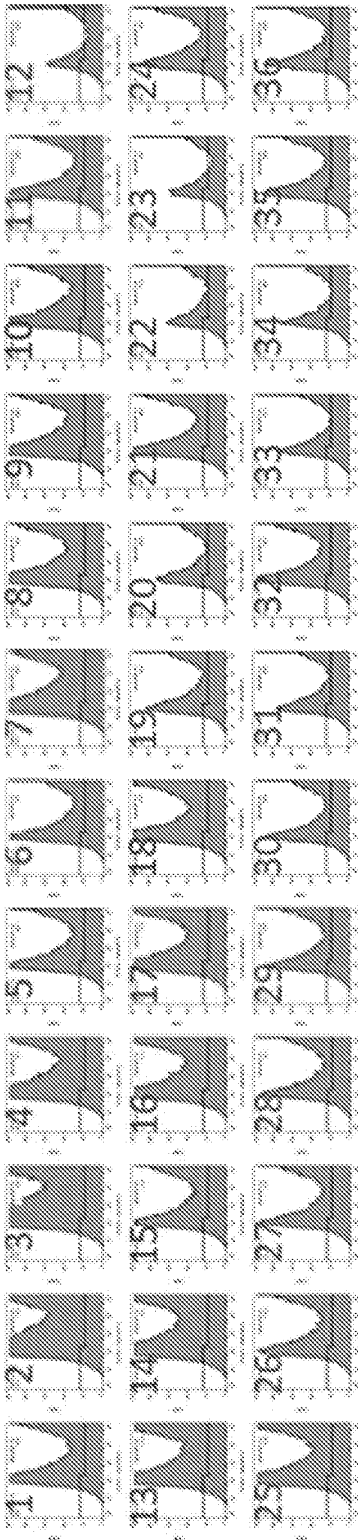


FIG. 76E

171/249

NI_A_Stockholm_18_2007

Plate 1



NI_A_California_07_2009
1223R H275Y

Plate 1

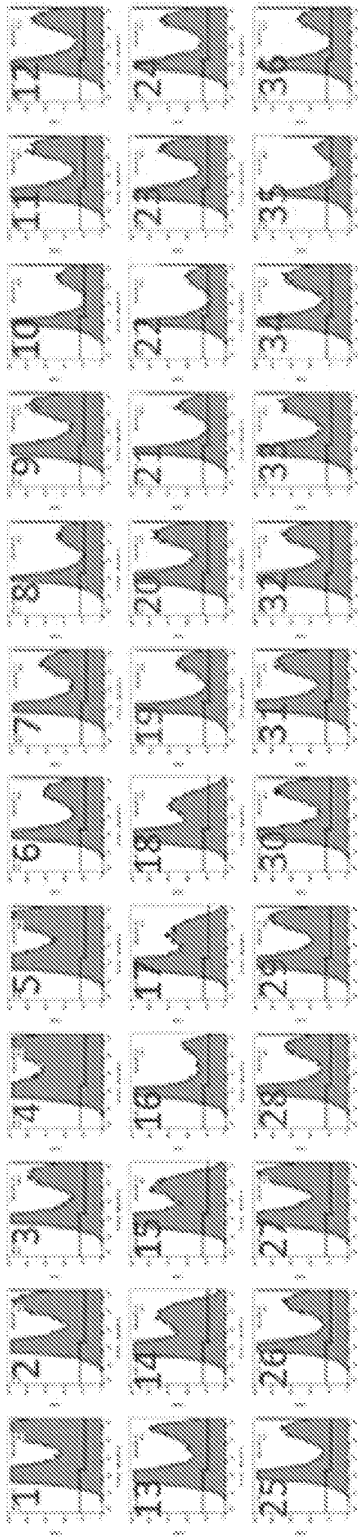
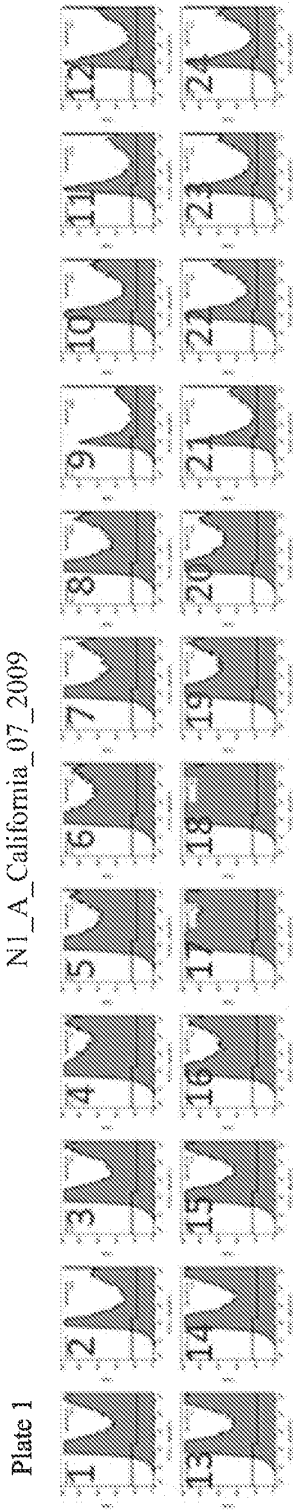


FIG. 77A



1	FNI3-rlgG 1-LS
2	FNI3-v8-rlgG 1-LS
3	FNI3-v9-rlgG 1-LS
4	FNI3-v10-rlgG 1-LS
5	FNI3-v11-rlgG 1-LS
6	FNI3-v12-rlgG 1-LS
7	FNI3-v13-rlgG 1-LS
8	FNI3-v14-rlgG 1-LS
9	FNI3-v15-rlgG 1-LS
10	FNI3-v16-rlgG 1-LS
11	FNI3-v17-rlgG 1-LS
12	FNI3-v18-rlgG 1-LS
13	FNI9-rlgG 1-LS
14	FNI9-v5-rlgG 1-LS
15	FNI9-v6-rlgG 1-LS
16	FNI9-v7-rlgG 1-LS
17	FNI9-v8-rlgG 1-LS
18	FNI9-v9-rlgG 1-LS
19	FNI17-rlgG 1-LS
20	FNI17-v1-rlgG 1-LS
21	FNI17-v2-rlgG 1-LS
22	FNI17-v3-rlgG 1-LS
23	FNI17-v4-rlgG 1-LS
24	FNI17-v5-rlgG 1-LS
25	FNI17-v11-rlgG 1-LS
26	FNI17-v12-rlgG 1-LS
27	FNI17-v13-rlgG 1-LS
28	FNI17-v14-rlgG 1-LS
29	FNI17-v15-rlgG 1-LS
30	FNI17-v16-rlgG 1-LS
31	FNI19-rlgG 1-LS
32	FNI19-v1-rlgG 1-LS
33	FNI19-v2-rlgG 1-LS
34	FNI19-v3-rlgG 1-LS
35	FNI19-v4-rlgG 1-LS
36	FNI19-v5-rlgG 1-LS

FIG. 77A (cont'd)

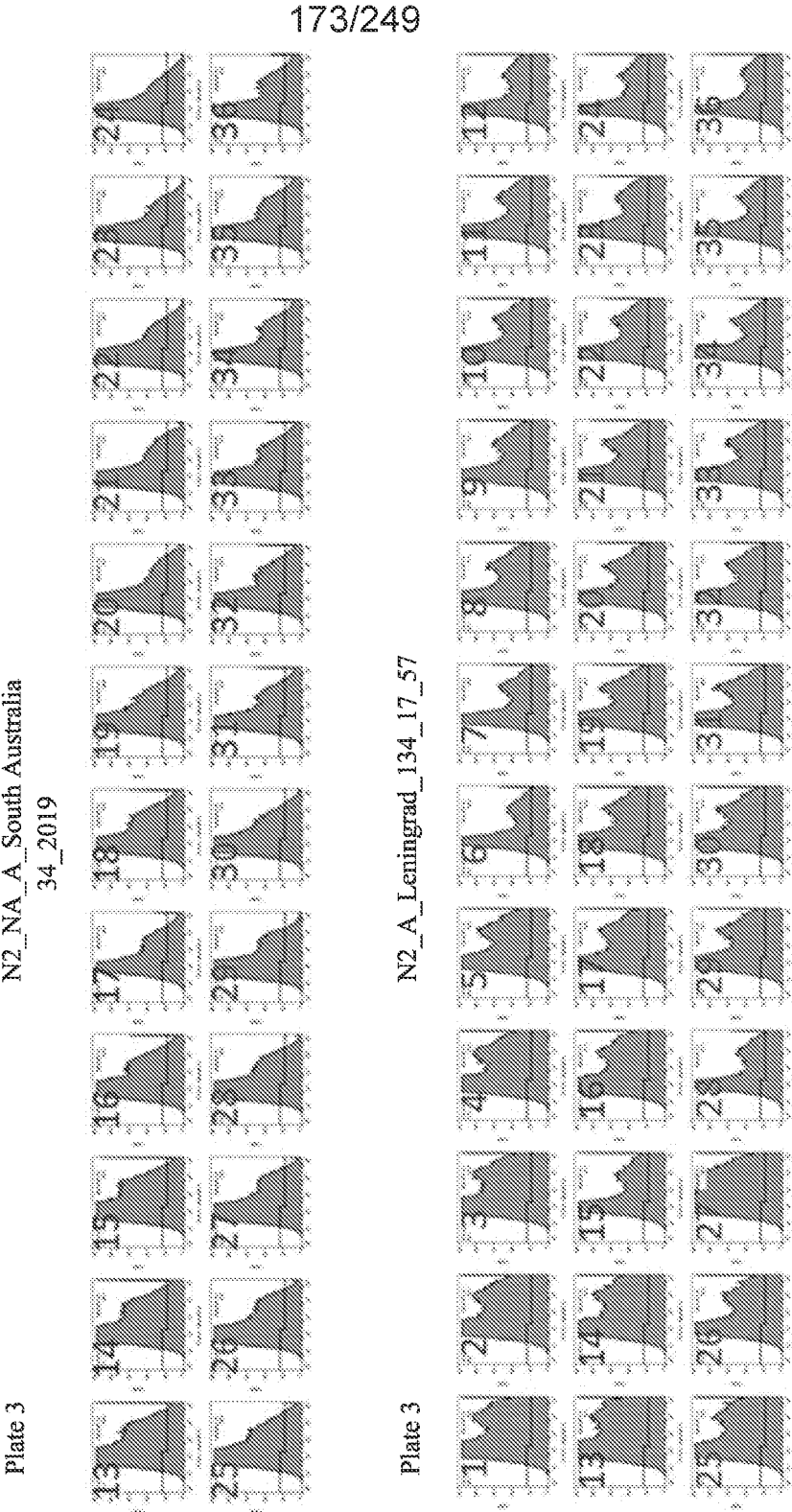
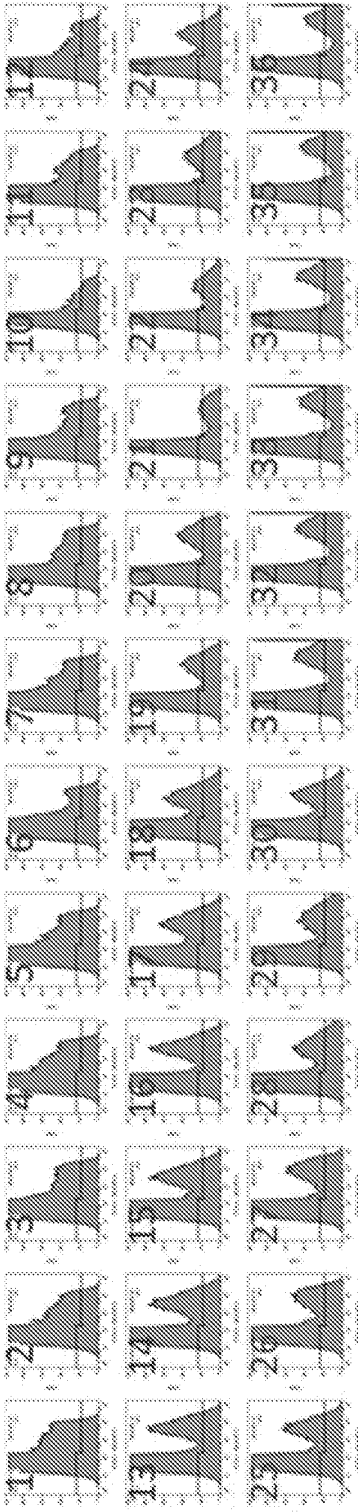


FIG. 77B

N2_A_Washington_01_2007

Plate 3



1	FNI3-rlgG 1-LS
2	FNI3-v8-rlgG 1-LS
3	FNI3-v9-rlgG 1-LS
4	FNI3-v10-rlgG 1-LS
5	FNI3-v11-rlgG 1-LS
6	FNI3-v12-rlgG 1-LS
7	FNI3-v13-rlgG 1-LS
8	FNI3-v14-rlgG 1-LS
9	FNI3-v15-rlgG 1-LS
10	FNI3-v16-rlgG 1-LS
11	FNI3-v17-rlgG 1-LS
12	FNI3-v18-rlgG 1-LS

13	FNI9-rlgG 1-LS
14	FNI9-v5-rlgG 1-LS
15	FNI9-v6-rlgG 1-LS
16	FNI9-v7-rlgG 1-LS
17	FNI9-v8-rlgG 1-LS
18	FNI9-v9-rlgG 1-LS
19	FNI17-rlgG 1-LS
20	FNI17-v6-rlgG 1-LS
21	FNI17-v7-rlgG 1-LS
22	FNI17-v8-rlgG 1-LS
23	FNI17-v9-rlgG 1-LS
24	FNI17-v10-rlgG 1-LS

25	FNI17-v11-rlgG 1-LS
26	FNI17-v12-rlgG 1-LS
27	FNI17-v13-rlgG 1-LS
28	FNI17-v14-rlgG 1-LS
29	FNI17-v15-rlgG 1-LS
30	FNI17-v16-rlgG 1-LS
31	FNI19-rlgG 1-LS
32	FNI19-v1-rlgG 1-LS
33	FNI19-v2-rlgG 1-LS
34	FNI19-v3-rlgG 1-LS
35	FNI19-v4-rlgG 1-LS
36	FNI19-v5-rlgG 1-LS

FIG. 77B (cont'd)

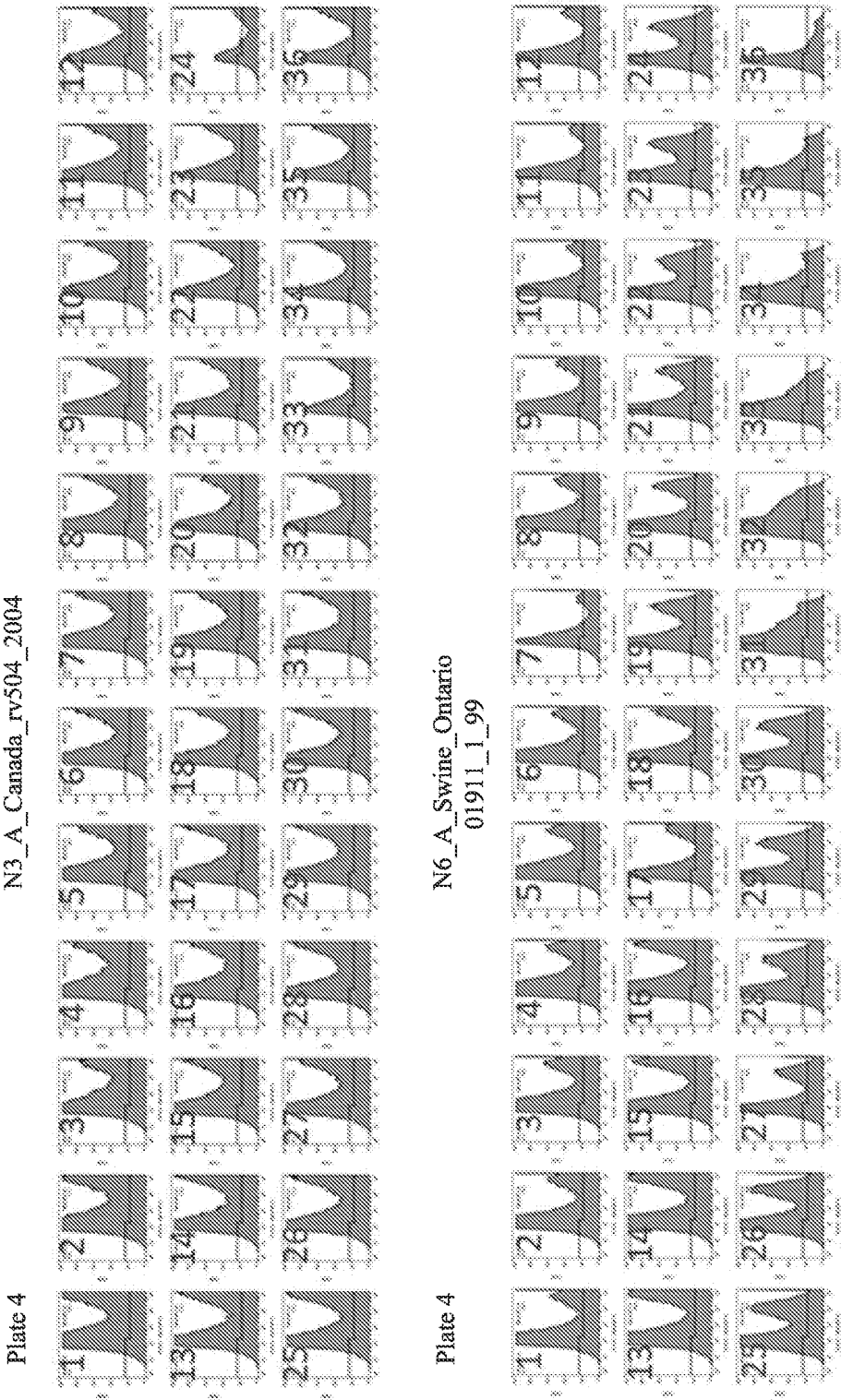


FIG. 77C

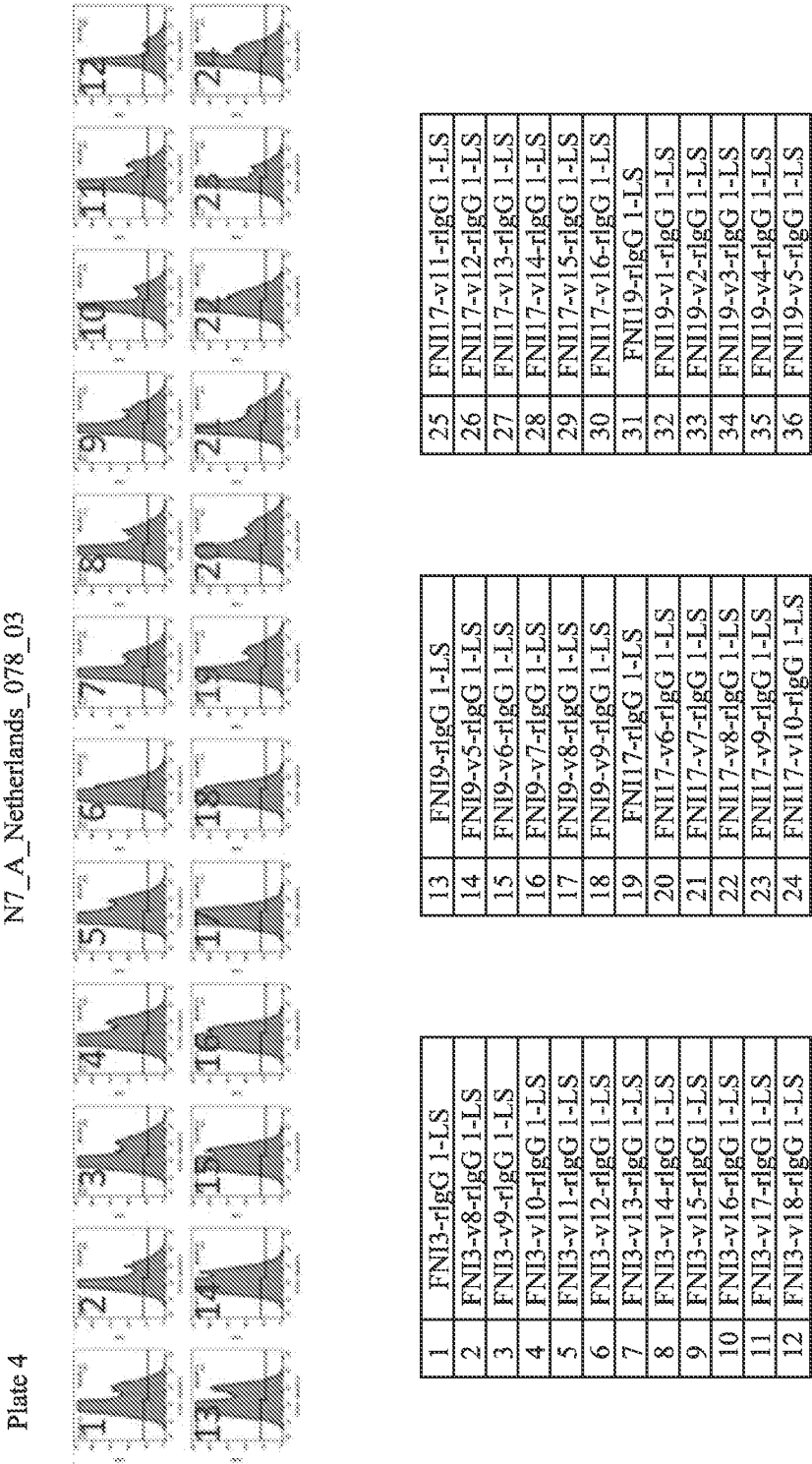


FIG. 77C (cont'd)

177/249

Plate 6
B/Yamanashi/166/1998
(Yamagata)

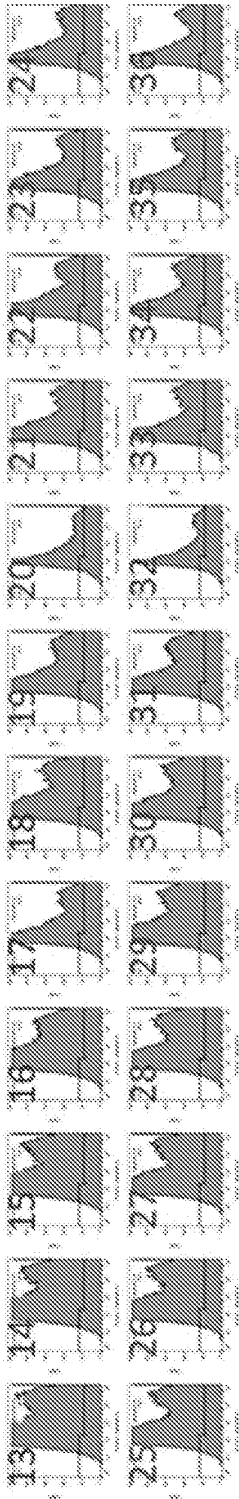


Plate 6
B/Malaysia/2506/2004
(Victoria)

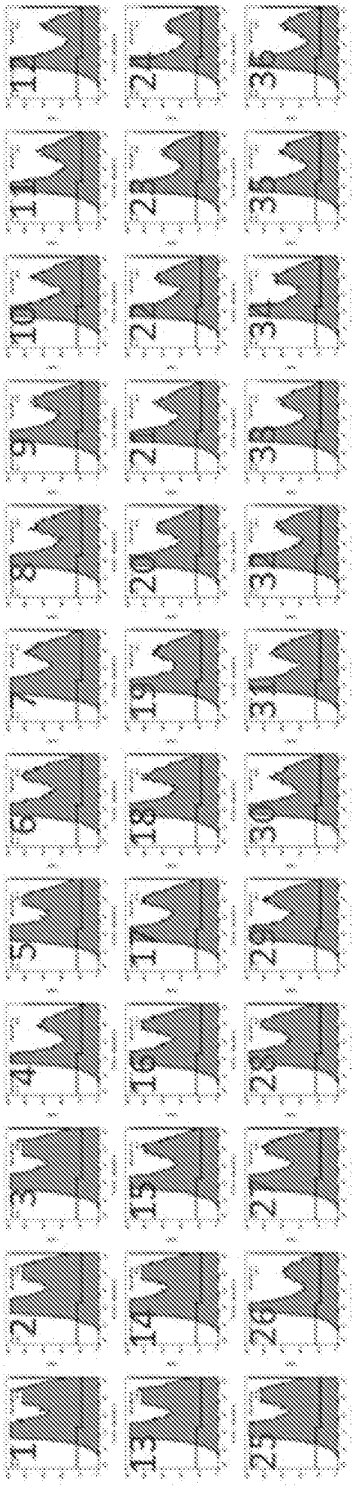


FIG. 77D

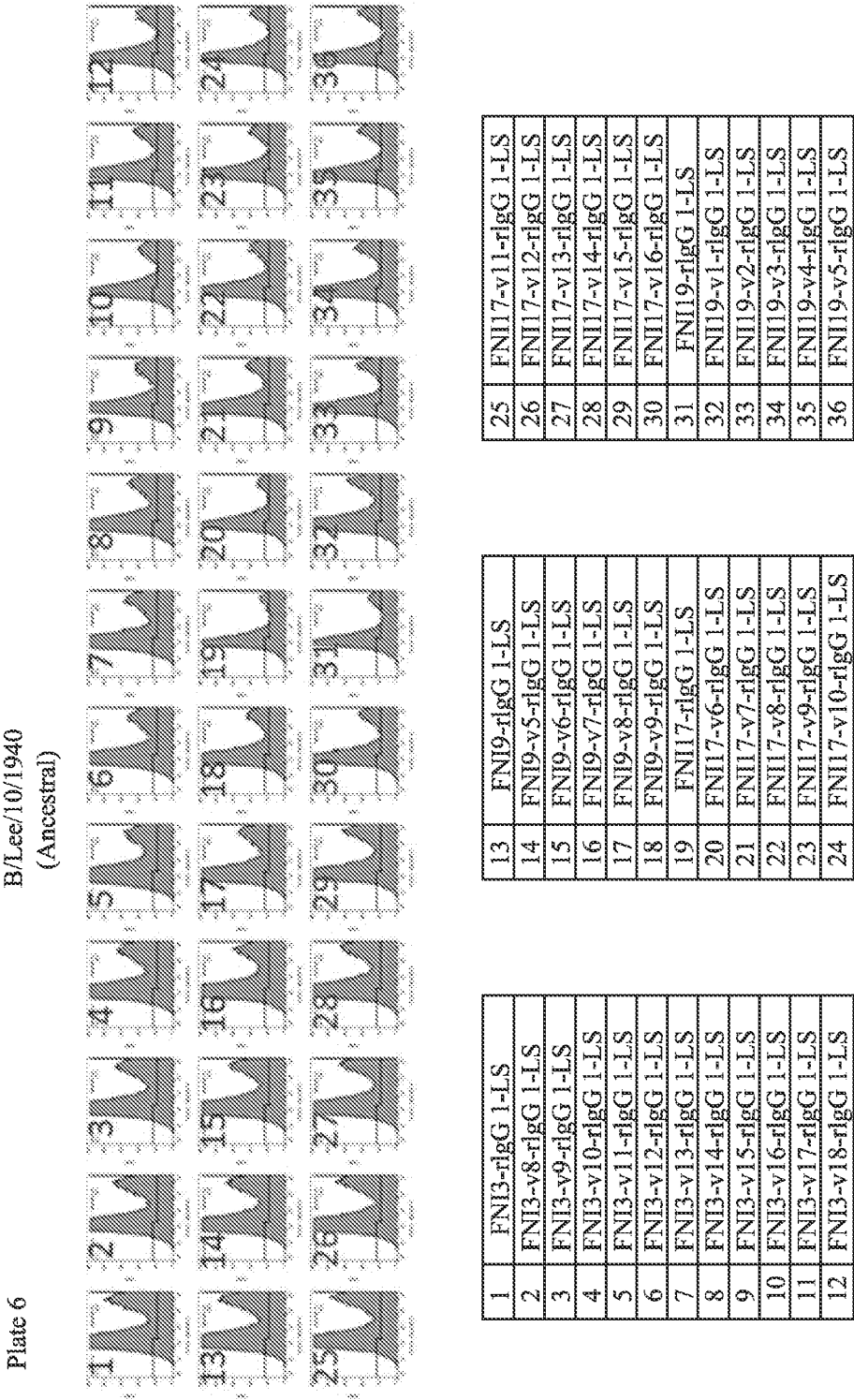


FIG. 77D (cont'd)

	20	40	60
UCA-VH	QVQLVQSGAEVK	PGSSVKNSCKASGGTFFSYAISWVRQAPGQGLEWMGG	IIPIFGTANYAQKFQG
FN13		..A..NNV..A	...H..SA..I
FN19		..S..NNQ...	...F..S..PTS..R
FN117		P	...TS..I
FN119		..E..NK..TLT	...S..I

	80	100	120
UCA-VH	RVTITADESTAYMELSSLRSEDTAVYY	CARAGSDYFNRDGLGWENYYFDY	MGQGTLVTVSS
FN13	..A..A...L.....NG.....S.....	S.....	
FN19	..F.....T..V..D.....D.....	AS.....	
FN117	..A..I..K..V..A.....S...F.....	R.....D.....EN.....	
FN119	..A.....T.....S.....S.....	T..V.....D...PF.....	A.....

FIG. 78A

180/249

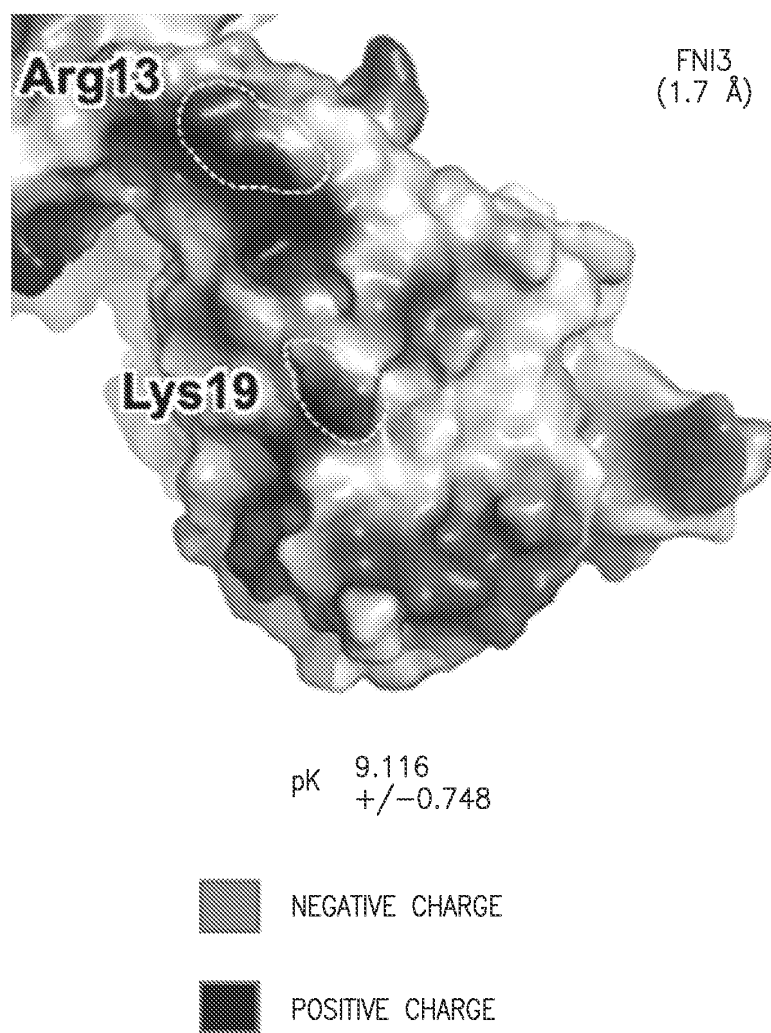


FIG. 78B

181/249

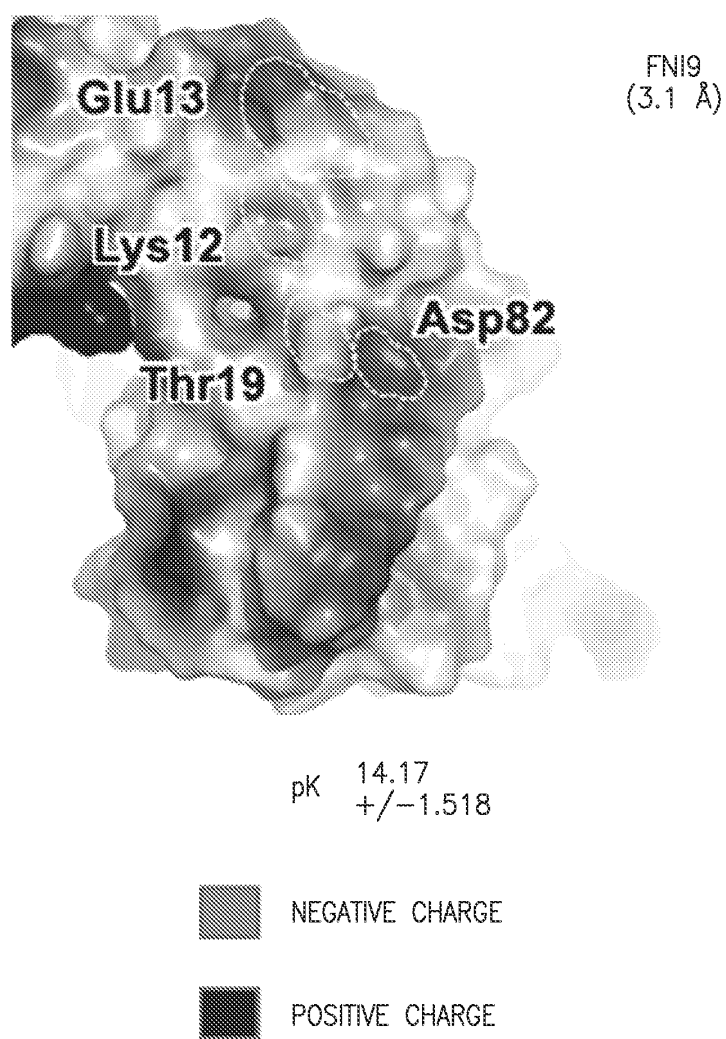


FIG. 78C

182/249

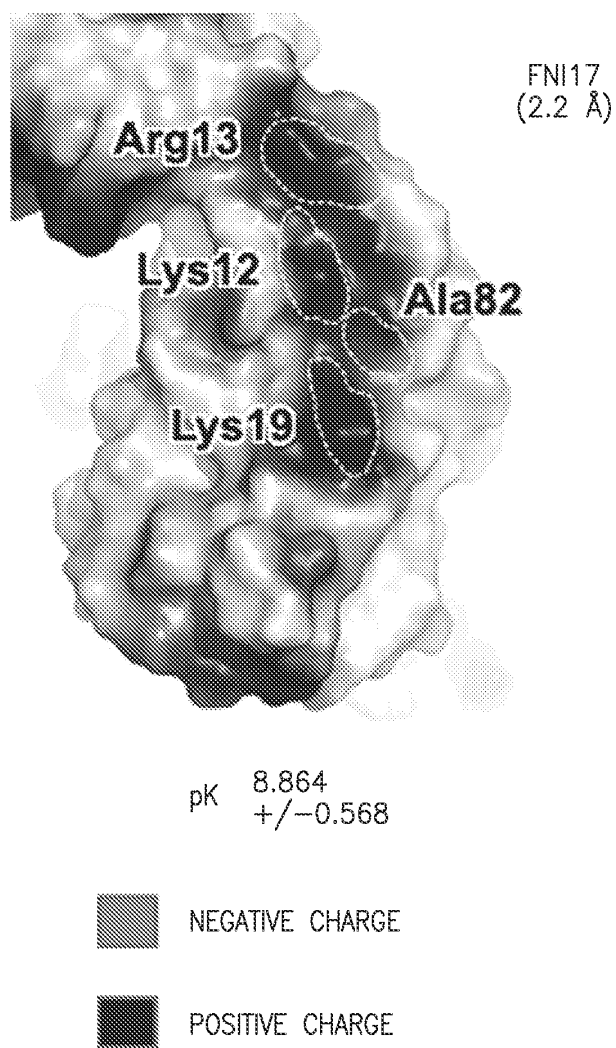


FIG. 78D

183/249

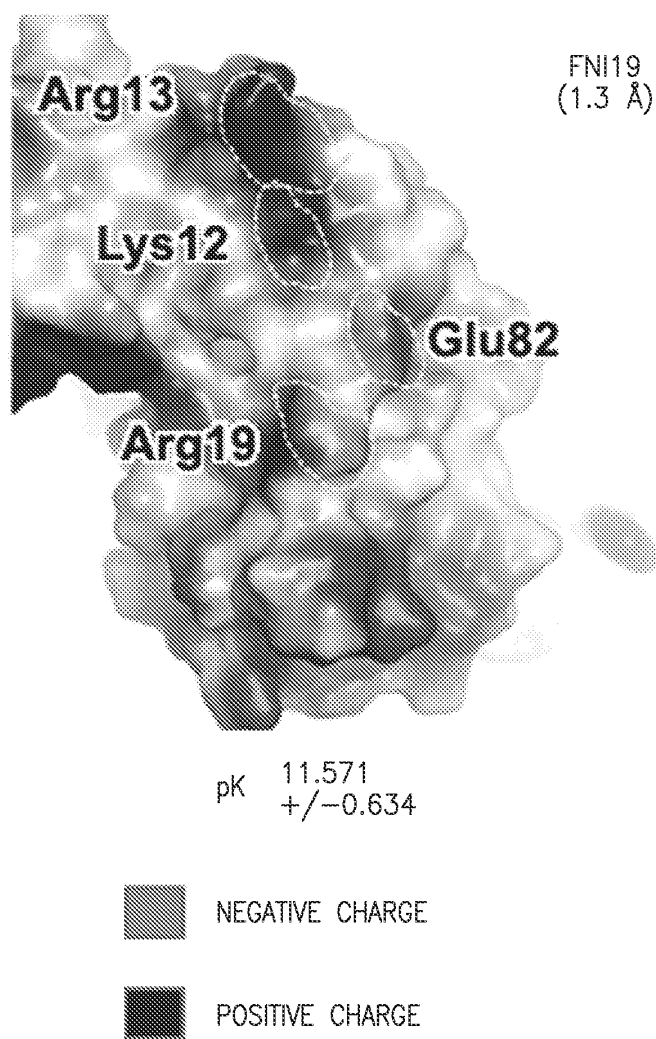


FIG. 78E

184/249

		HALF-LIFE (DAYS)	AUC (DAY* μ g/ml)	CL _{ss} (ml/DAY)	VOLUME (mL)
PK1	FNI17-LS	8.86 $\pm$ 0.57	551.38 $\pm$ 74.42	1.24 $\pm$ 0.23	16.02 $\pm$ 3.88
	FNI19-LS	11.75 $\pm$ 0.63	548.47 $\pm$ 77.01	1.51 $\pm$ 0.27	25.18 $\pm$ 4.10
PK2	FNI17-V19-LS	14.88 $\pm$ 3.27	582.60 $\pm$ 99.63	1.80 $\pm$ 0.25	39.02 $\pm$ 11.07
	FNI19-V3-LS	14.40 $\pm$ 2.13	732.05 $\pm$ 112.48	1.84 $\pm$ 0.25	38.53 $\pm$ 8.65

i.v INJECTION - 5mg/Kg

FIG. 79A

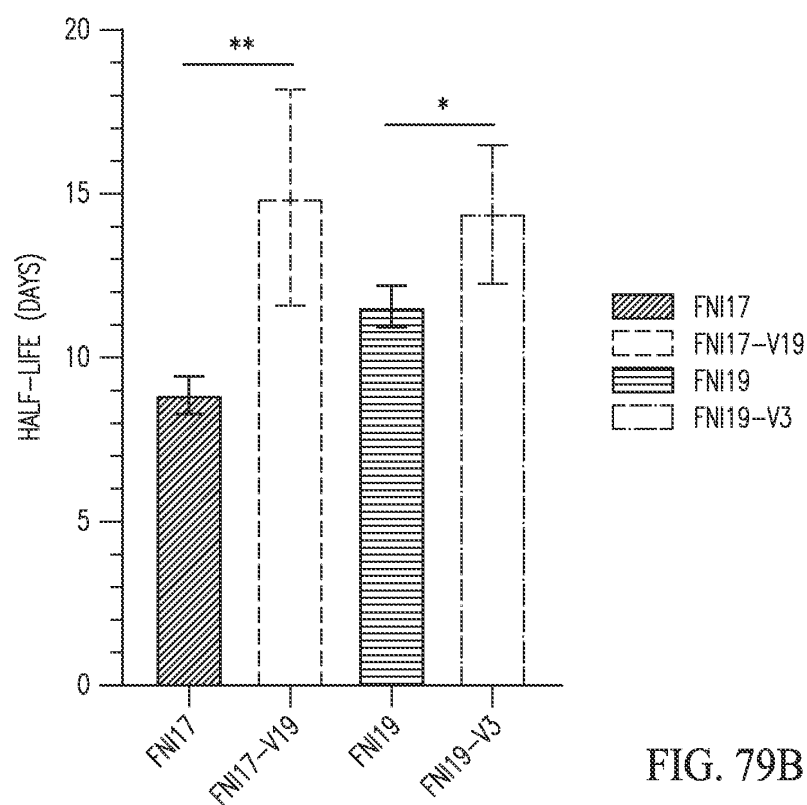


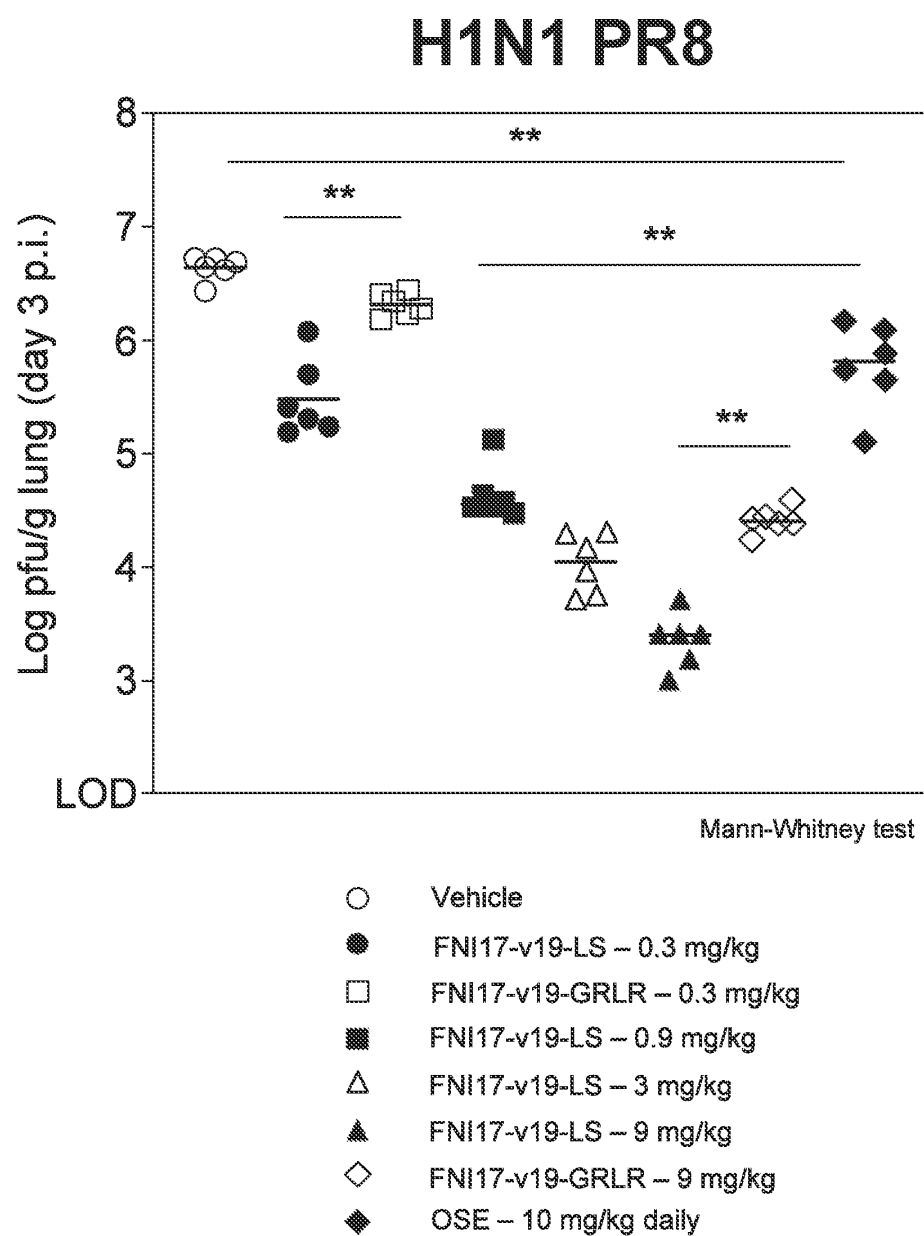
FIG. 79B

185/249

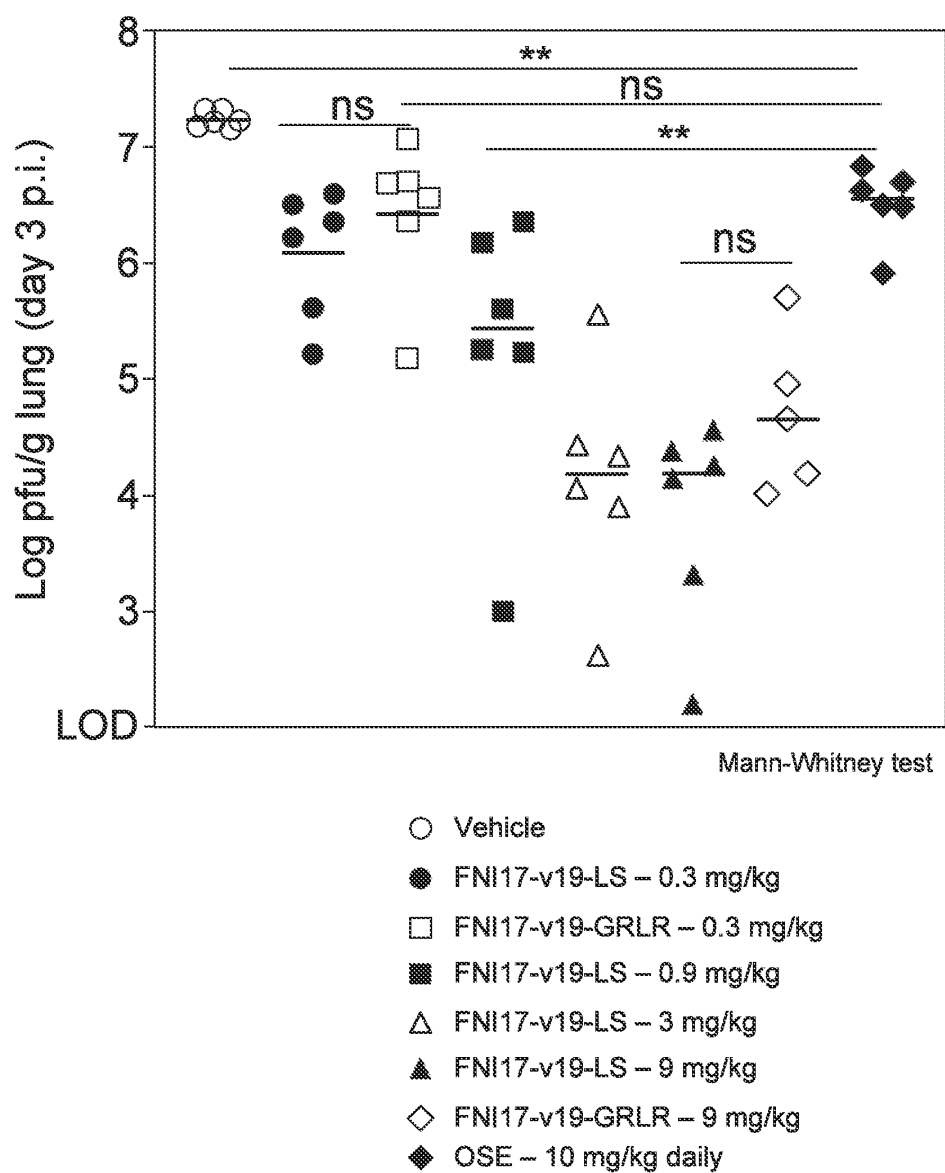
Group	Treatment	Influenza Infection	Endpoints
Control	Vehicle Control	A/Puerto Rico/8/34	Day 3/4 Lung PFU
FNI17-v19-rlgG1-LS	9 mg/kg		
FNI17-v19-rlgG1-LS	3 mg/kg		
FNI17-v19-rlgG1-LS	0.9 mg/kg		
FNI17-v19-rlgG1-LS	0.3 mg/kg		
Oseltamivir	10 mg/kg		
FNI17-v19-rlgG1-GRLR	9 mg/kg		
FNI17-v19-rlgG1-GRLR	0.3 mg/kg		
N=6 mice/group (48 mice total)			
Control	Vehicle Control	A/Hong Kong/8/68	Day 3/4 Lung PFU
FNI17-v19-rlgG1-LS	9 mg/kg		
FNI17-v19-rlgG1-LS	3 mg/kg		
FNI17-v19-rlgG1-LS	0.9 mg/kg		
FNI17-v19-rlgG1-LS	0.3 mg/kg		
Oseltamivir	10 mg/kg		
FNI17-v19-rlgG1-GRLR	9 mg/kg		
FNI17-v19-rlgG1-GRLR	0.3 mg/kg		
N=6 mice/group (48 mice total)			
Control	Vehicle Control	B/Victoria/504/2000	Day 3/4 Lung PFU
FNI17-v19-rlgG1-LS	9 mg/kg		
FNI17-v19-rlgG1-LS	3 mg/kg		
FNI17-v19-rlgG1-LS	0.9 mg/kg		
FNI17-v19-rlgG1-LS	0.3 mg/kg		
Oseltamivir	10 mg/kg		
N=6 mice/group (36 mice total)			
Control	Vehicle Control		
FNI17-v19-rlgG1-LS	9 mg/kg		
FNI17-v19-rlgG1-LS	3 mg/kg		
FNI17-v19-rlgG1-LS	0.9 mg/kg		
FNI17-v19-rlgG1-LS	0.3 mg/kg		
Oseltamivir	10 mg/kg		
N=6 mice/group (36 mice total)			

FIG. 80

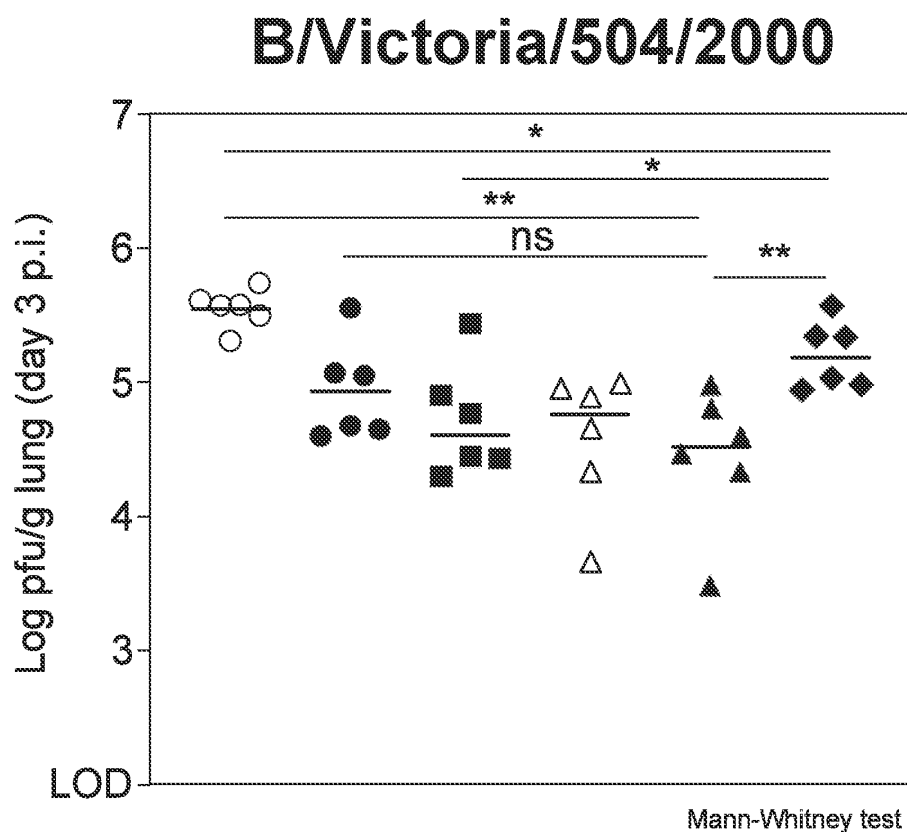
186/249

*FIG. 81A*

187/249

H3N2 HK/68**FIG. 81B**

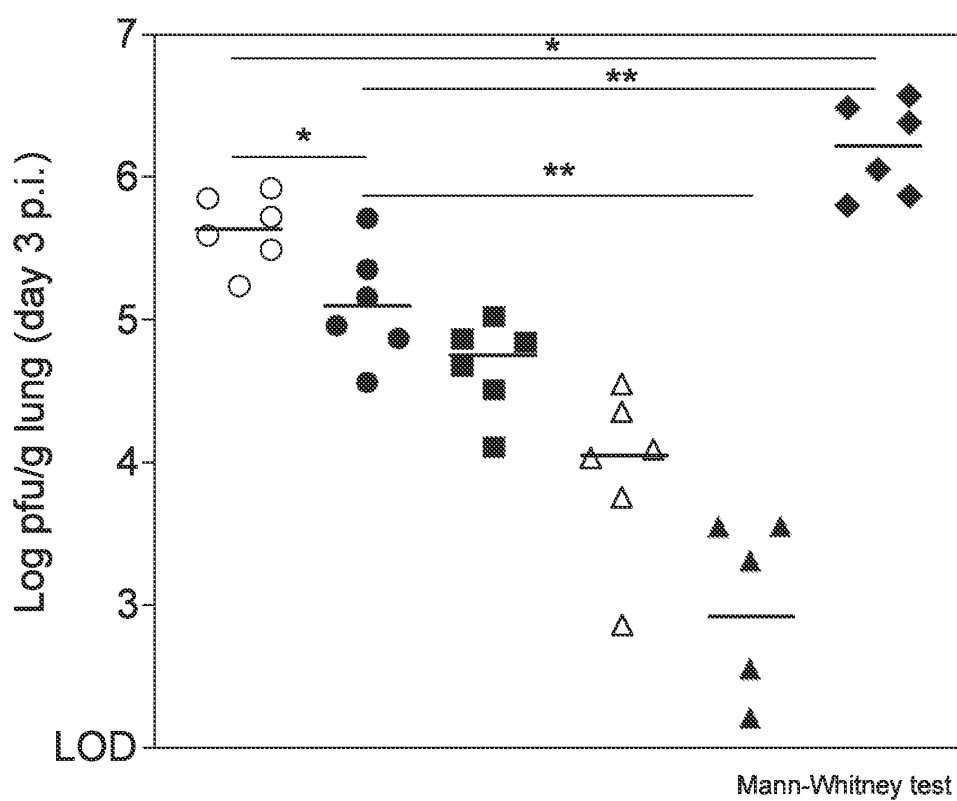
188/249



- Vehicle
- FNI17-v19-LS – 0.3 mg/kg
- FNI17-v19-LS – 0.9 mg/kg
- △ FNI17-v19-LS – 3 mg/kg
- ▲ FNI17-v19-LS – 9 mg/kg
- ◆ OSE – 10 mg/kg daily

FIG. 81C

189/249

B/Brisbane/60/2008

- Vehicle
- FNI17-v19-LS – 0.3 mg/kg
- FNI17-v19-LS – 0.9 mg/kg
- △ FNI17-v19-LS – 3 mg/kg
- ▲ FNI17-v19-LS – 9 mg/kg
- ◆ OSE – 10 mg/kg daily

FIG. 81D

190/249

Setting	Prophylaxis
Age range	7-11 weeks
mAb delivery	I.V.
Injection/Timing	Single / Day -1
Virus	H1N1 PR8
Infection route	I.N.
Viral input	5LD50

FIG. 82

191/249

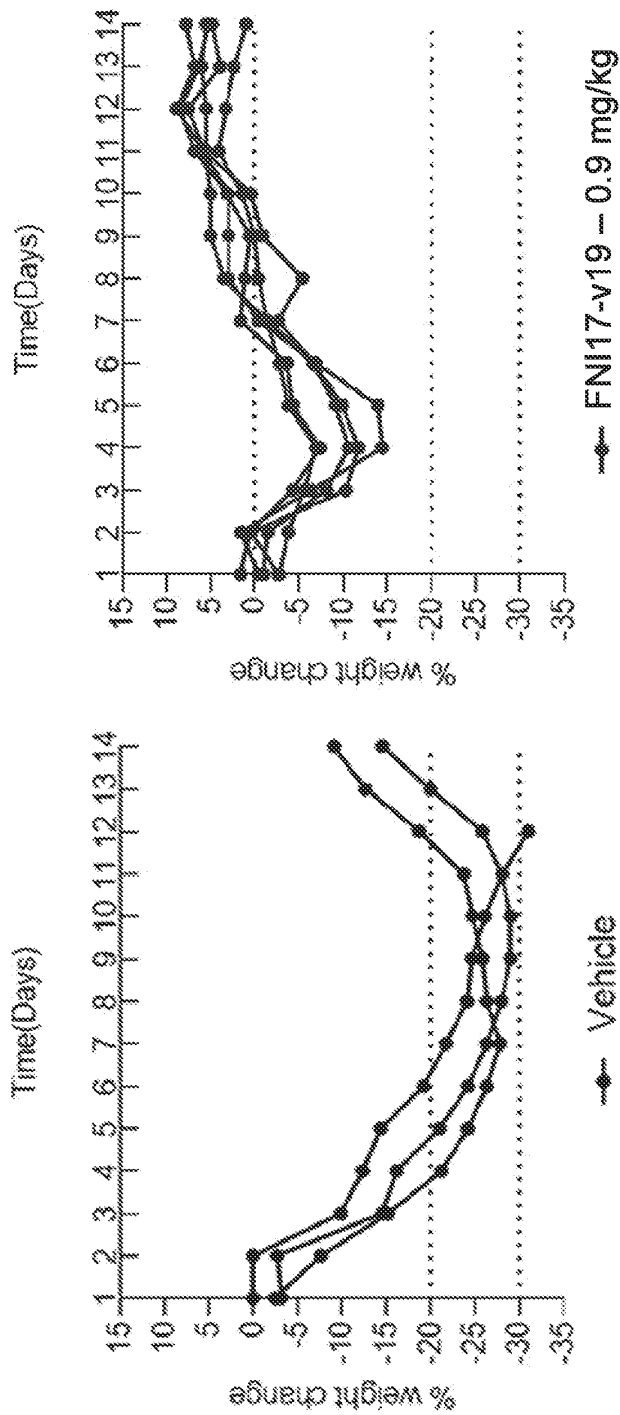


FIG. 83A

192/249

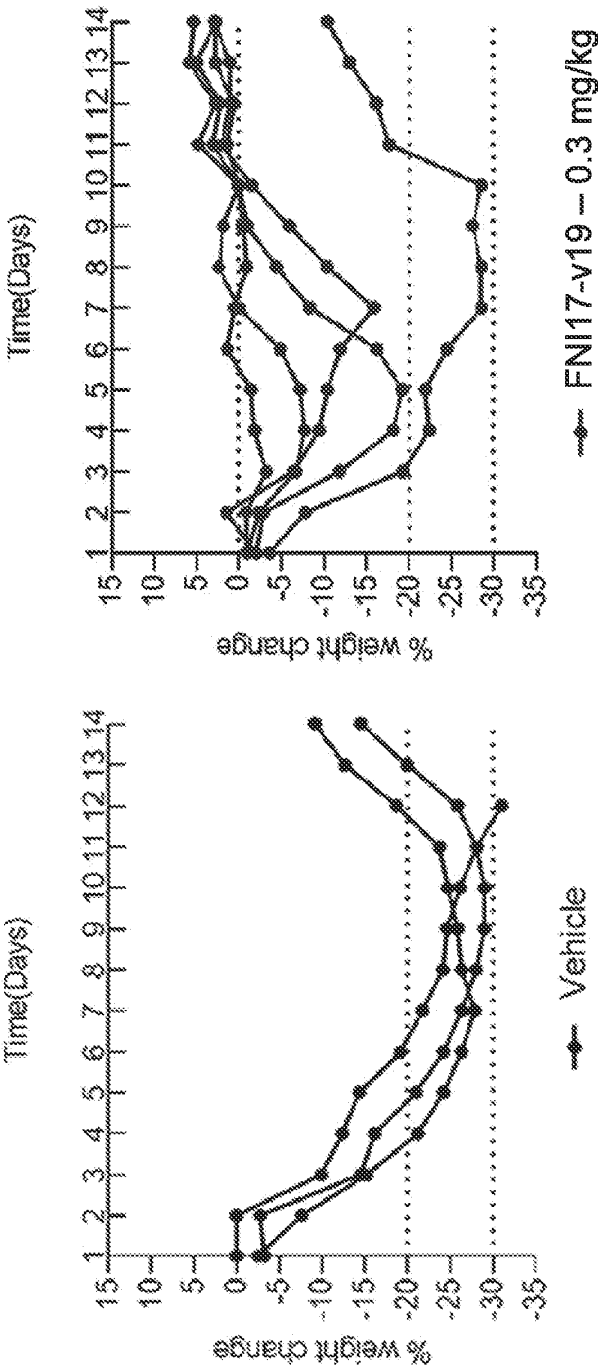


FIG. 83B

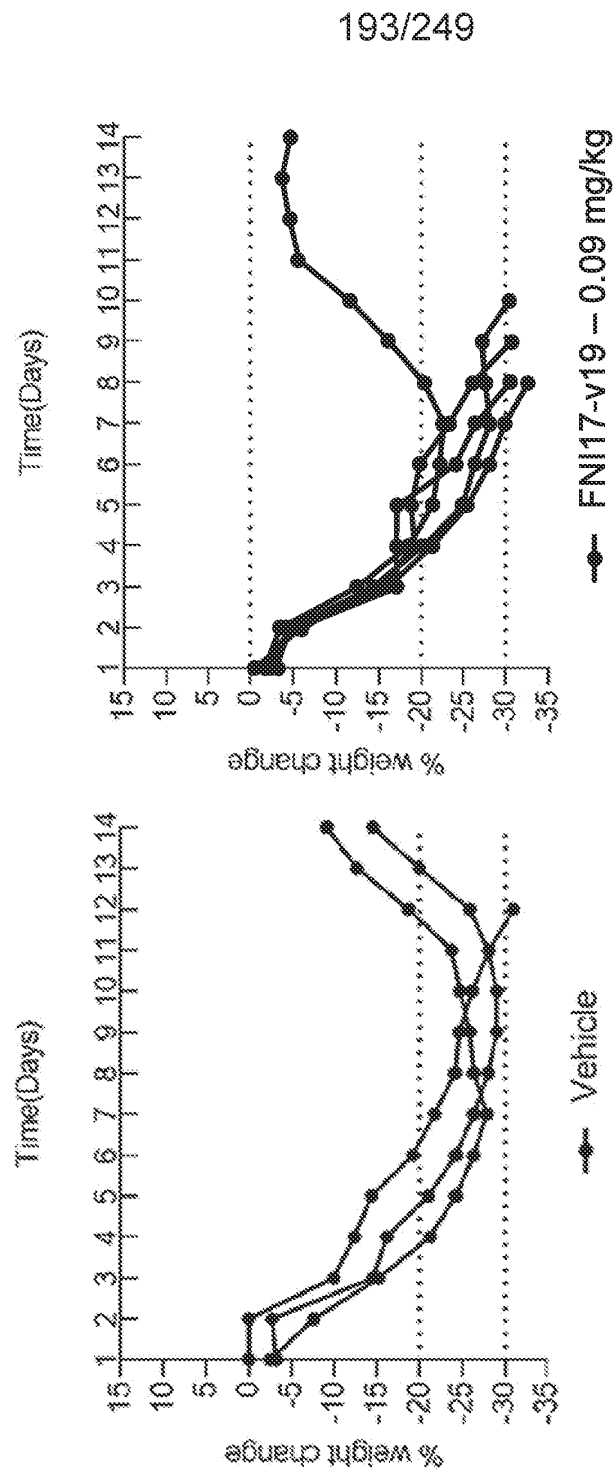
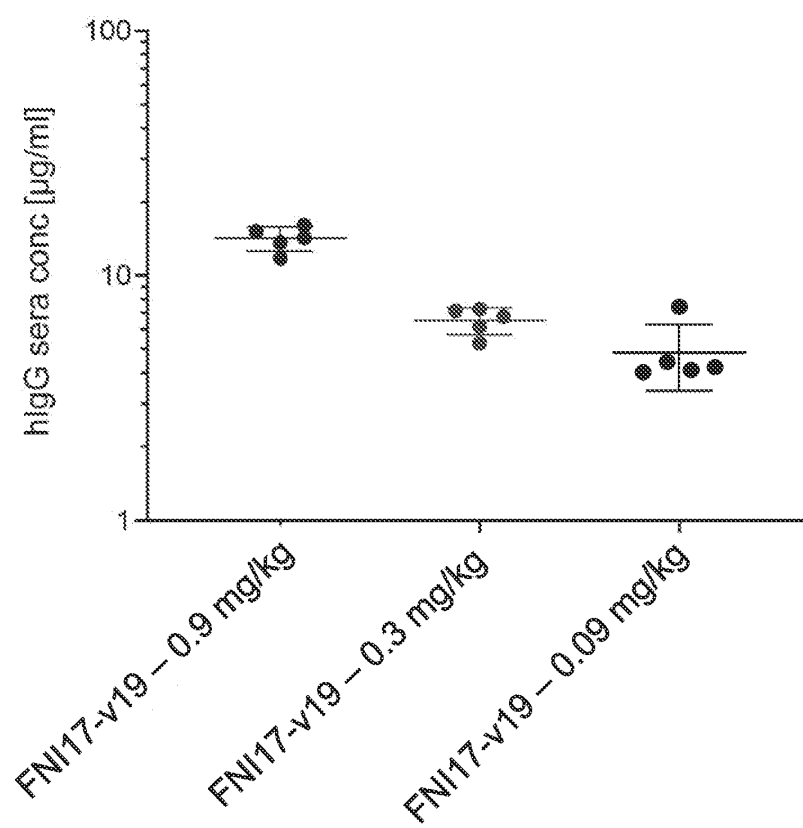


FIG. 83C

194/249

*FIG. 84*

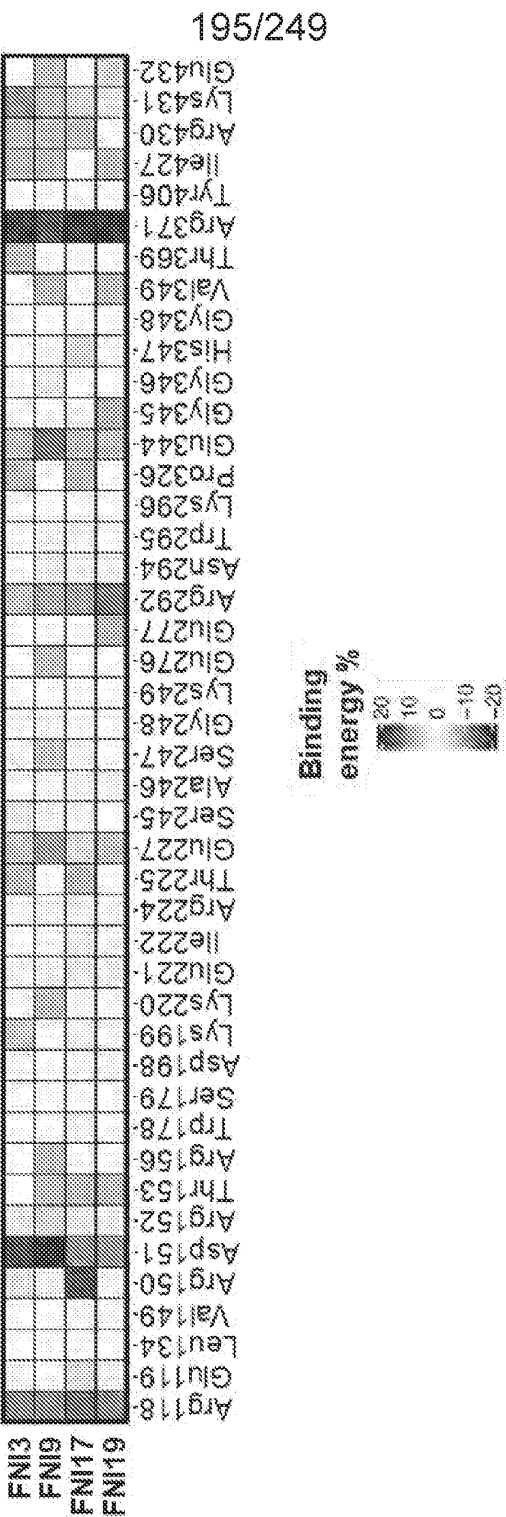


FIG. 85

196/249

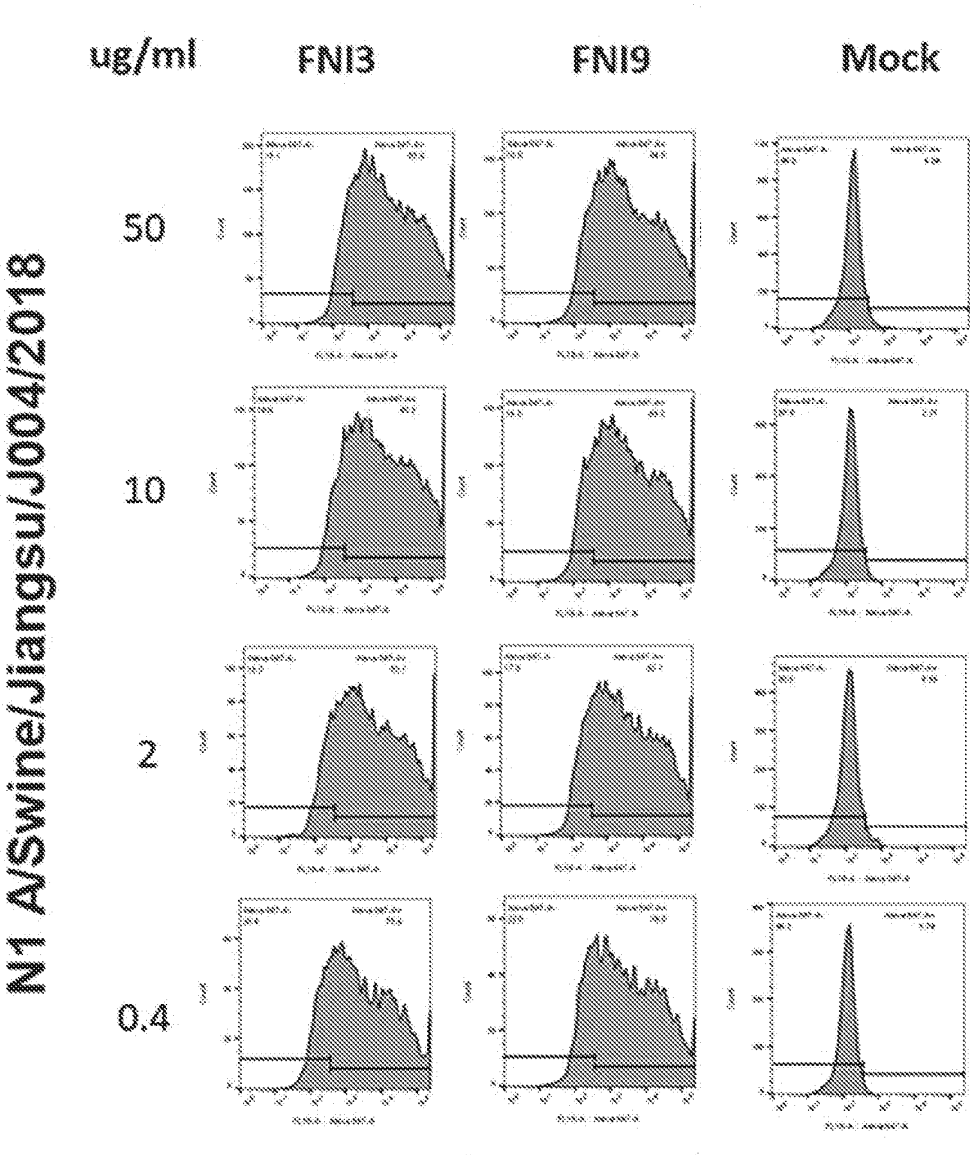


FIG. 86

197/249

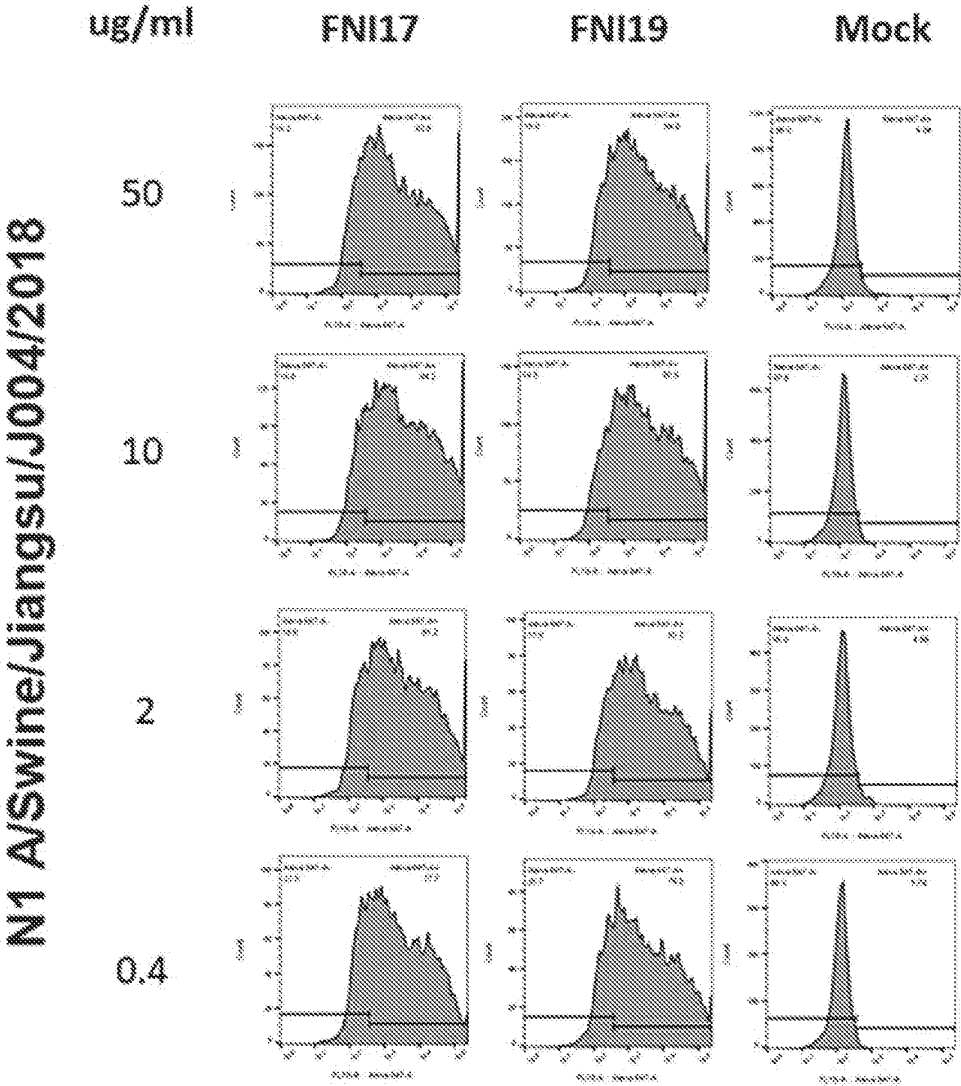


FIG. 86 (cont'd)

198/249

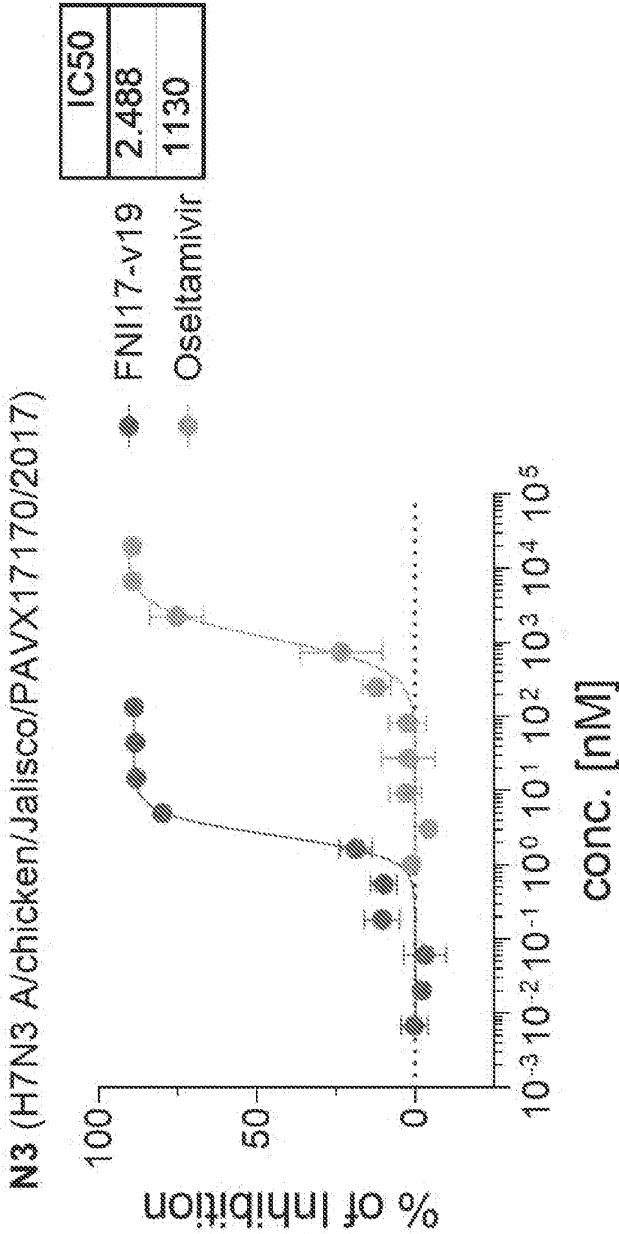


FIG. 87A

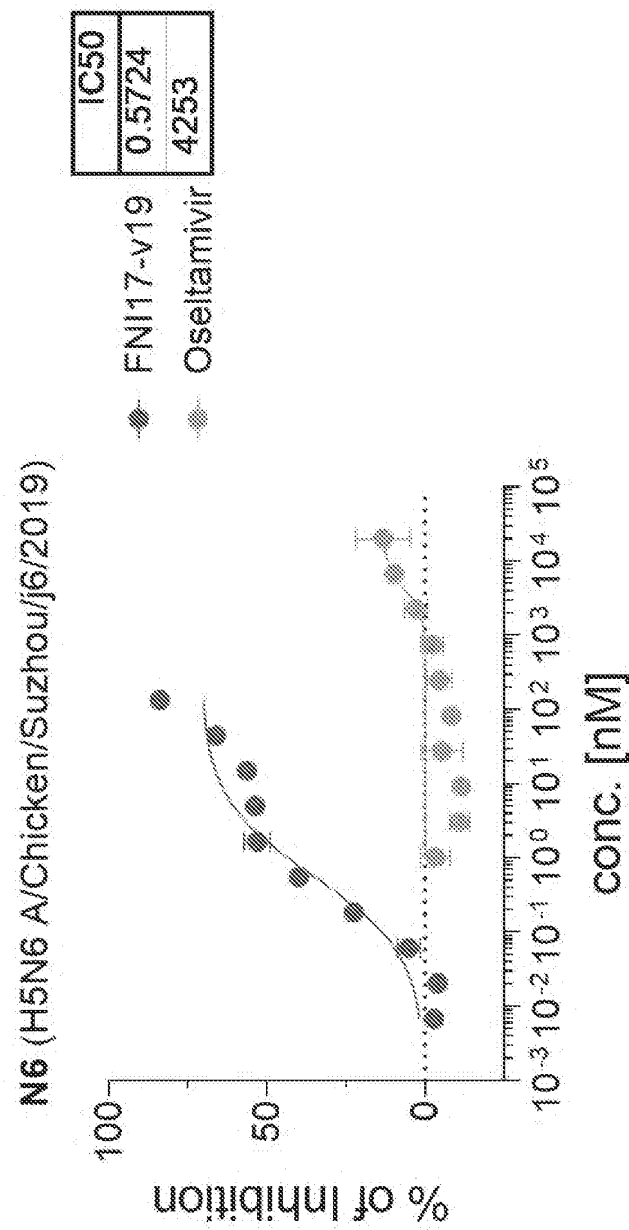


FIG. 87B

200/249

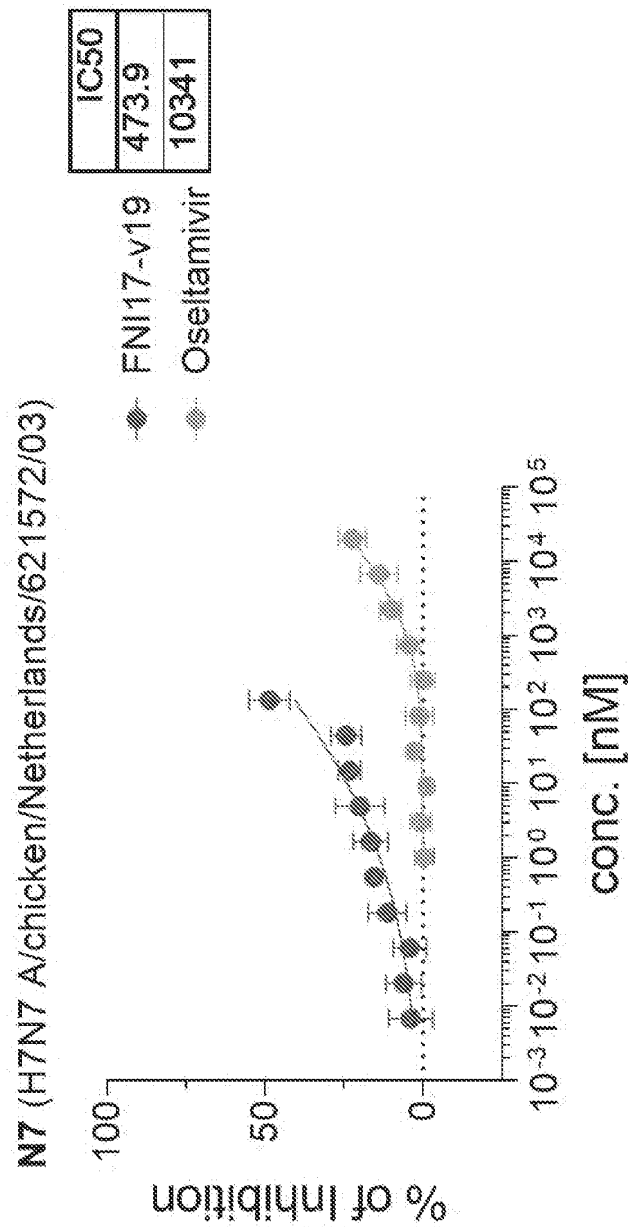


FIG. 87C

201/249

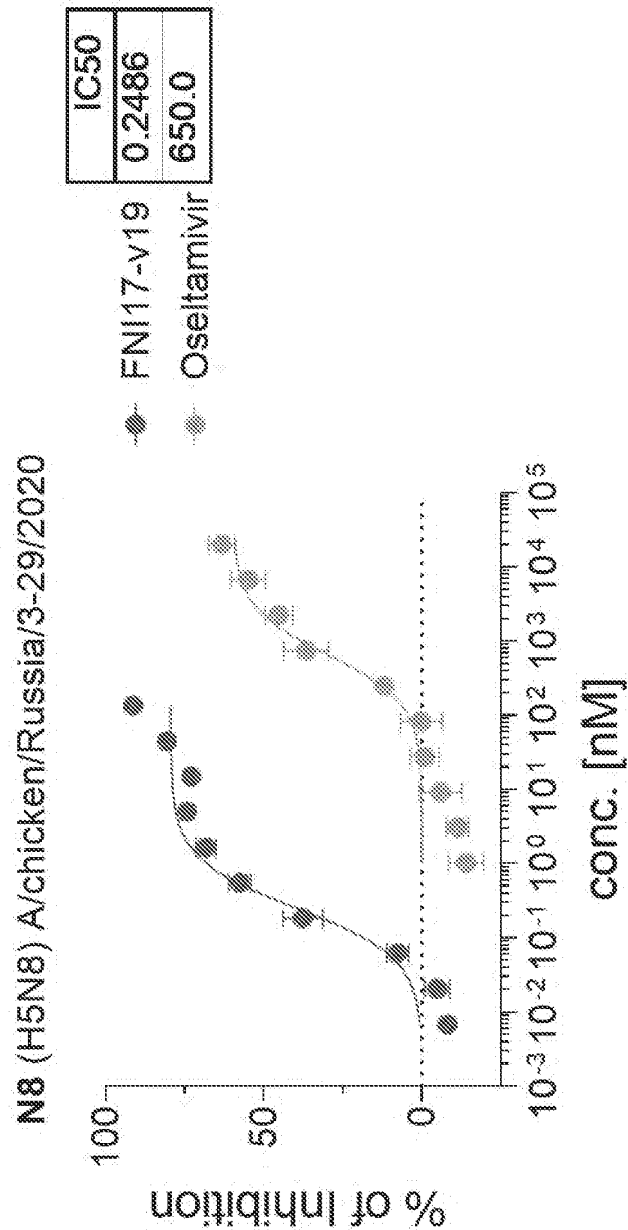
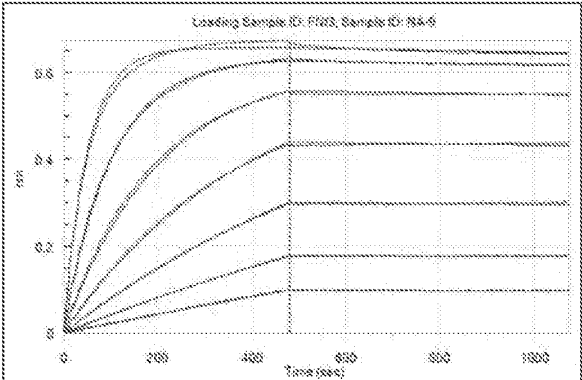


FIG. 87D

202/249

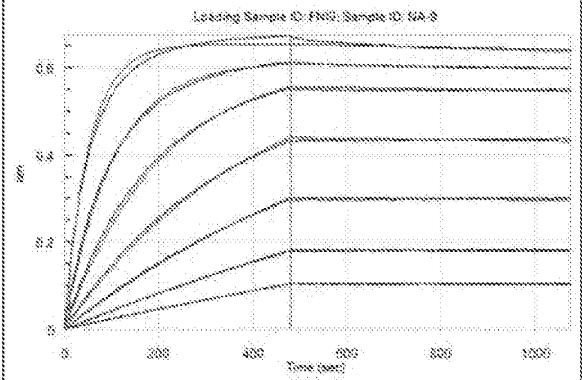
N9

FNI3



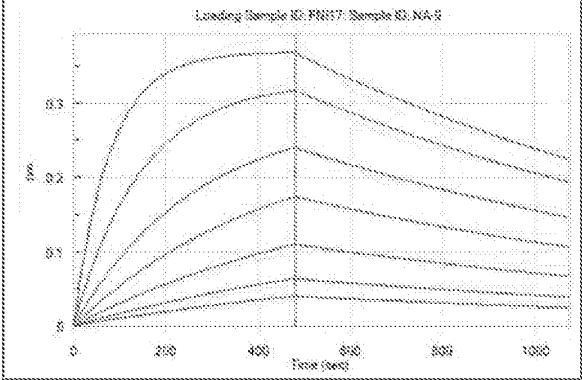
KD=8.50E-11 (M)

FNI9



KD=8.80E-11 (M)

FNI17



KD=3.84E-9 (M)

FIG. 88

203/249

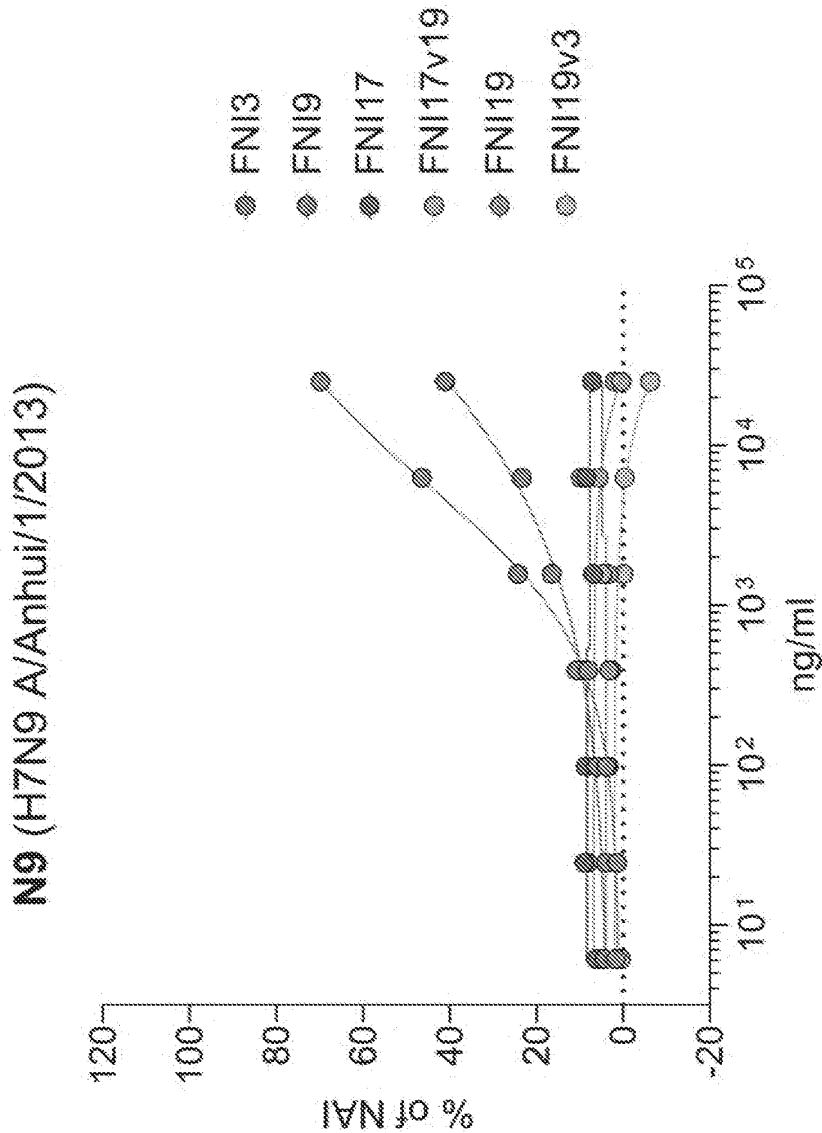


FIG. 89

204/249

Activation of Jurkat-FcγRIIIa (V158)
Expi-CHO expressing N9 (H7N9 A/Anhui/1/2013)

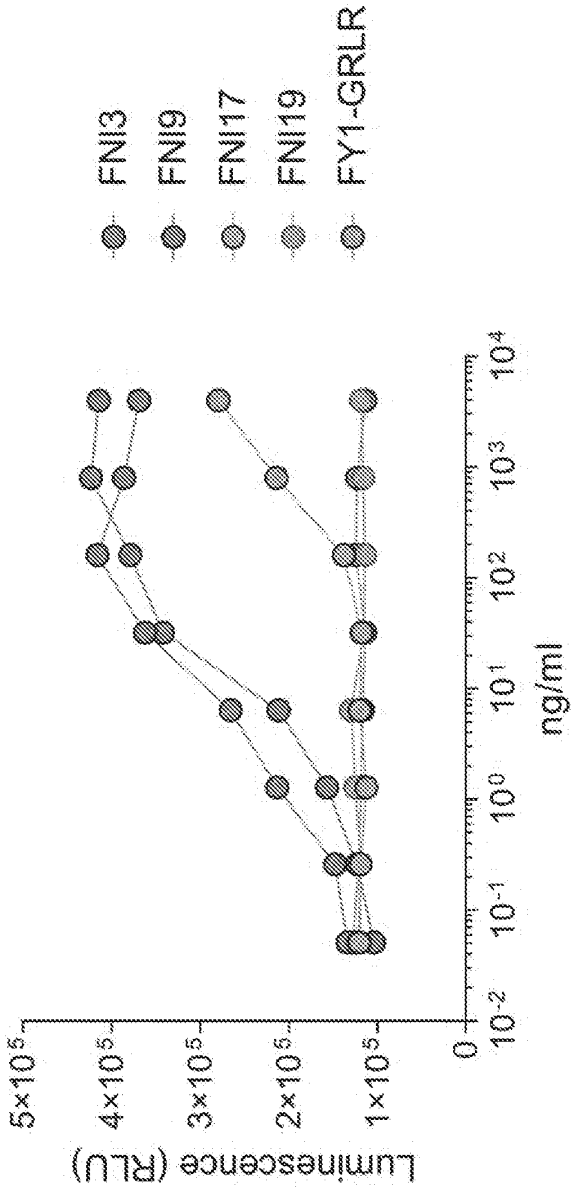


FIG. 90

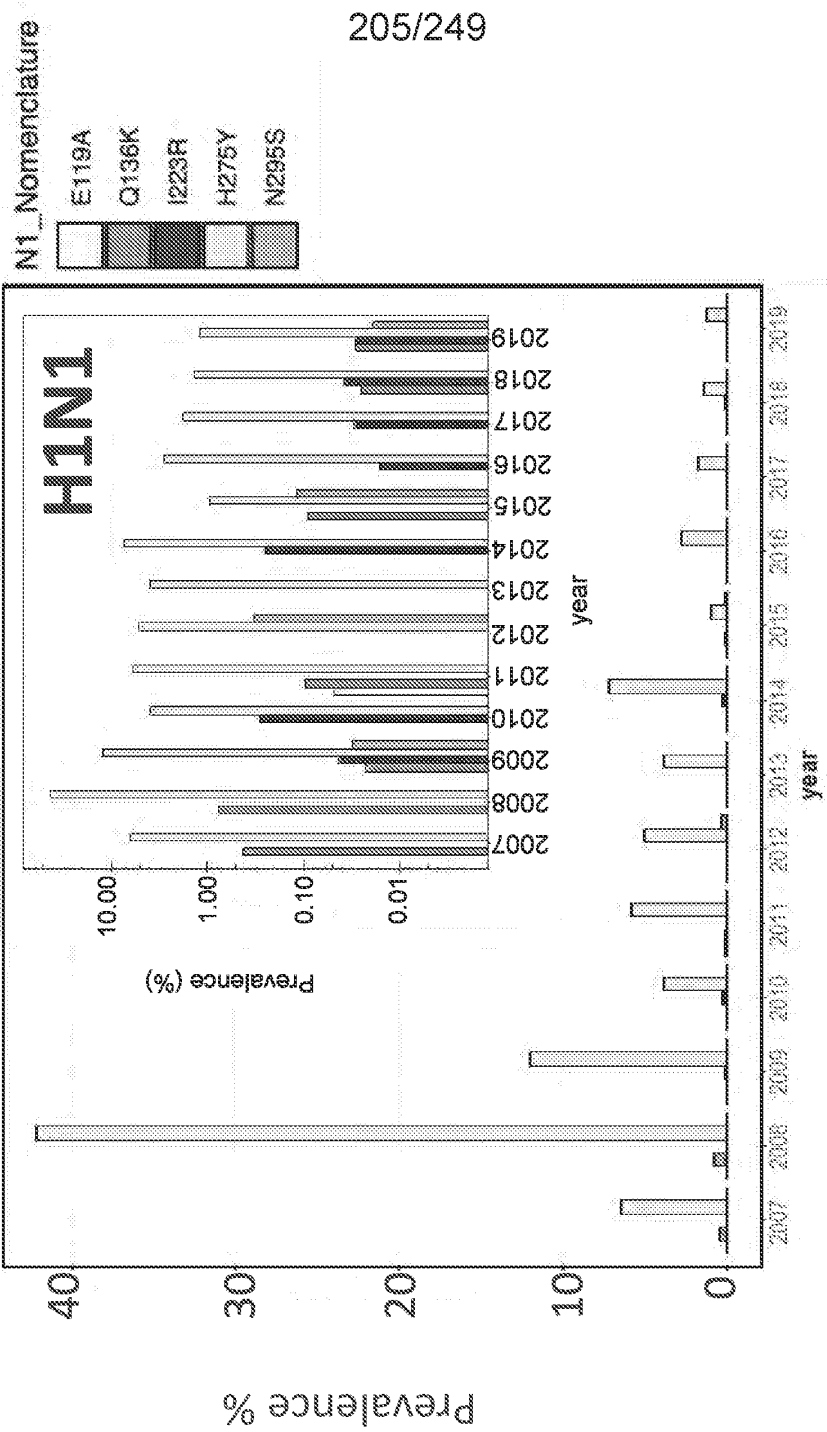


FIG. 91A

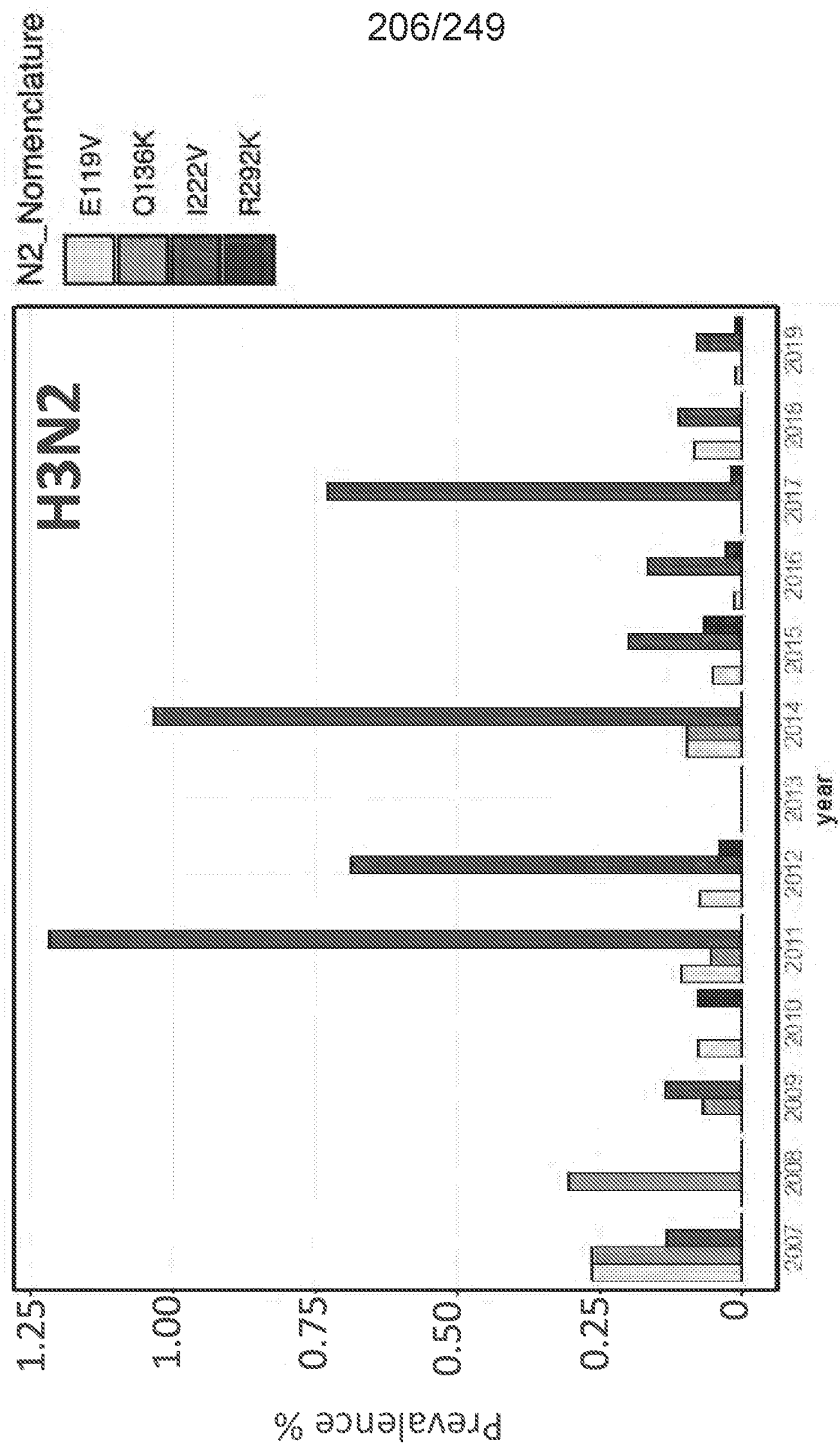


FIG. 91B

207/249

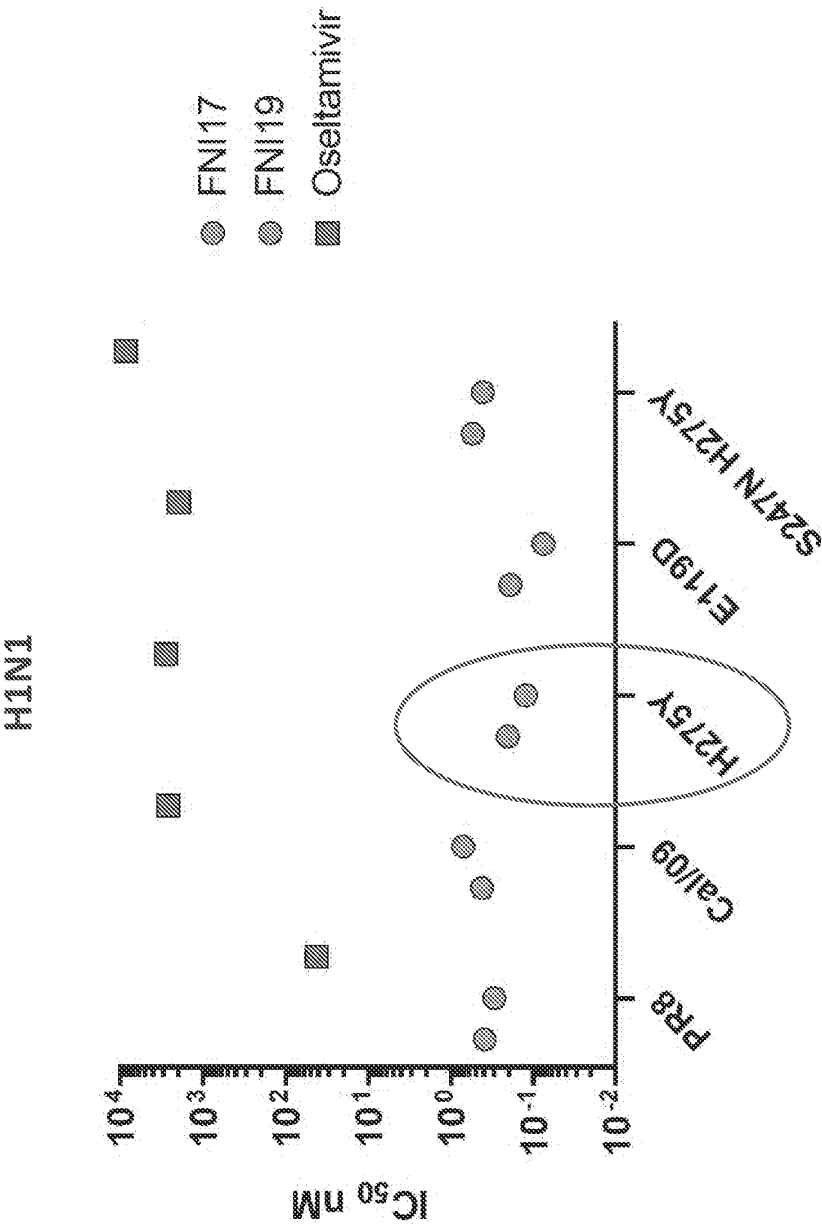


FIG. 92A

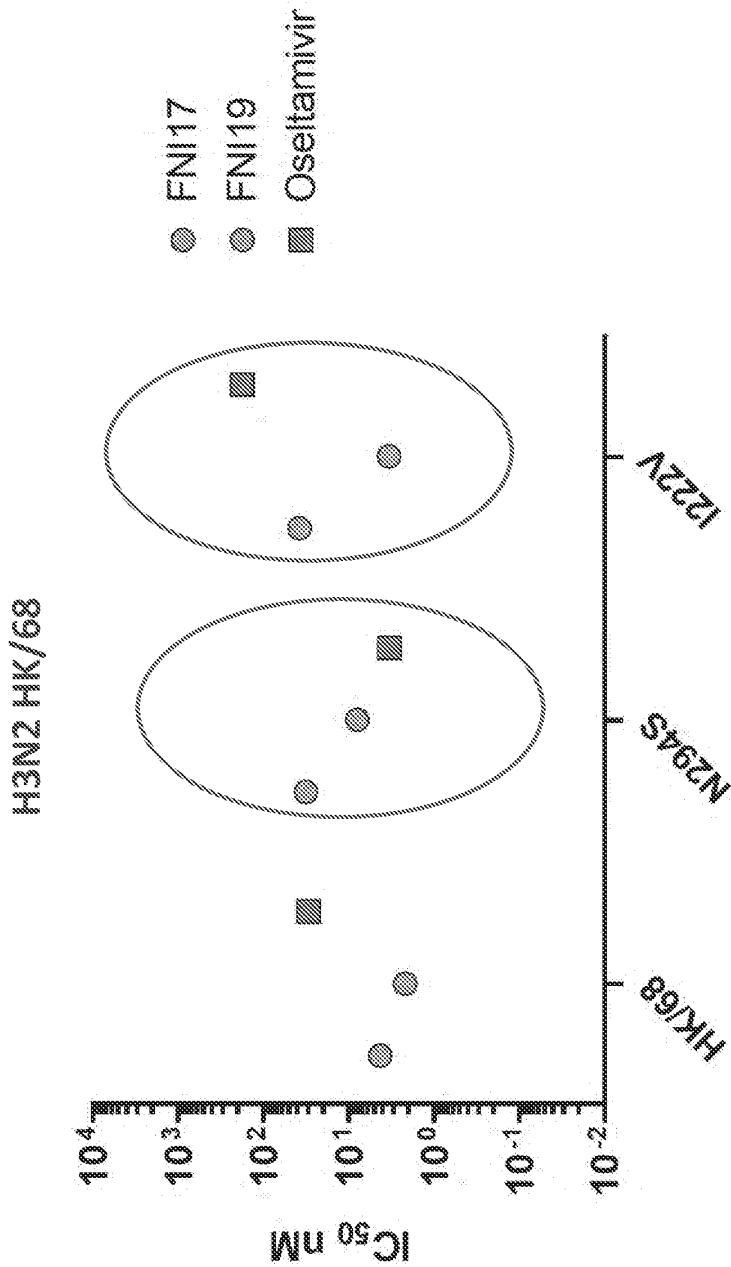
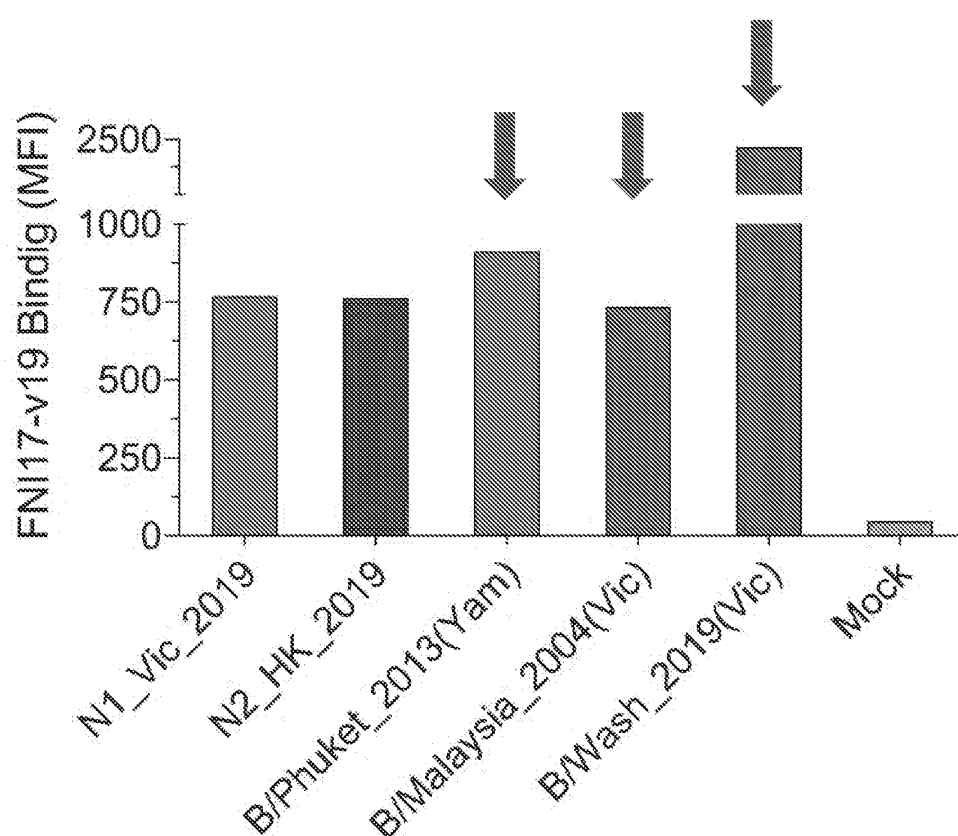


FIG. 92B

209/249

**FIG. 93**

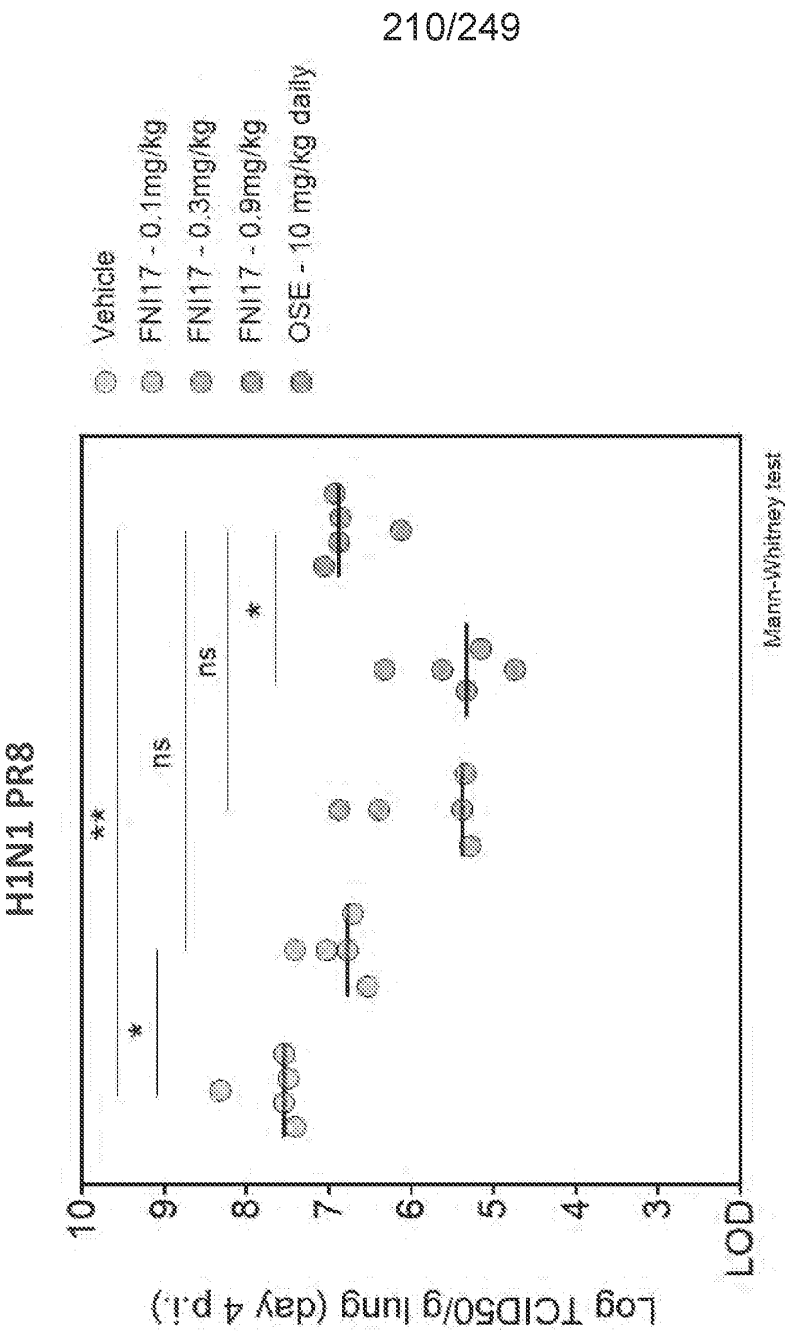


FIG. 94A

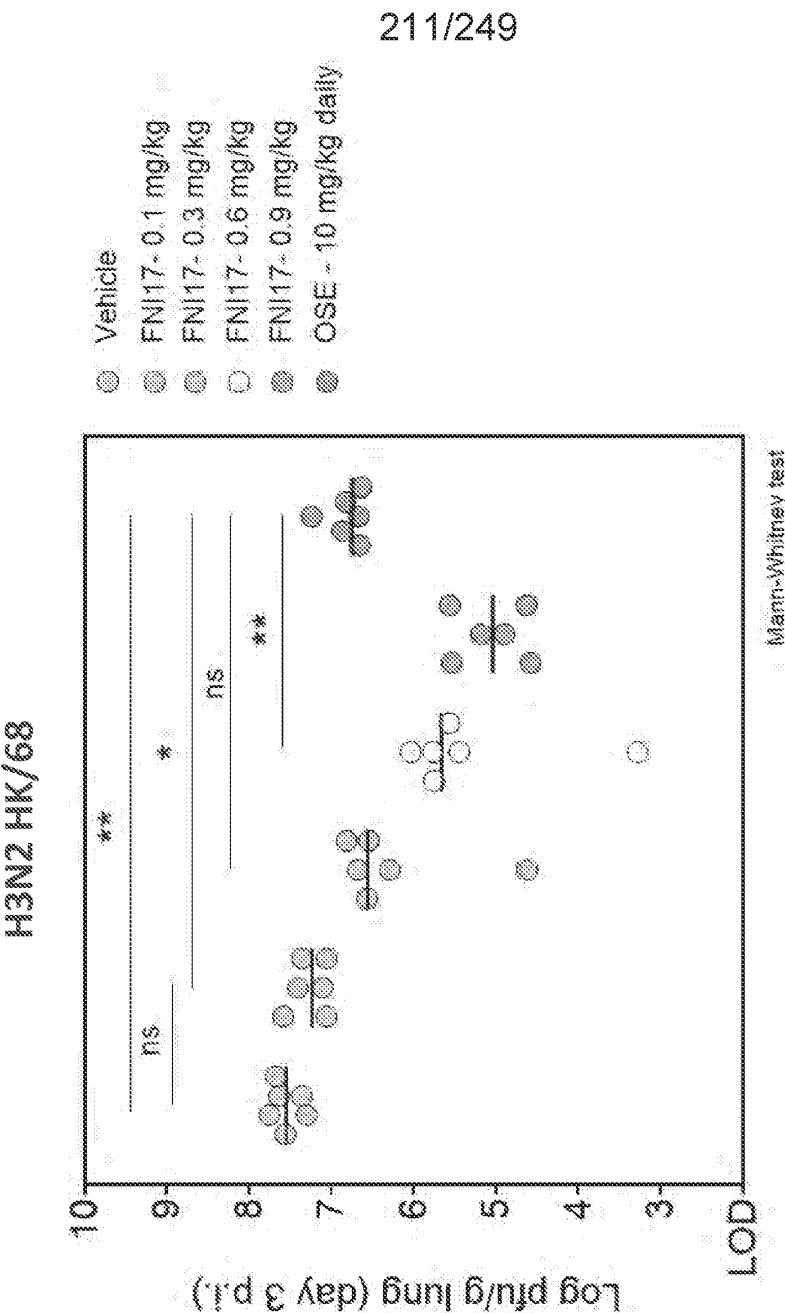
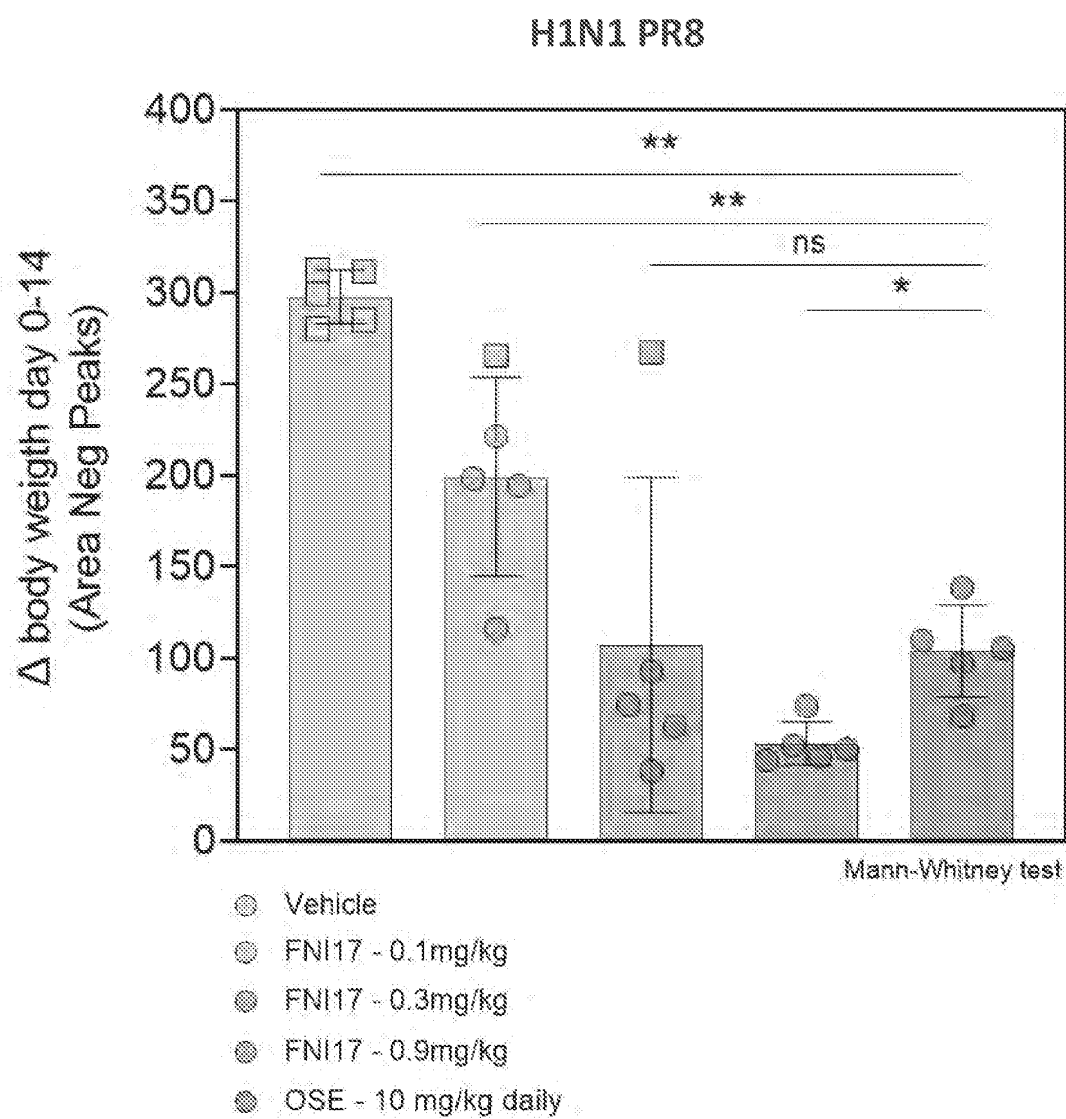
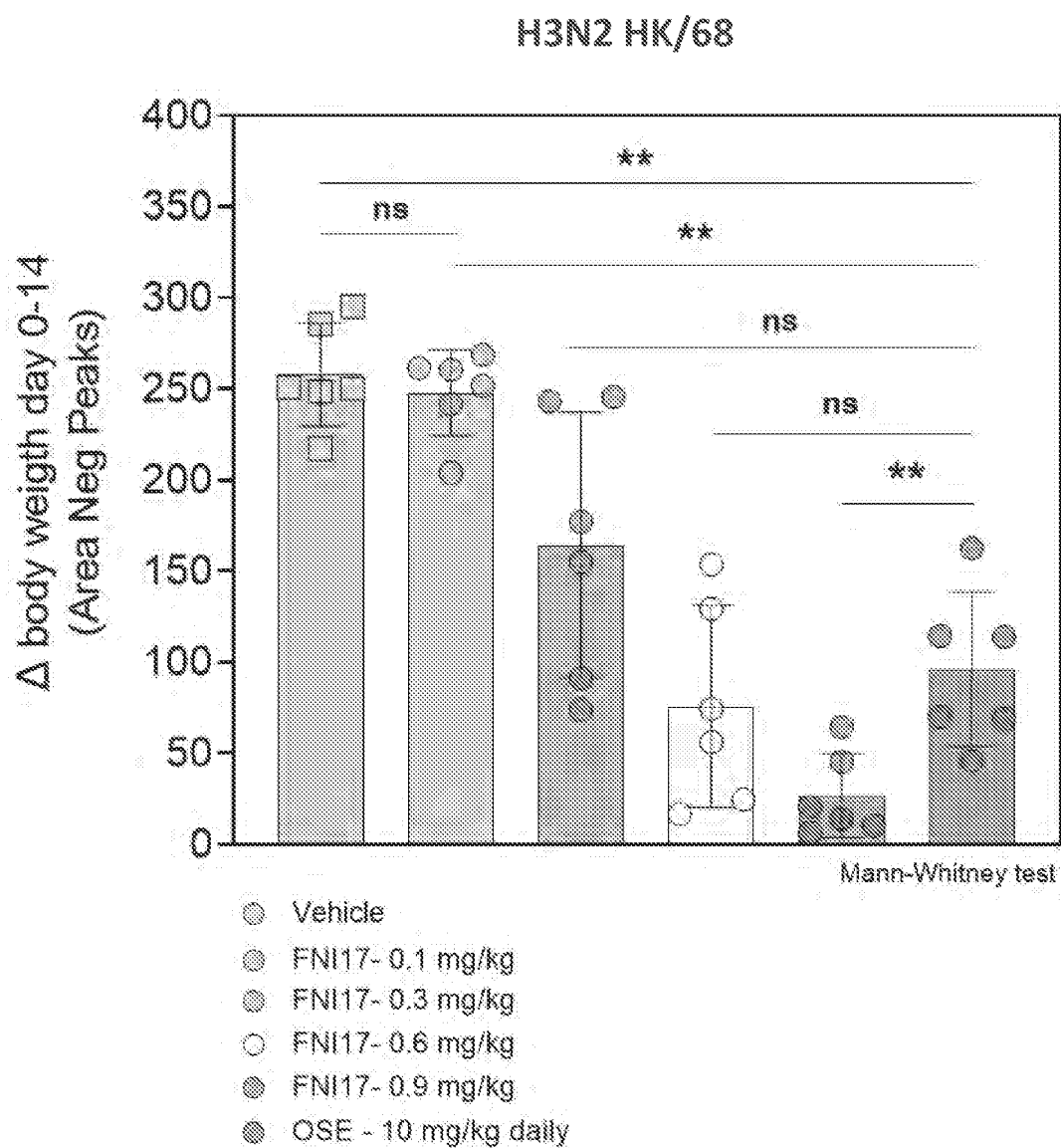


FIG. 94B

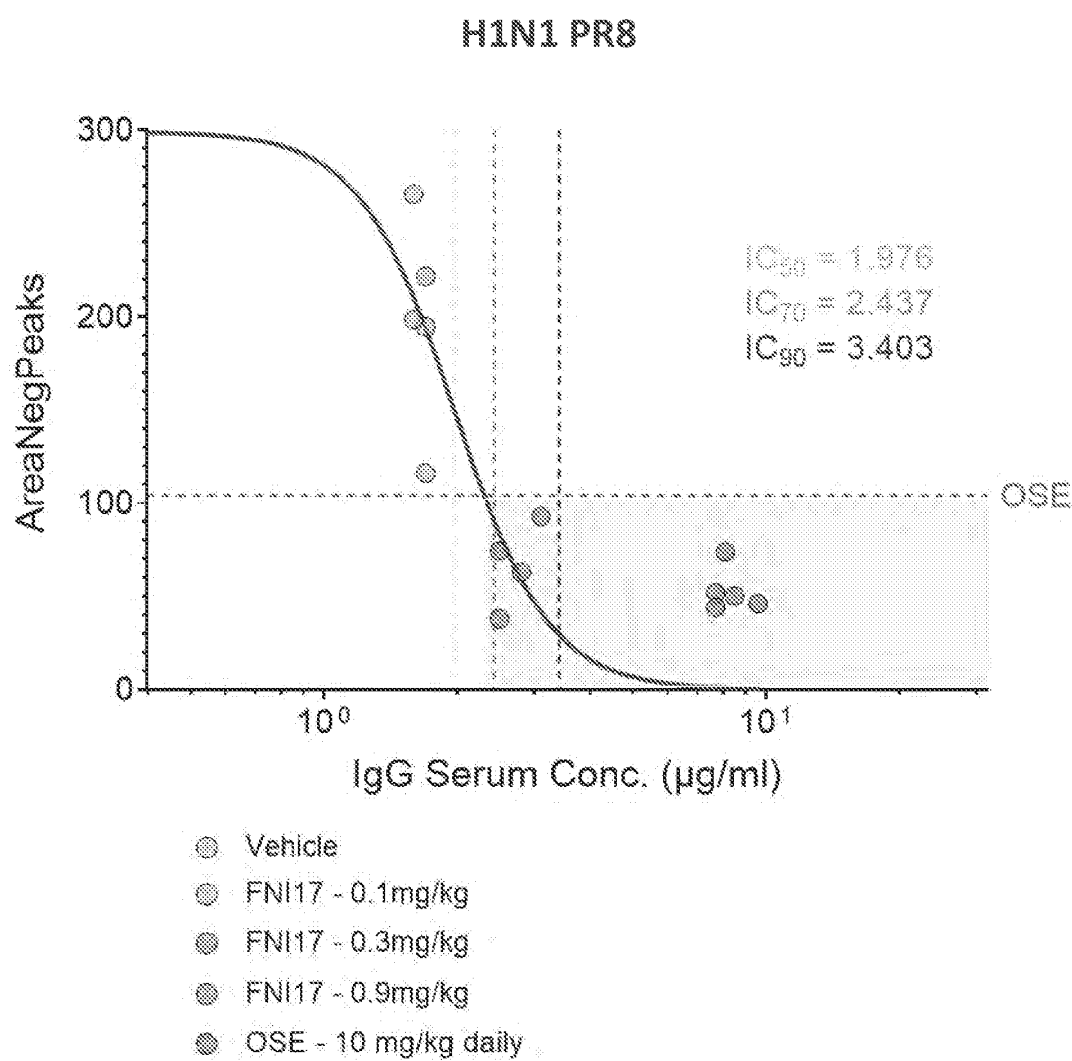
212/249

**FIG. 95A**

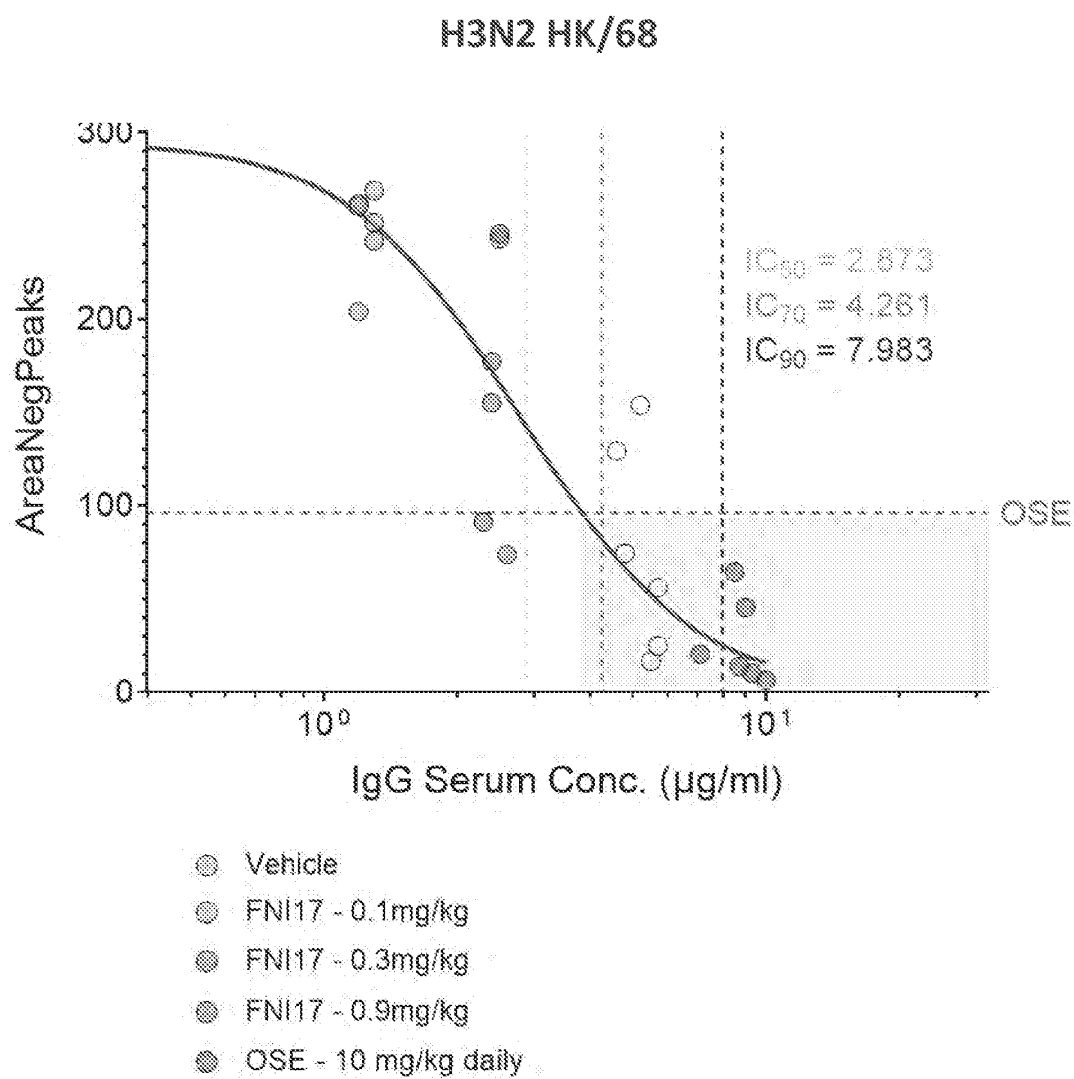
213/249

**FIG. 95B**

214/249

**FIG. 96A**

215/249

**FIG. 96B**

216/249

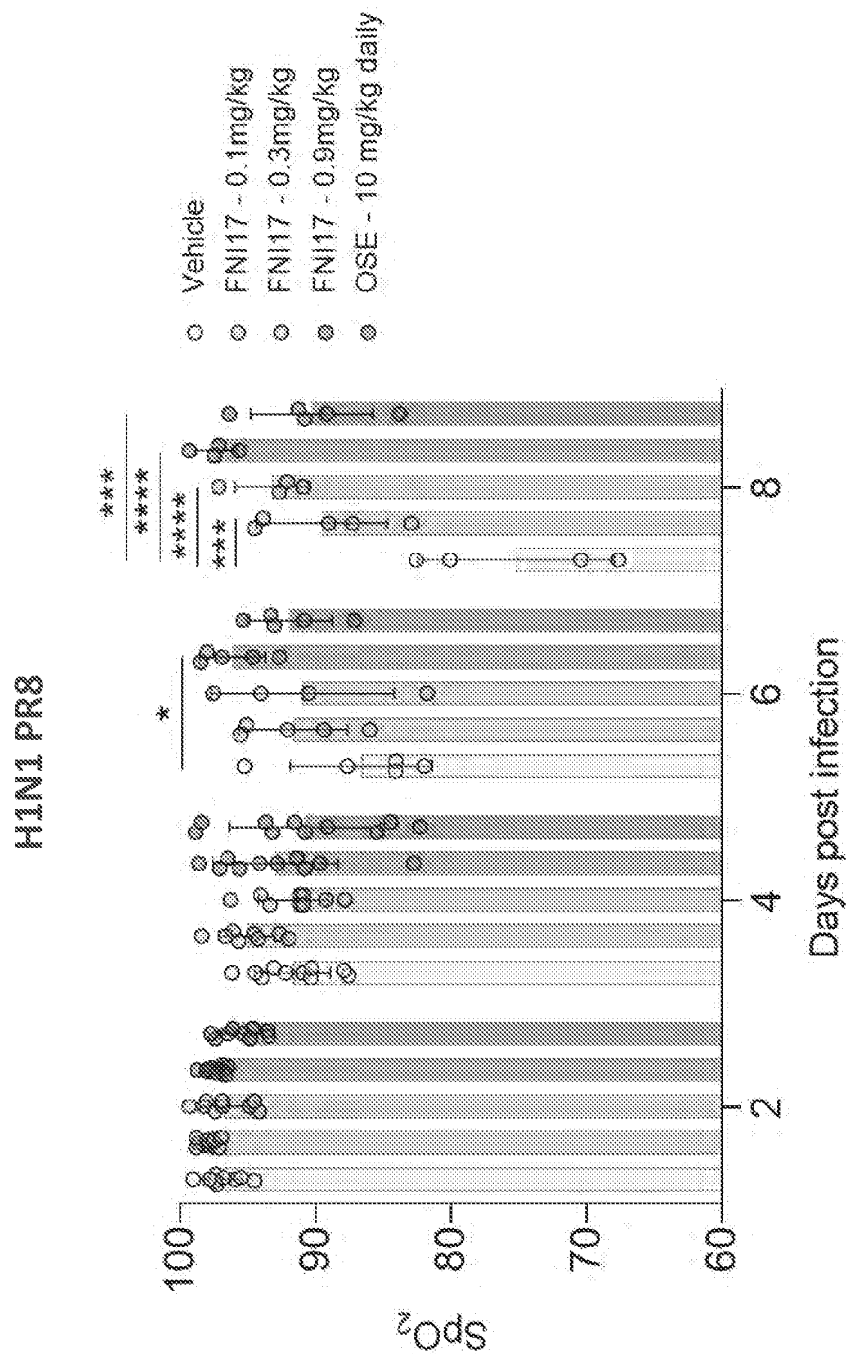


FIG. 97A

217/249

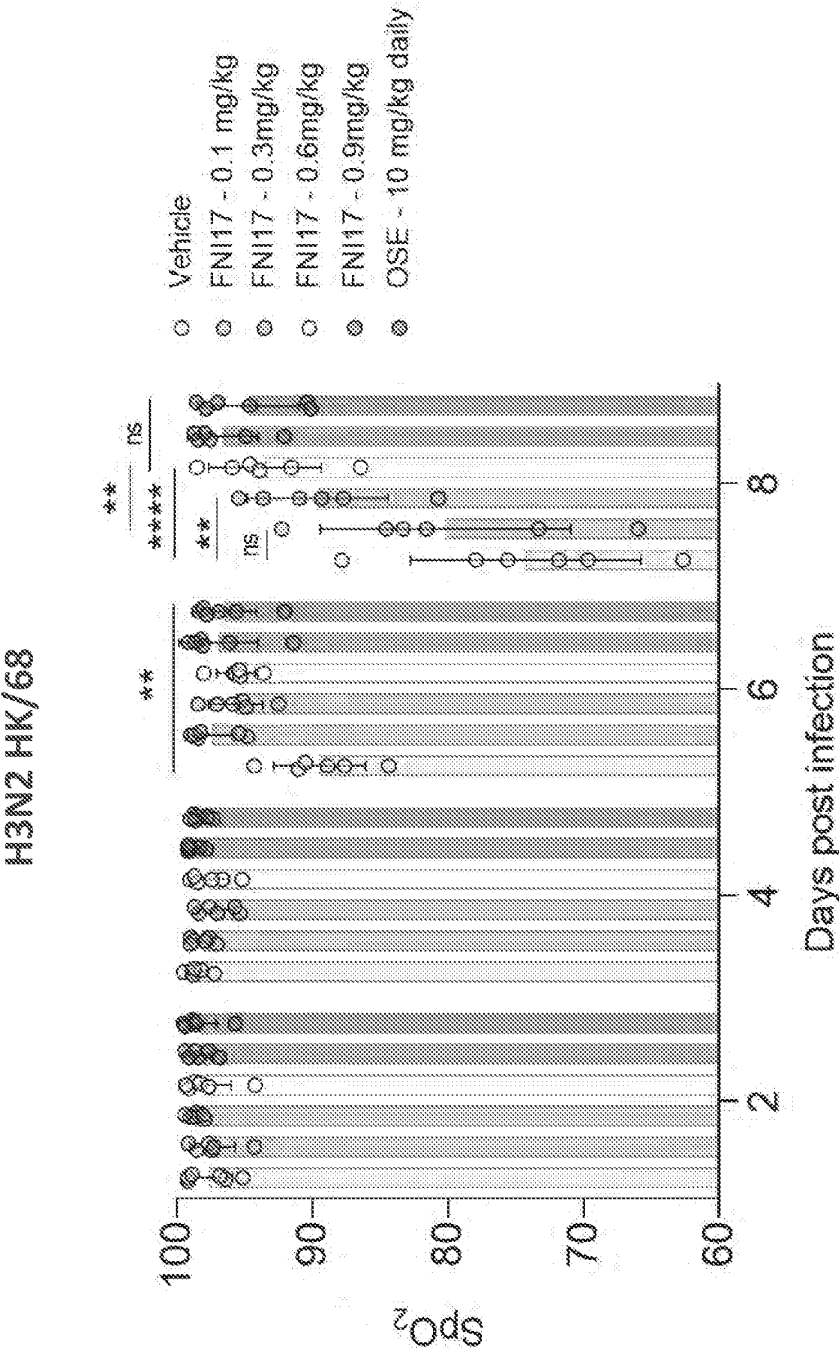
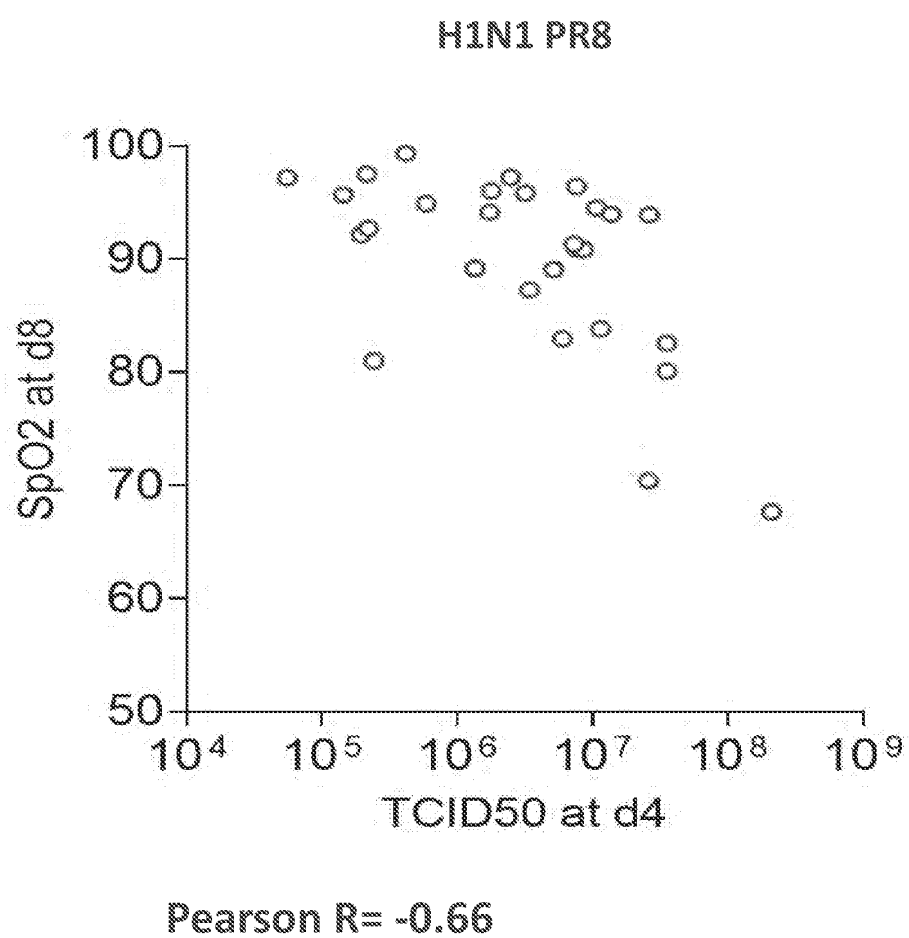
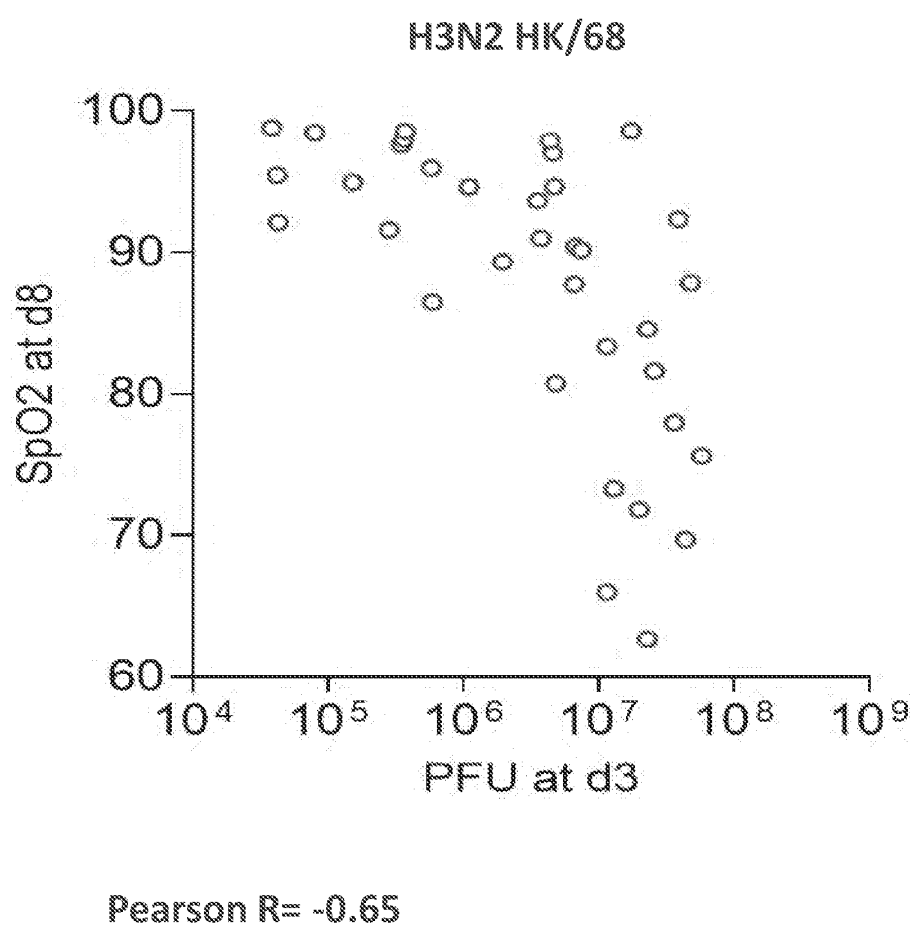


FIG. 97B

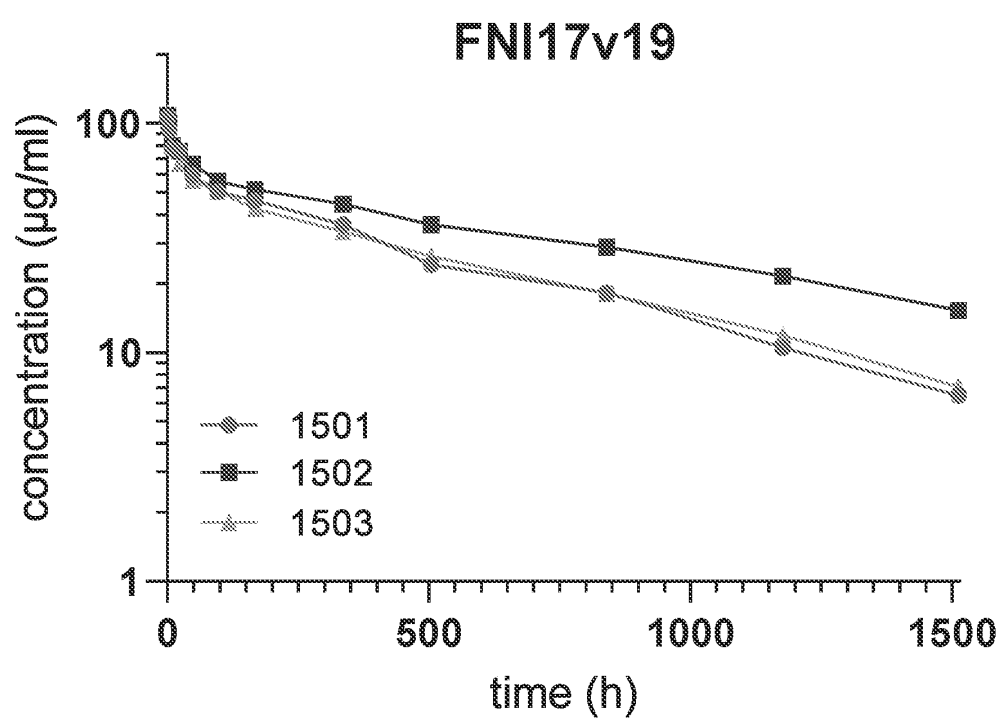
218/249

**FIG. 98A**

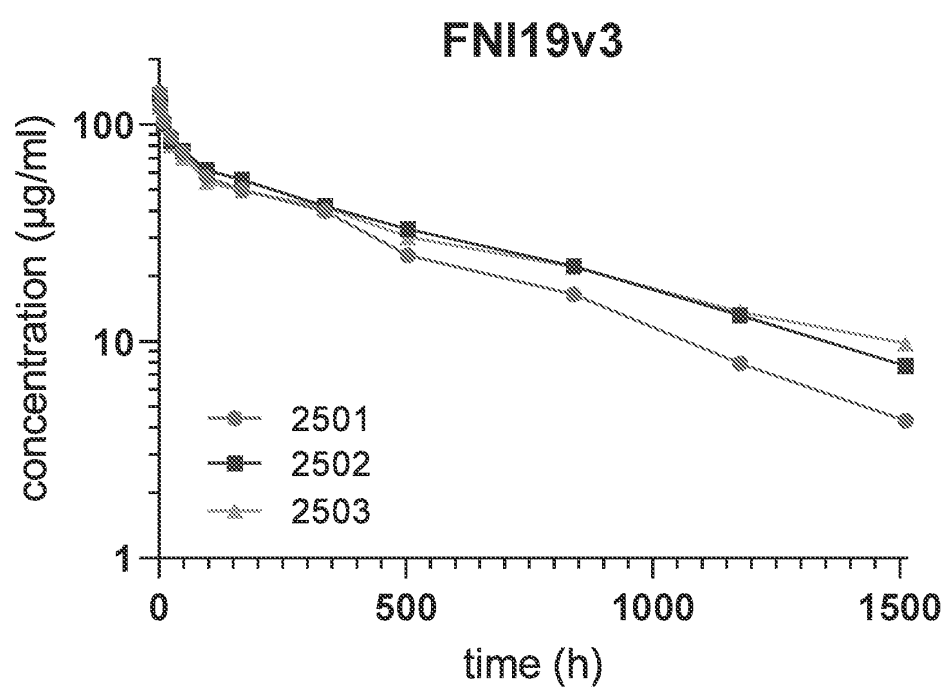
219/249

**FIG. 98B**

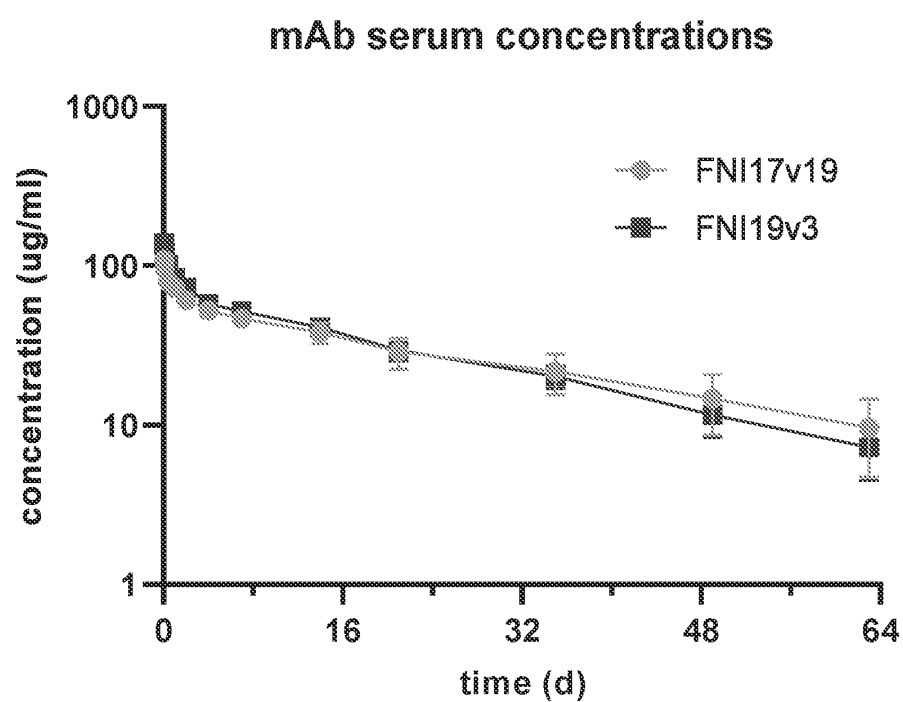
220/249

**FIG. 99A**

221/249

**FIG. 99B**

222/249

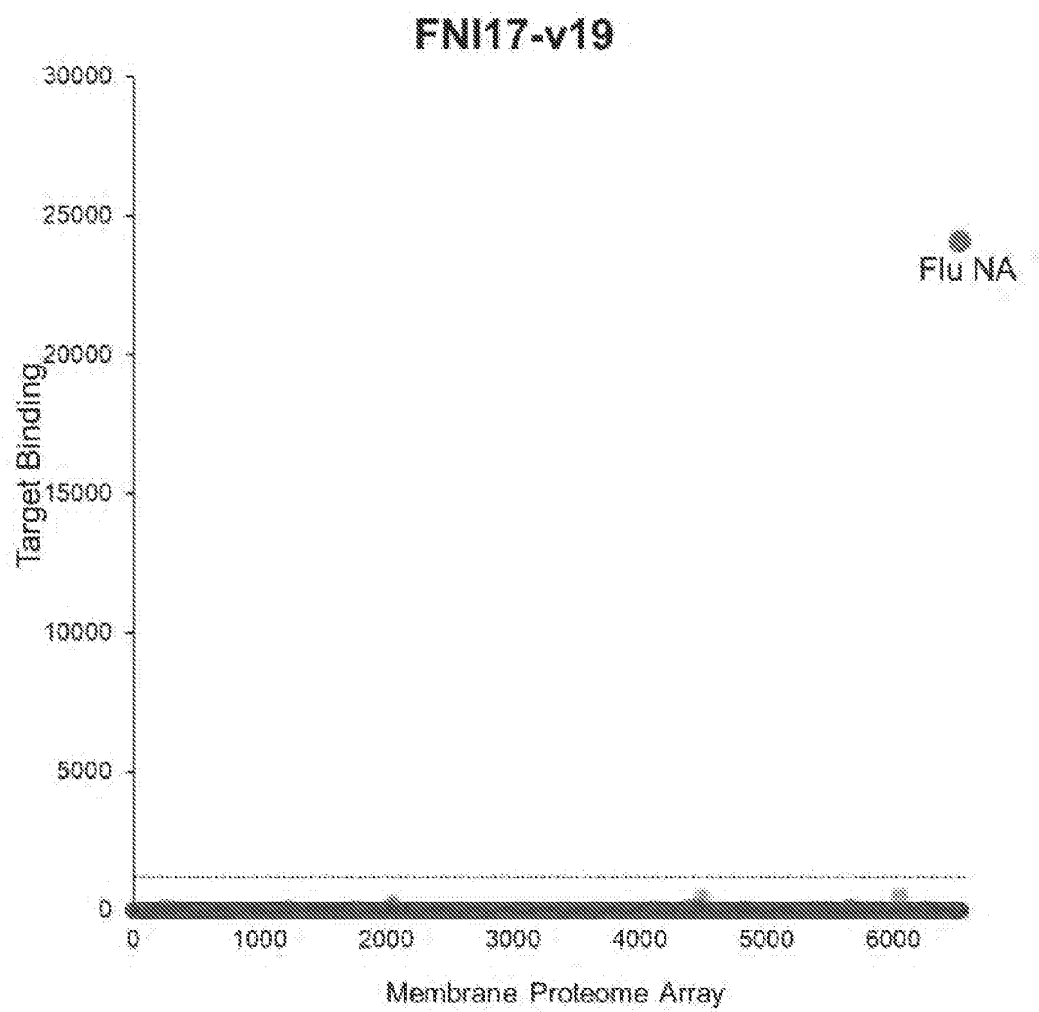
**FIG. 99C**

	FNI17v19	FNI19v3	FM08_LS
$T_{1/2}$	24.8	19.8	27.2
C_{min}	9.6 ¹	7.3 ¹	12.5 ²
V_z	86.4	72.7	65.4 ³
Cl	0.105	0.098	0.070 ³
AUC_{last}	1710	1734	1640

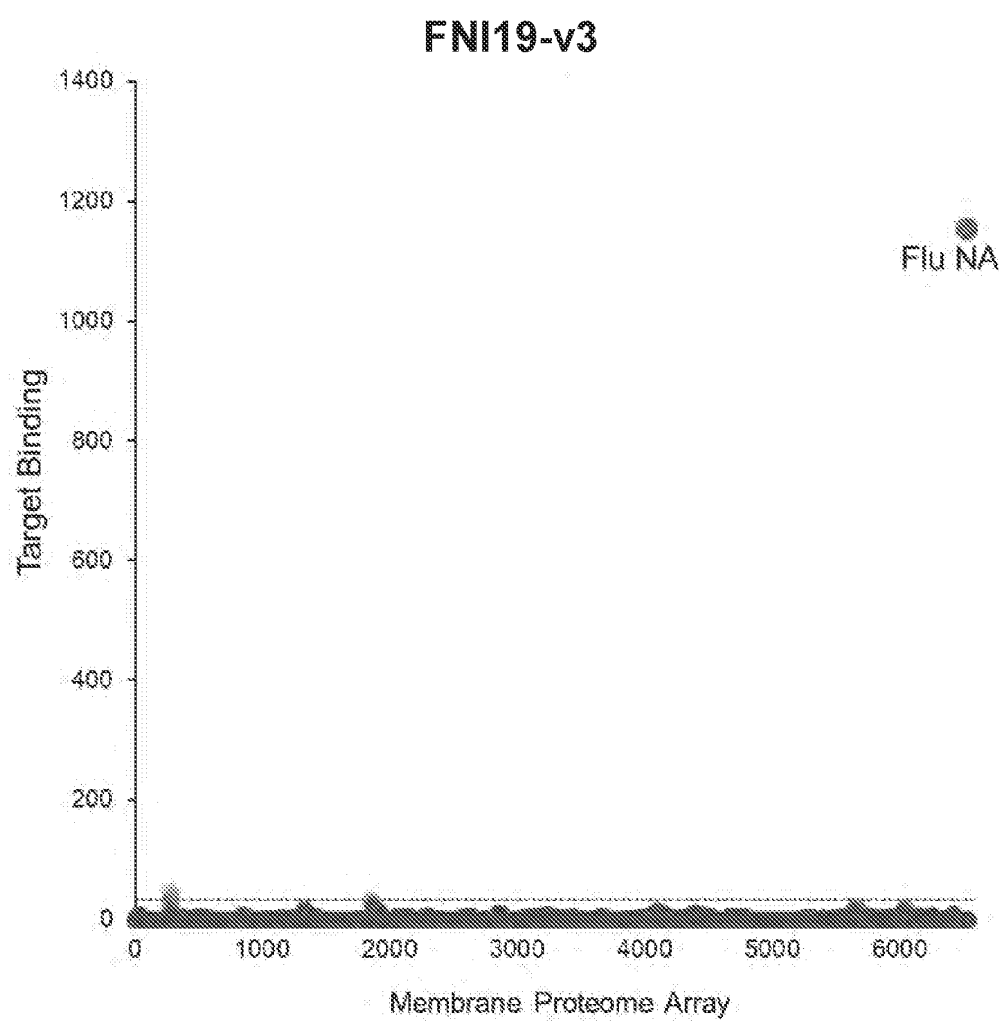
$T_{1/2}$ in d, C_{min} in $\mu\text{g/ml}$, V_z in ml/kg , Cl in ml/h/kg , AUC_{last} in $\mu\text{g.h/ml}$
1: at 64d; 2: at 56d; 3: assuming 3.5kg

FIG. 100

224/249

**FIG. 101A**

225/249

**FIG. 101B**

226/249

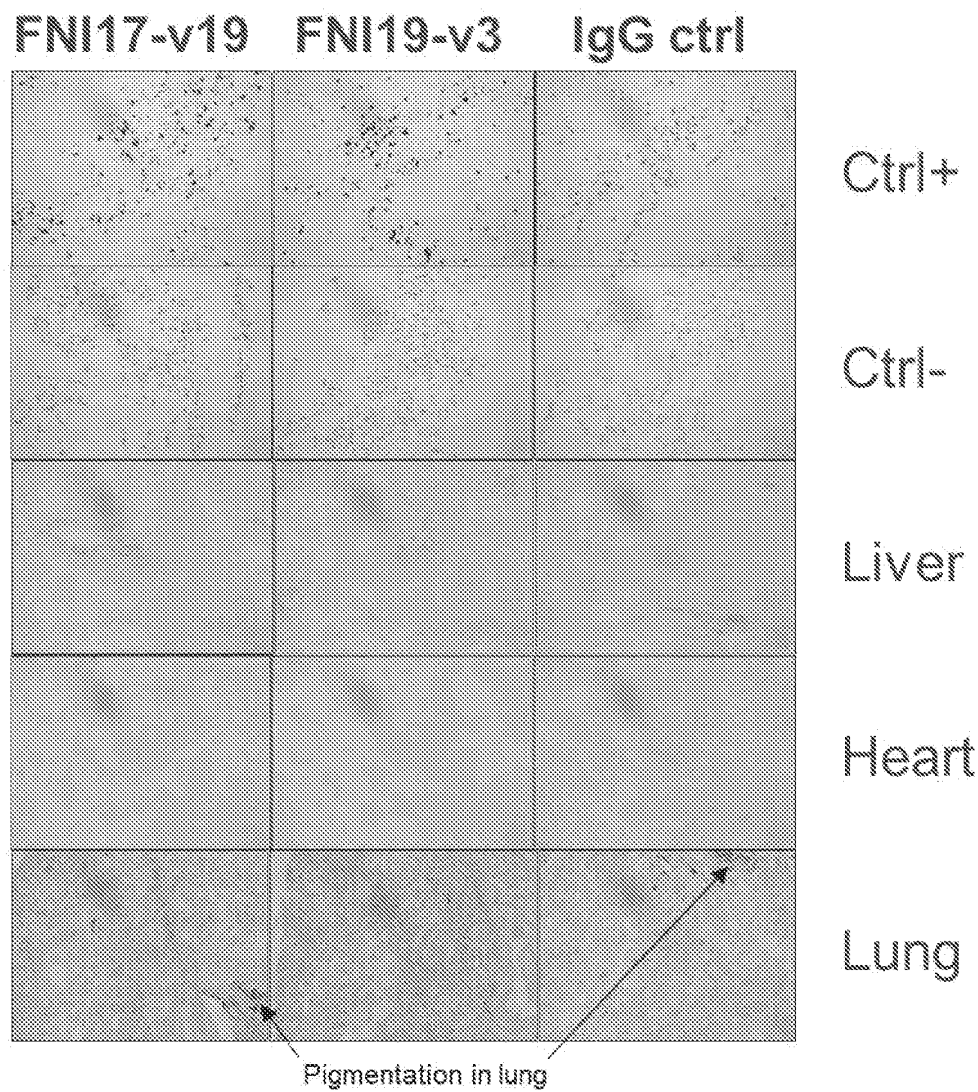


FIG. 102

227/249

N1 A/California/07/09

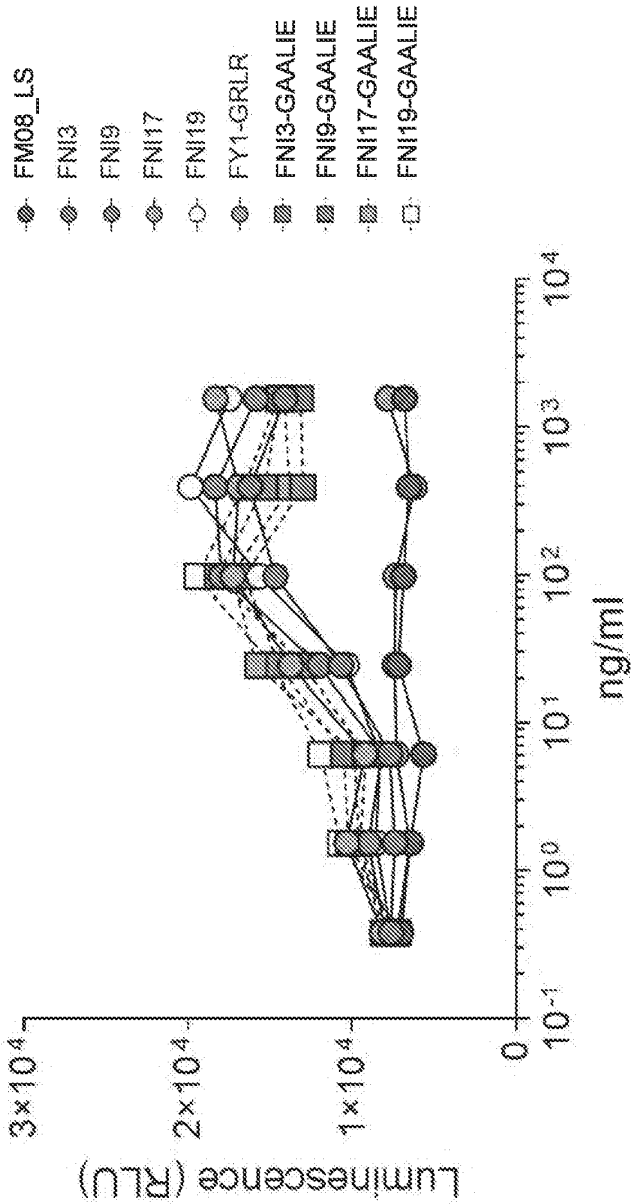


FIG. 103A

228/249

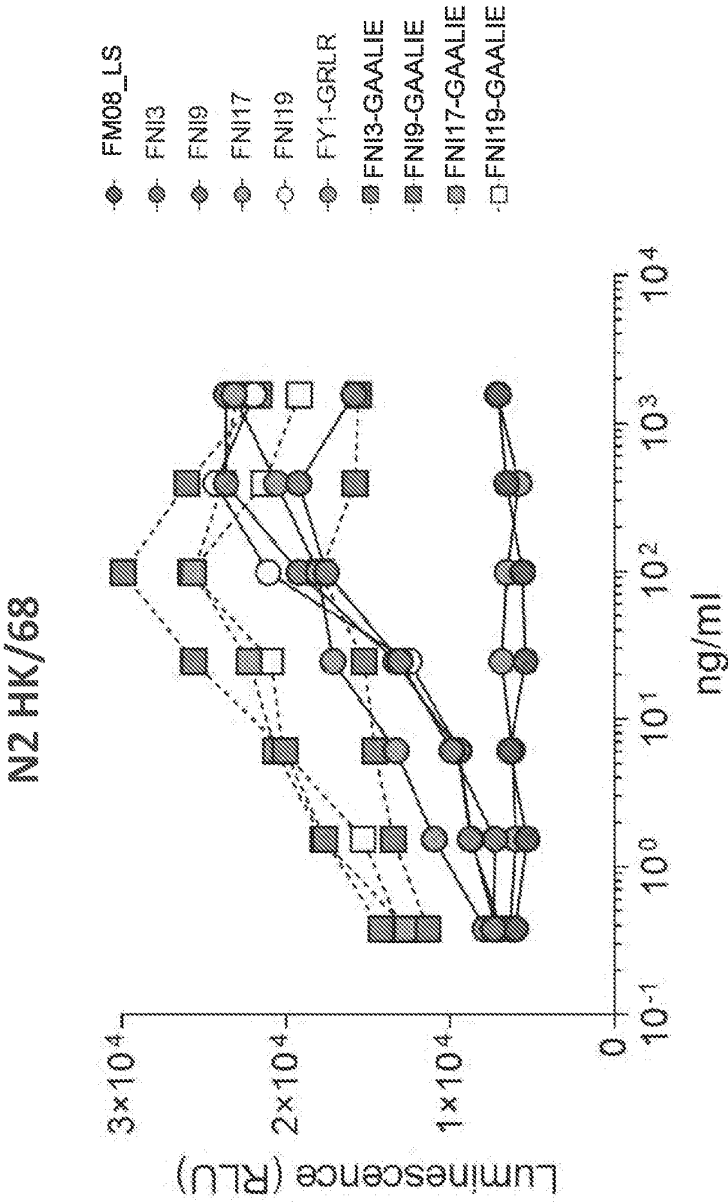


FIG. 103B

229/249

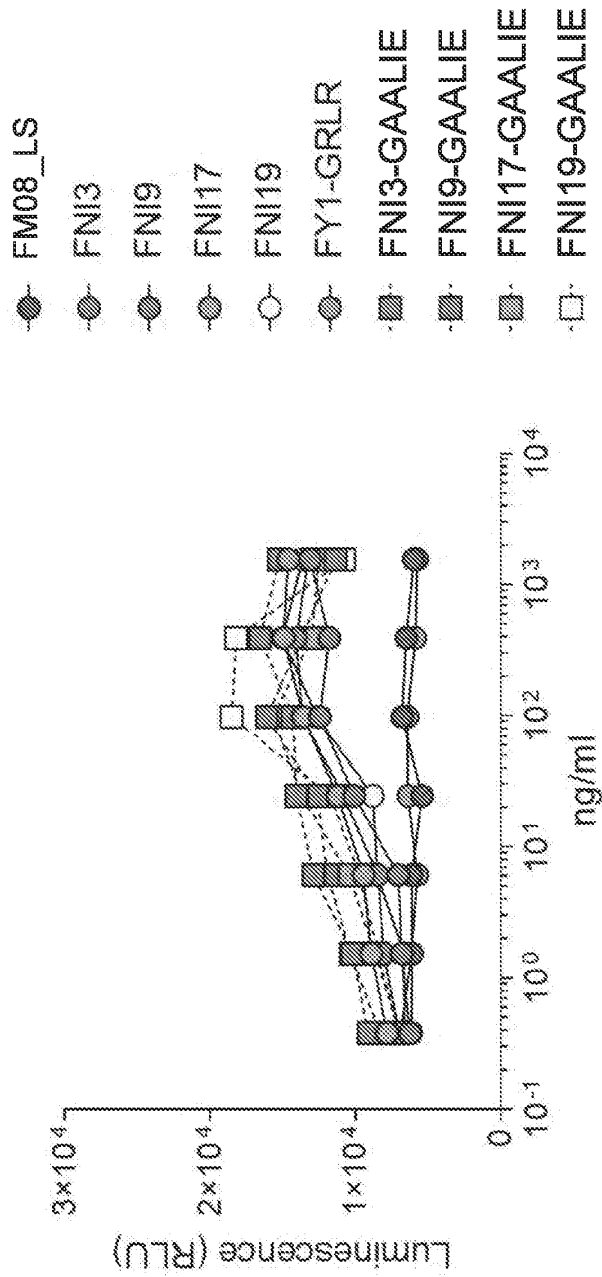
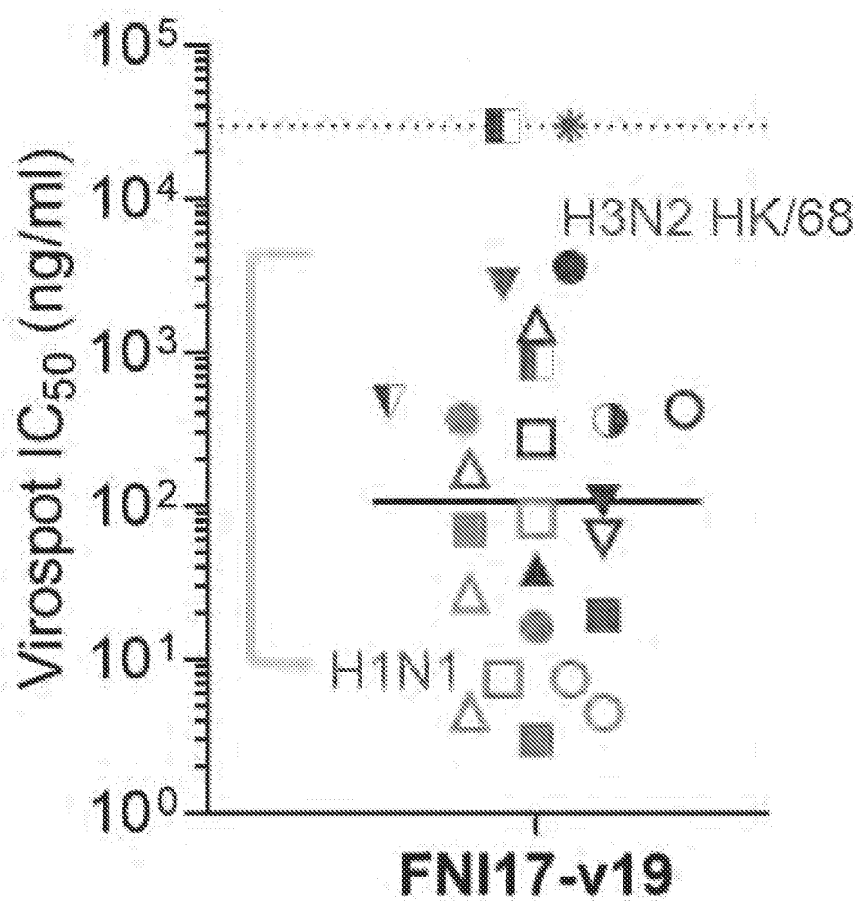


FIG. 103C

230/249

**FIG. 104**

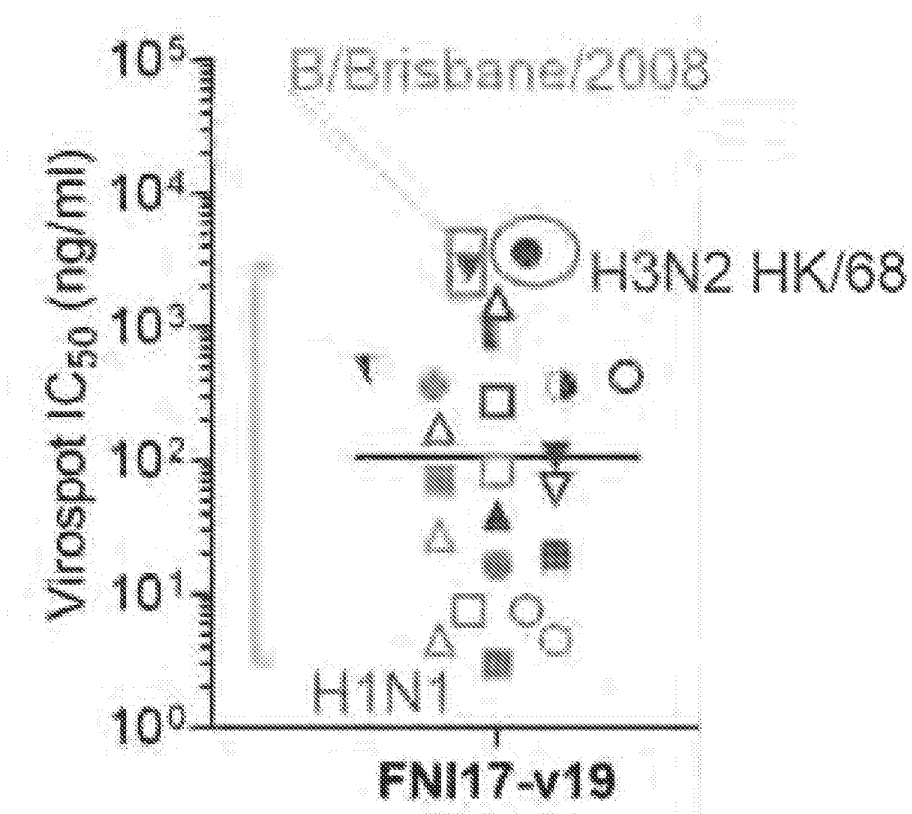
231/249

□ A/New Jersey/8/1976	● A/Aichi/2/1968	▼ A/Fukui/45/2004
△ A/Mississippi/3/2001	● A/Bilthoven/21793/1972	▼ A/Brisbane/10/2007
■ A/Netherlands/602/2009	○ A/Netherlands/233/1982	▲ A/Texas/50/2012
● A/Brisbane/02/2018	△ A/Shanghai/11/1987	□ A/Singapore/2016
○ A/Michigan/45/2015	▼ A/Nanchang/933/1995	■ A/SouthAustralia/34/2019
△ B/Harbin/7/1994	△ B/Perth/211/2001	
■ B/Malaysia/2506/2004	● B/Hubei-wujiagang/158/2009	
▼ B/Brisbane/33/2008	□ B/Wisconsin/01/2010	
■ B/Colorado/06/2017	○ B/Massachusetts/02/2012	
* B/Washington/02/2019	■ B/Phuket/3073/2013	

H1N1; H3N2; B/Victoria-lineage; B/Yamagata-lineage

FIG. 104 (Cont'd)

232/249

**FIG. 105**

233/249

□ A/New Jersey/8/1976	● A/Aichi/2/1968	▼ A/Fukui/45/2004
△ A/Mississippi/3/2001	● A/Bilthoven/21793/1972	▼ A/Brisbane/10/2007
■ A/Netherlands/602/2009	○ A/Netherlands/233/1982	▲ A/Texas/50/2012
● A/Brisbane/02/2018	△ A/Shanghai/11/1987	□ A/Singapore/2016
○ A/Michigan/45/2015	▼ A/Nanchang/933/1995	■ A/SouthAustralia/34/2019
△ B/Harbin/7/1994	△ B/Perth/211/2001	
■ B/Malaysia/2506/2004	● B/Hubei-wujiagang/158/2009	
▼ B/Brisbane/33/2008	□ B/Wisconsin/01/2010	
■ B/Colorado/06/2017	○ B/Massachusetts/02/2012	
* B/Washington/02/2019	■ B/Phuket/3073/2013	

H1N1; H3N2; B/Victoria-lineage; B/Yamagata-lineage

FIG. 105 (cont'd)

234/249

H3N2 HK/68

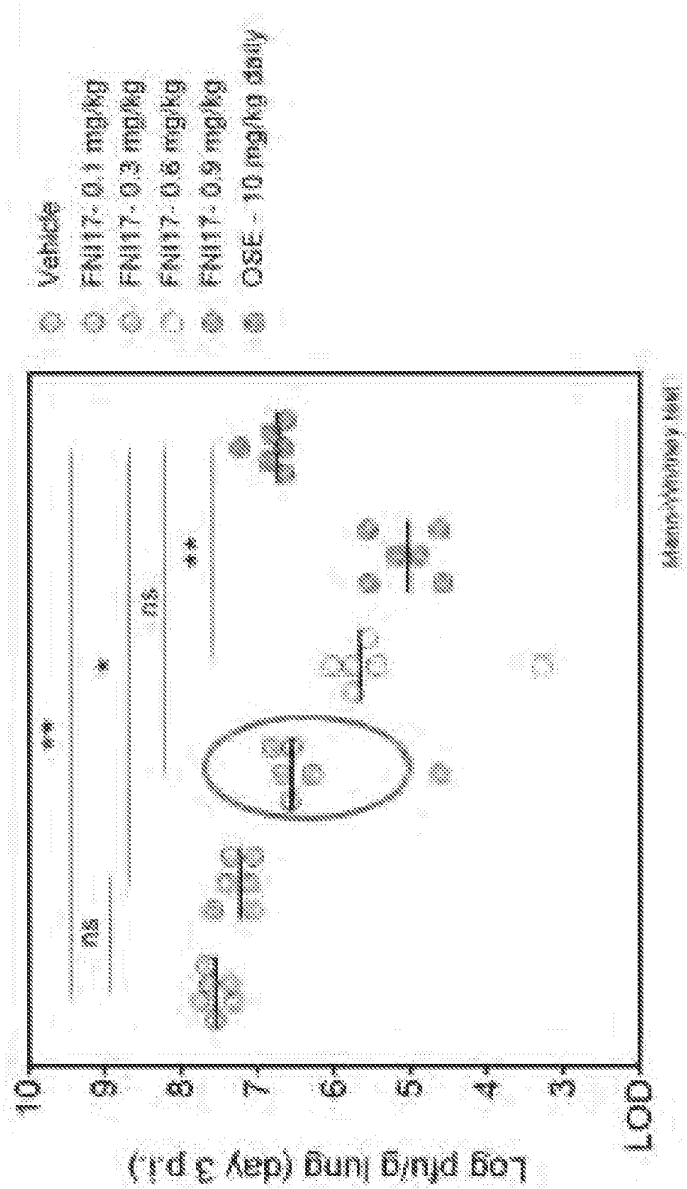


FIG. 106A

235/249

H1N1 PR8

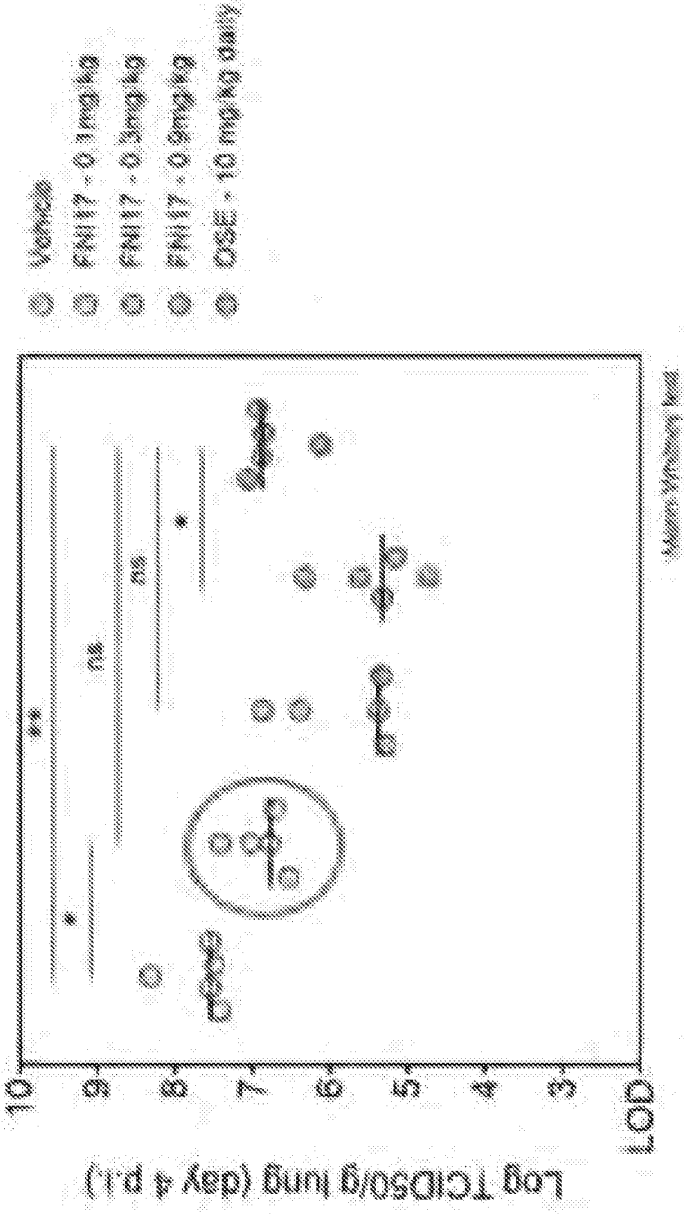


FIG. 106B

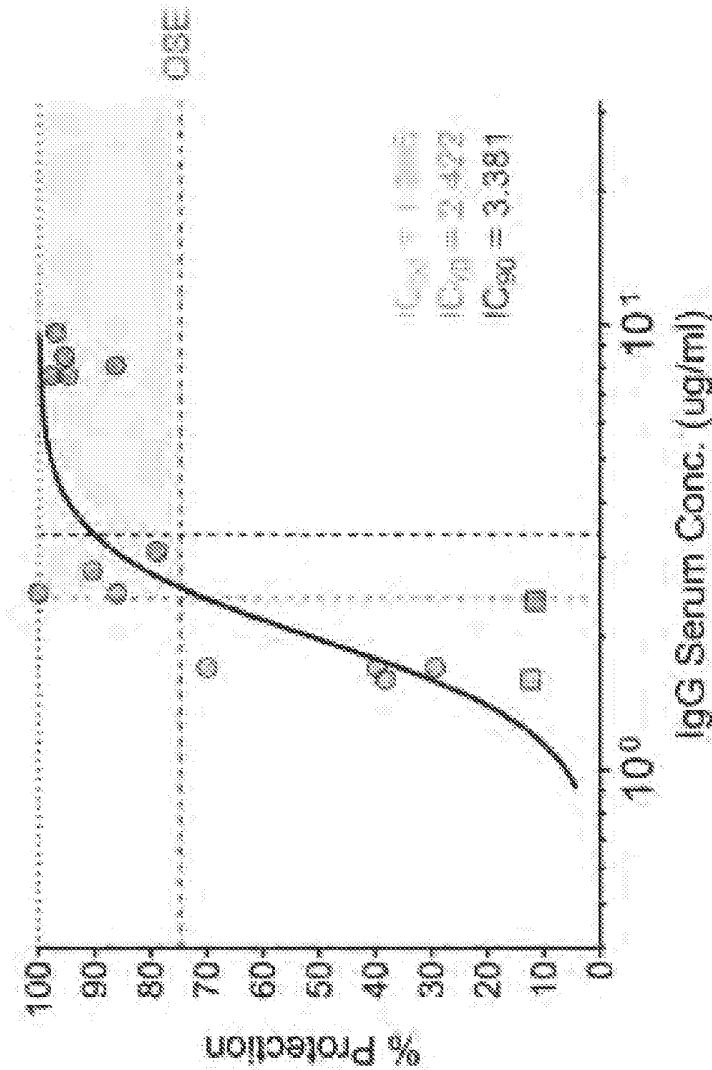
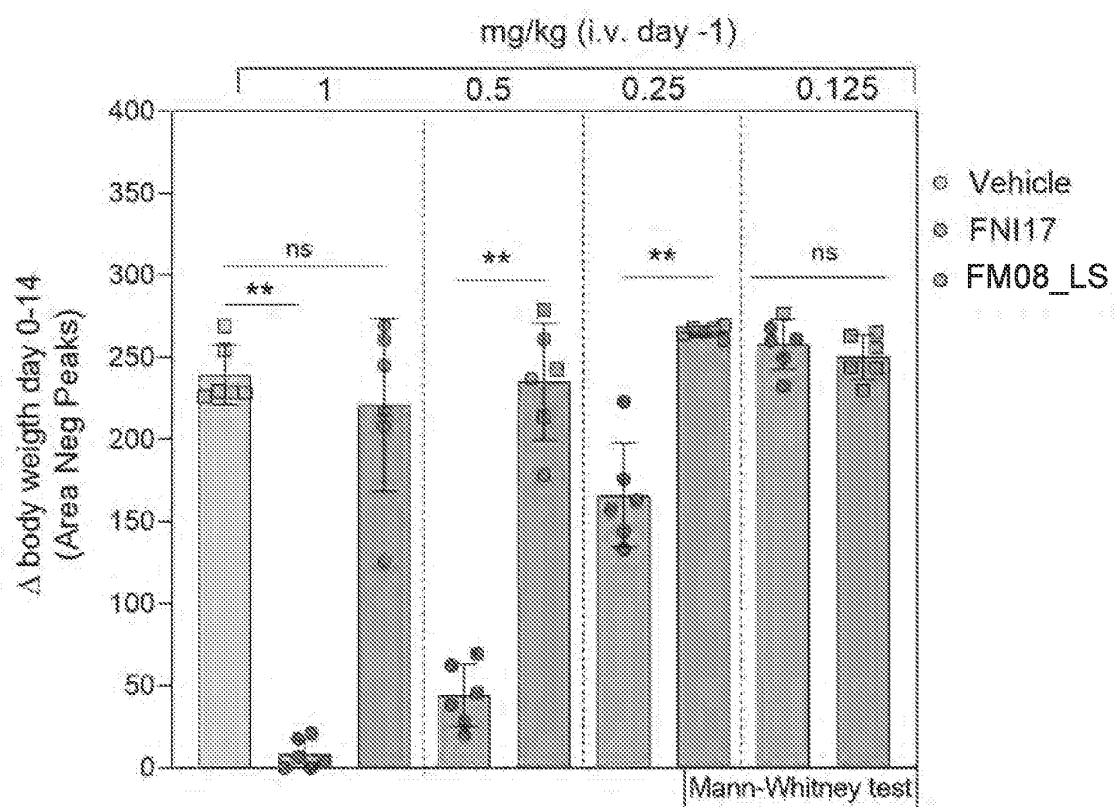


FIG. 107

237/249

**FIG. 108**

238/249

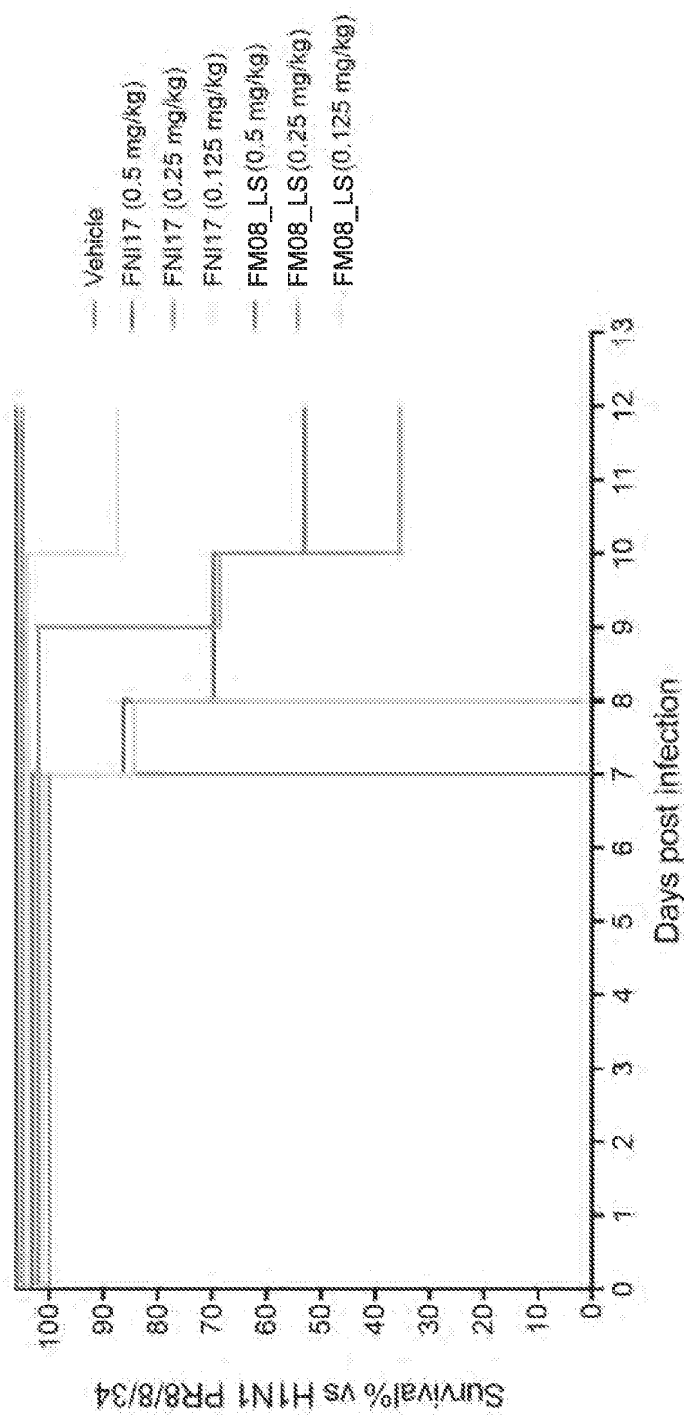


FIG. 109

239/249

mAb name	VH	VK	Titer	Gain/Loss
FNi3-rIgG1-LS	FNi3-VH-WT	FNi3-VK-WT	75.064	
FNi3-v8-rIgG1-LS	FNi3-VH-WT	FNi3-VK-FR123GL	95.036	27%
FNi3-v9-rIgG1-LS	FNi3-VH-WT	FNi3-VK-FR12GL	181.42	142%
FNi3-v10-rIgG1-LS	FNi3-VH-FR124GL	FNi3-VK-WT	138.72	85%
FNi3-v11-rIgG1-LS	FNi3-VH-FR124GL	FNi3-VK-FR123GL	238.583	218%
FNi3-v12-rIgG1-LS	FNi3-VH-FR124GL	FNi3-VK-FR12GL	209.362	179%
FNi3-v13-rIgG1-LS	FNi3-VH-N925/G935	FNi3-VK-WT	96.217	28%
FNi3-v14-rIgG1-LS	FNi3-VH-N925/G935	FNi3-VK-FR123GL	153.183	104%
FNi3-v15-rIgG1-LS	FNi3-VH-N925/G935	FNi3-VK-FR12GL	314.734	319%
FNi3-v16-rIgG1-LS	FNi3-VH-FR124GL-N925/G935	FNi3-VK-WT	95.233	27%
FNi3-v17-rIgG1-LS	FNi3-VH-FR124GL-N925/G935	FNi3-VK-FR123GL	97.102	29%
FNi3-v18-rIgG1-LS	FNi3-VH-FR124GL-N925/G935	FNi3-VK-FR12GL	390.099	420%
FNi9-rIgG1-LS	FNi9-VH-WT	FNi9-VK-WT	169.122	
FNi9-v5-rIgG1-LS	FNi9-VH-WT	FNi9-VK-FR123GL	306.765	81%
FNi9-v6-rIgG1-LS	FNi9-VH-WT	FNi9-VK-FR123GL-25	320.145	89%
FNi9-v7-rIgG1-LS	FNi9-VH-FR124GL	FNi9-VK-WT	236.713	40%
FNi9-v8-rIgG1-LS	FNi9-VH-FR124GL	FNi9-VK-FR123GL	328.115	94%
FNi9-v9-rIgG1-LS	FNi9-VH-FR124GL	FNi9-VK-FR123GL-25	279.512	65%
FNi17-rIgG1-LS	FNi17-VH-WT	FNi17-VK-WT	176.697	
FNi17-v6-rIgG1-LS	FNi17-VH-WT	FNi17-VK-FR123GL	255.505	45%
FNi17-v7-rIgG1-LS	FNi17-VH-WT	FNi17-VK-FR12GL	130.947	28%
FNi17-v8-rIgG1-LS	FNi17-VH-WT	FNi17-VK-W97A	168.236	5%
FNi17-v9-rIgG1-LS	FNi17-VH-WT	FNi17-VK-W97L	148.657	16%
FNi17-v10-rIgG1-LS	FNi17-VH-WT	FNi17-VK-W97Y	148.657	16%
FNi17-v11-rIgG1-LS	FNi17-VH-FR124GL	FNi17-VK-WT	319.752	81%
FNi17-v12-rIgG1-LS	FNi17-VH-FR124GL	FNi17-VK-FR123GL	349.17	98%
FNi17-v13-rIgG1-LS	FNi17-VH-FR124GL	FNi17-VK-FR12GL	260.621	47%
FNi17-v14-rIgG1-LS	FNi17-VH-FR124GL	FNi17-VK-W97A	265.246	50%
FNi17-v15-rIgG1-LS	FNi17-VH-FR124GL	FNi17-VK-W97L	237.796	35%
FNi17-v16-rIgG1-LS	FNi17-VH-FR124GL	FNi17-VK-W97Y	188.11	6%
FNi19-rIgG1-LS	FNi19-VH-WT	FNi19-VK-WT	205.82	
FNi19-v1-rIgG1-LS	FNi19-VH-WT	FNi19-VK-FR123GL	88.641	57%
FNi19-v2-rIgG1-LS	FNi19-VH-WT	FNi19-VK-FR12GL	70.735	60%
FNi19-v3-rIgG1-LS	FNi19-VH-FR124GL	FNi19-VK-WT	309.323	50%
FNi19-v4-rIgG1-LS	FNi19-VH-FR124GL	FNi19-VK-FR123GL	151.412	26%
FNi19-v5-rIgG1-LS	FNi19-VH-FR124GL	FNi19-VK-FR12GL	150.92	27%

FIG. 110

Normalization vs wt of MFI values

	FMI3	FMI3-v8	FMI3-v9	FMI3-v10	FMI3-v11	FMI3-v12
N1 A Stockholm 18 2007	1.00	0.79	0.74	0.93	0.97	0.89
N1 A California 07 2009 I223R_H275Y	1.00	0.93	0.90	0.84	0.85	0.82
N1 A California 07 2009	1.00	0.94	0.96	0.74	0.81	0.73
N1 NA A swine Hebel 0116 2017	1.00	0.97	0.98	0.86	1.03	0.94
N1 NA A swine Jiangsu J004 2018	1.00	0.87	0.85	0.84	0.76	0.84
N2 NA A South Australia 34 2019	1.00	0.95	0.90	0.89	0.93	0.89
N2 A Leningrad 134 17 57	1.00	0.93	0.91	0.90	0.89	0.85
N2 A Washington 01 2007	1.00	1.13	1.38	0.94	1.03	1.02
N3 A Canada rv504 2004	1.00	1.01	0.83	0.85	0.97	0.99
N6 A Swine Ontario 01911 1 99	1.00	1.00	0.98	0.86	0.91	0.92
N7 A Netherlands 078 03	1.00	0.99	1.18	0.91	0.86	0.63
N8 A harbor seal New hampshire 179629 2011	1.00	0.93	0.77	0.80	0.71	0.46
N9 A Anhui 1 2013	1.00	0.96	0.97	0.85	0.94	0.89
B/Yamanashi/166/1998(Yamagata)	1.00	0.90	0.82	0.92	0.87	0.91
B/Malaysia/2506/2004(Victoria)	1.00	0.94	0.90	0.83	0.84	0.84
B/Leel/10/1940(Ancestral)	1.00	0.93	0.90	0.86	0.77	0.80

FIG. 111

241/249

Normalization vs wt of MFI values

	FN13-v13	FN13-v14	FN13-v15	FN13-v16	FN13-v17	FN13-v18
N1 A Stockholm 18 2007	0.86	0.98	0.96	0.95	1.02	1.05
N1 A California 07 2009 I223R_H275Y	0.84	0.87	0.91	0.93	0.95	0.97
N1 A California 07 2009	0.79	0.86	0.84	0.94	0.89	1.00
N1 NA A swine Hebel 0116 2017	0.85	0.99	1.00	1.02	1.02	1.02
N1 NA A swine Jiangsu J004 2018	0.76	0.82	0.86	0.84	0.90	0.95
N2 NA A South Australia 34 2019	0.88	0.93	0.88	0.89	0.92	0.93
N2 A Leningrad 134 17 57	0.83	0.84	0.86	0.88	0.91	0.98
N2 A Washington 01 2007	0.98	1.22	1.26	0.83	0.94	1.14
N3 A Canada rv504 2004	0.95	1.01	1.03	0.99	0.97	0.97
N6 A Swine Ontario 01911 1 99	0.84	0.93	0.98	0.90	0.95	1.01
N7 A Netherlands 078 03	0.94	1.16	1.09	0.87	0.93	0.96
N8 A harbor seal New hampshire 179629 2011	0.81	0.84	0.70	0.79	0.93	0.70
N9 A Anhui 1 2013	0.90	0.94	0.88	0.92	0.87	0.97
B/Yamanashi/166/1998(Yamagata)	0.84	0.90	0.90	0.93	0.92	0.94
B/Malaysia/2506/2004(Victoria)	0.79	0.83	0.84	0.87	0.88	0.92
B/Lee/10/1940(Ancestral)	0.84	0.81	0.82	0.84	0.86	0.89

FIG. 111 (cont'd)

Normalization vs wt of MFI values

	FN19	FN19-v5	FN19-v6	FN19-v7	FN19-v8	FN19-v9
N1 A Stockholm 18 2007	1.00	0.97	0.93	0.98	1.02	1.00
N1 A California 07 2009 1223R_H275Y	1.00	0.48	0.46	0.82	0.41	0.40
N1 A California 07 2009	1.00	1.03	0.98	0.80	0.66	0.51
N1 NA A swine Hebel 0116 2017	1.00	1.00	0.93	0.95	0.97	1.00
N1 NA A swine Jiangsu J004 2018	1.00	0.97	0.99	0.86	0.88	0.90
N2 NA A South Australia 34 2019	1.00	1.04	0.96	0.88	0.84	0.89
N2 A Leningrad 134 17 57	1.00	0.96	0.89	0.89	0.83	0.85
N2 A Washington 01 2007	1.00	0.85	0.81	0.86	0.74	0.89
N3 A Canada rv504 2004	1.00	1.05	0.90	0.90	1.04	0.96
N6 A Swine Ontario 01911 1 99	1.00	1.01	0.94	0.89	0.87	0.84
N7 A Netherlands 078 03	1.00	0.68	0.70	0.64	0.57	0.59
N8 A harbor seal New hampshire 179629 2011	1.00	0.78	0.79	0.72	0.58	0.64
N9 A Anhui 1 2013	1.00	0.79	0.74	0.85	0.71	0.62
B/Yamanashi/166/1998(Yamagata)	1.00	1.03	1.04	0.88	0.96	1.00
B/Malaysia/2506/2004(Victoria)	1.00	1.00	0.94	0.91	0.92	0.91
B/Lee/10/1940(Ancestral)	1.00	0.98	0.96	0.85	0.90	0.88

FIG. 112

243/249

Normalization vs wt of MFI values

	FNI17	FNI17-v6	FNI17-v7	FNI17-v8	FNI17-v9	FNI17-v10
N1 A Stockholm 18 2007	1.00	1.00	1.08	0.92	1.03	1.12
N1 A California 07 2009 1223R H275Y	1.00	1.00	1.03	1.03	1.06	1.10
N1 A California 07 2009	1.00	0.99	1.19	1.27	1.29	1.30
N1 NA A swine Hebei 0116 2017	1.00	0.99	0.96	1.00	0.99	1.04
N1 NA A swine Jiangsu J004 2018	1.00	1.07	1.04	1.09	1.13	1.09
N2 NA A South Australia 34 2019	1.00	1.21	1.13	0.83	0.81	0.88
N2 A Leningrad 134 17 57	1.00	1.01	1.02	1.06	1.12	1.15
N2 A Washington 01 2007	1.00	1.35	1.16	0.96	1.23	0.68
N3 A Canada rv504 2004	1.00	1.00	1.03	1.12	1.13	1.08
N6 A Swine Ontario 01911 1 99	1.00	1.36	1.12	0.71	0.69	0.71
N7 A Netherlands 078 03	1.00	1.24	0.91	0.51	0.60	0.53
N8 A harbor seal New_hampshire_179629_2011	1.00	0.87	0.91	2.27	1.25	0.84
N9 A Anhui 1 2013	1.00	1.20	1.14	0.92	0.86	0.82
B/Yamanashi/166/1998(Yamagata)	1.00	0.92	0.96	0.98	1.00	0.99
B/Malaysia/2506/2004(Victoria)	1.00	1.01	1.01	1.05	1.07	1.11
B/Leel/10/1940(Ancestral)	1.00	0.92	1.03	1.09	1.12	1.13

FIG. 113

244/249

Normalization vs wt of MFI values

	FNI17-v11	FNI17-v12	FNI17-v13	FNI17-v14	FNI17-v15	FNI17-v16
N1 A Stockholm 18_2007	1.12	1.04	1.05	1.05	1.03	1.01
N1 A California 07_2009_1223R_H275Y	1.15	1.10	1.06	1.06	1.00	1.06
N1 A California 07_2009	1.28	1.30	1.26	1.33	1.24	1.22
N1 NA A swine Hebei 0116_2017	1.01	1.03	0.99	1.01	0.95	0.93
N1 NA A swine Jiangsu J004_2018	1.21	1.06	1.12	1.08	1.10	1.12
N2 NA A South Australia 34_2019	1.13	1.19	1.18	0.96	0.88	0.92
N2 A Leningrad 134_17_57	1.30	1.19	0.94	1.08	1.11	1.03
N2 A Washington 01_2007	0.83	1.06	1.17	1.04	1.17	0.72
N3 A Canada rv504_2004	1.21	1.14	1.11	1.14	1.10	1.12
N6 A Swine Ontario 01911_1_99	1.00	1.15	1.16	0.86	0.81	0.86
N7 A Netherlands 078_03	0.82	1.11	1.20	0.50	0.59	0.59
N8 A harbor seal New Hampshire 179629_2011	0.74	0.77	0.84	2.15	1.82	0.85
N9 A Anhui 1_2013	1.05	1.43	1.39	1.10	0.99	0.93
B/Yamanashi/166/1998(Yamagata)	1.19	1.12	1.14	1.08	1.07	1.08
B/Malaysia/2506/2004(Victoria)	1.27	1.16	1.12	1.09	1.05	1.03
B/Lee/10/1940(Ancestral)	1.41	1.32	1.32	1.21	1.24	1.17

FIG. 113 (cont'd)

245/249

Normalization vs wt of MFI values

	FNI19	FNI19-v1	FNI19-v2	FNI19-v3	FNI19-v4	FNI19-v5
N1 A Stockholm 18 2007	1.00	1.00	1.06	1.09	1.11	1.14
N1 A California 07 2009 J223R_H275Y	1.00	1.02	1.08	1.02	1.06	1.12
N1 A California 07 2009	1.00	1.01	1.03	0.98	1.05	0.96
N1 NA A swine Hebei 0116 2017	1.00	0.99	0.97	1.03	1.06	1.08
N1 NA A swine Jiangsu J004 2018	1.00	0.95	1.02	1.04	1.05	1.09
N2 NA A South Australia 34 2019	1.00	1.02	0.98	1.01	0.98	1.04
N2 A Leningrad 134 17 57	1.00	1.05	1.05	1.04	1.16	1.24
N2 A Washington 01 2007	1.00	1.08	1.04	0.93	1.05	1.01
N3 A Canada rv504 2004	1.00	1.02	1.04	1.05	1.17	1.19
N6 A Swine Ontario 01911 1 99	1.00	0.96	0.74	1.00	0.96	0.95
N7 A Netherlands 078 03	1.00	0.96	0.96	1.12	1.06	1.00
N8 A harbor seal New hampshire 179629 2011	1.00	0.94	0.78	0.86	0.88	0.62
N9 A Anhui 1 2013	1.00	1.05	0.97	1.05	0.93	0.96
B/Yamanashi/166/1998(Yamagata)	1.00	0.98	1.09	1.03	1.13	1.19
B/Malaysia/2506/2004(Victoria)	1.00	1.05	1.07	1.00	1.13	1.17
B/Lee/10/1940(Ancestral)	1.00	0.96	1.04	1.11	1.09	1.19

FIG. 114

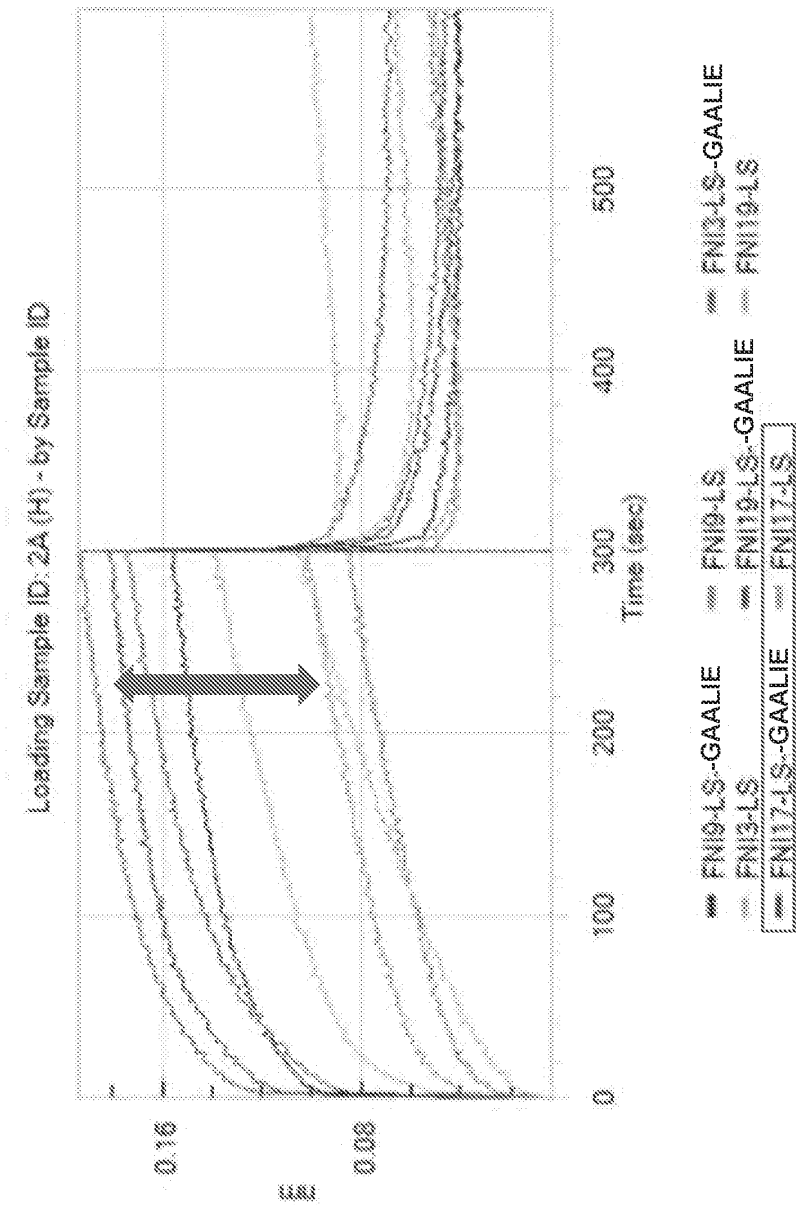


FIG. 115A

247/249

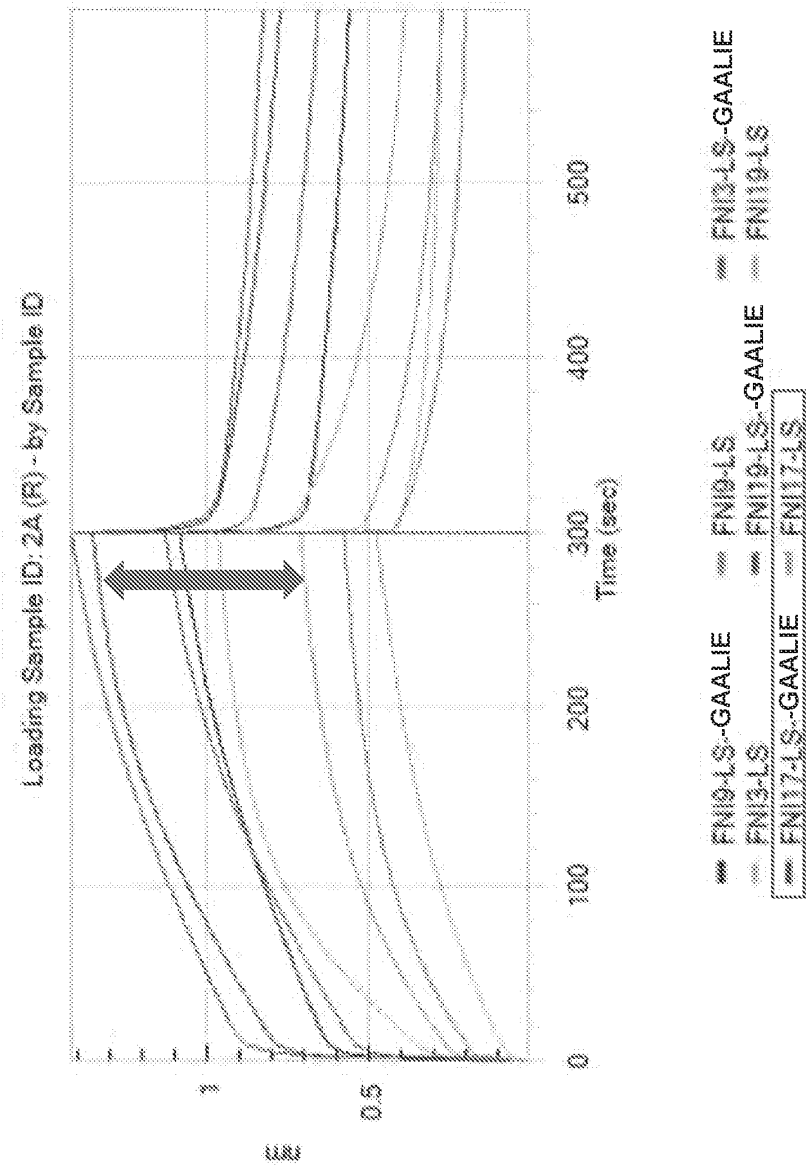


FIG. 115B

248/249

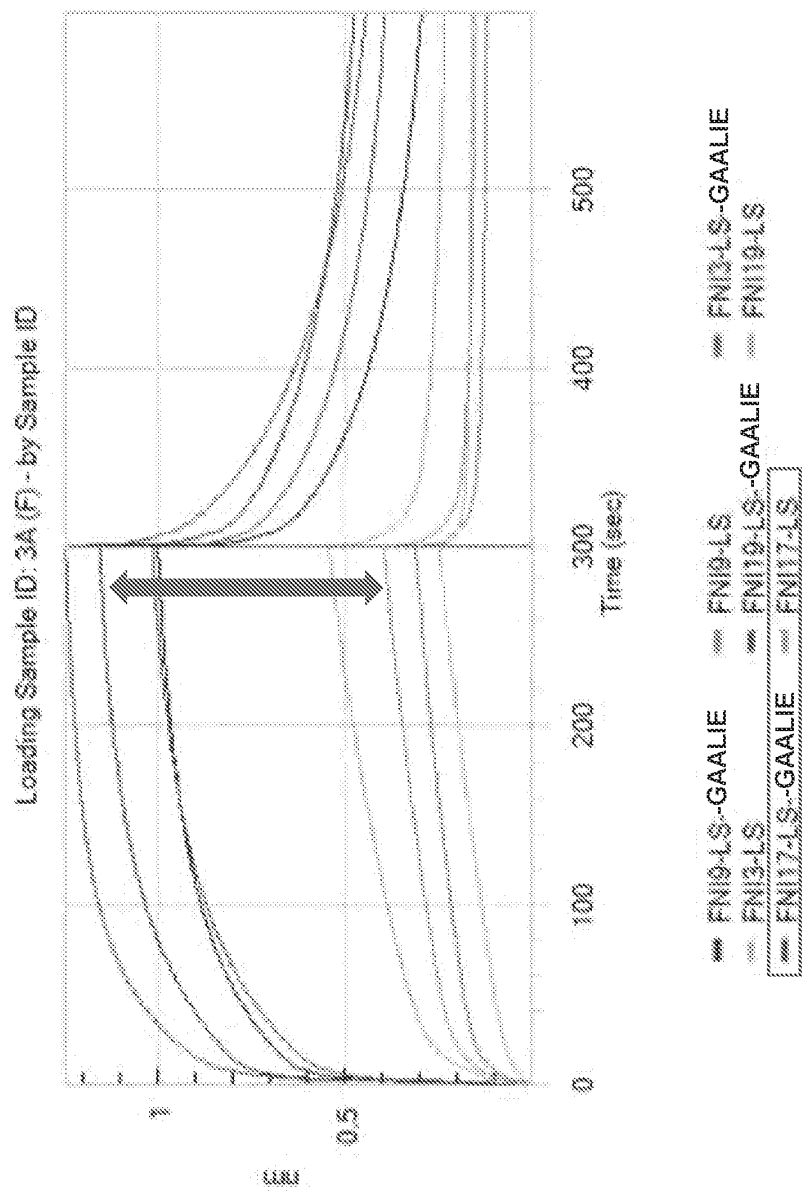


FIG. 115C

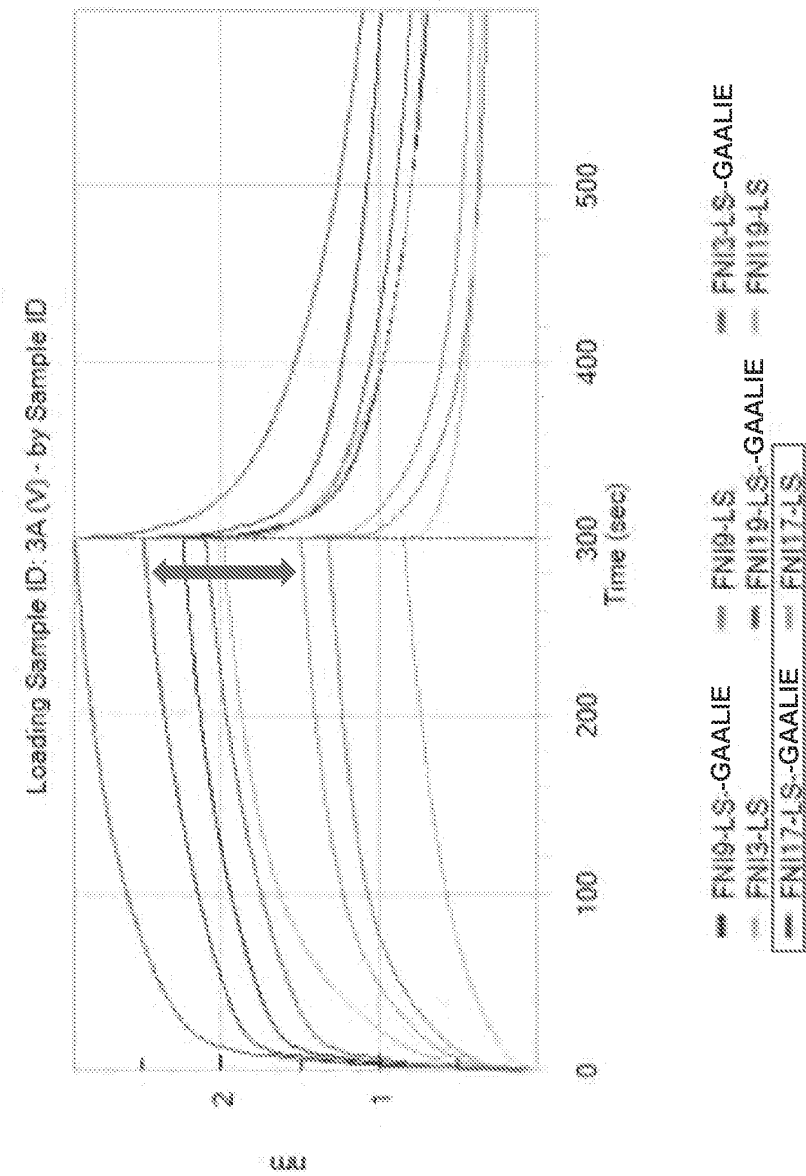


FIG. 115D