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Fig. 1

MEVELVLLPLVSSQC~~VNL~~TTRTQLPPAYTNSFTRGVYYPD~~KV~~FRSSVLHSTQDLFLPFFSN
 VTWFHAIHVSGTNGTKRFDNPVLPFNDGVYFASTEKSNIIRGWFGTTLD~~SK~~TQSLIVNN
 ATNVVIKVCEEQFCNDPFLGVYYHKNNKSWMESEFRVYSSANNCTFEYVSQPFLMDLEG
 KQGNFKNLREFVFKNIDGYFKIY~~SK~~HTPINLV~~RD~~LPQGFSALEPLVDLPIGINITRFQTLAL
 HRSYLTPGDSSSGWTAGAAAYYVGYLQPRIFLLKY~~NEN~~GT~~TD~~AVDCALDPLSETKCTLK
 SFTVEKGIYQTSNFRVQPTESIVRFPNITNLC~~PF~~GEVFNATRFASVYAWNRRKISNCVADYS
 VLYNSASFSTFKCYGVSPTKLNDLCFTNVYADSFVIRGDEV~~RQ~~IAPGQTGKIADYNYKLP
 DDFTGCVIAWNSNNLDSKVGNGYNYLYRLFRKSNLKP~~FER~~DISTE~~IY~~QAGSTPCNGVEGF
 NCYFPLQSYGFQPTNGVGYQPYRVVLSFELLHAPATVCGPKKSTNLVKNKCVN~~FN~~ENG
 LTGTGVLTESNKKFLPFQOQGRDIADTTDAVRDPQ~~TLE~~ILDITPCSF~~GG~~SVITPGTNTSNQ
 VAVLYQDVNCTEVPVAIHADQLPTWRVYSTG~~SN~~VFQTRAGCLIGAEHVNN~~SY~~ECDIPG
 AGICASYQTQ~~TNS~~**PRRARS**VASQSIIAYTMSLGAENS~~VAY~~SNNSIAIPTNFTISVTTEILPVS
 MTKTSVDCTMYICGDS~~TE~~CNLLLLQYGSFCTQLN~~RAL~~TGIAVEQDKNTQE~~VFA~~QVKQIYK
 TPPIKDFGGNF~~SQ~~ILPDPSPKPSKRSFIEDLLENK~~VT~~LADAGFIKQYGDCLGDIAARDLICA
 QKFNGLTVLPLLTDEMIAQYTSALLAGTITSGWTFGAGAA~~LQ~~IPFAMQMAYR~~FN~~GIGVT
 QNVLYENQKLIANQFNSAIGKIQDLSSTASALGKLQDVVNQNAQA~~AL~~N~~TL~~VKQLSSNFGA
 ISSVLNDILSR~~LD~~KVEAEVQIDRLITGR~~LQ~~SLQTYVTQQLIRAAEIRASANLAATKMSECV
 LGQSKRVDFCGKGYHLMSPFQ~~S~~APHGVVFLHVTVYPAQEKNFTTAPAICH~~DG~~KAHFPRE
 GV~~F~~VSN~~G~~THWFVTQRNFYEPQIITDNTFVSGNCDV~~V~~IGIVNNTVYDPLQPELDSFKEEL
 DKYFKNHTSPD~~VD~~LGDISGINASV~~V~~NIQKEIDRLNEVAKNLN~~ES~~LIDLQELGKYEYIKWP
 WYIWLGFIAGLIAIVMVTMLCCMTSCCSCCLKGCCSCGCKFDEDDSE~~P~~VLKGVKLHYT

Fig. 2

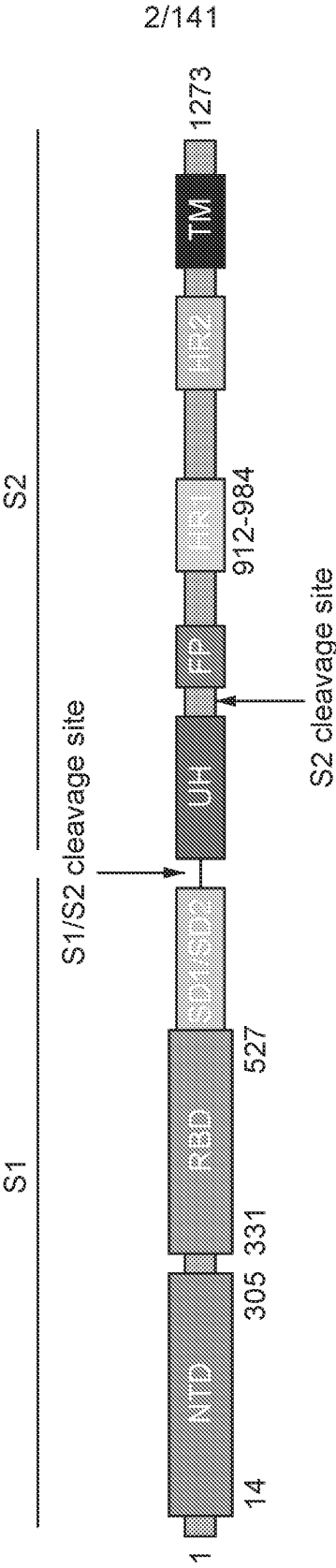


Fig. 3

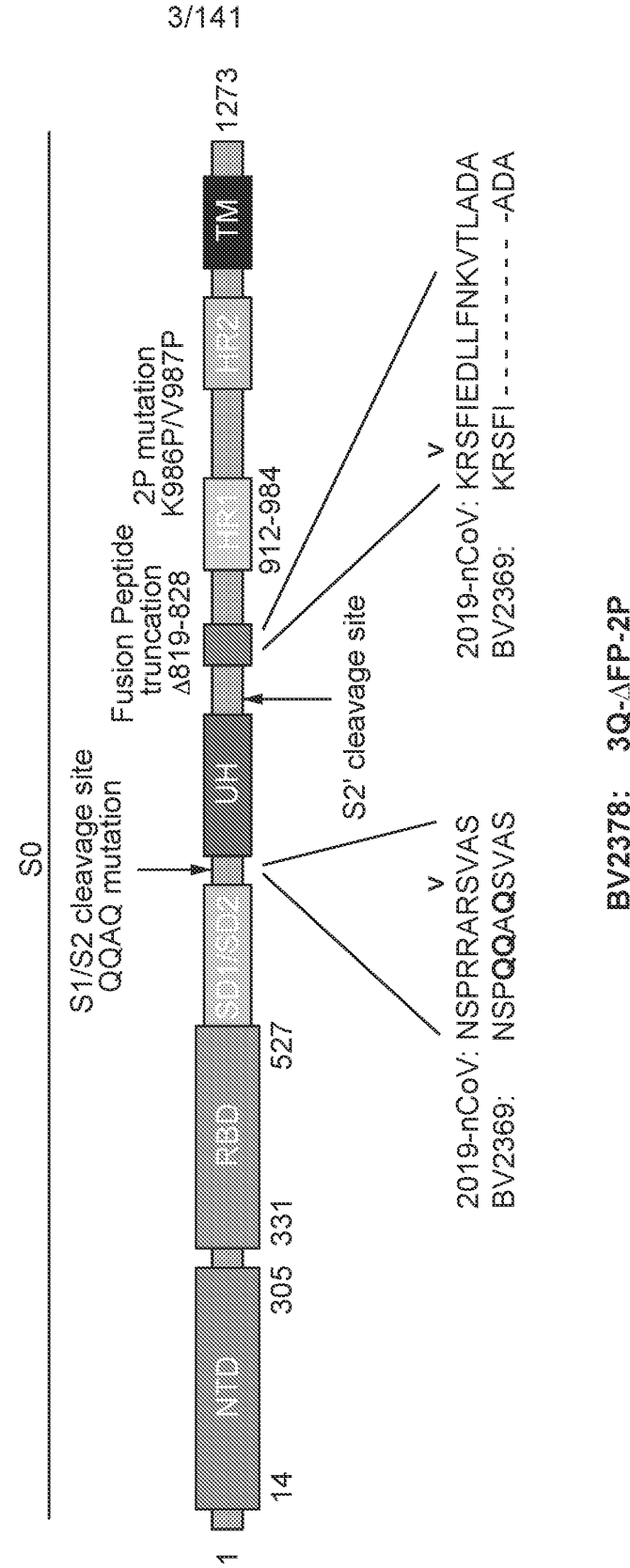
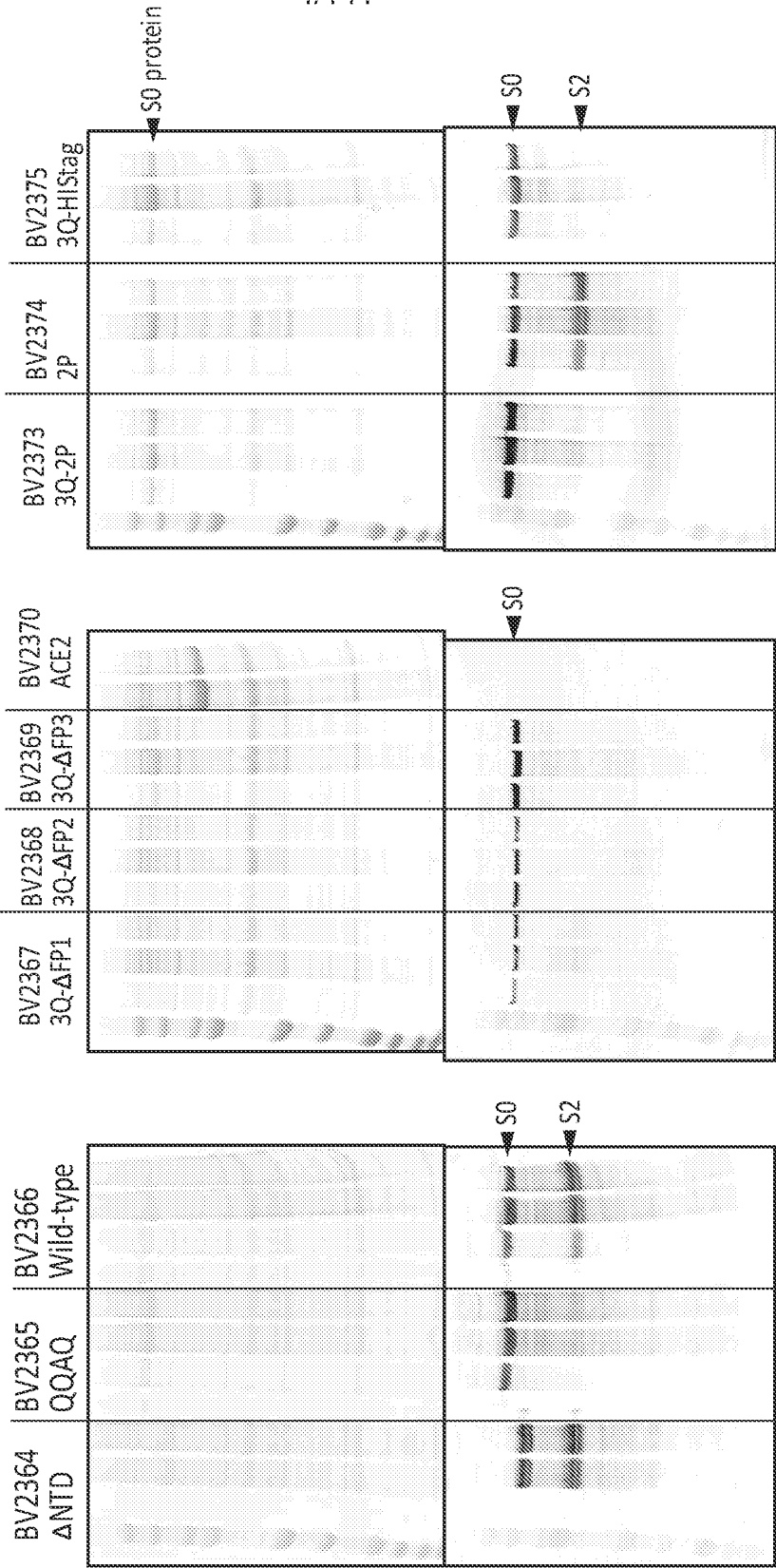


Fig. 4



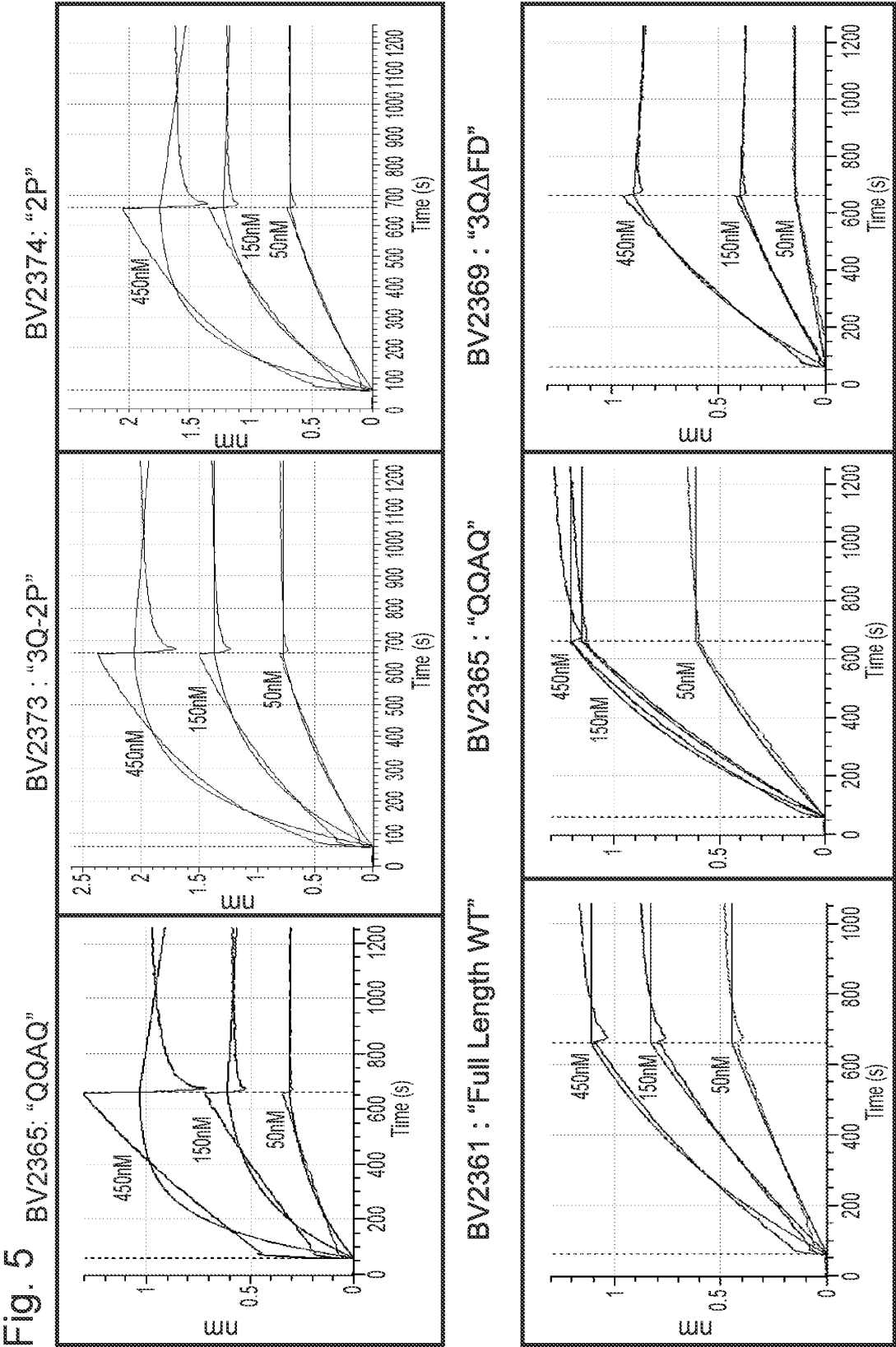
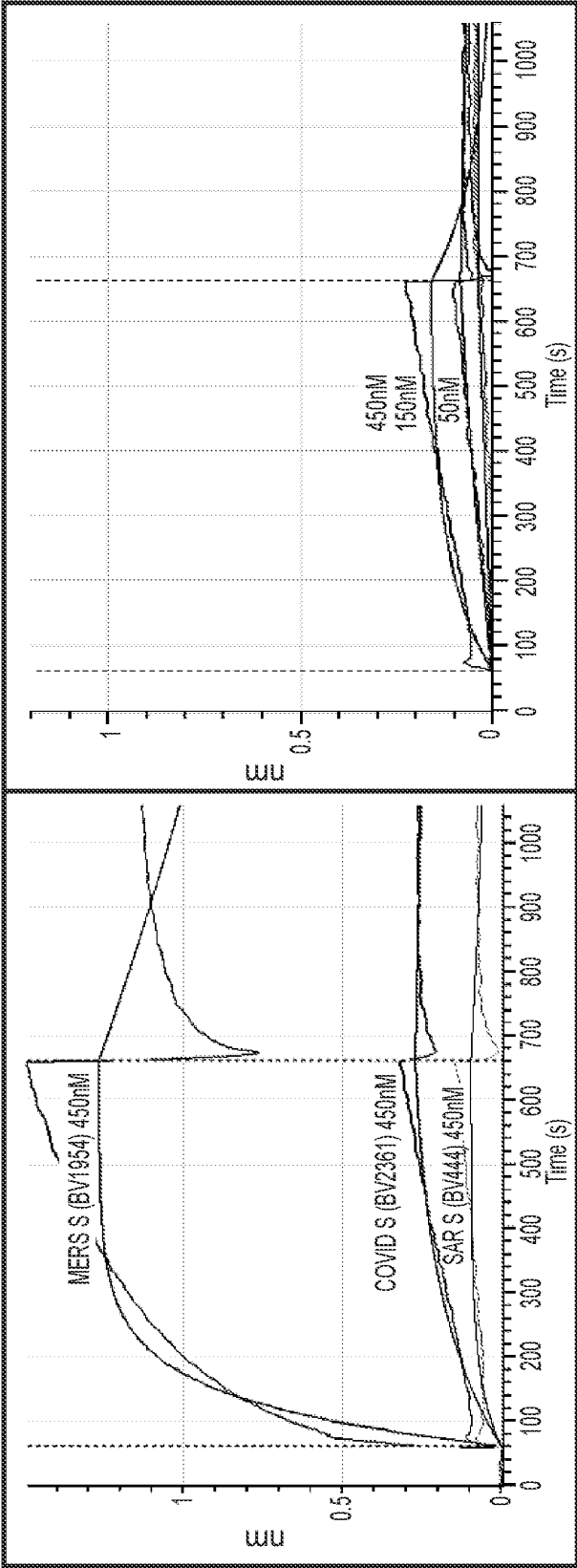


Fig. 6

Binding DPP4 receptor: MERS does not bind ACE2 receptor



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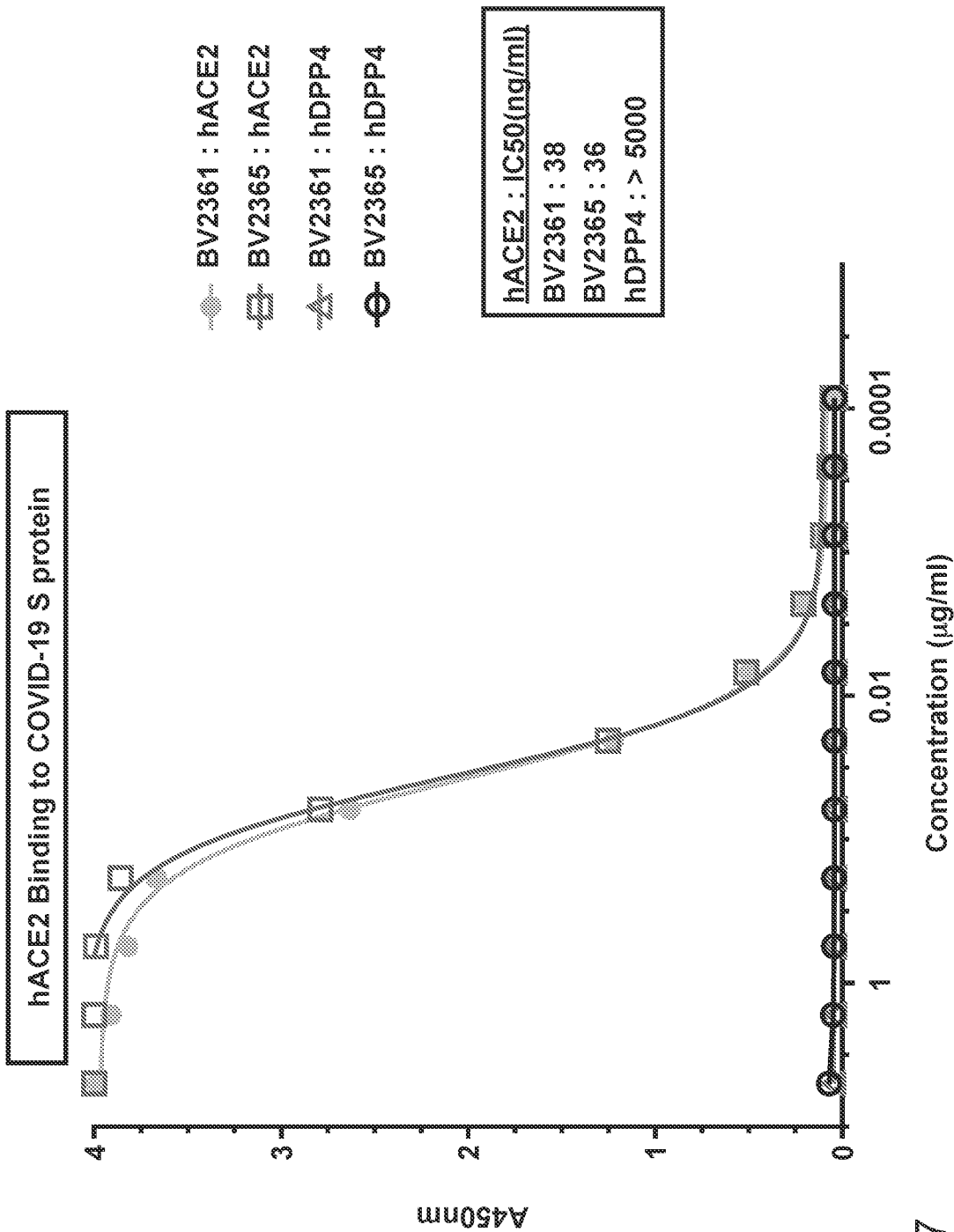
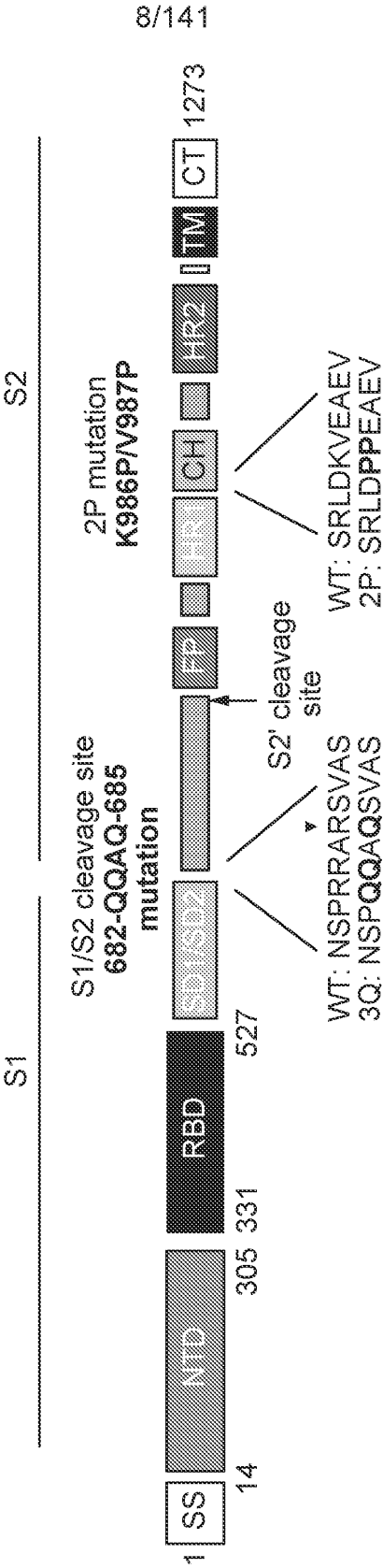


Fig. 7

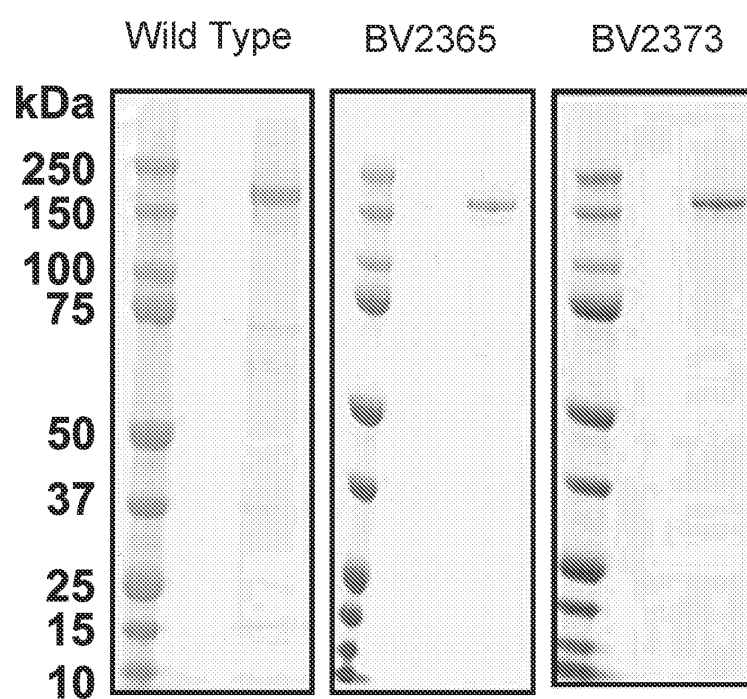
Fig. 8

BV2373



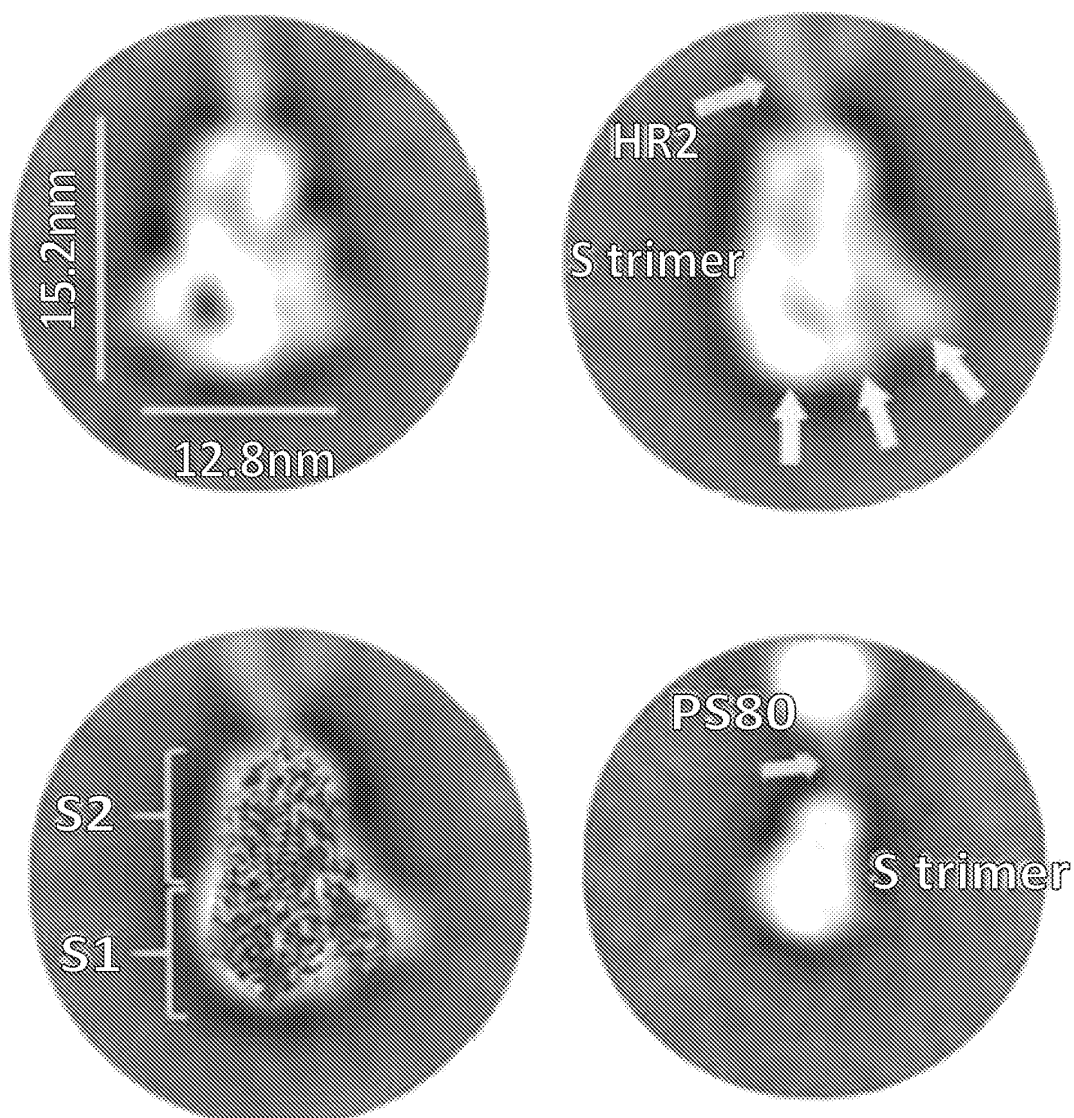
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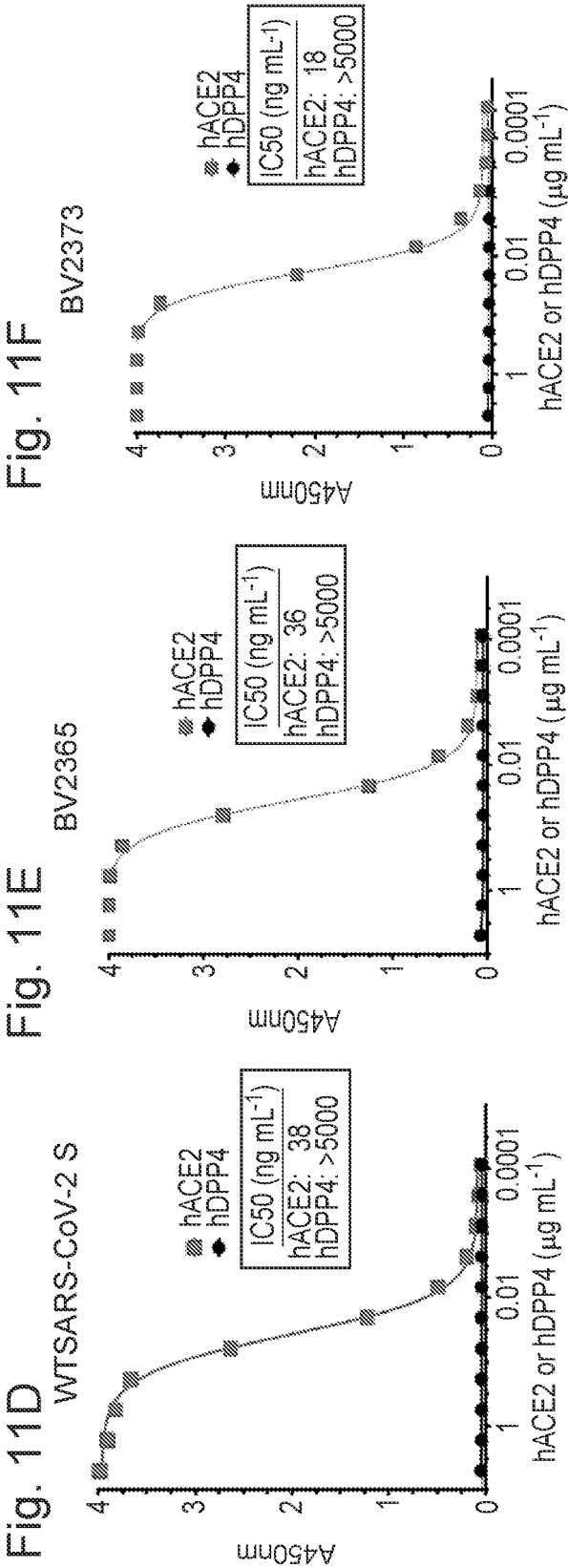
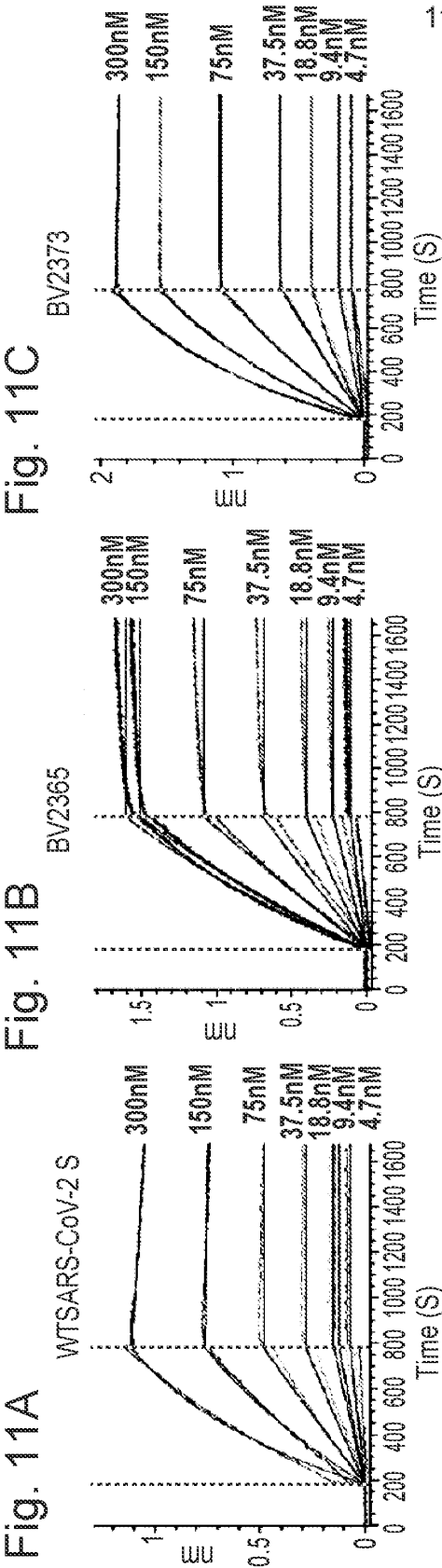
Fig. 9



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Fig. 10





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Fig. 12A

BV2373 Binding to hACE2 under stress conditions

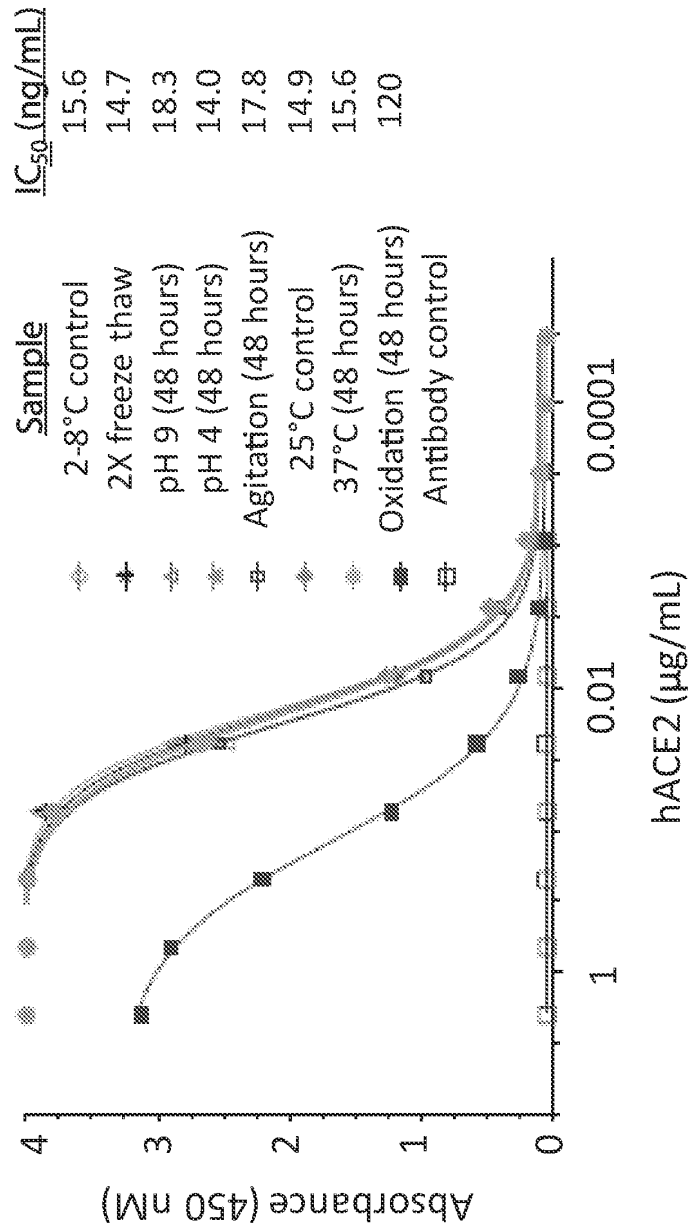


Fig. 12B

BV2365 Binding to hACE2 under stress conditions

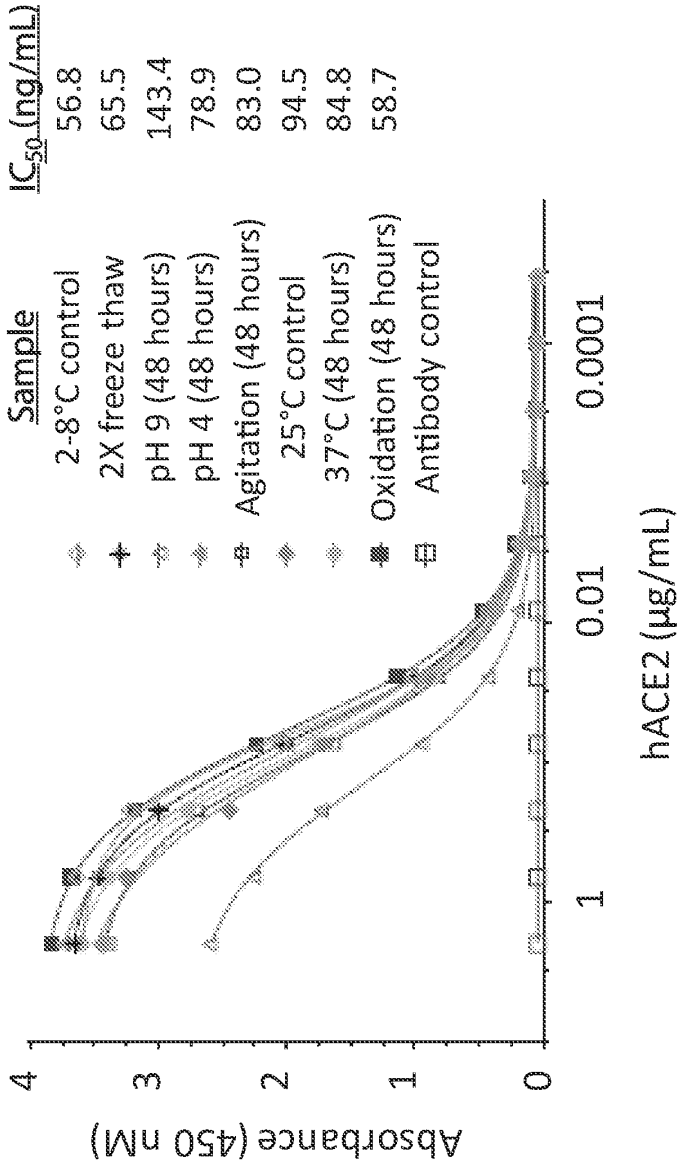
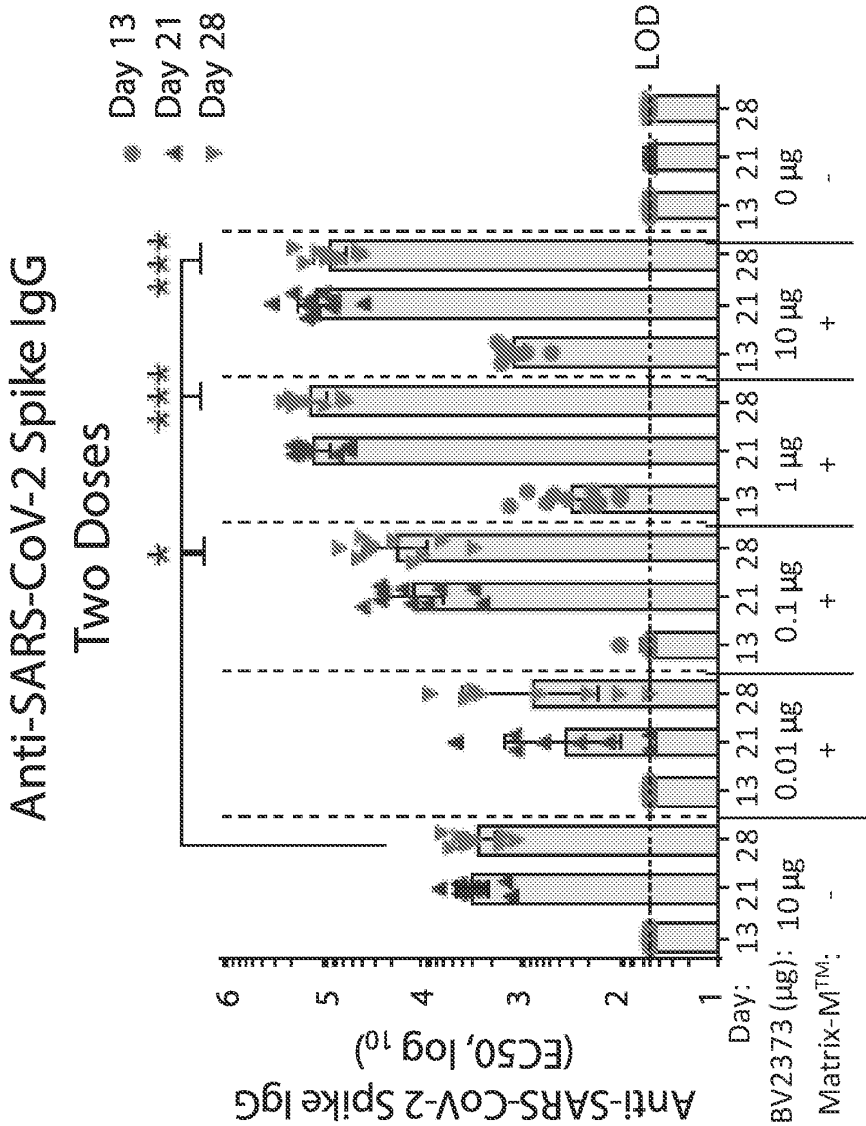


Fig. 13A



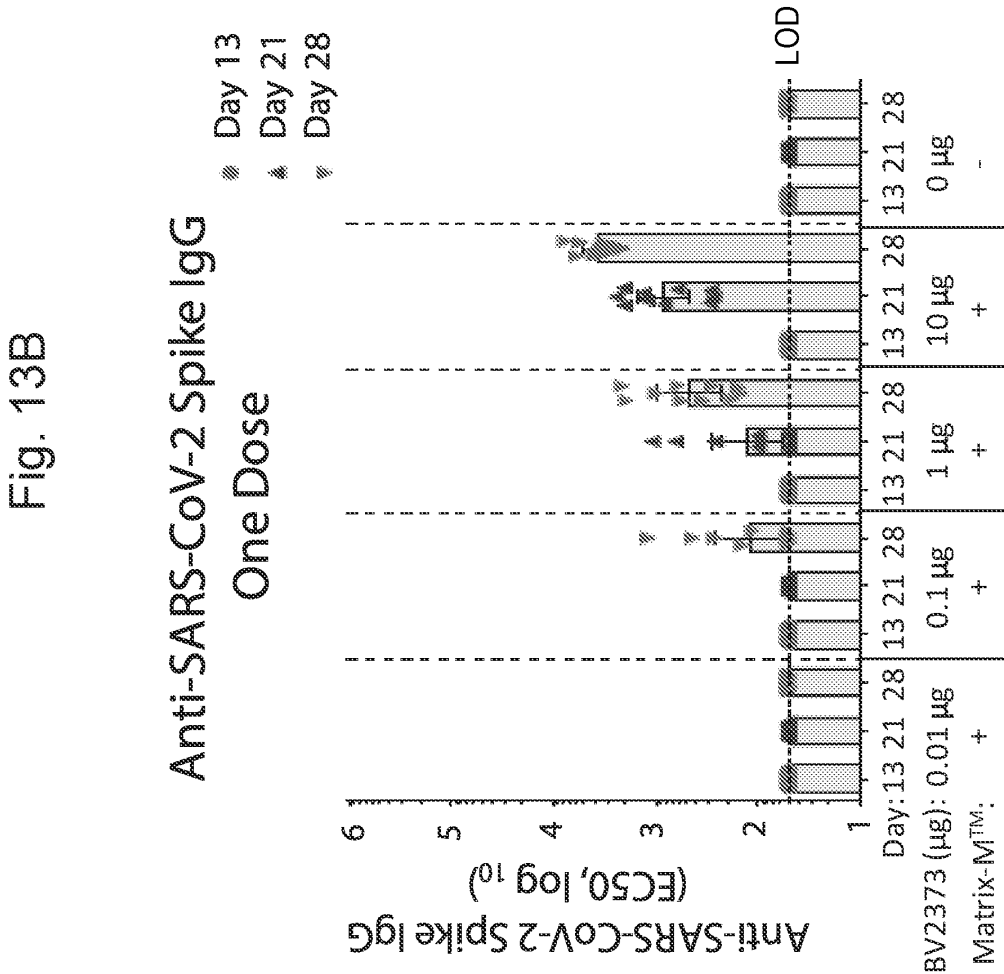


Fig. 14

hACE2 Receptor Blocking Antibody

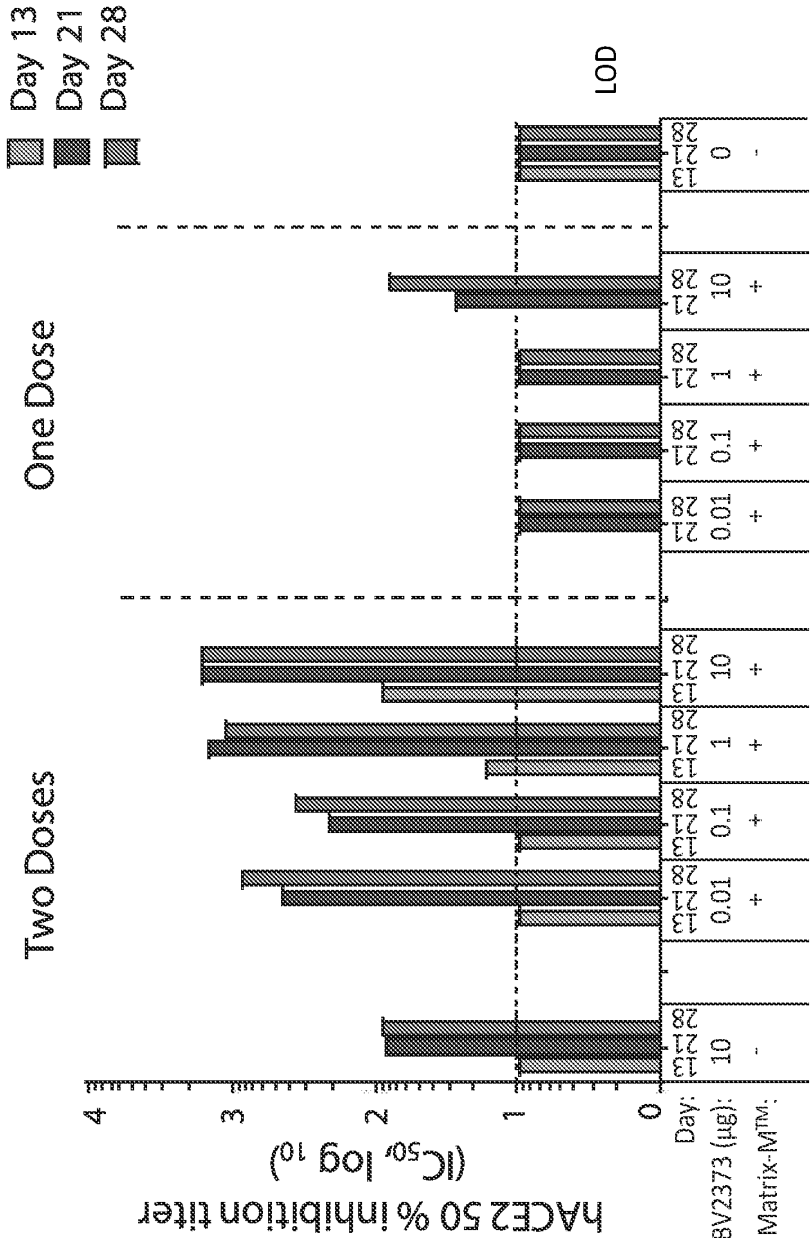
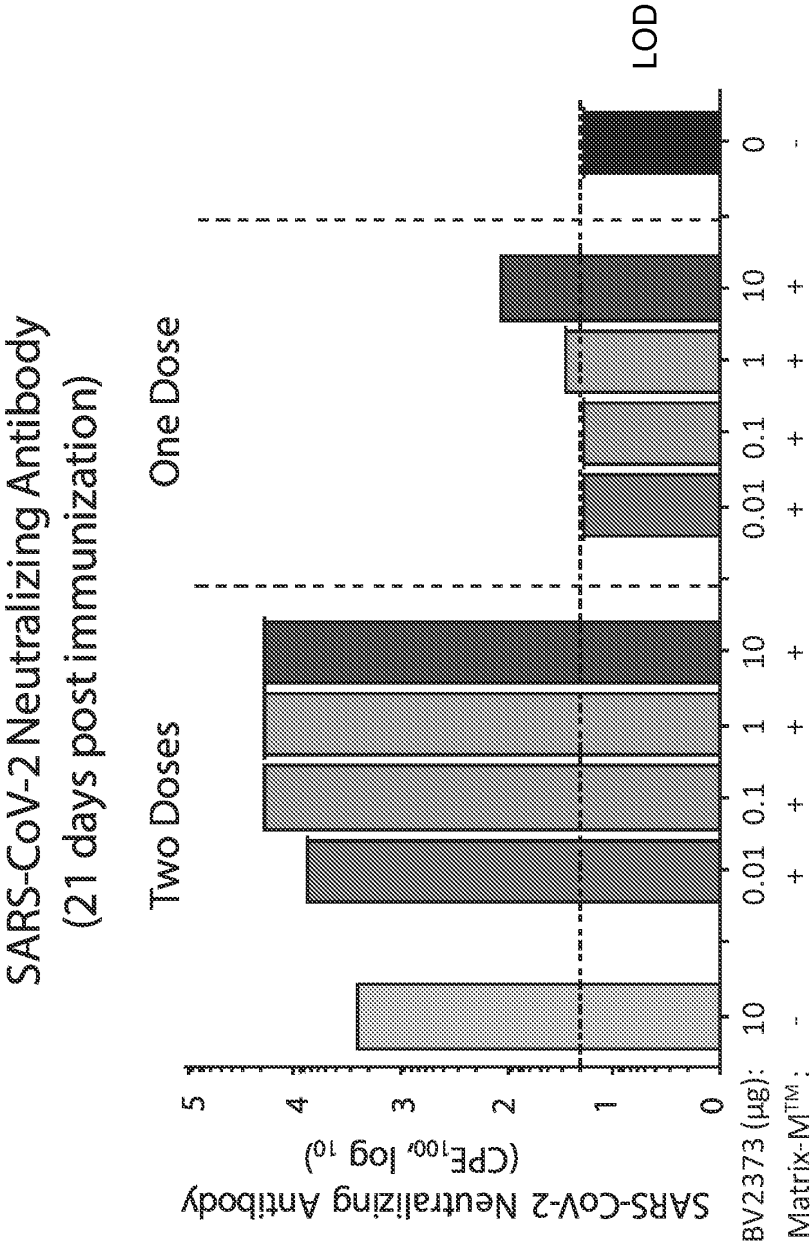


Fig. 15



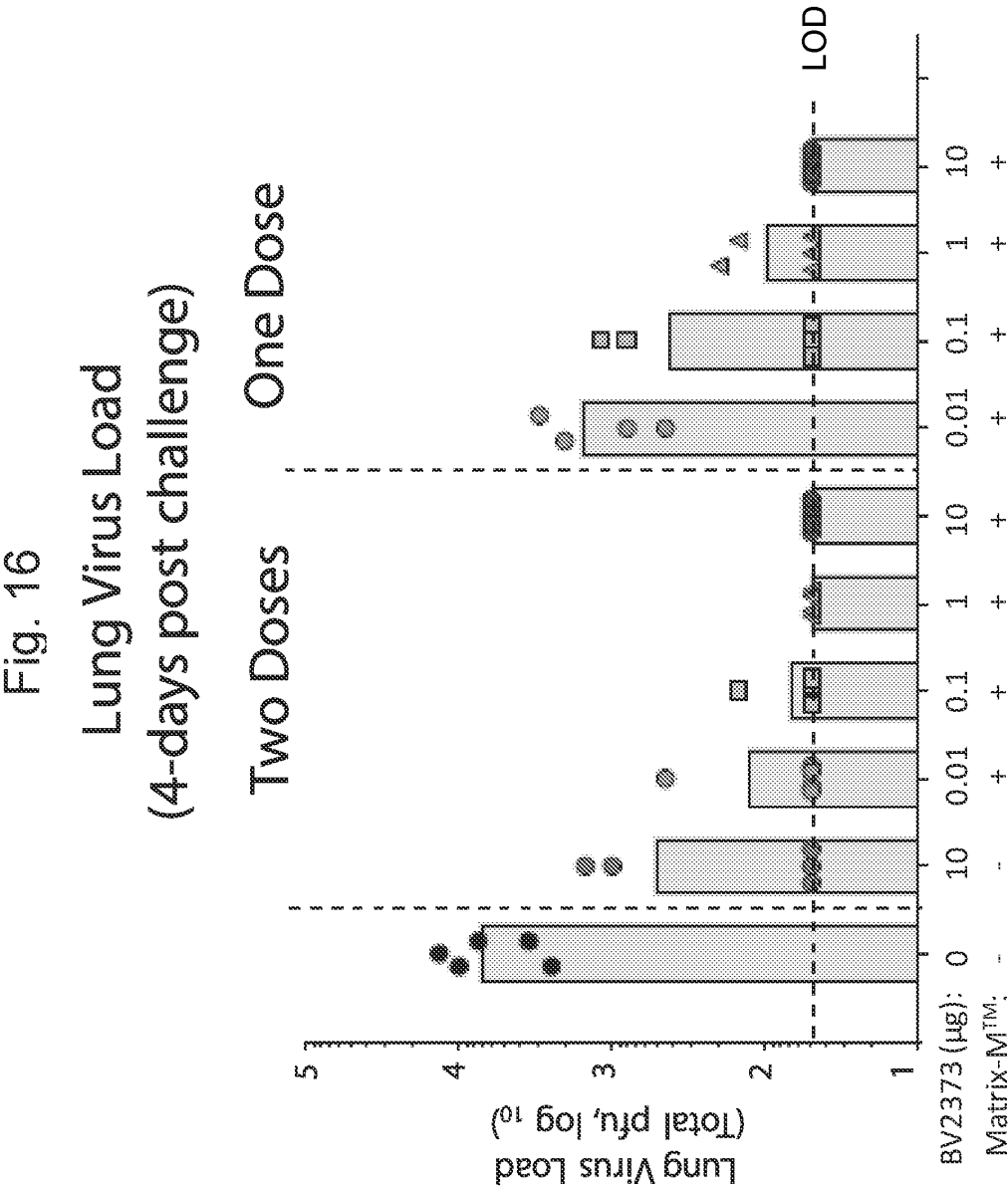


Fig. 17A
% Weight Change (One Dose)

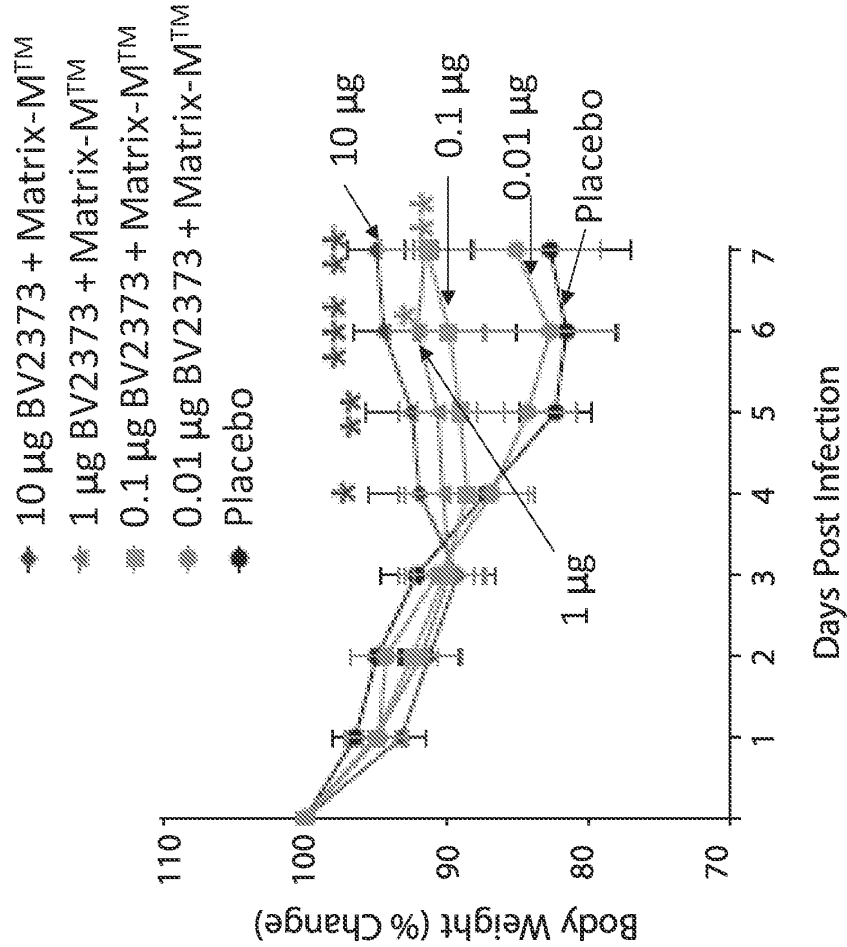


Fig. 17B

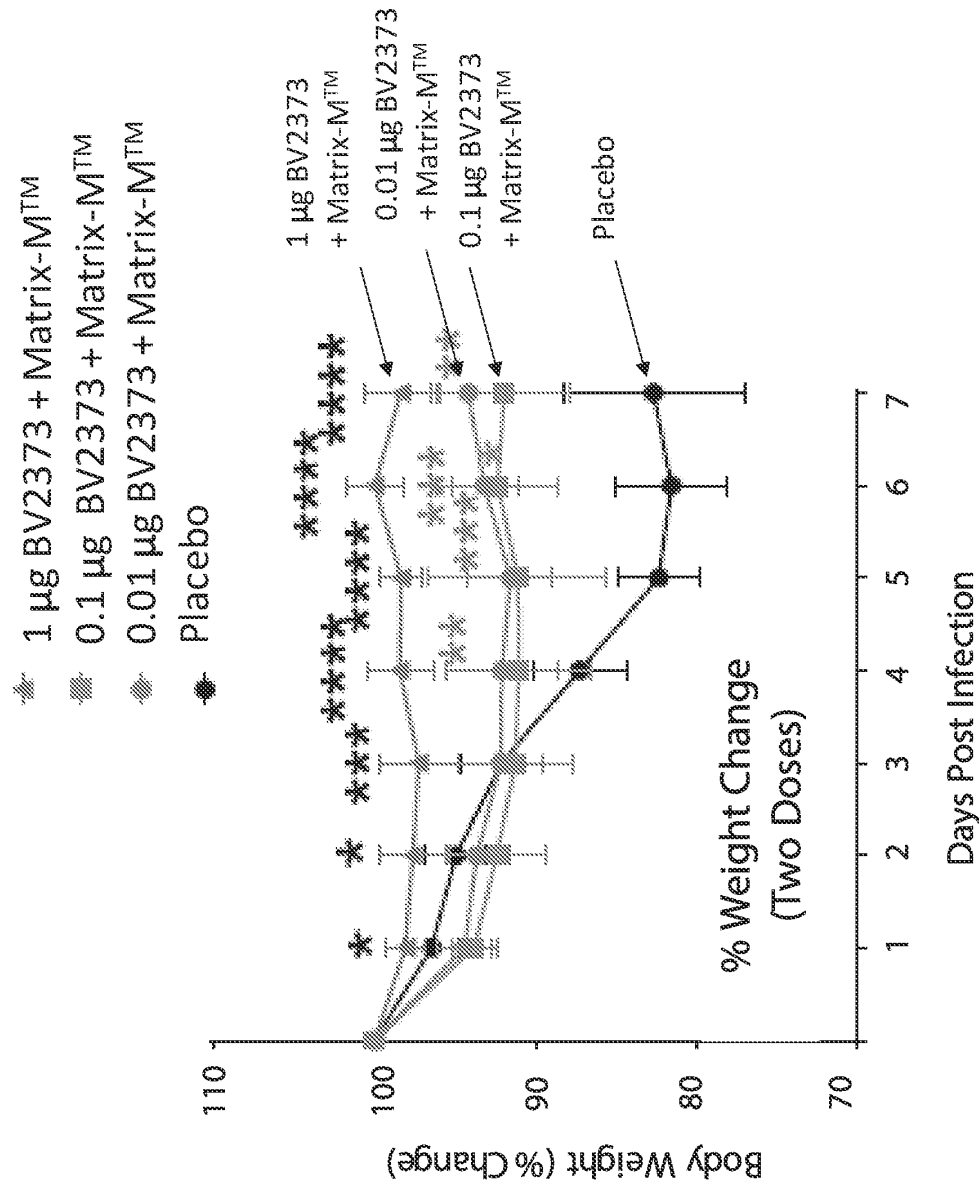
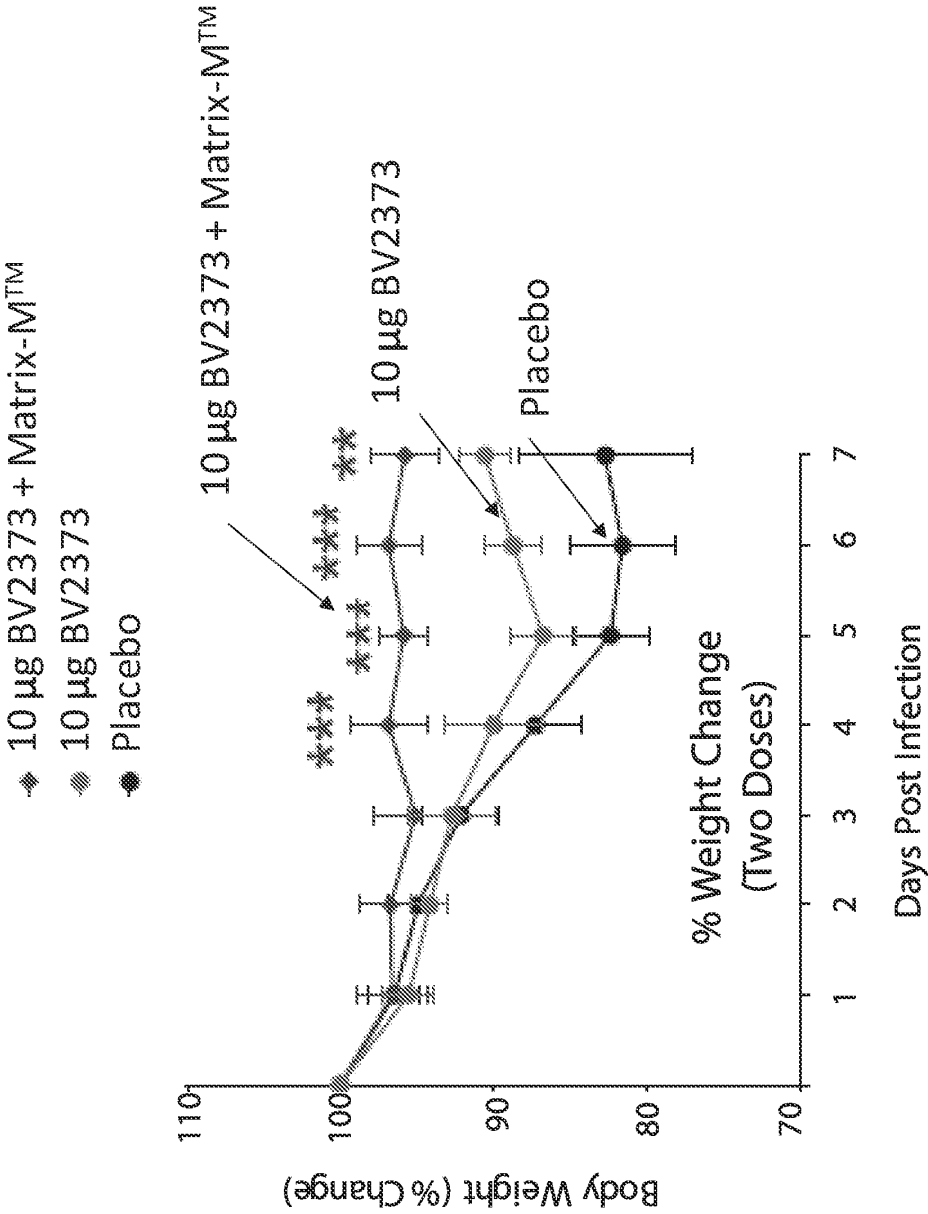
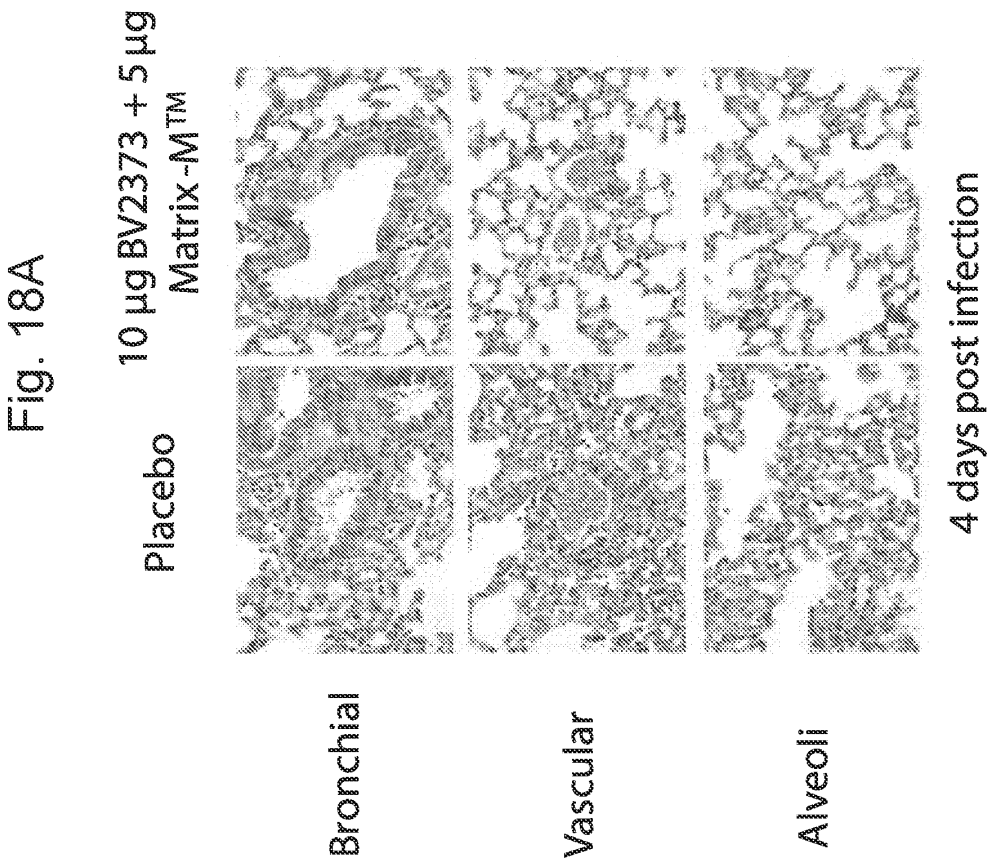
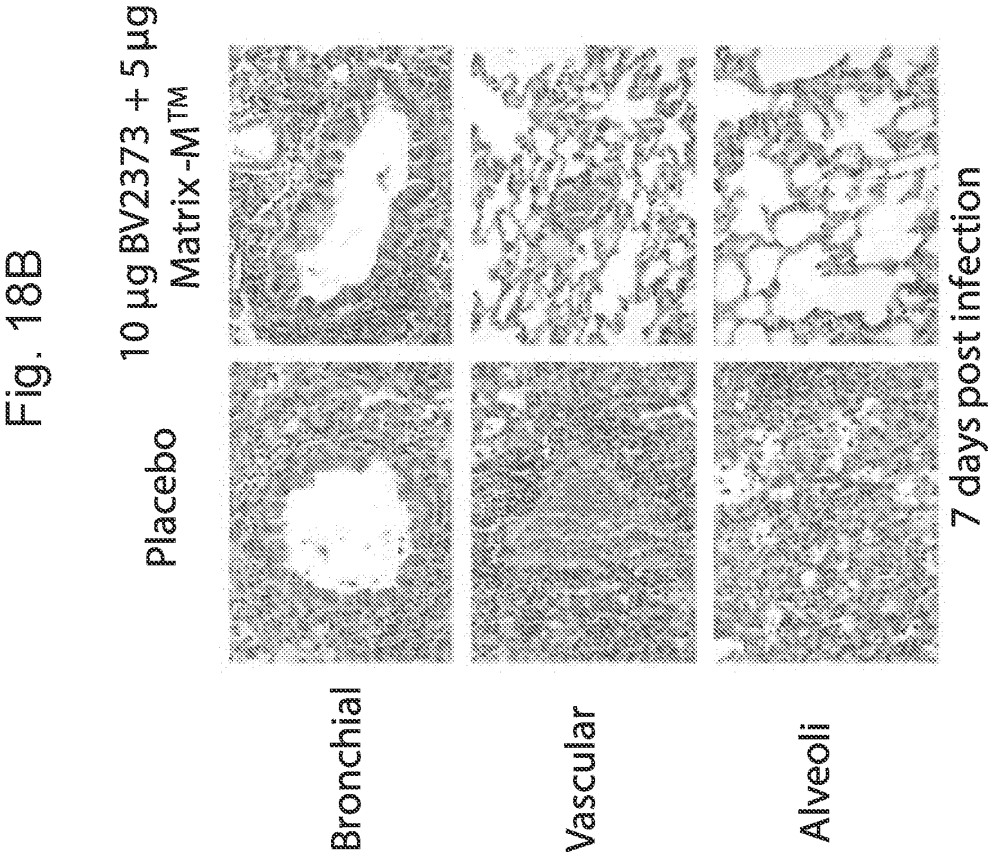
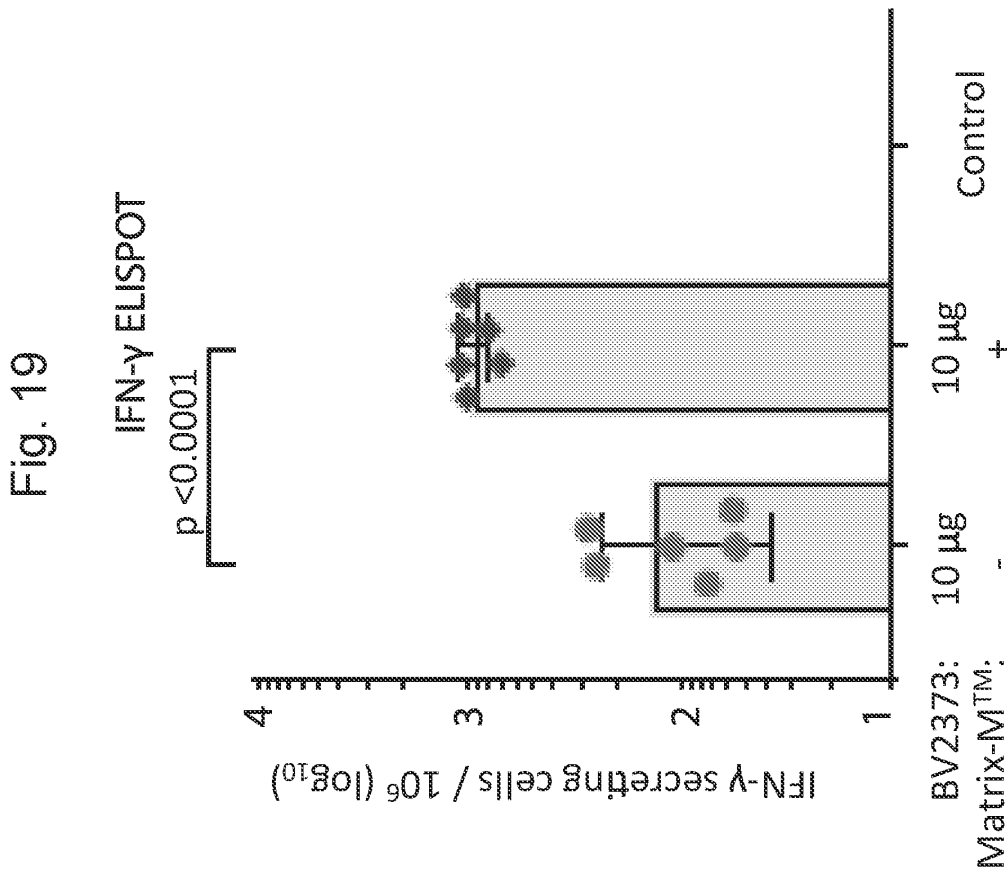


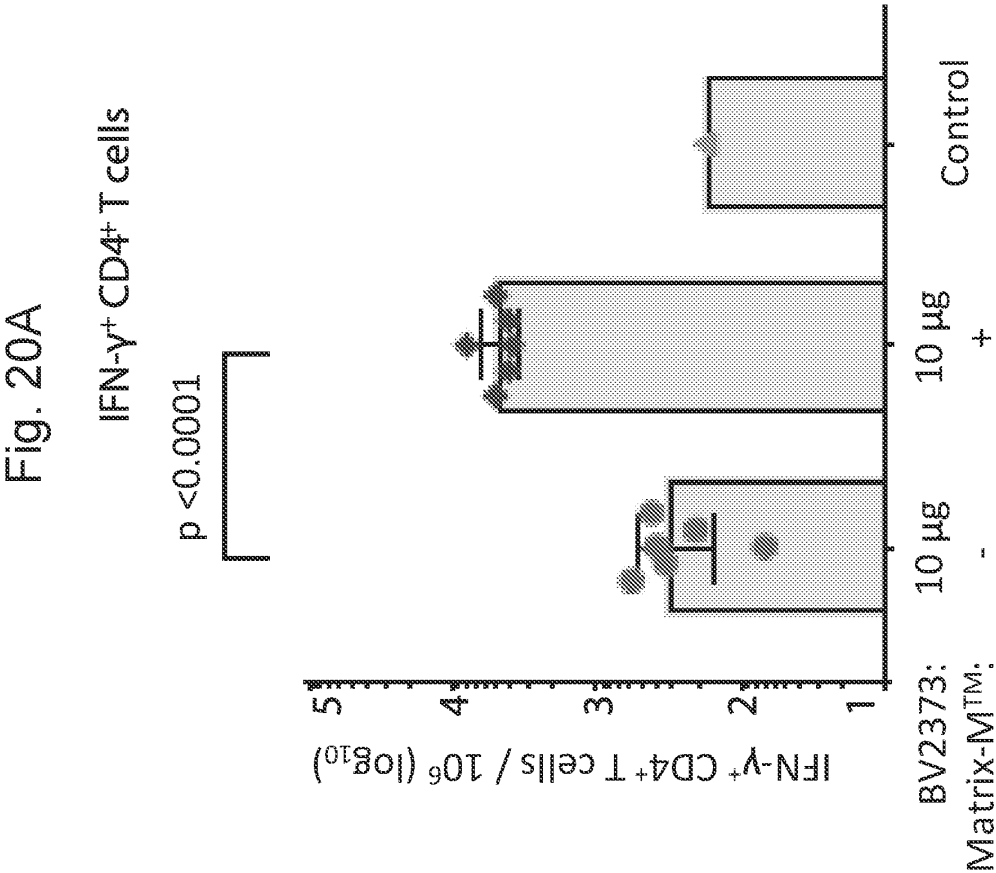
Fig. 17C

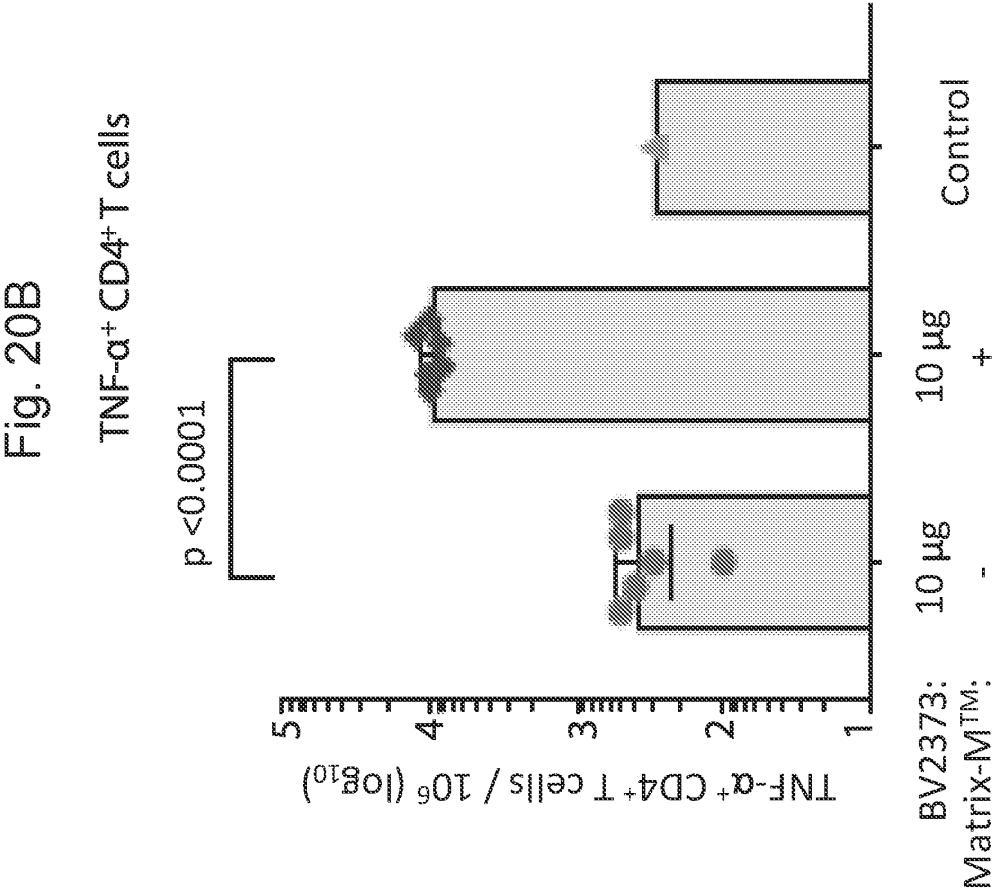




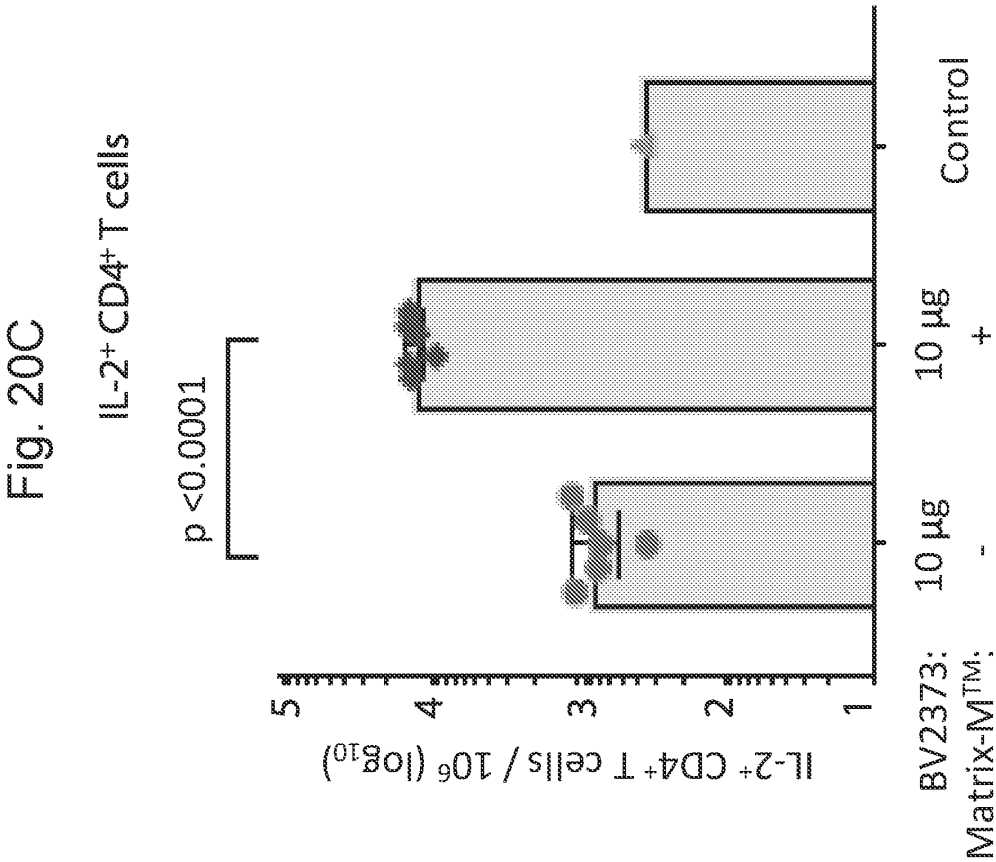


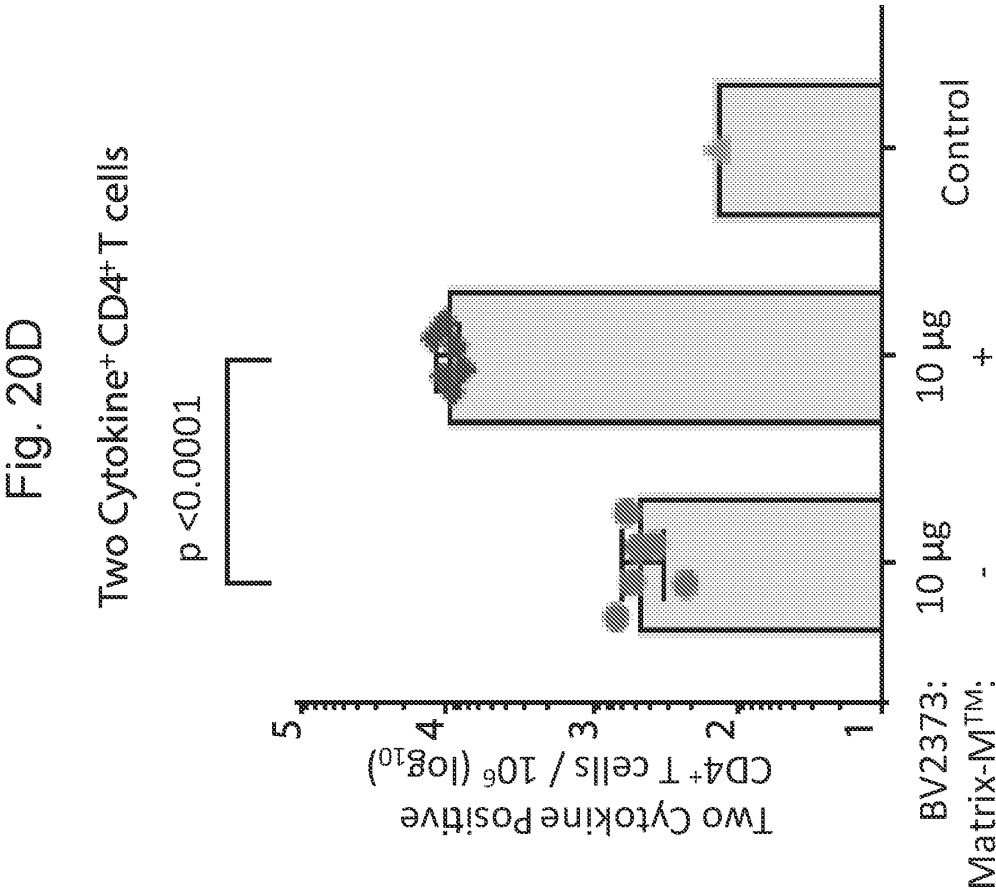


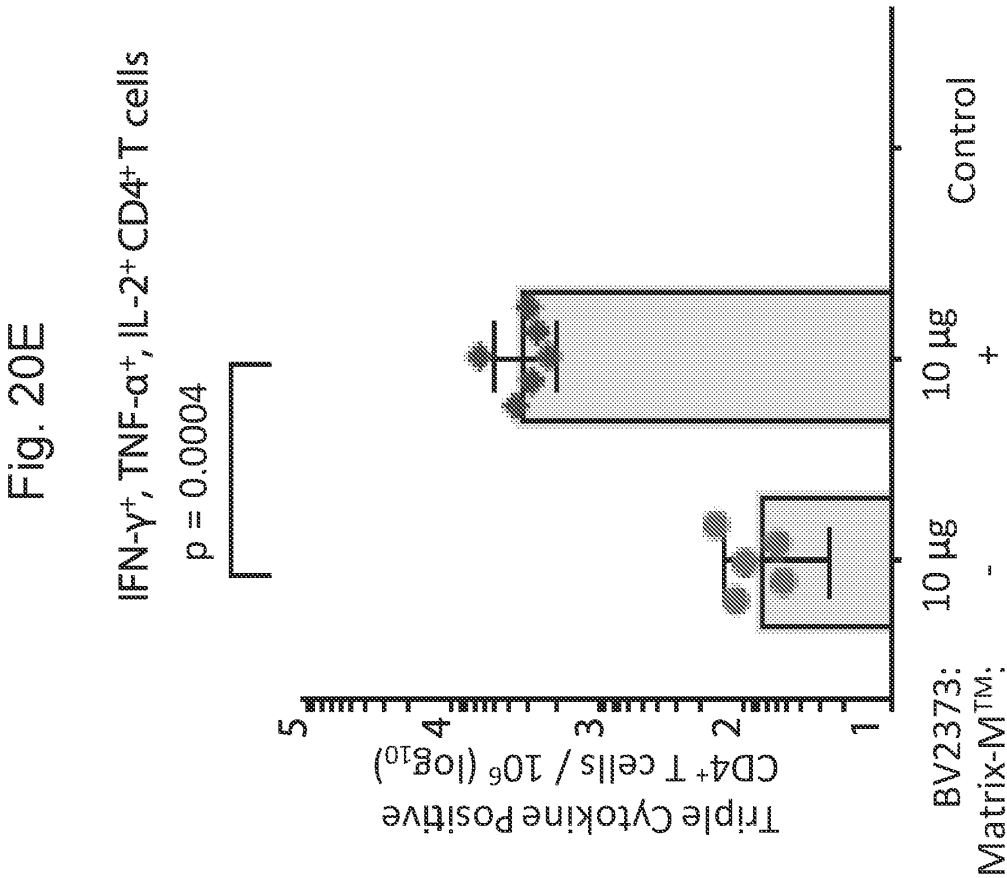


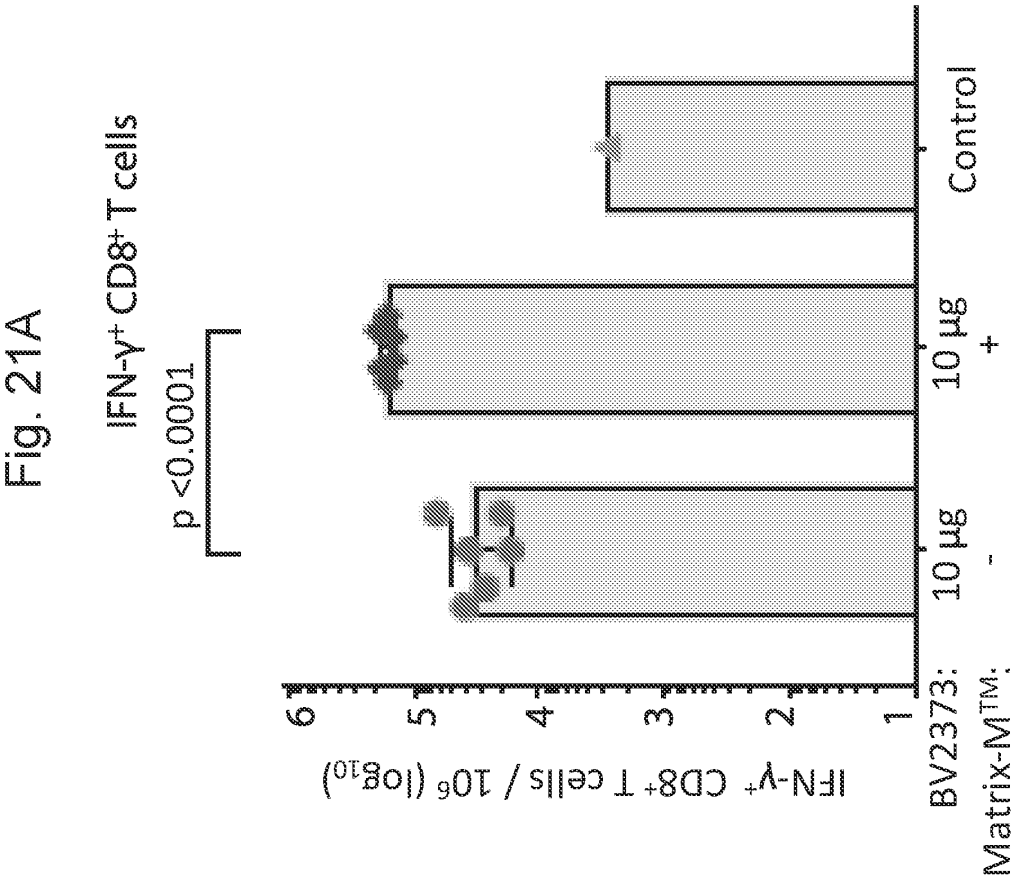


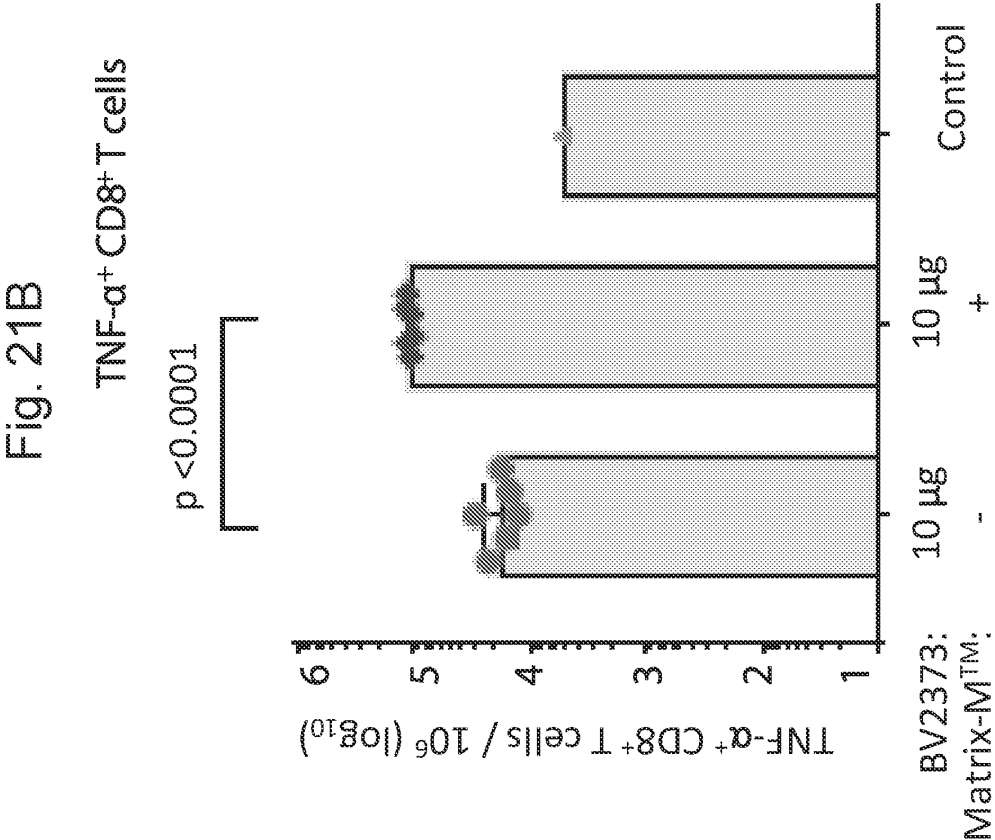
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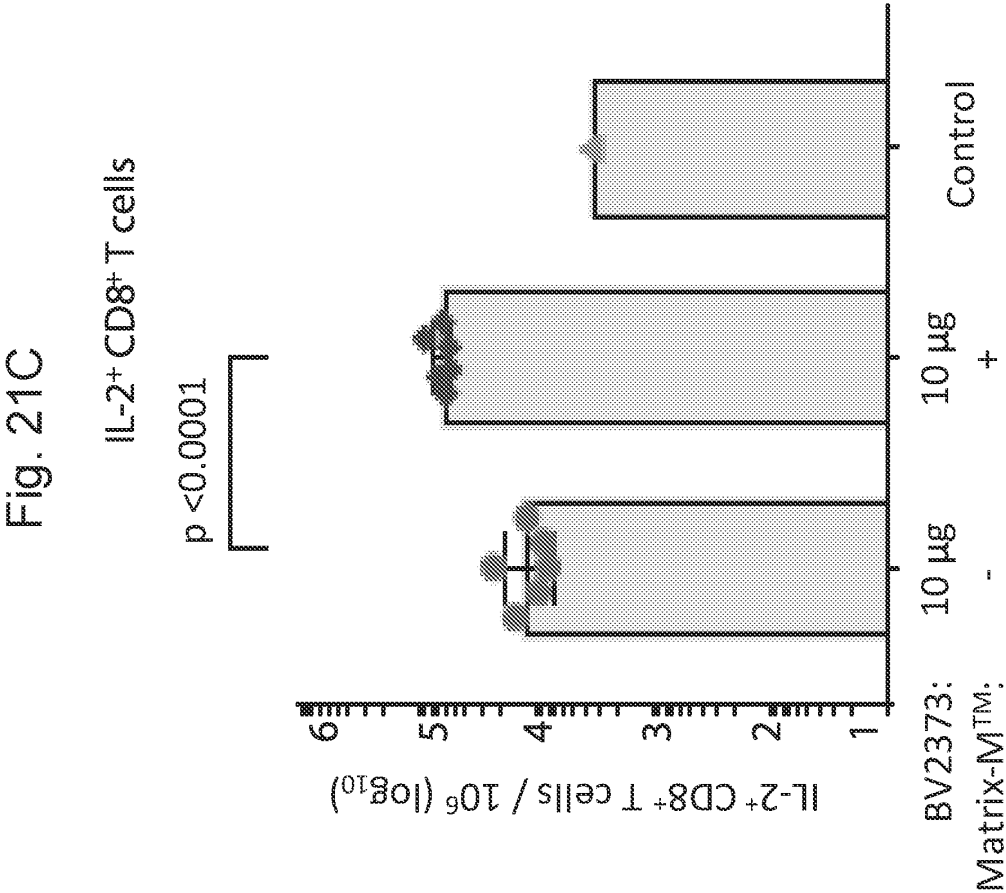


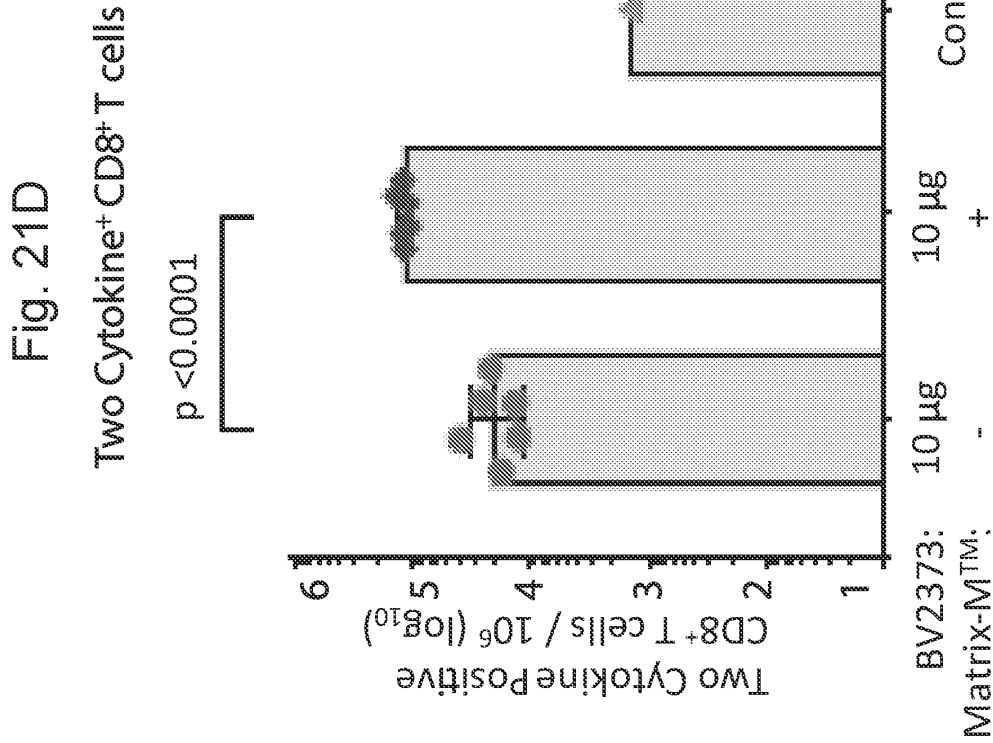


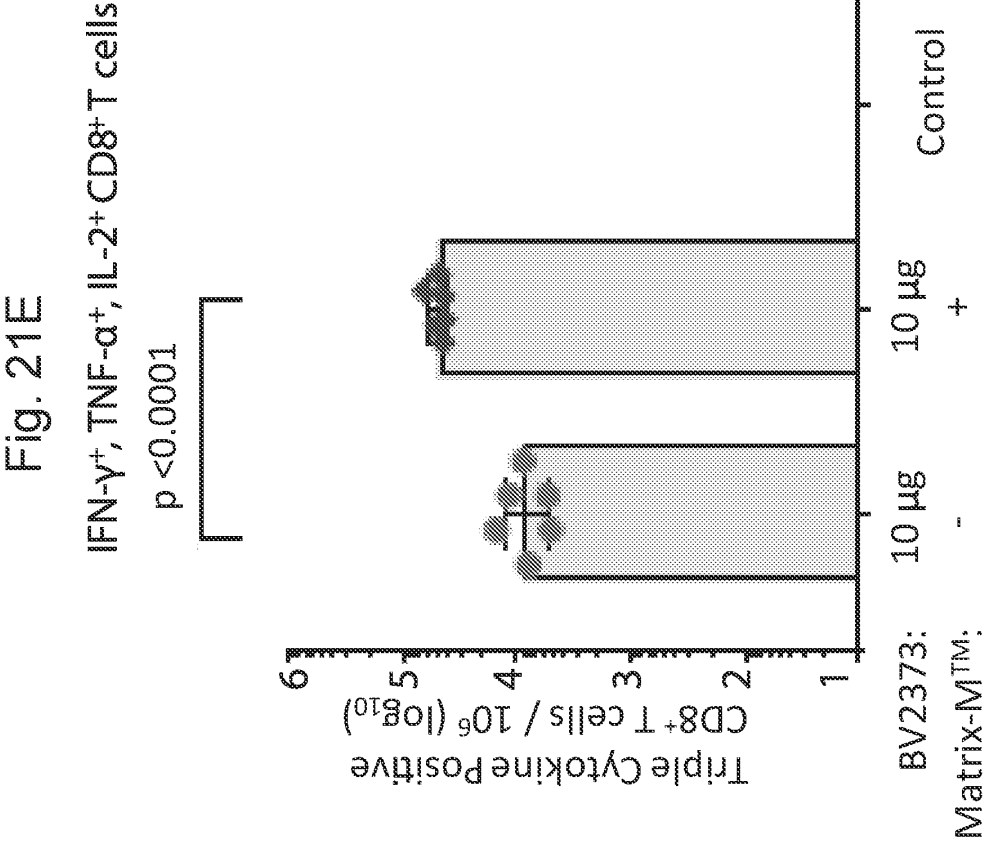












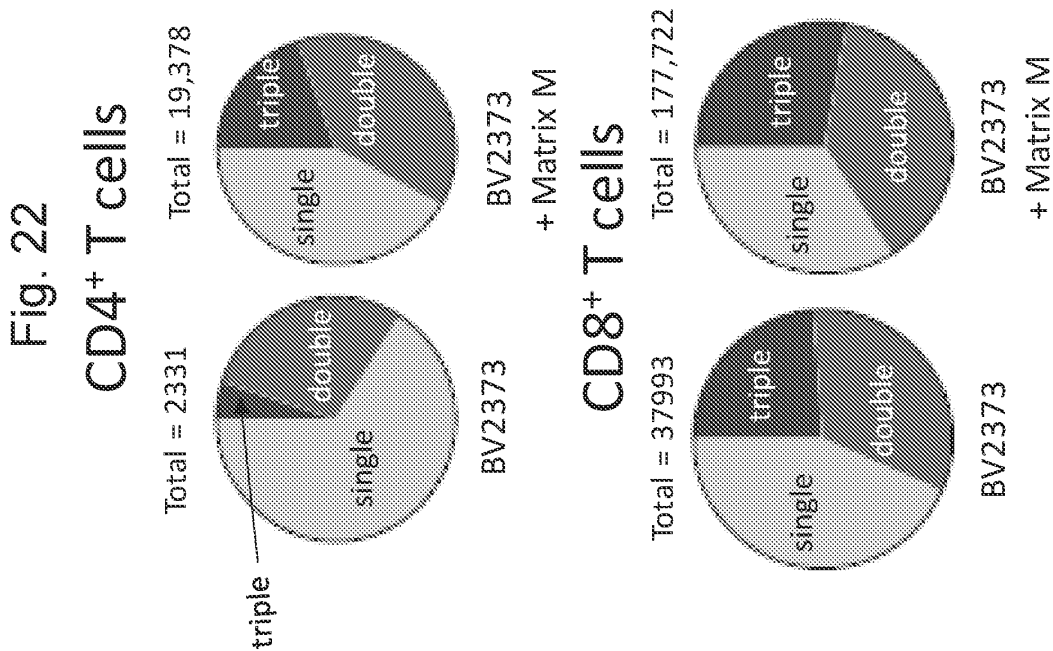


Fig. 23A

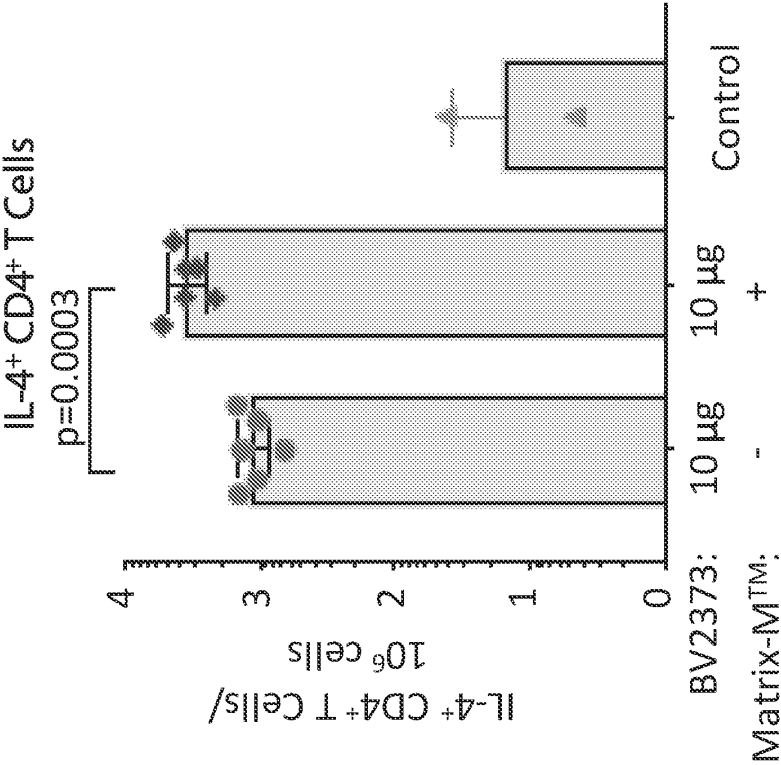
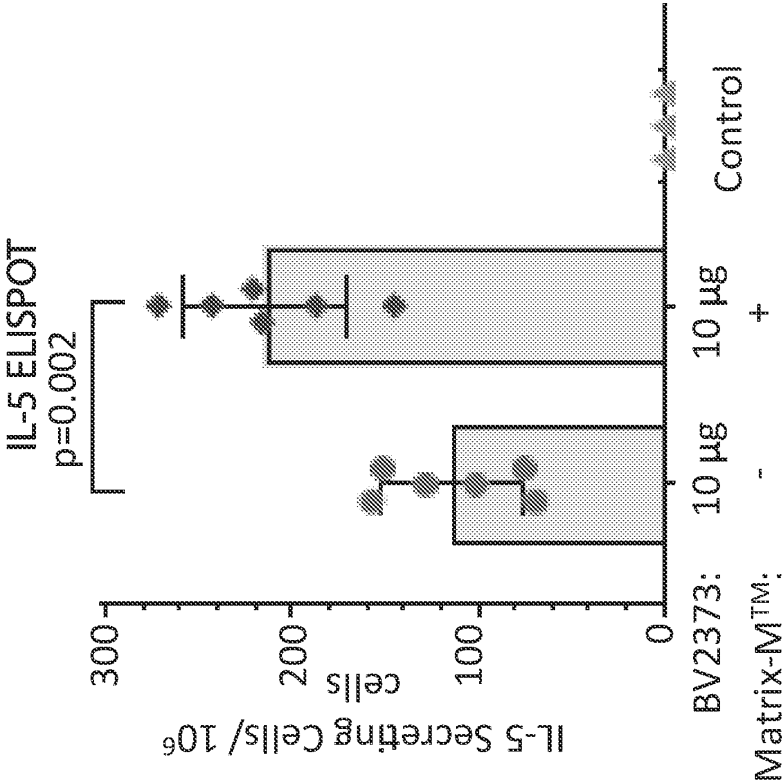
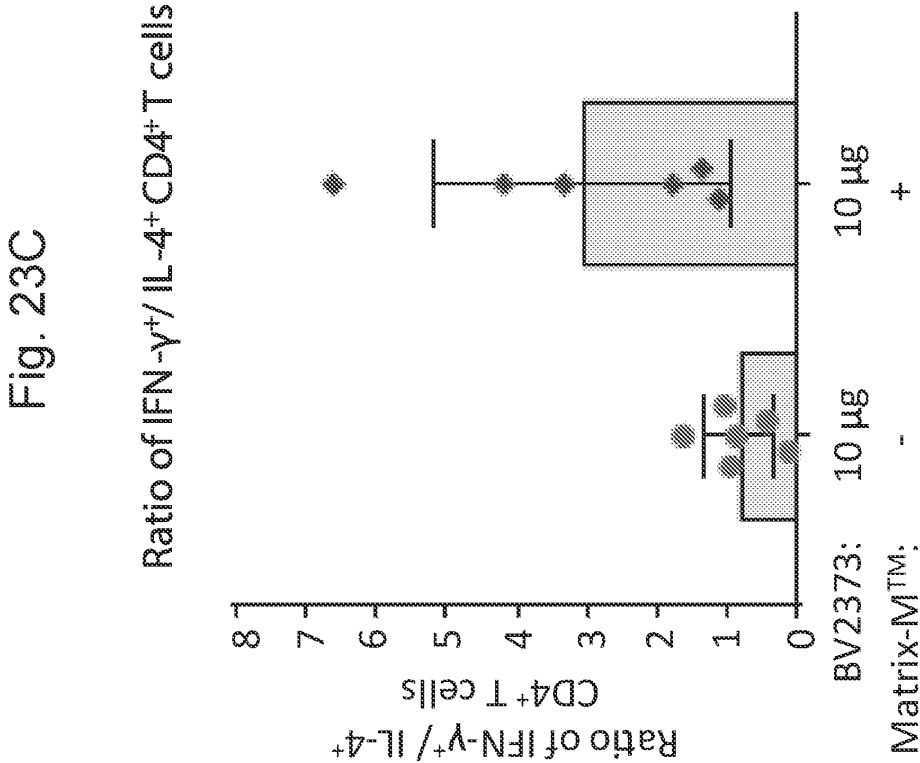


Fig. 23B





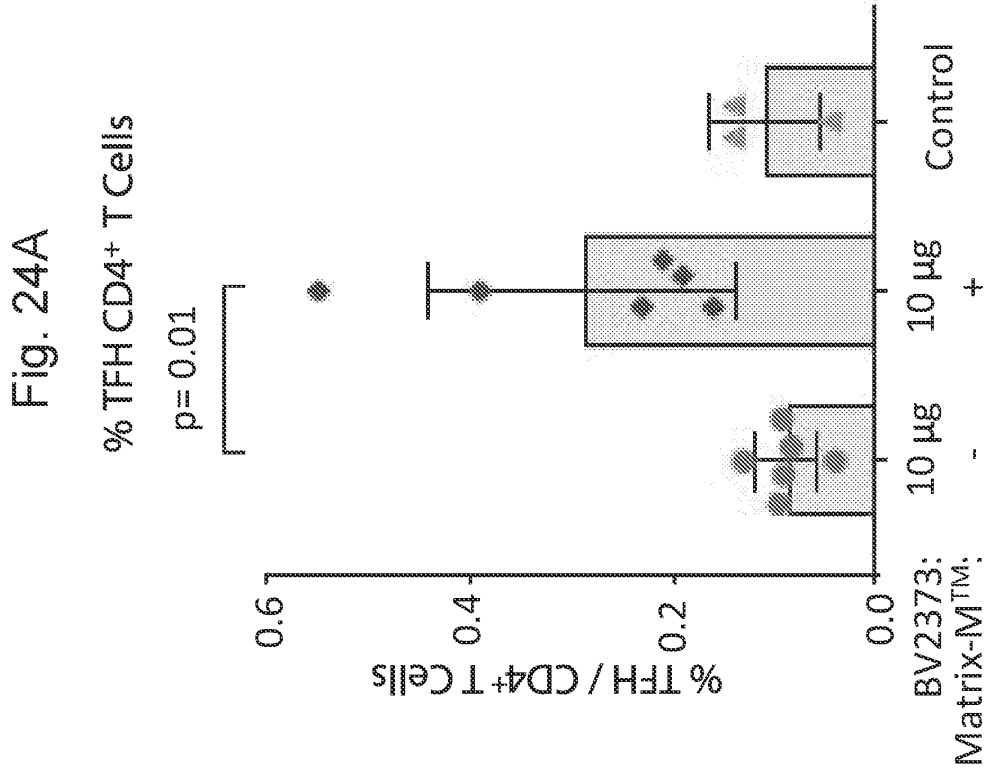
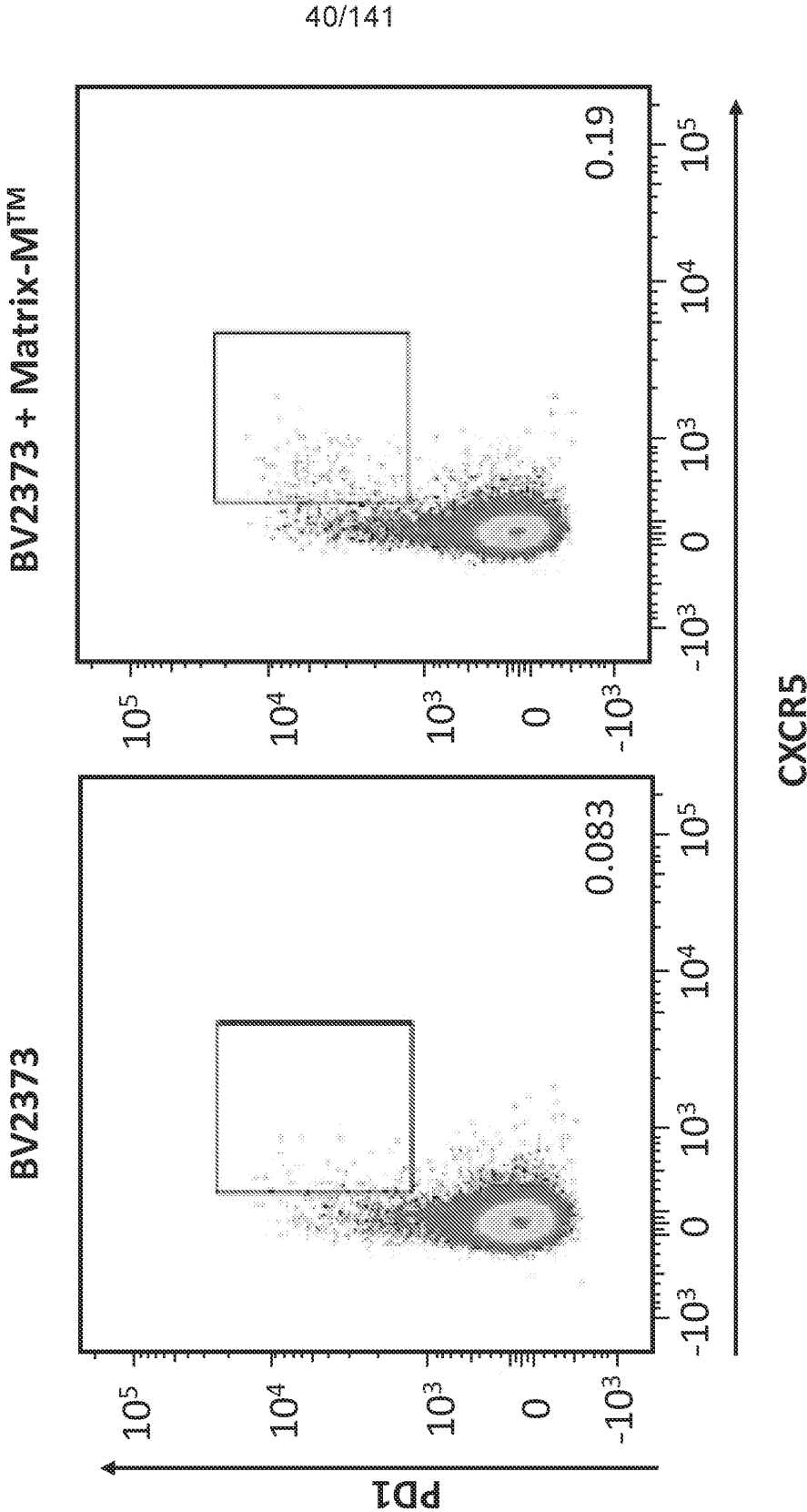


Fig. 24B



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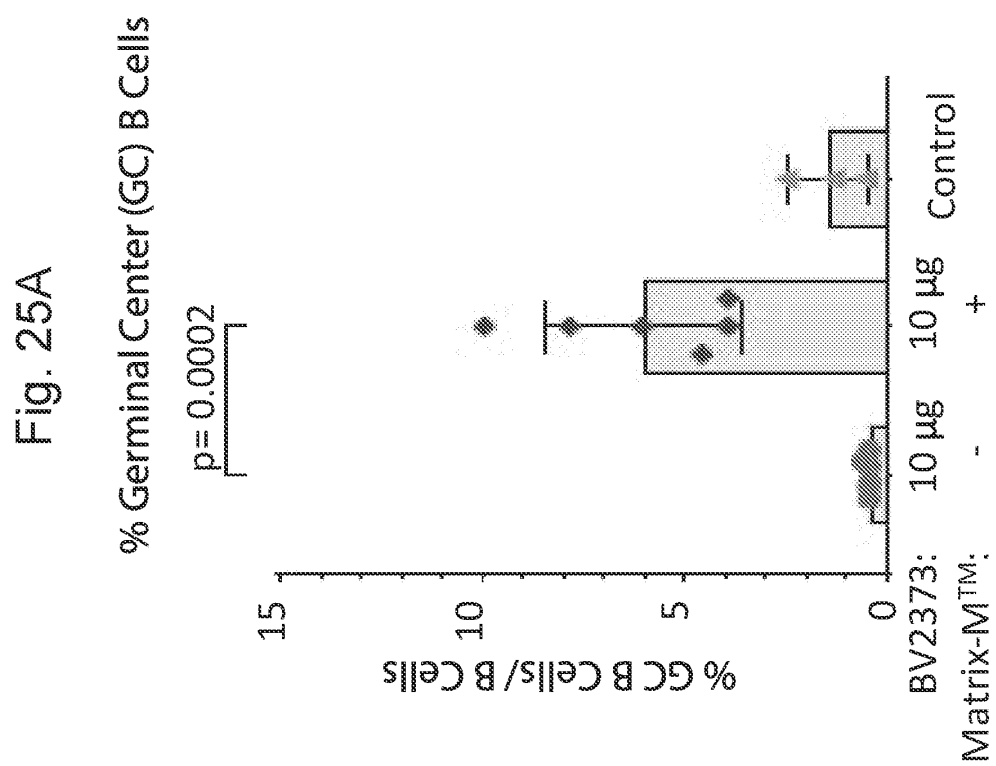
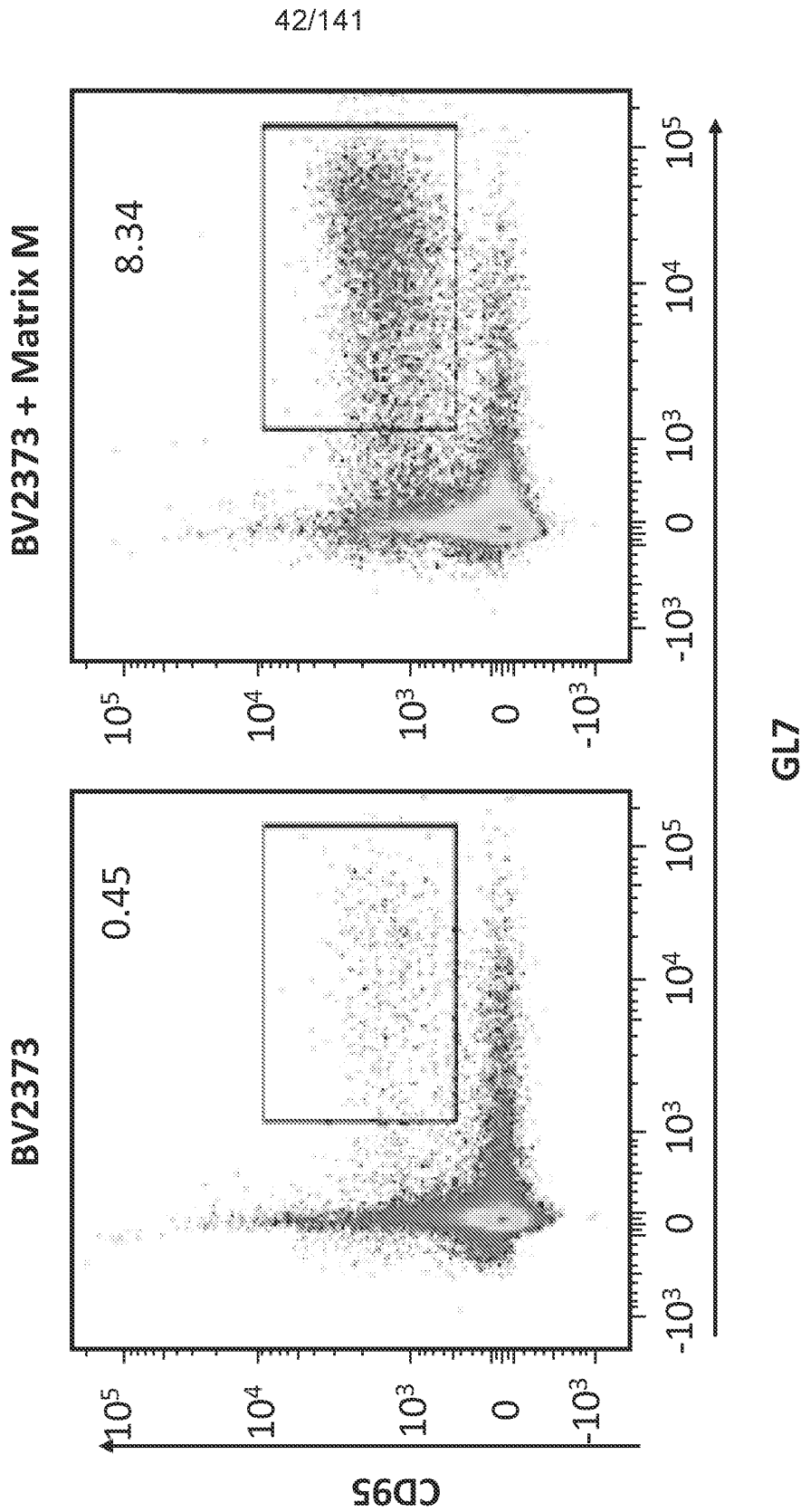


Fig. 25B



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Fig. 26A

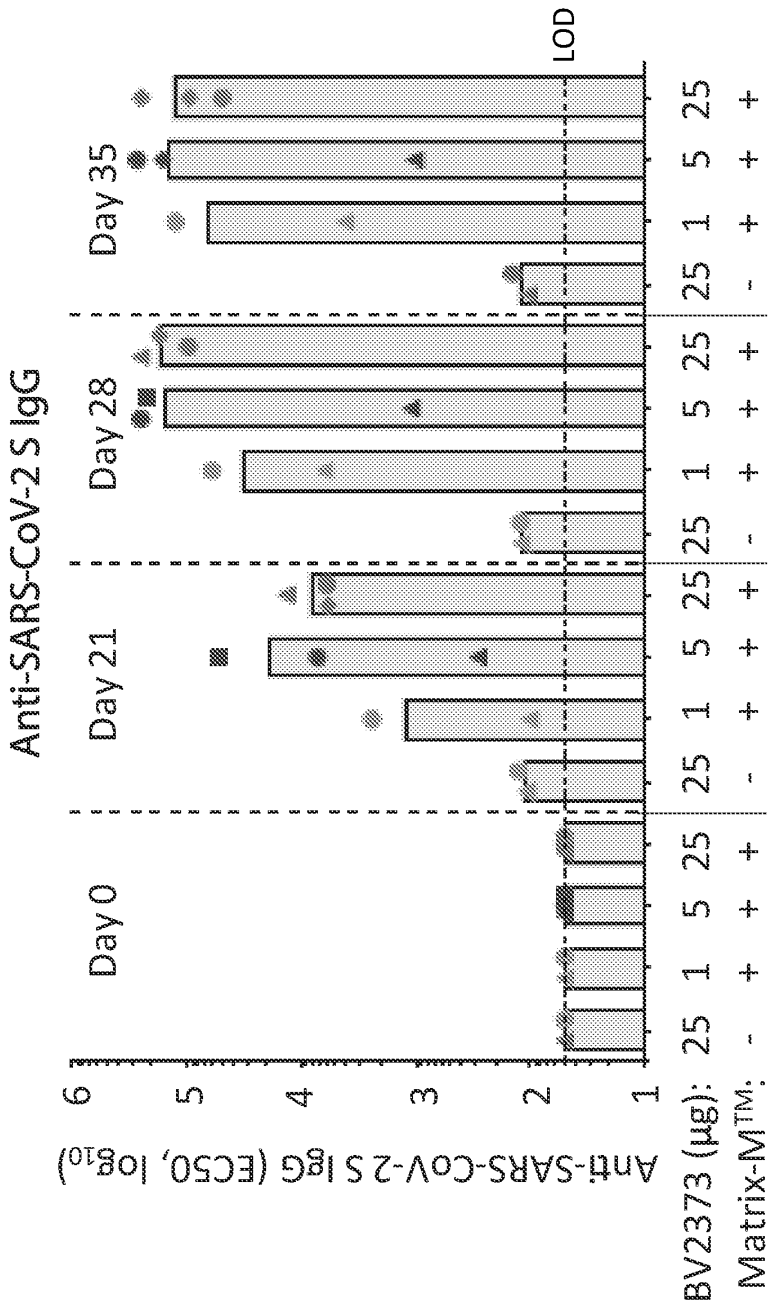


Fig. 26C

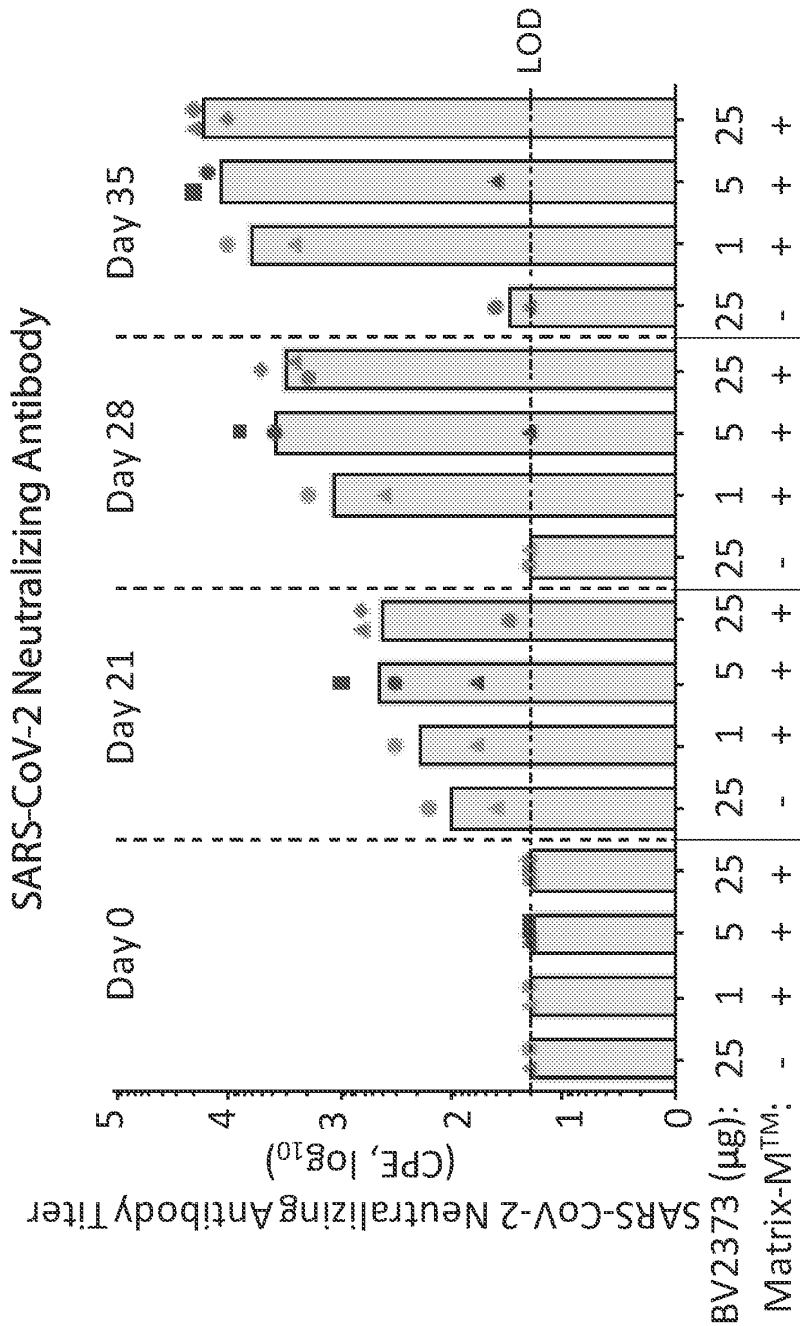
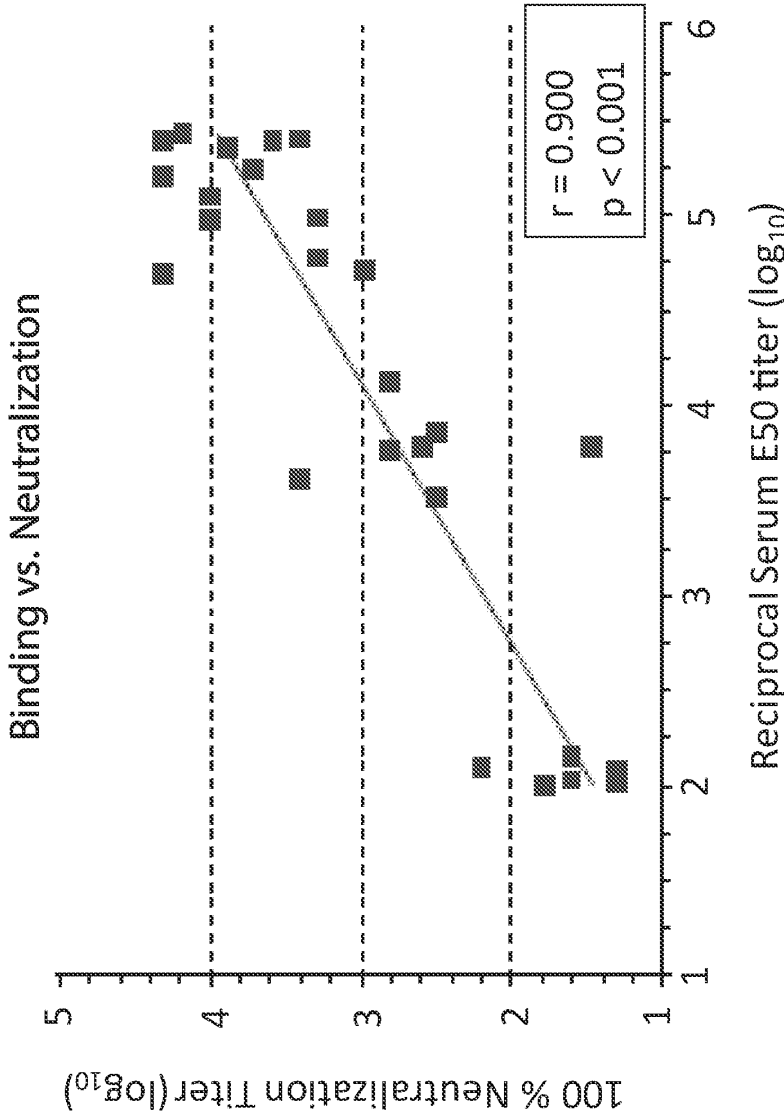


Fig. 27



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Fig. 28

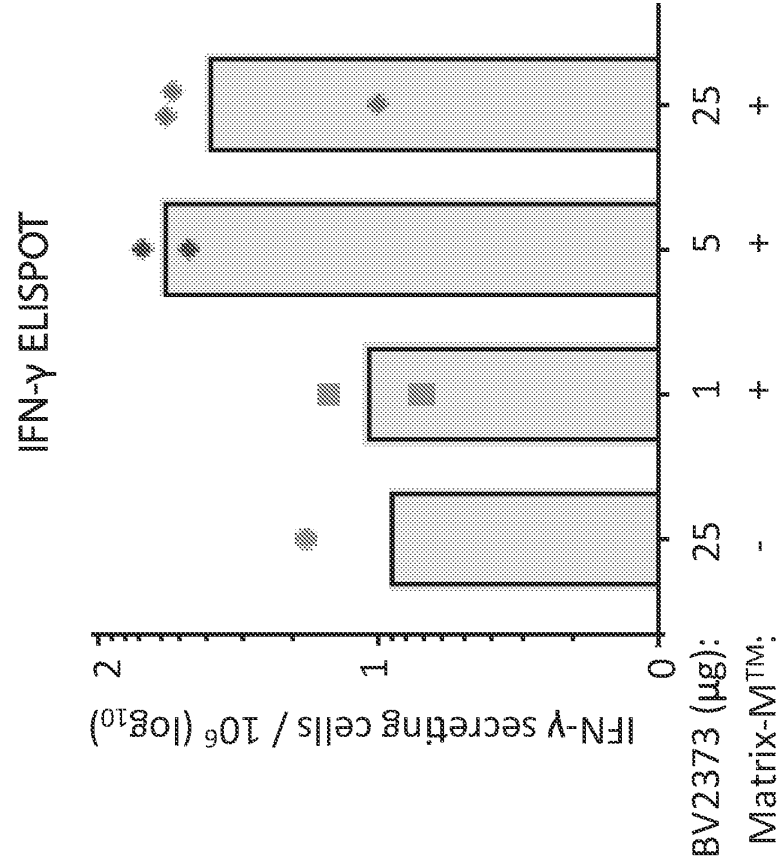


Fig. 29A

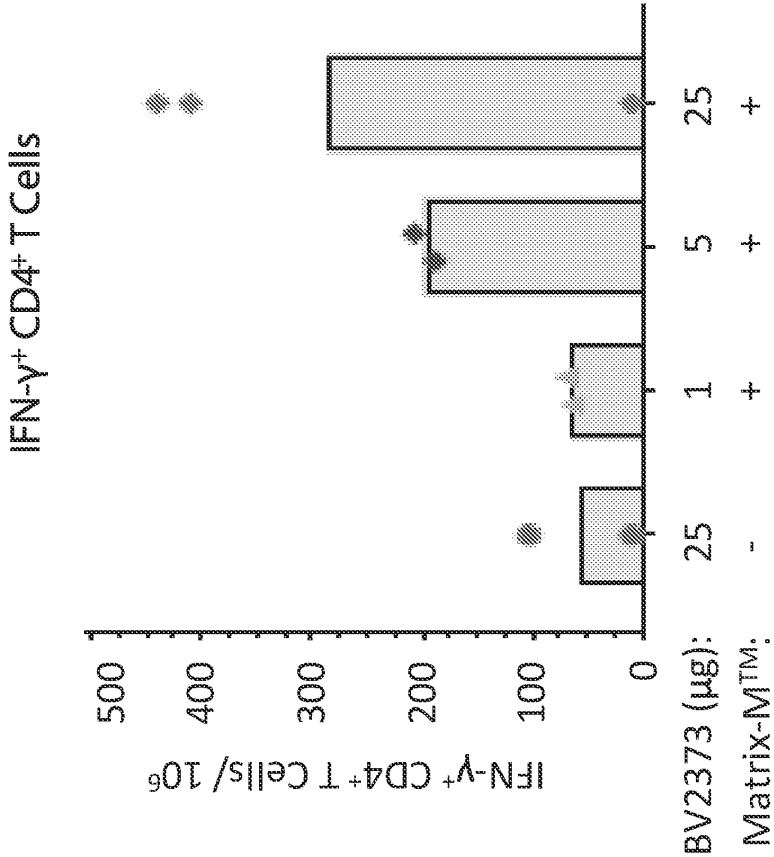


Fig. 29B

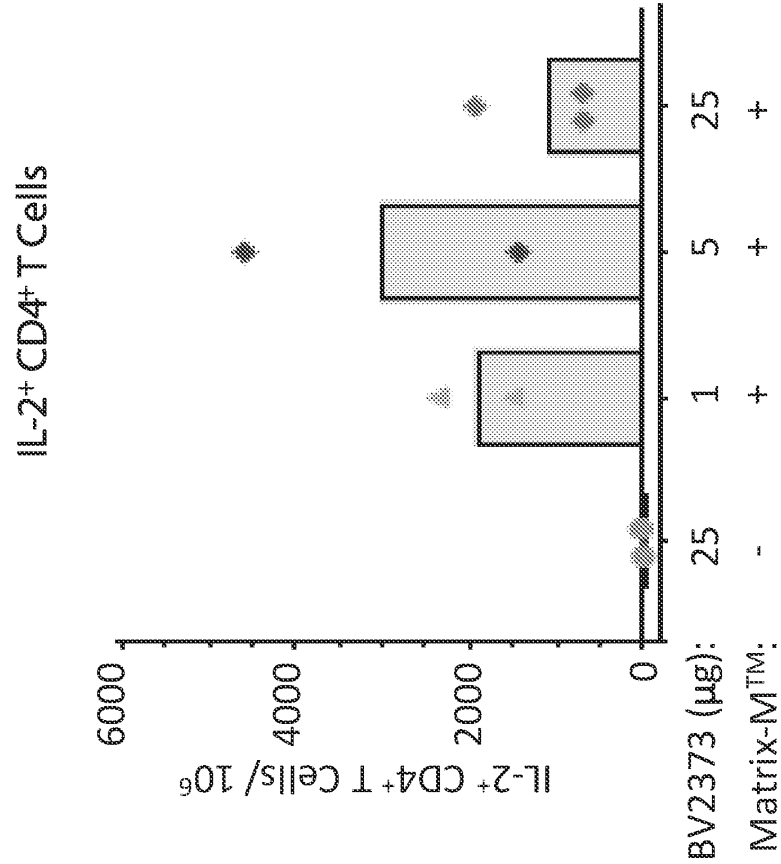


Fig. 29C

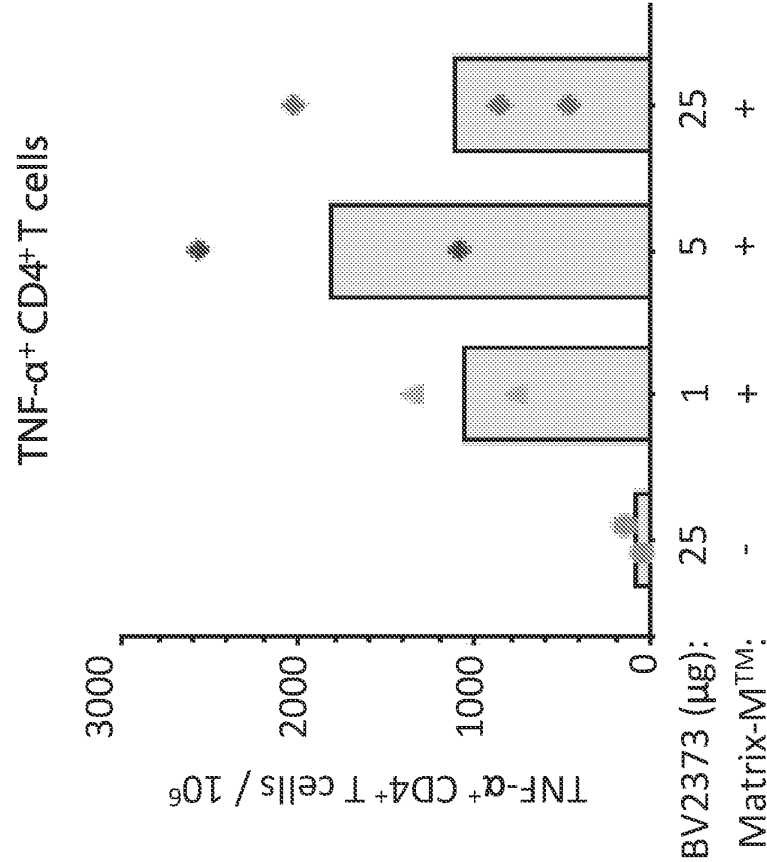
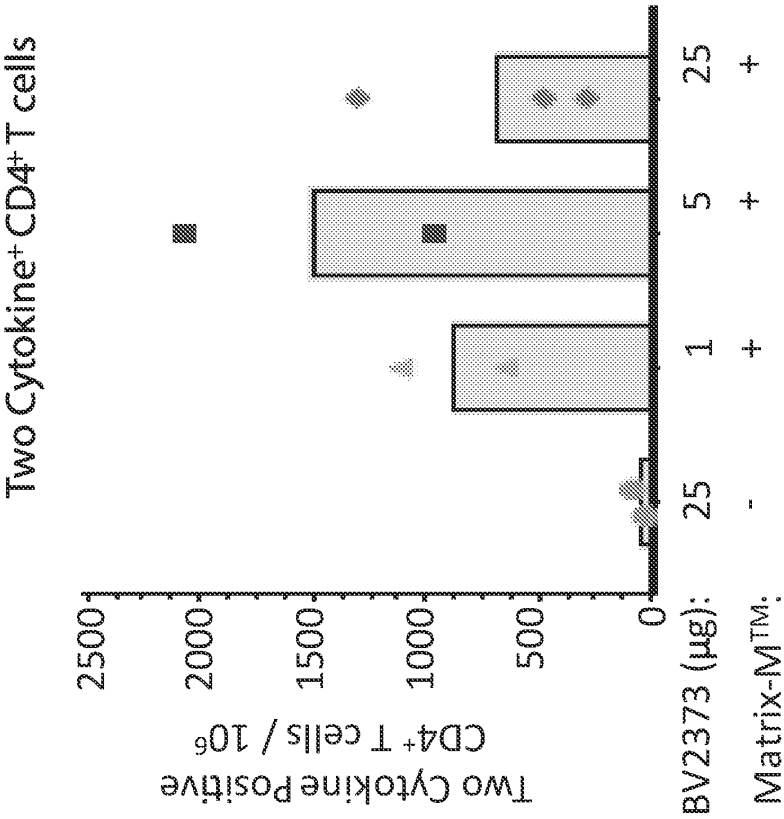
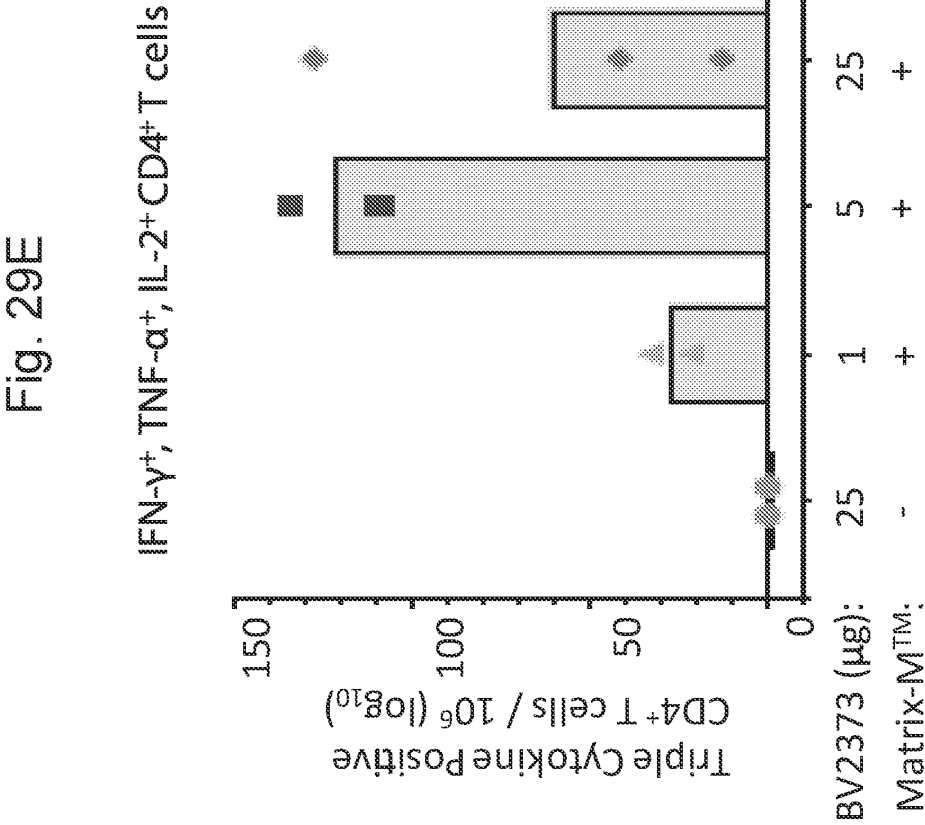


Fig. 29D





BV2384: CoV-2019/GSAS/K986P/V987P (SEQ ID NO: 109)

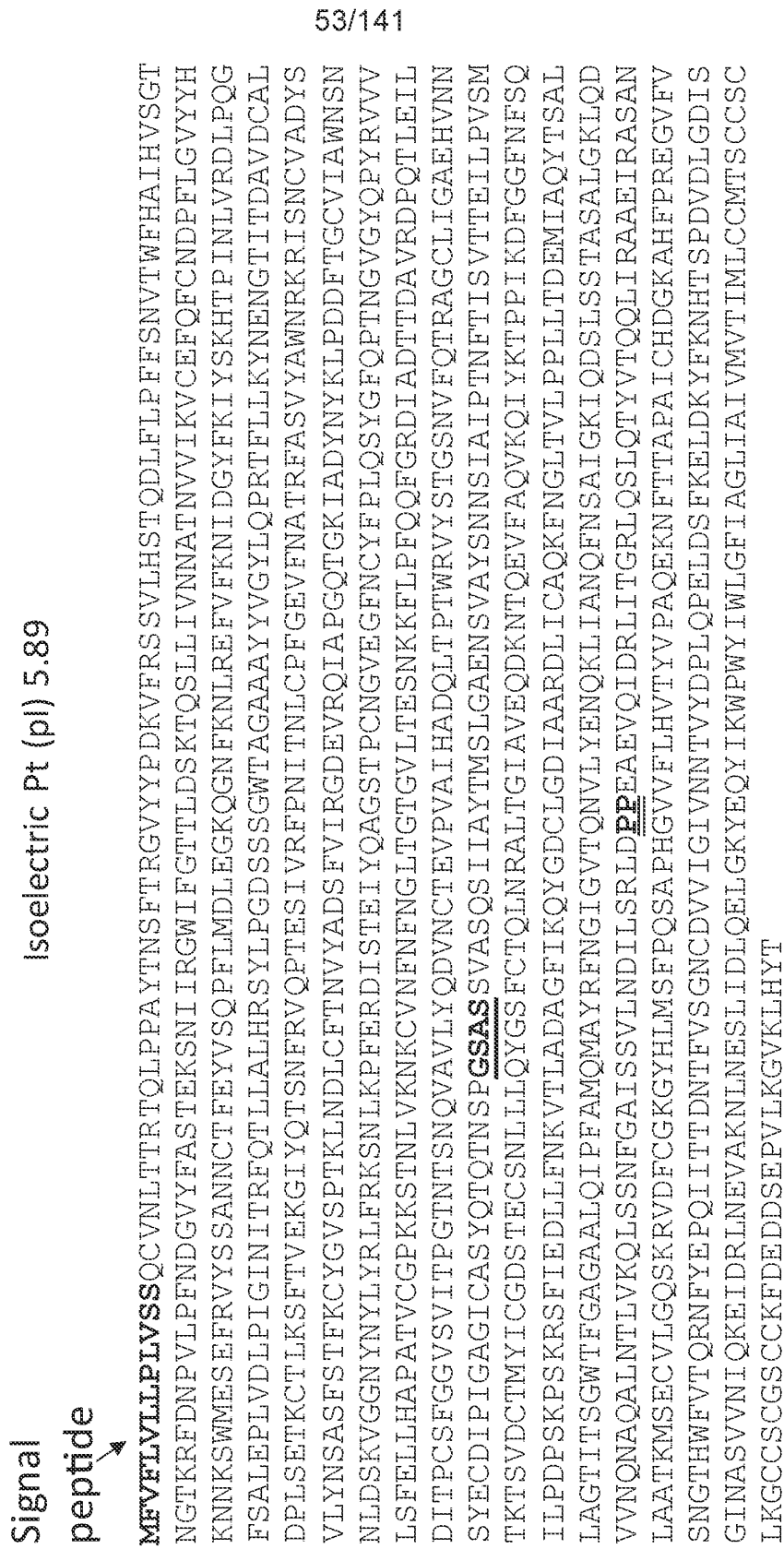


Fig. 30

BV2373 (SEQ ID NO: 86)

Signal peptide Inactive furin
cleavage site

CoV-2019/QQAQ/K986P/V987P

MFVFLVLLPLVSSQC
VNLTTTRTQLPPAYTNSFTRGVYYPDKVFRSSVLHSTQDLFLPFFSNVTFWFAIHVSGT
NGTKRFDNPVLPFNDGVYFAS
TEKSNIIIRGWIFGTTLD
SKTQSLLI
VNNATNVVIKVCE
FQFCNDPFLGVYH
KNNKSWMESEFRVYSSANNCTFEYVSQPF
LMDLEKQGNFKNLRE
FVFKNIDGYFKI
YSKHTPINLVRDLPQG
FSALEPLVDLPIGINITRFQTLALHRSY
LTPGDSSSGWTAGAAAYVGYLQPRTE
LLKYNENGTITDAVDCA
LDPLSETKCTLKSFTEKGIYQTSNFRVQPTESIVRFPNITNLC
PFGFENATRFASVYAWNKRKISNCVADY
SVLYNSASFSTFKCYGVSPTKLNDLCFTNVYADSFVIRGDEV
RQIAPGQTGKIADYNYKLPDDFTGCVIAWNS
NNLDSKVGGNYNLYRLFRKSNLKPFFERDISTEIIYQAGST
PCNGVEGFNCYFPLQSYGFQPTNGVGYPYRVV
VLSFELLHAPATVCGPKKSTNLVKNKCVNFENGLTGTVL
TESNKKFLPFQQFGGRDIA
DTTDAVRDPQTLEI
LDITPCSFGGVSVITPGTNTSNQAVLYQDVNCTEVPVA
IHADQLTPTWRVYSTGSNVFQTRAGCLIGAEHVN
NSYECDIPIGAGICASYQTQTNSPQQAAQSVASQSI
IAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVS
MTKTSVDCTMYICGDS
TECSNLLLQYGSFCTQLNRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKDFGGFNES
QILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLG
DIAARDLICAQKFNGLTVLPPLTDEMIAQYTSALAGTITSGWTFGAGAA
LQIPFAMQMAYRFNGIGVTQNVLYENQKLIANQFN
SAIGKIQDSLSSTASALGKLQDVVNQNAQALNTLVKQLSSNFGAISSVLNDILSR
LDDPPEAEVQIDRLITGRQLSLQTYVTQQLIRAAEIRASA
NLAATKMSECVLGQSKRVDFCGKGYHLMSFPQSA
PHGVVFLHVTVVPAQEKNTTAPACHDGAHFPREGVF
VSNQTHWFTQRNFYEPQIITDNTFVSGNCDVVIGI
VNNTVYDPLQPELDSFKEELDKYFKNHTSPDVLGD
ISGINASVVNIIQKEIDRLNEVAKNLNESLIDLQELG
KYEQYIKWPWYIWLGFIAGLIAIVMVTIMLCMTSCC
SCLKGCCGCGCCCKFDEDDSEPV
LKGVKLLHYT

Fig. 31

Fig. 32

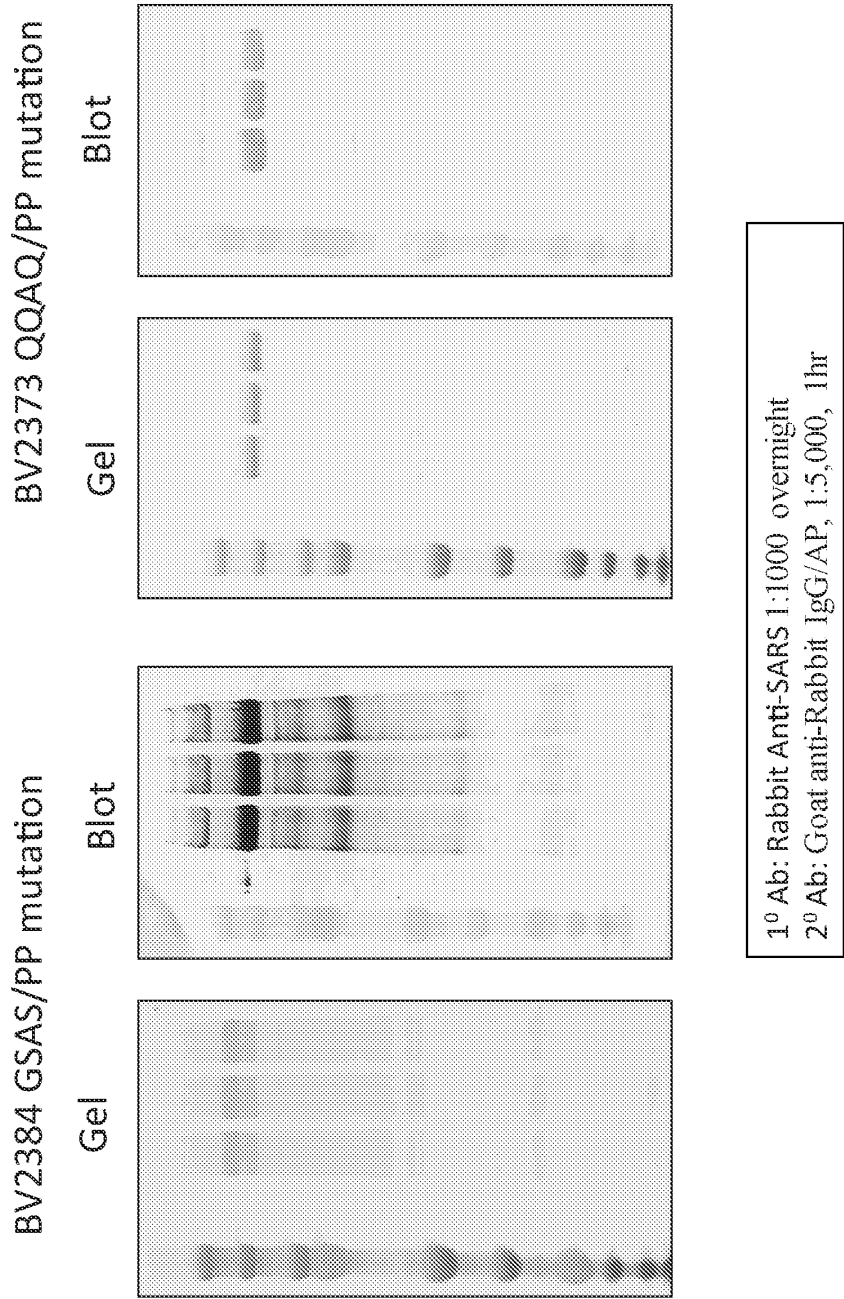
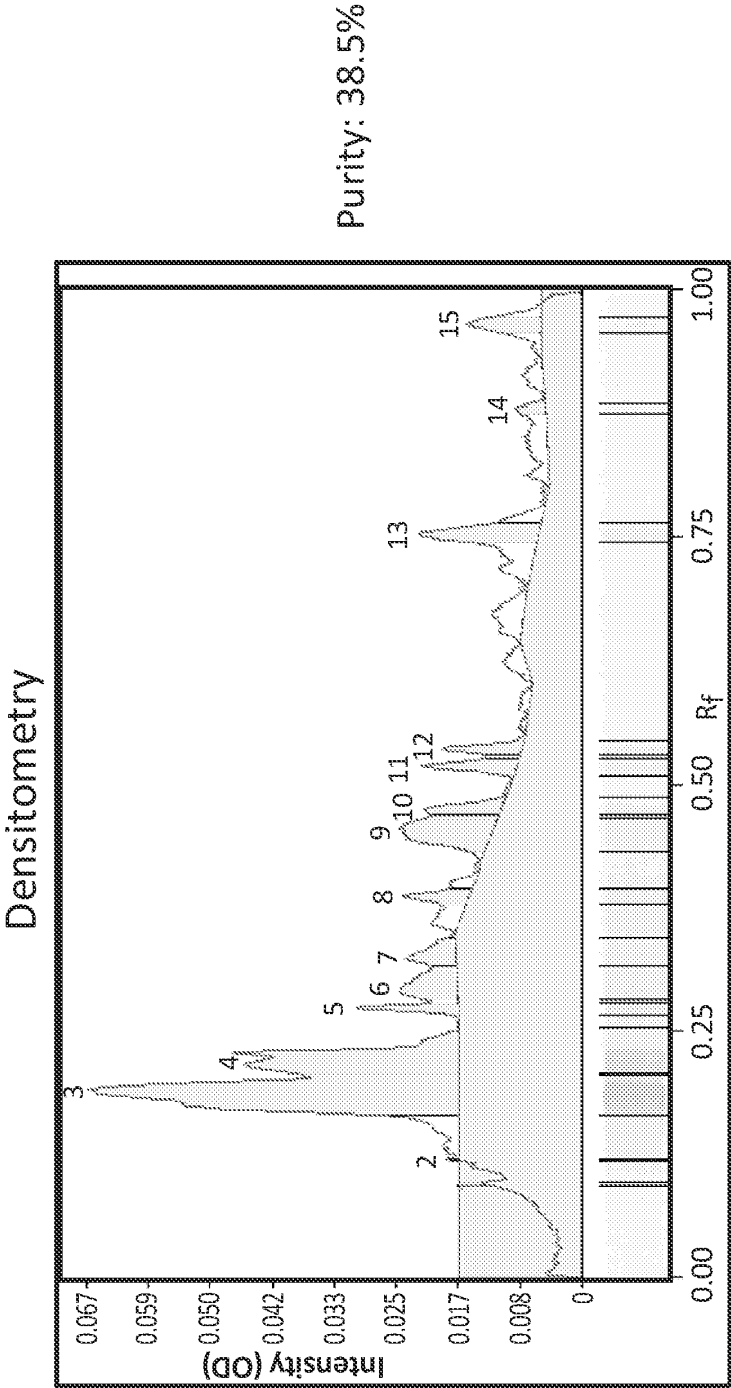


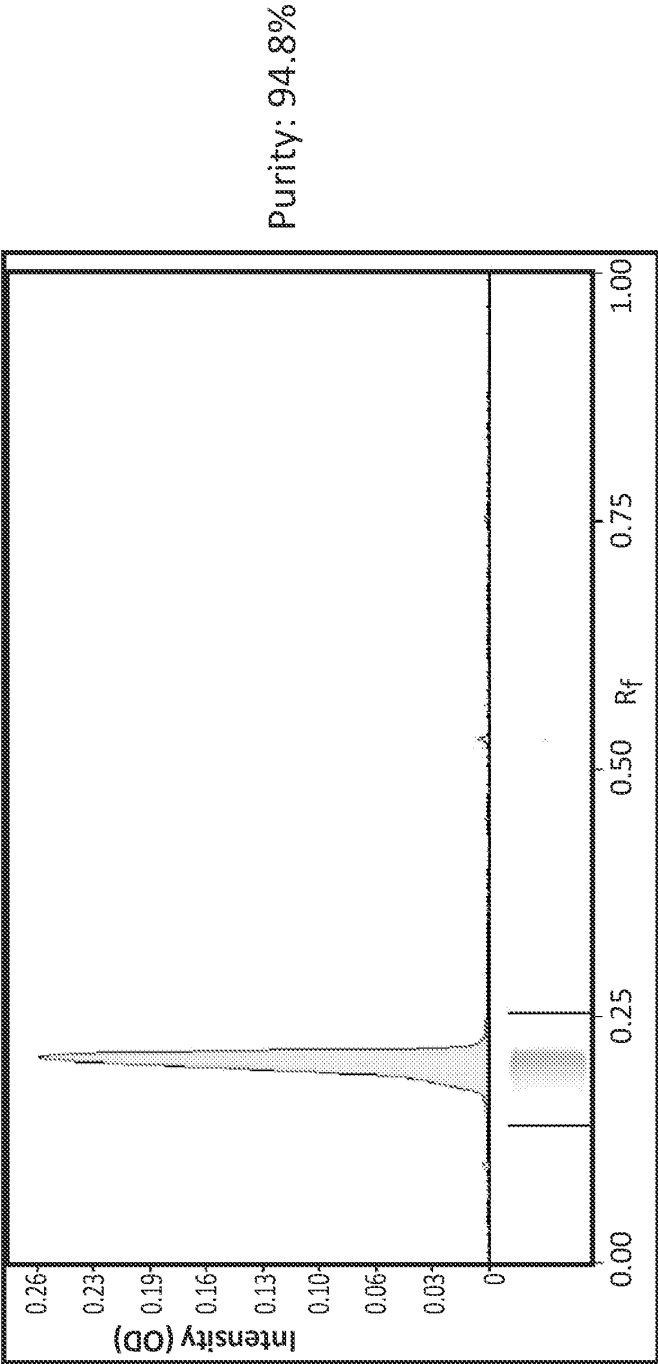
Fig. 33



Protein concentration:
A280(0.9226) - A340(0.187) = 0.7356 / 1.067 = 0.6894 mg/mL
Total Volume: 19.0mL X 0.6894 mg/mL = 13.098 mg
Yield: 13.098mg/4.8 liter = 2.728 mg/L

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Fig. 34
Densitometry



Protein concentration:
 $A_{280}(0.8368) - A_{340}(0.0248) = 0.8142 / 1.067 = 0.761 \text{ mg/mL}$
Total Volume: $42.47 \text{ mL} \times 0.761 \text{ mg/mL} = 42.32 \text{ mg}$
Yield: $42.32 \text{ mg} / 5 \text{ liter} = 6.4 \text{ mg/L}$

Fig. 35A

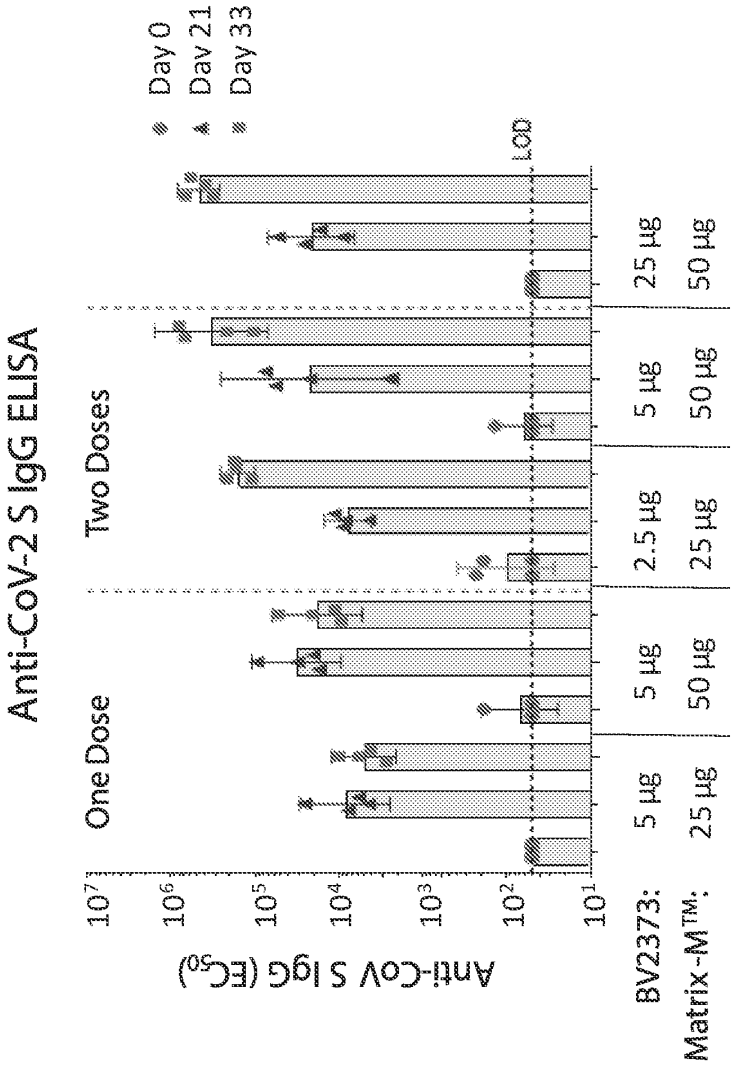


Fig. 35B

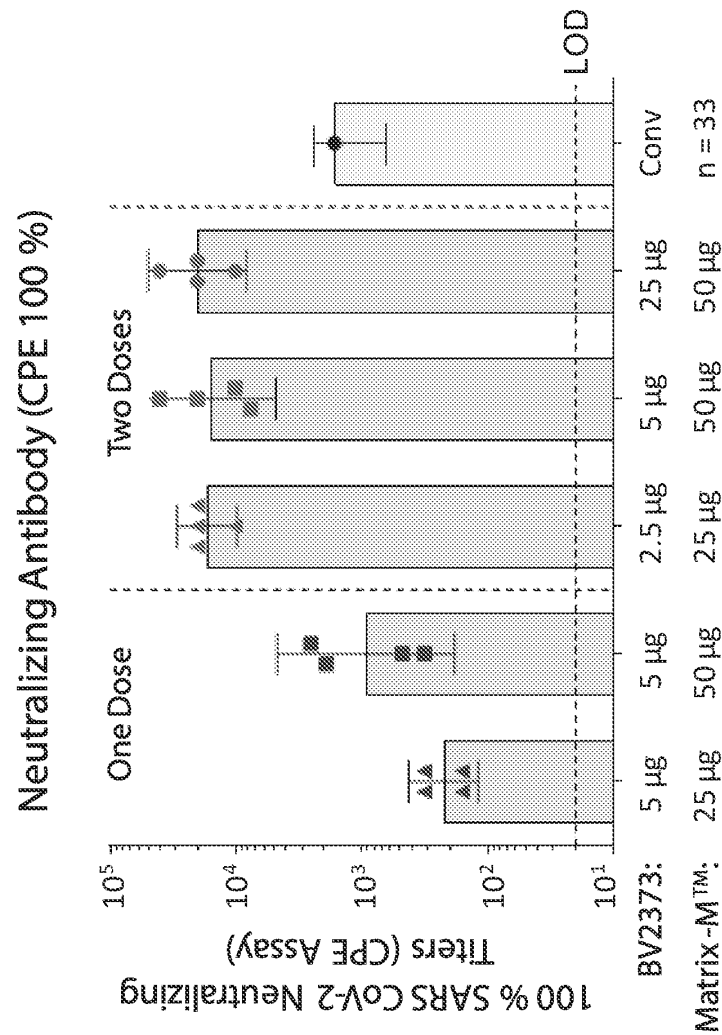


Fig. 36A

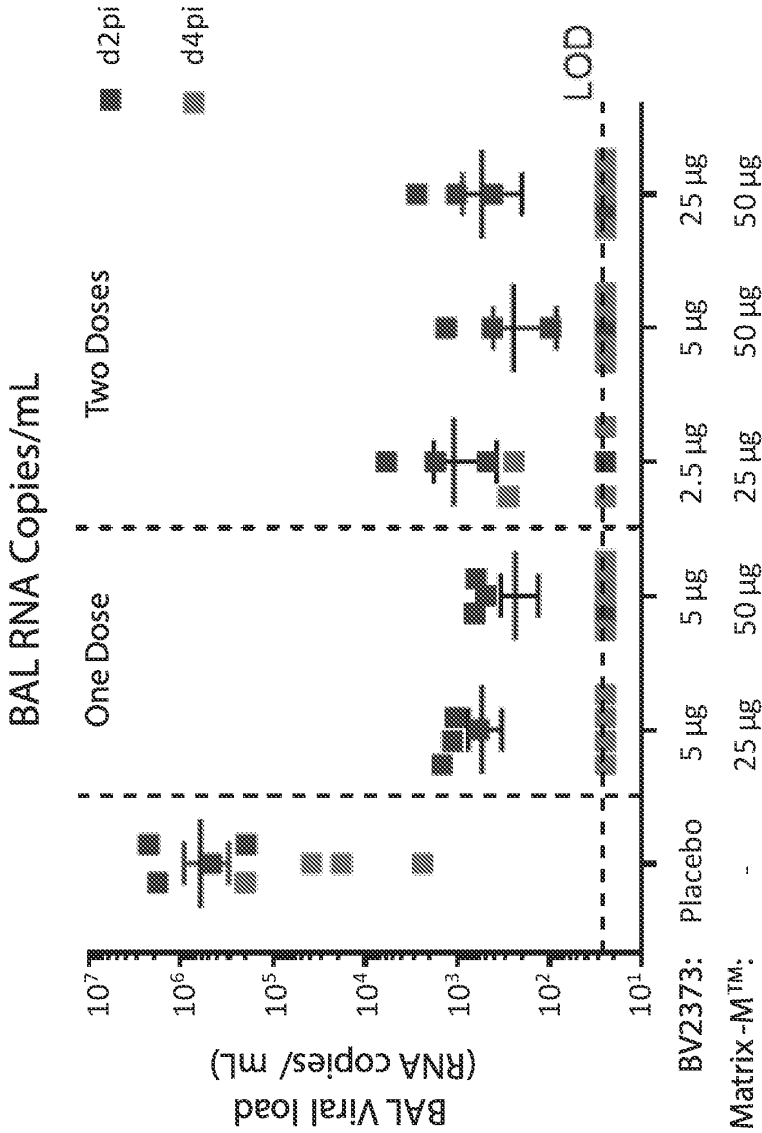


Fig. 36B

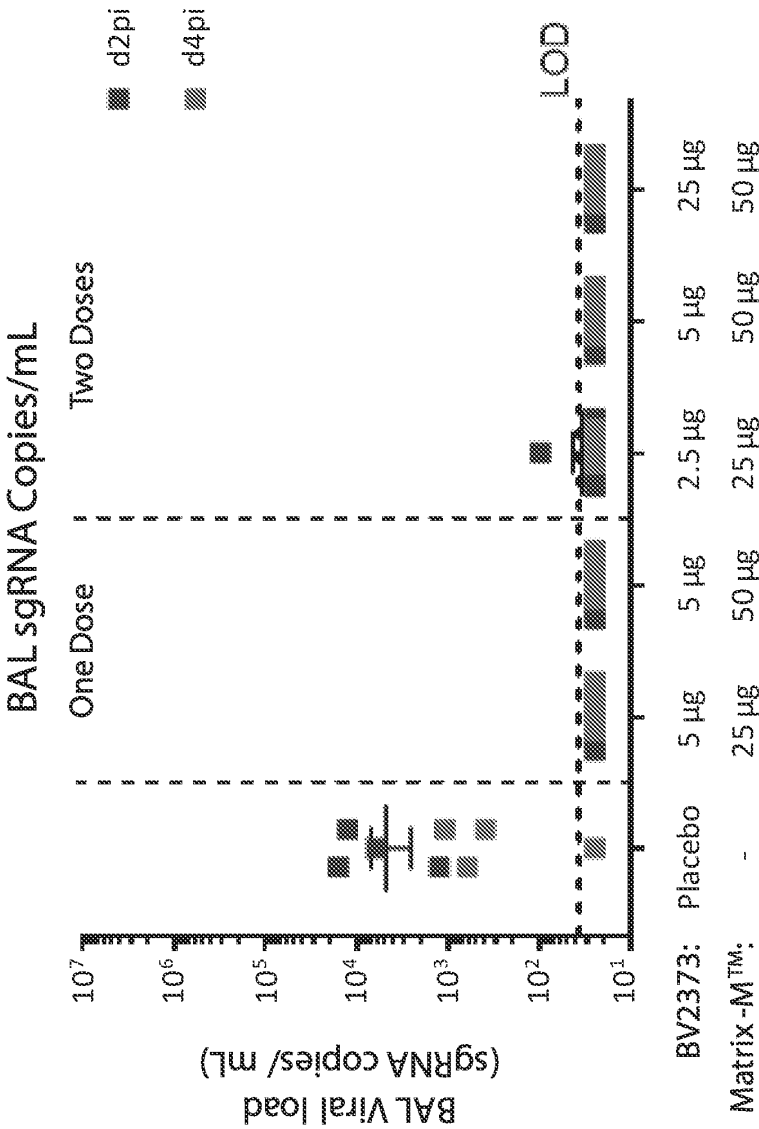


Fig. 37A

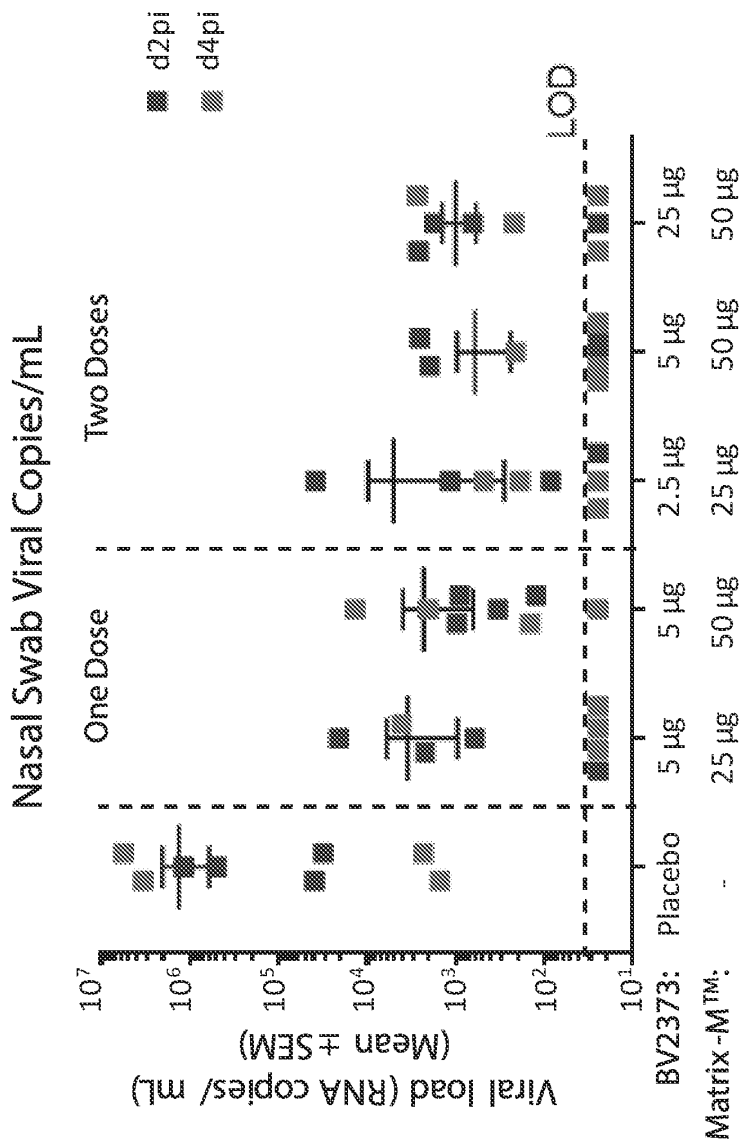
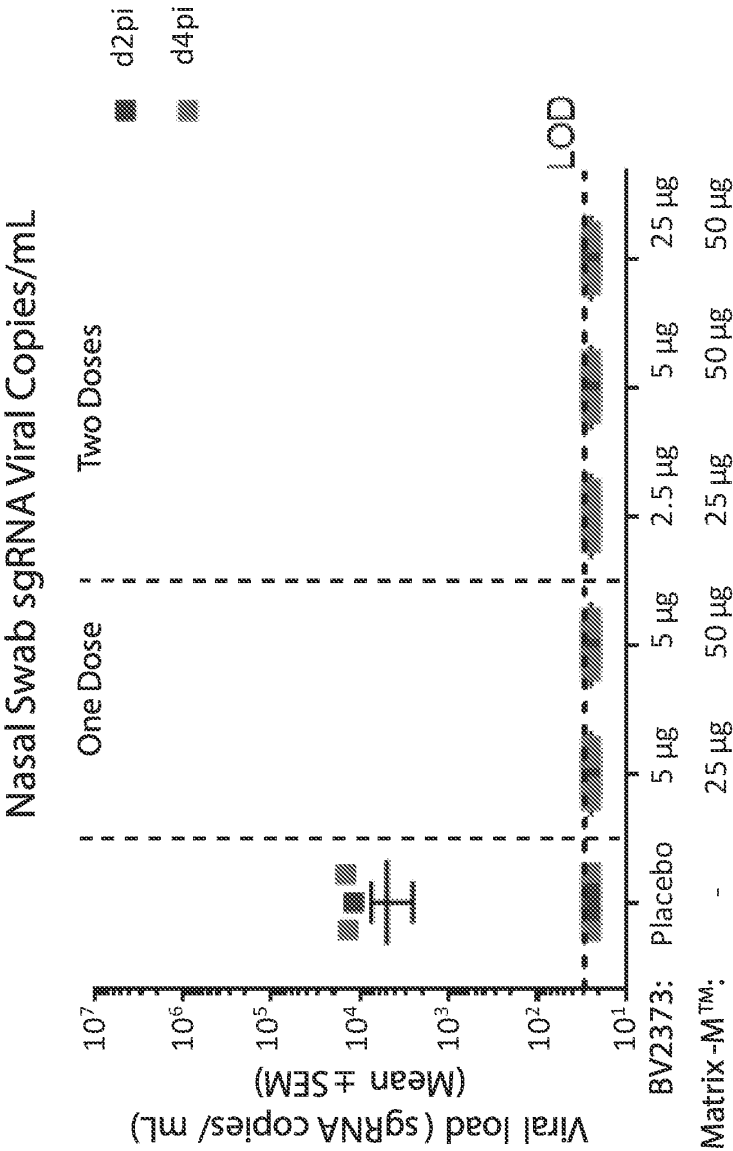


Fig. 37B



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Fig. 38A

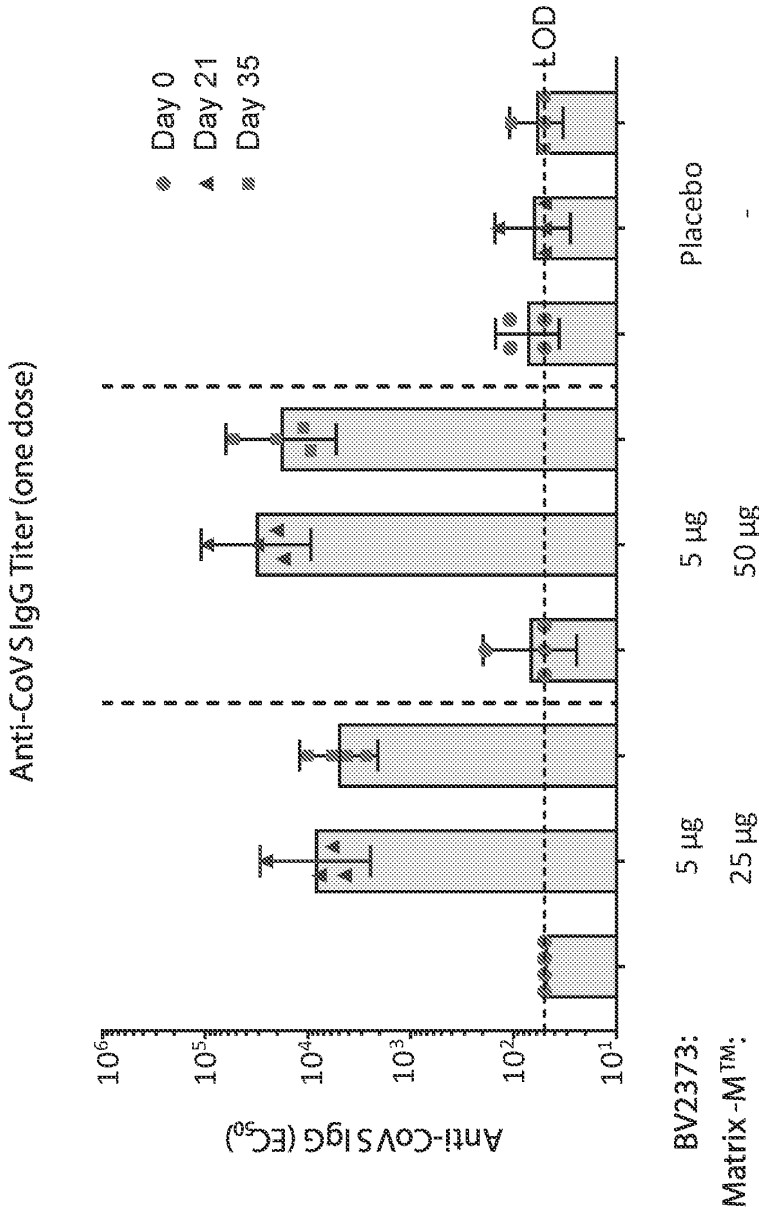


Fig. 38B

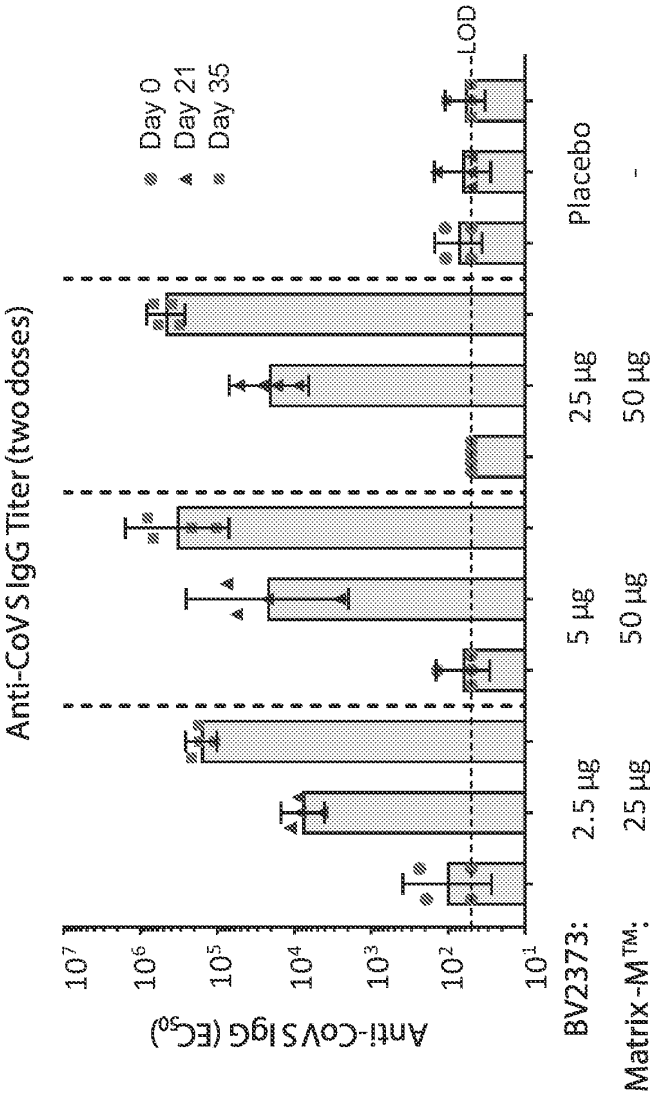
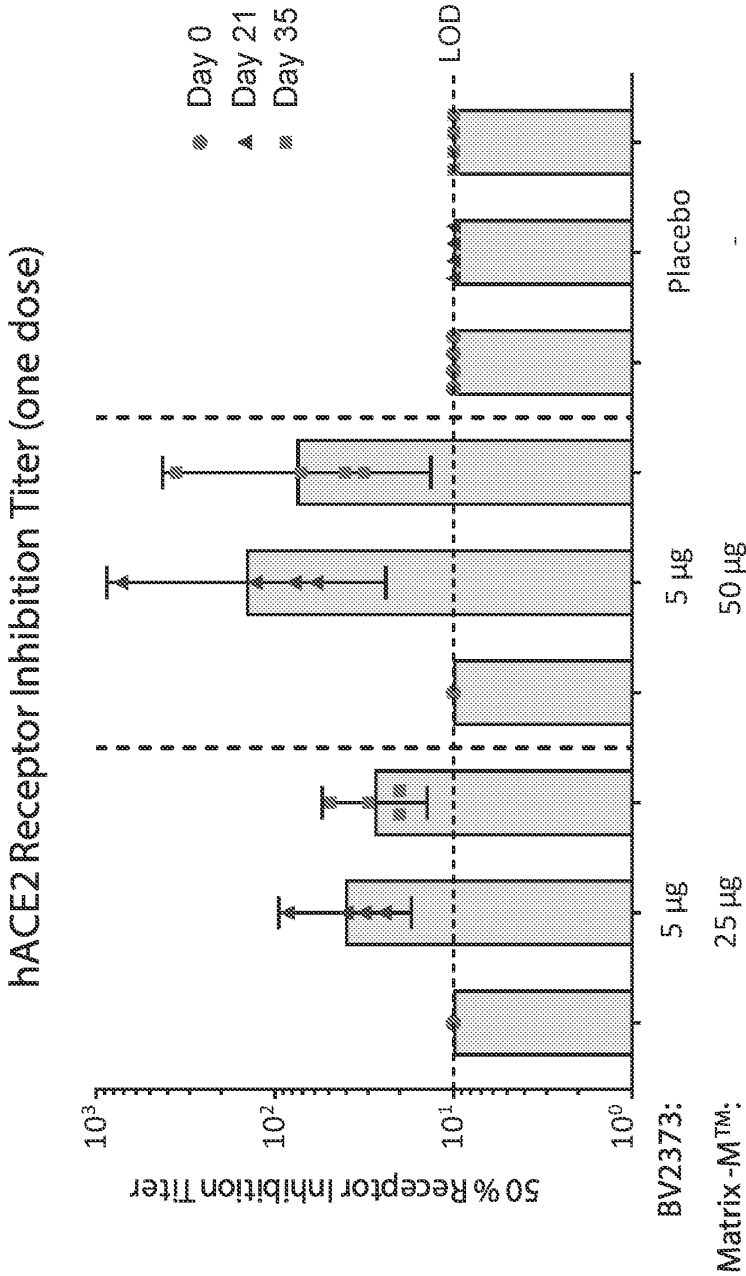


Fig. 38C



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Fig. 38D

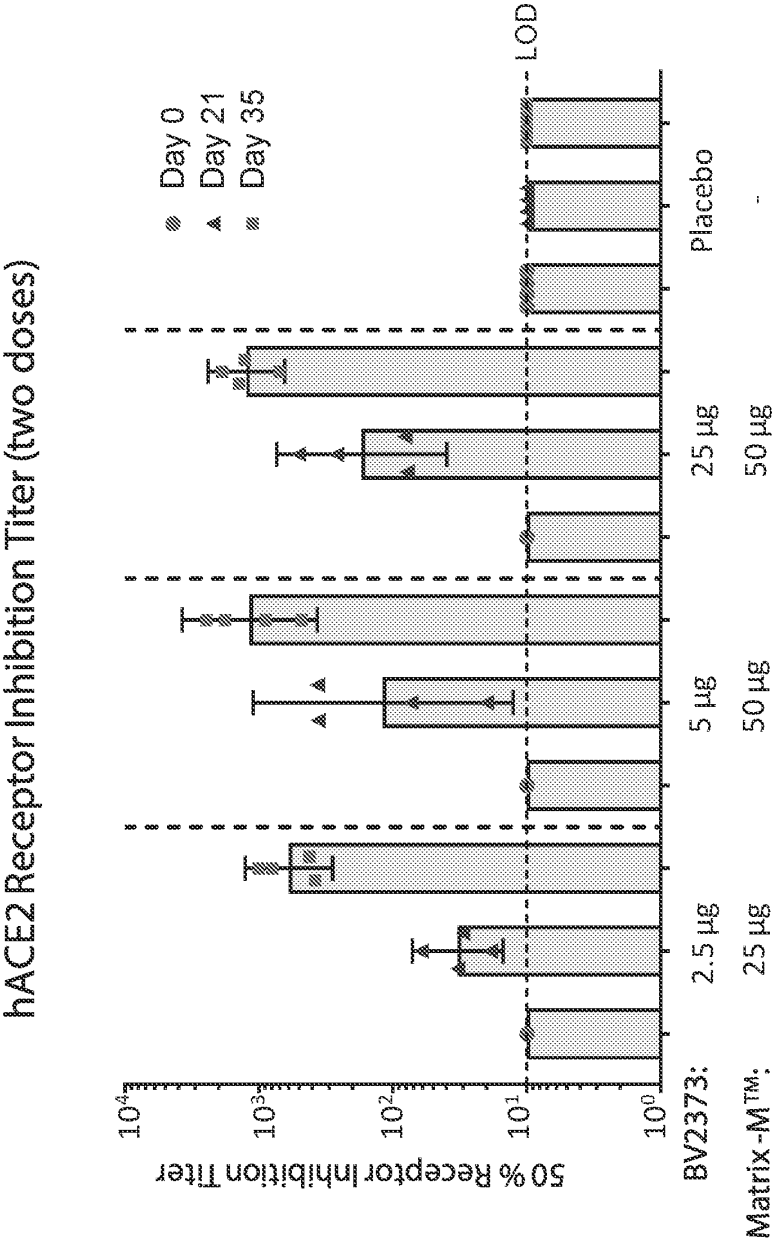


Fig. 38E

Correlation of Anti-S IgG Titer and hACE2 Receptor Inhibition
in macaques

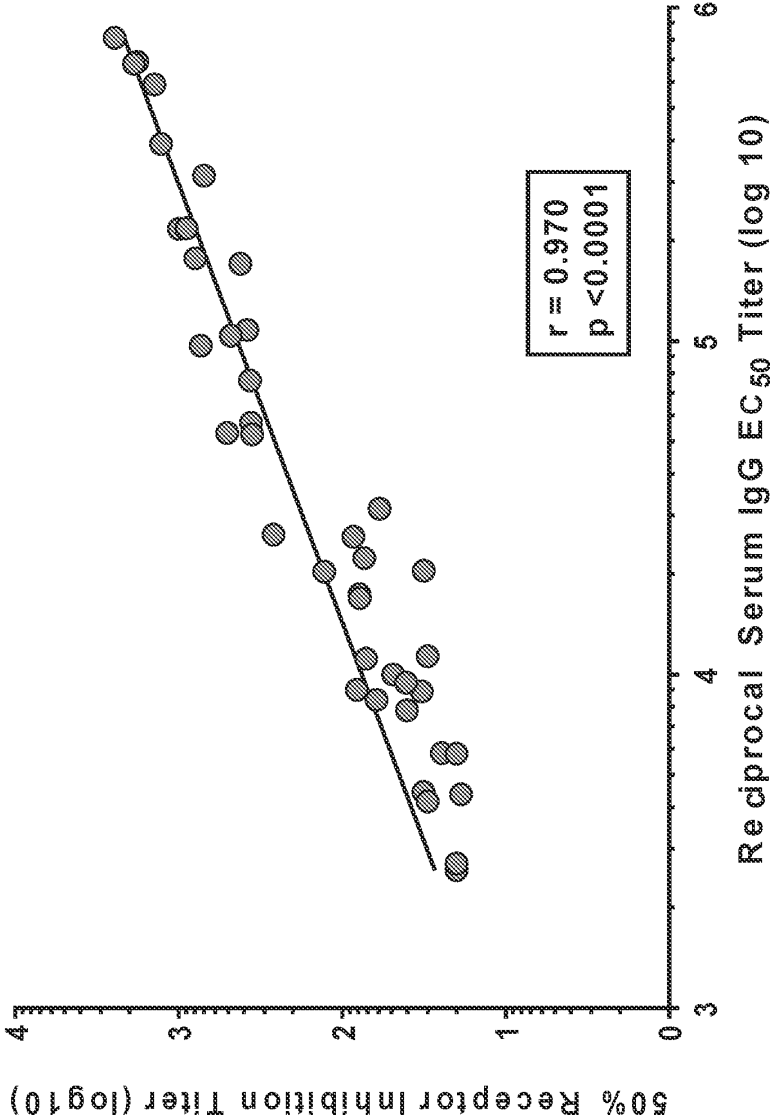


Fig. 39

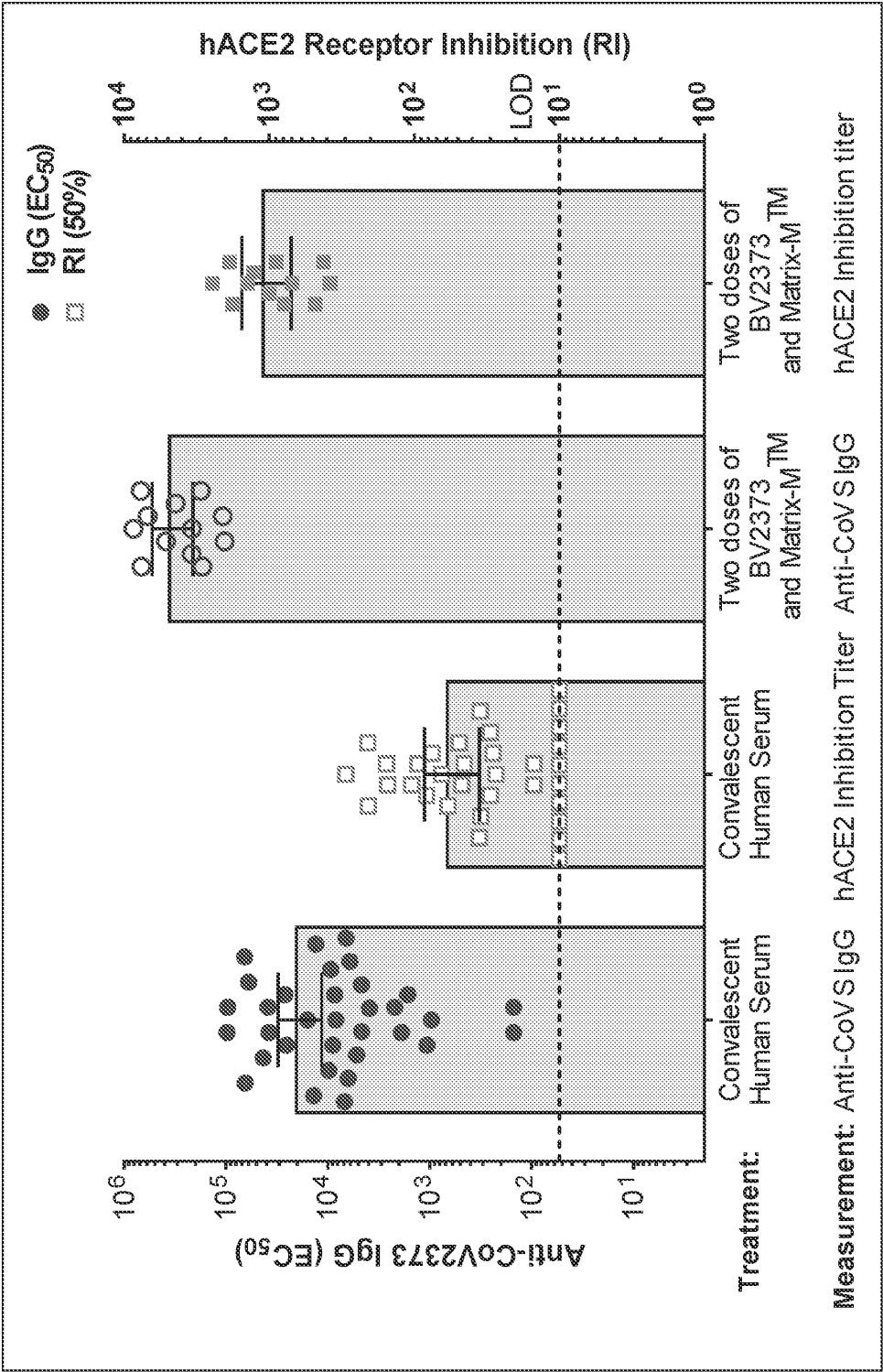


Fig. 40A
SARS-CoV-2 Neutralizing Titers by CPE (100% neutralization)

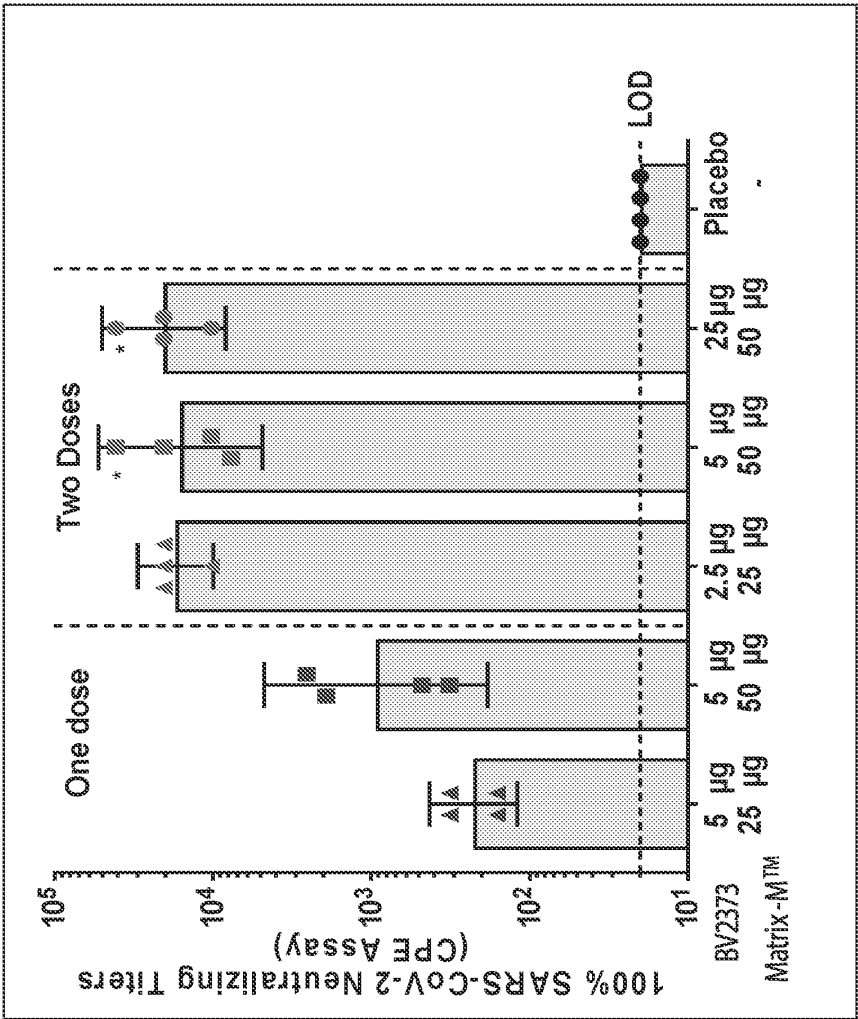
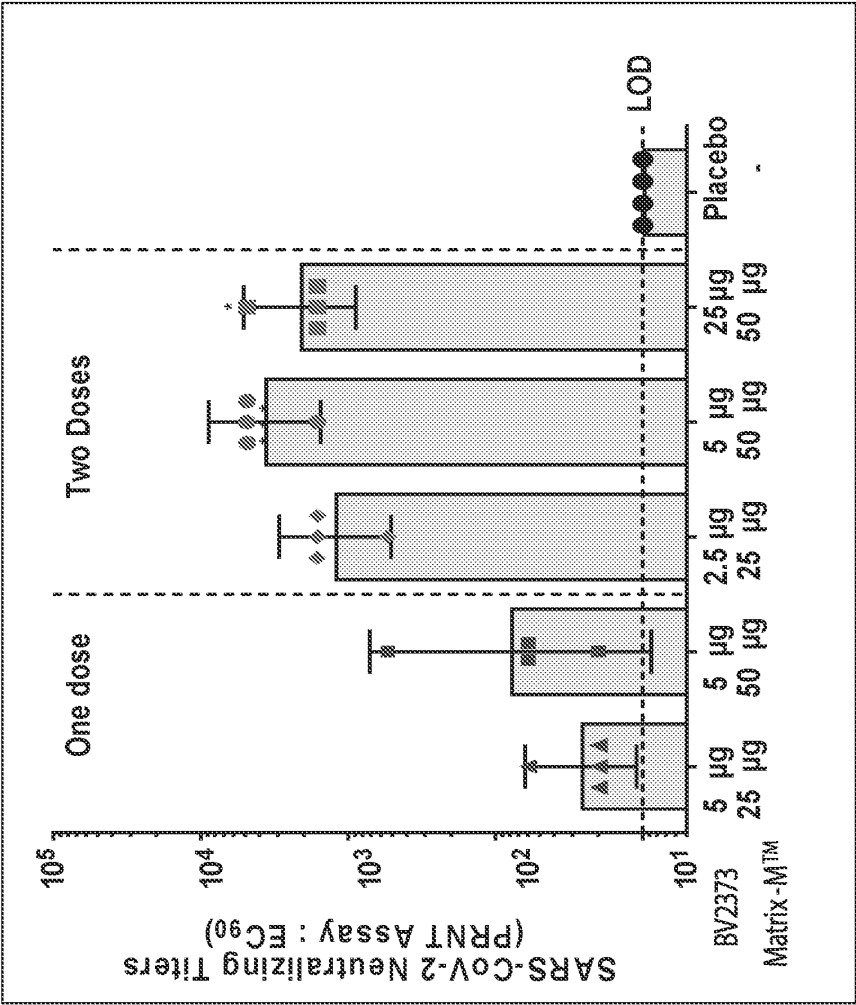


Fig. 40B
SARS-CoV-2 Neutralizing Titers by PRNT (EC90 titers)

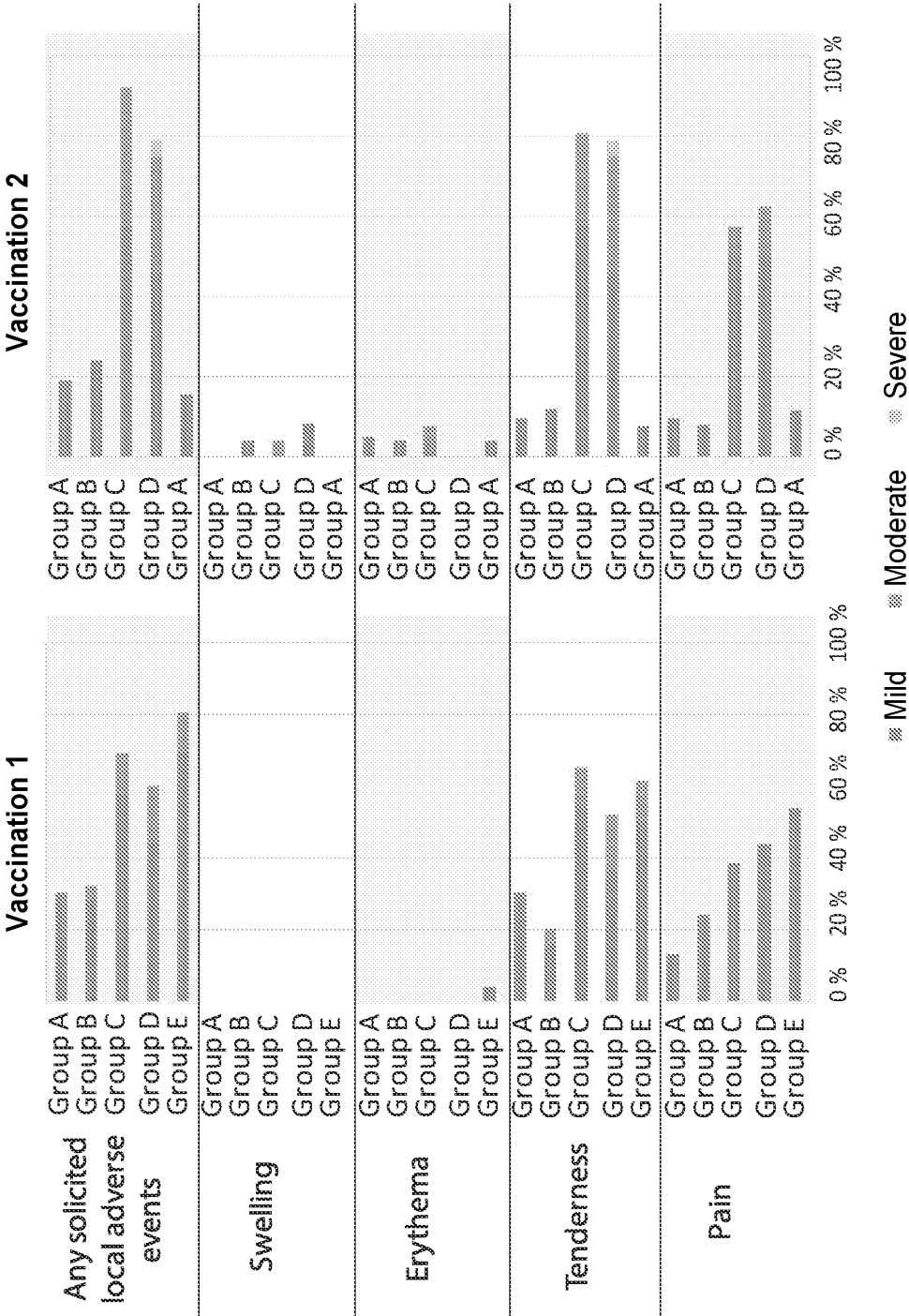


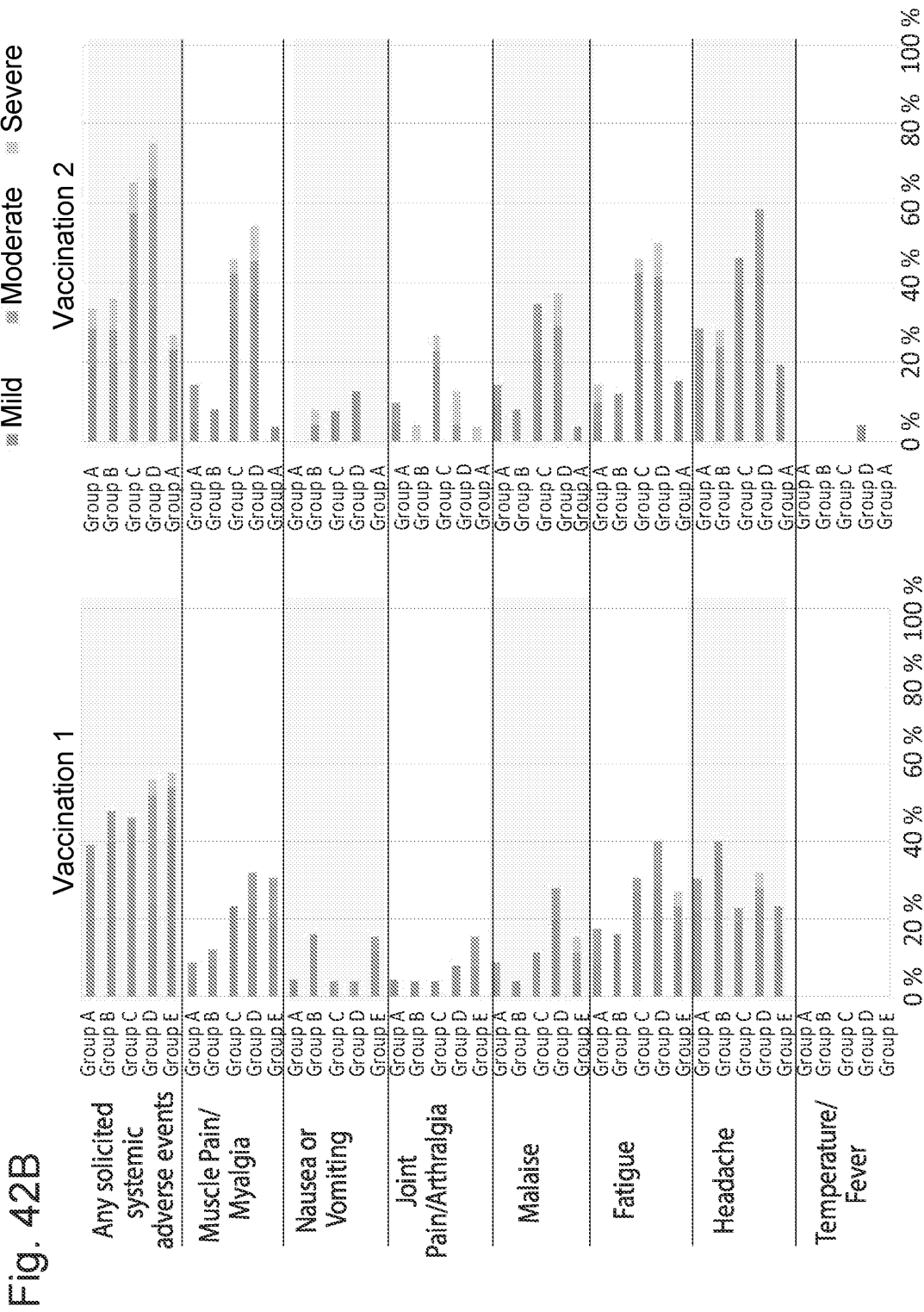
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Fig. 41

Procedure	Screening	Day									
		0	7	21	28	35	49	105	189	386	
Vaccination		X		X							
Blood sample: safety	X		X	X	X						
Blood sample: immuno genicity		X	X	X	X	X	X	X	X		
Nasal swab	X					X					
Reactogenicity		↔	↔	↔	↔						
Unsolicited AE		↔	↔								
MAAE: All/Related		↔	↔					↔	↔	↔	
SAE or AESI		↔	↔					↔			

Fig. 42A





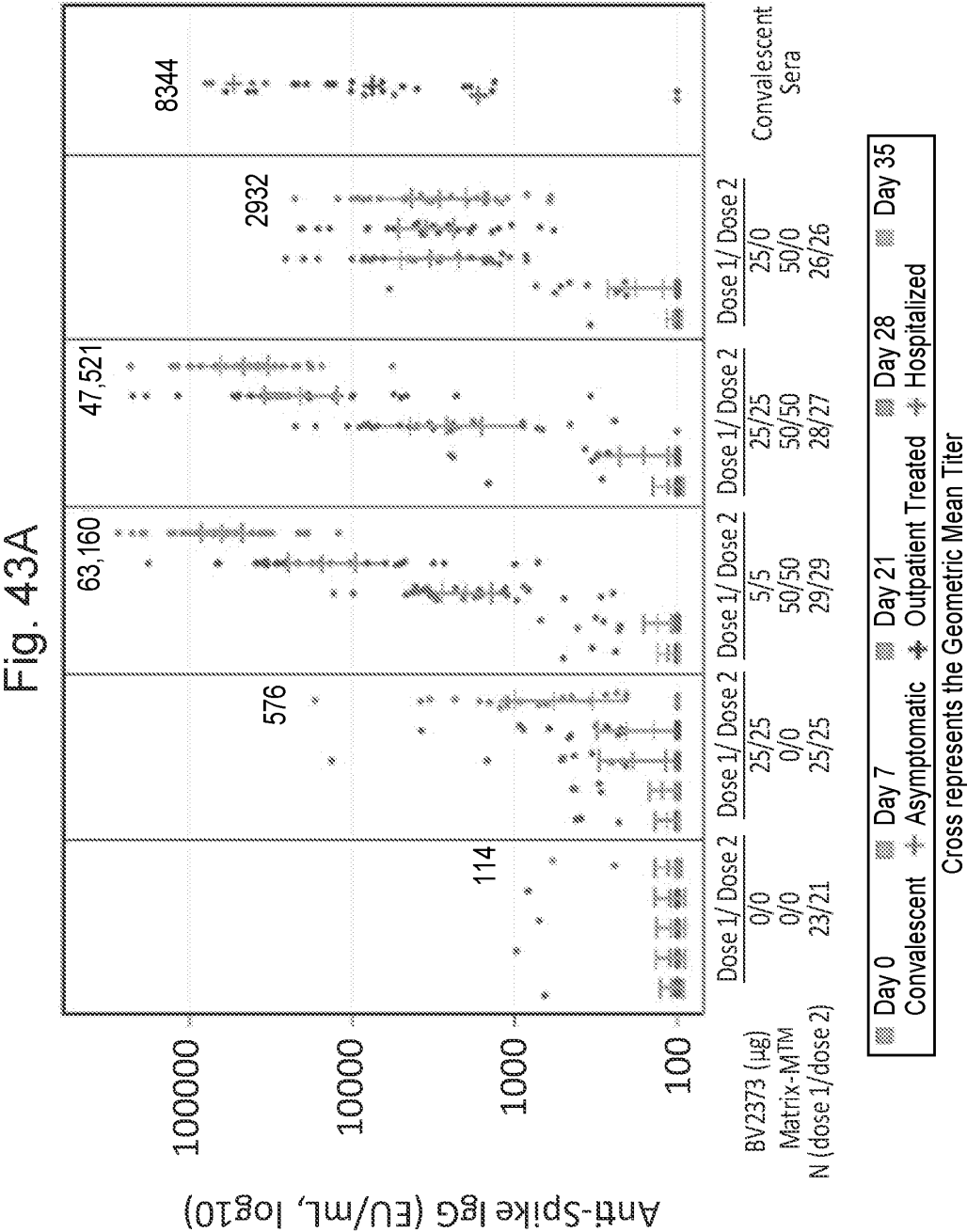


Fig. 43B

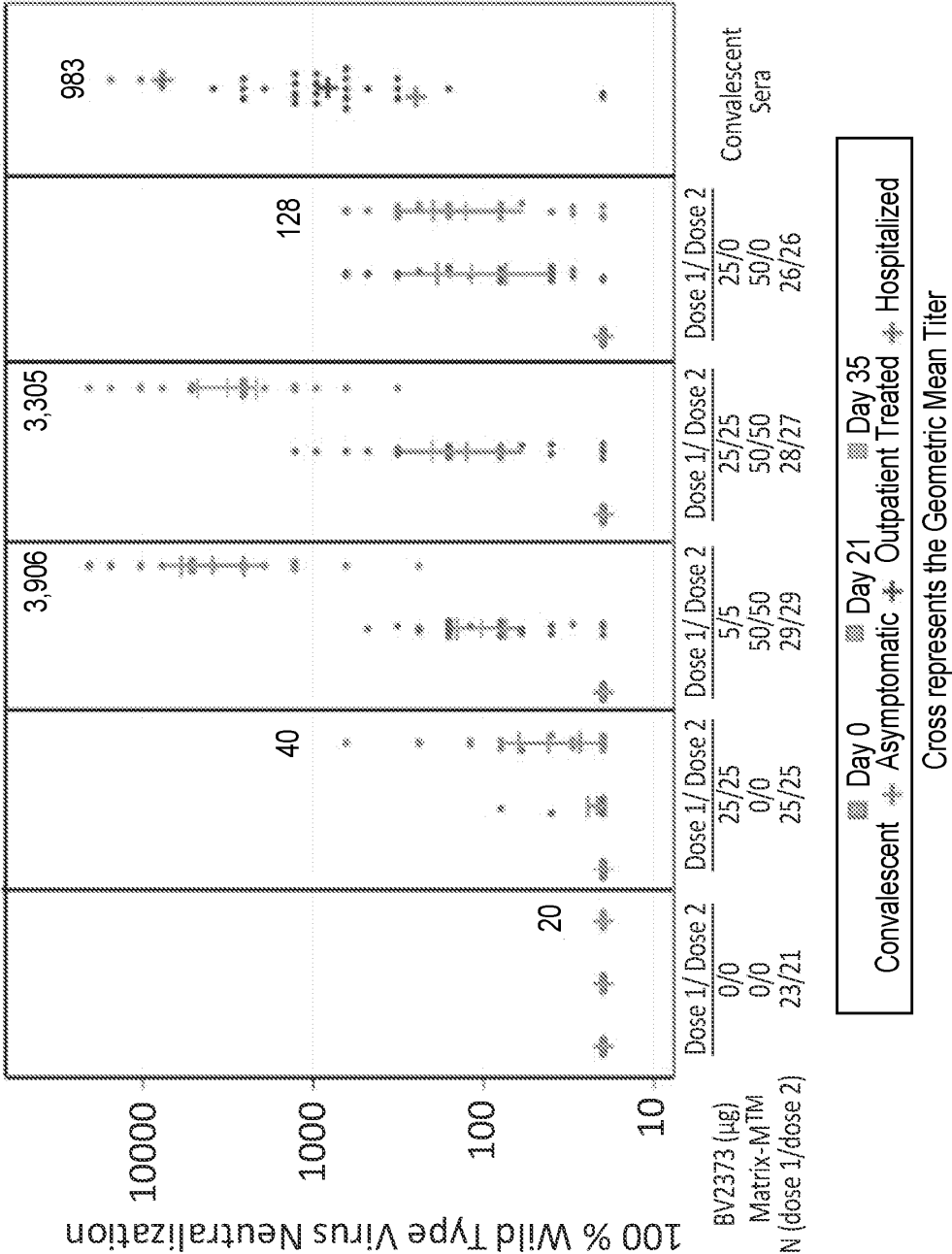


Fig. 44A

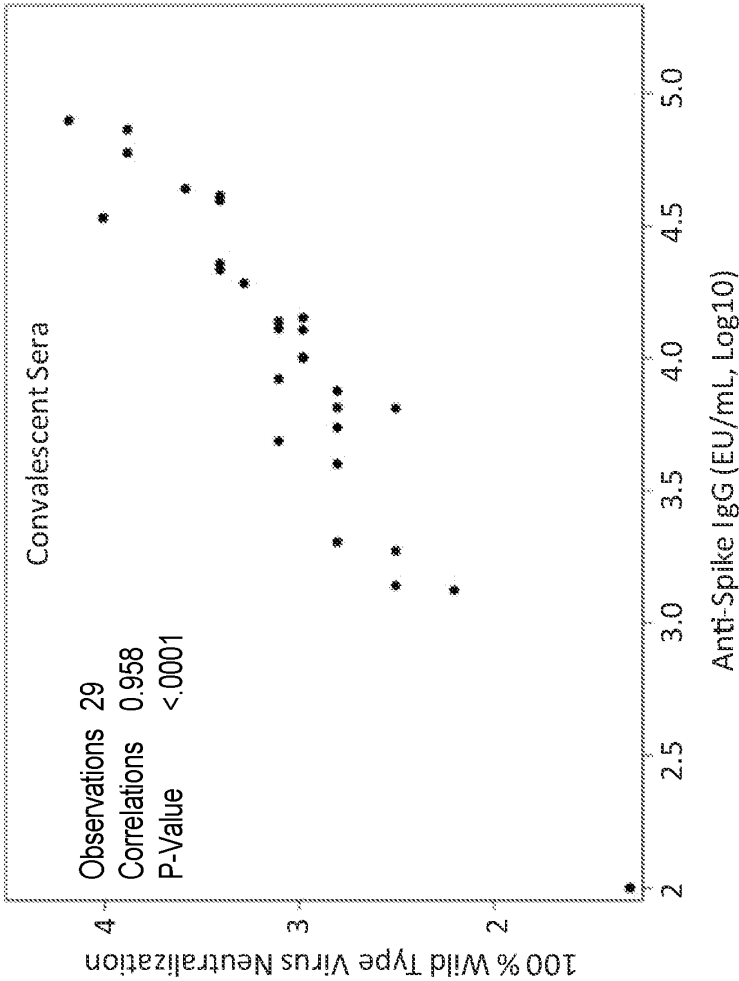


Fig. 44B

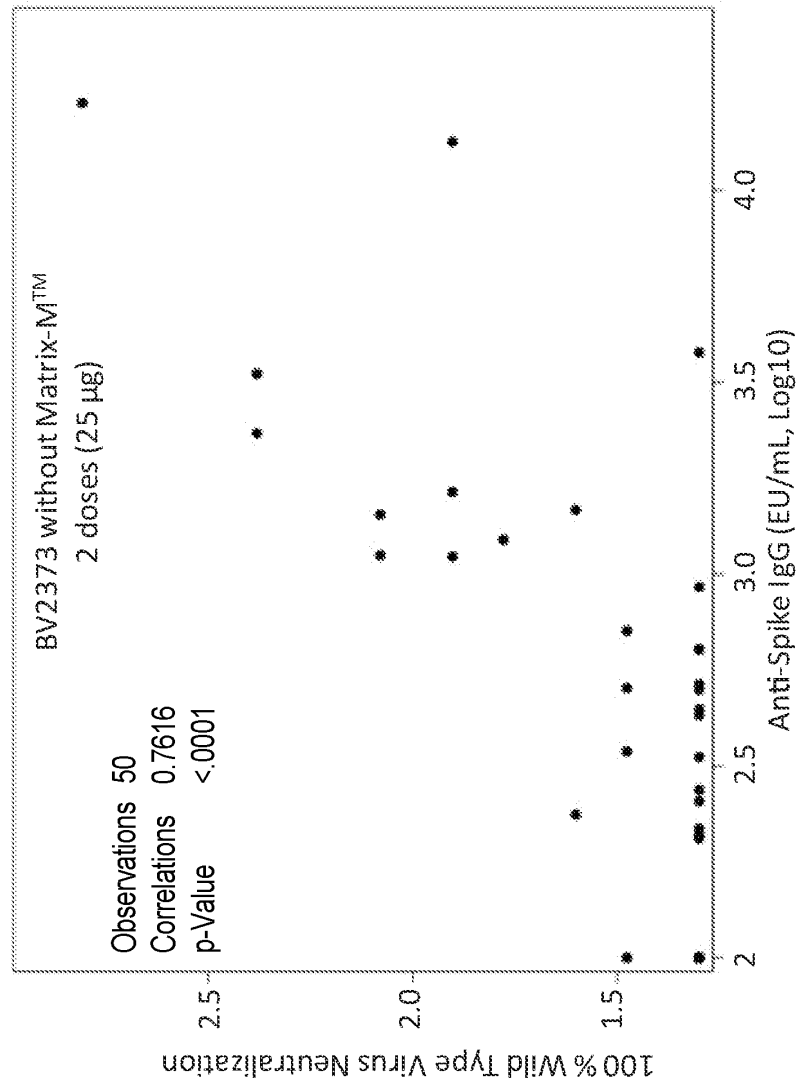


Fig. 44C

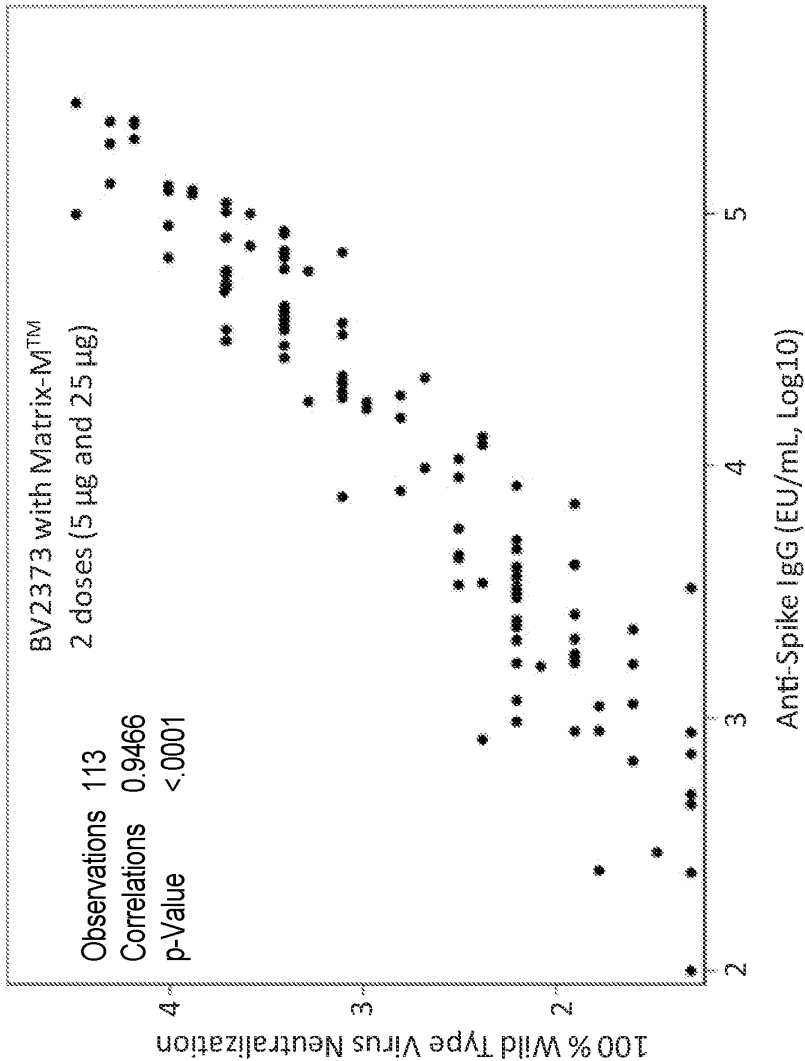


Fig. 45A

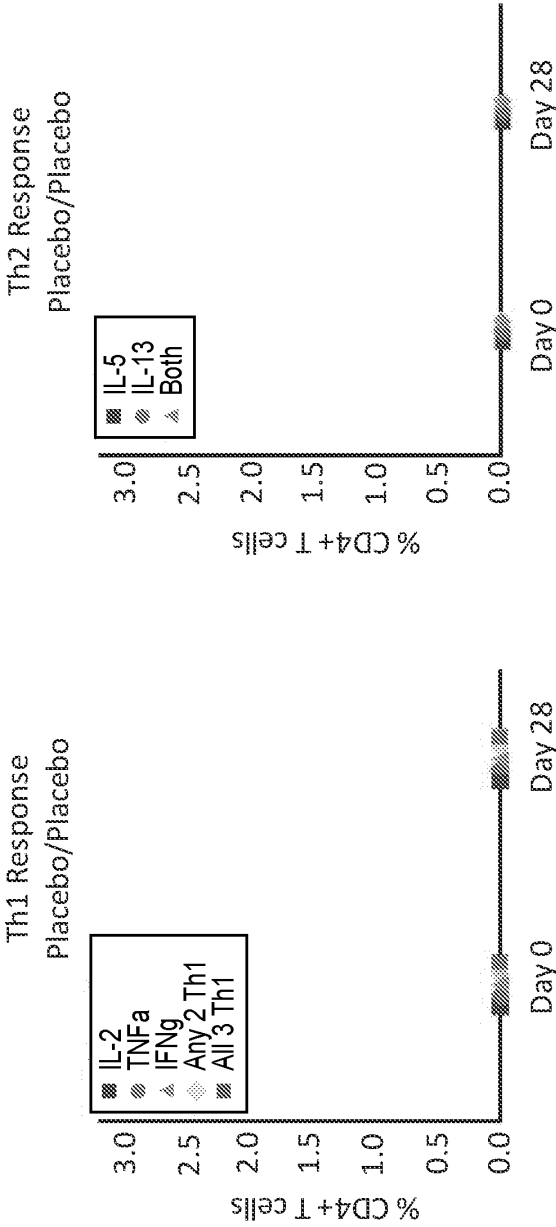


Fig. 45B

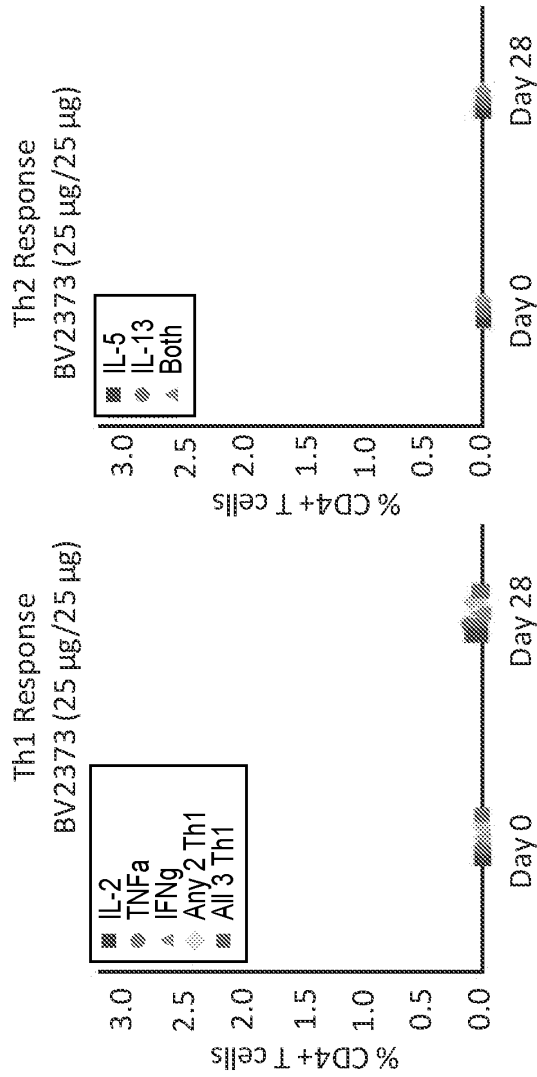


Fig. 45C

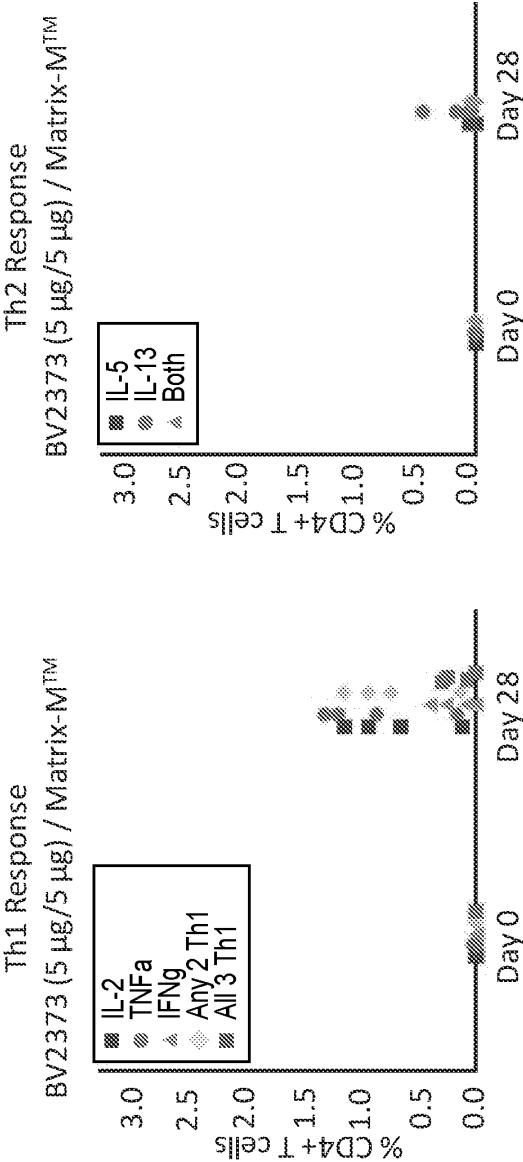
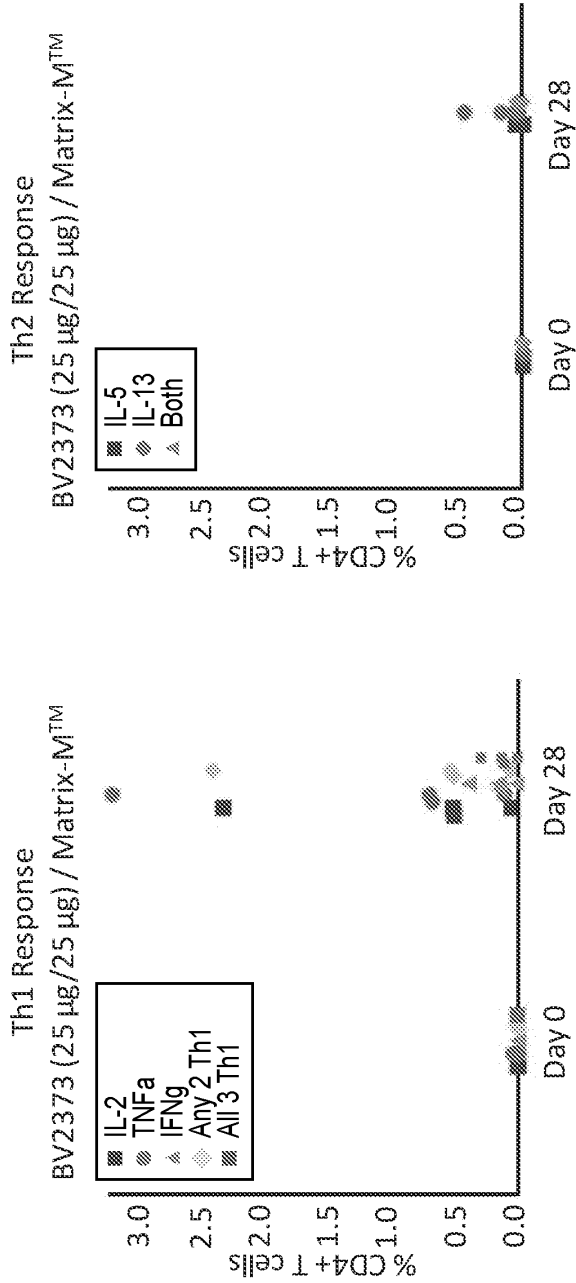


Fig. 45D



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Fig. 46A

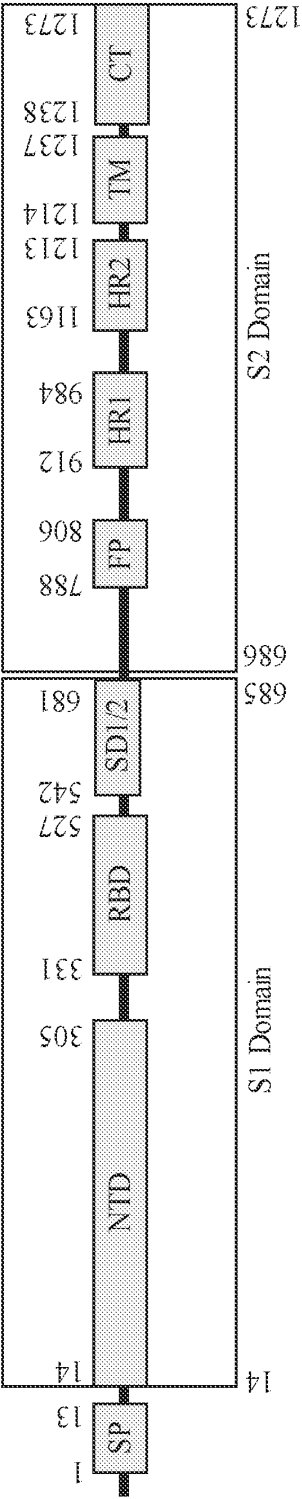


Fig. 46B

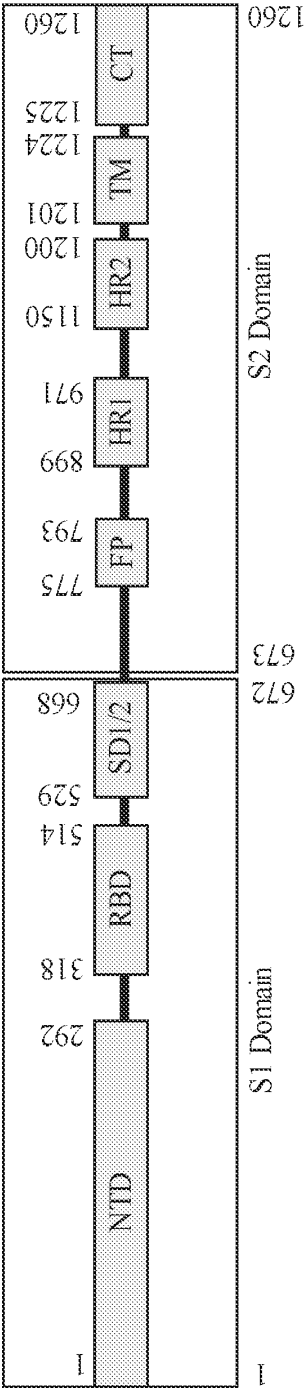


Fig. 47

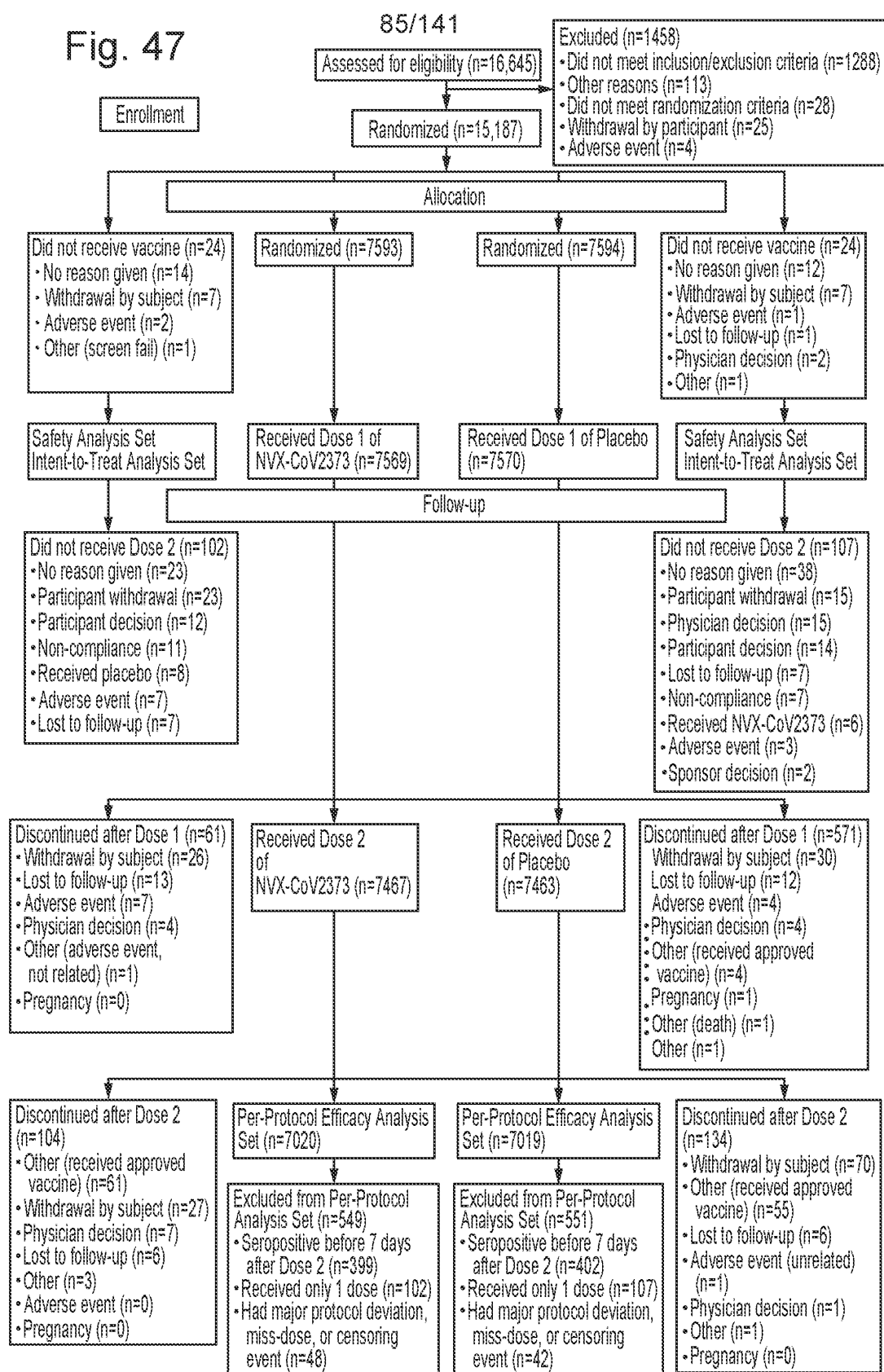


Fig. 48

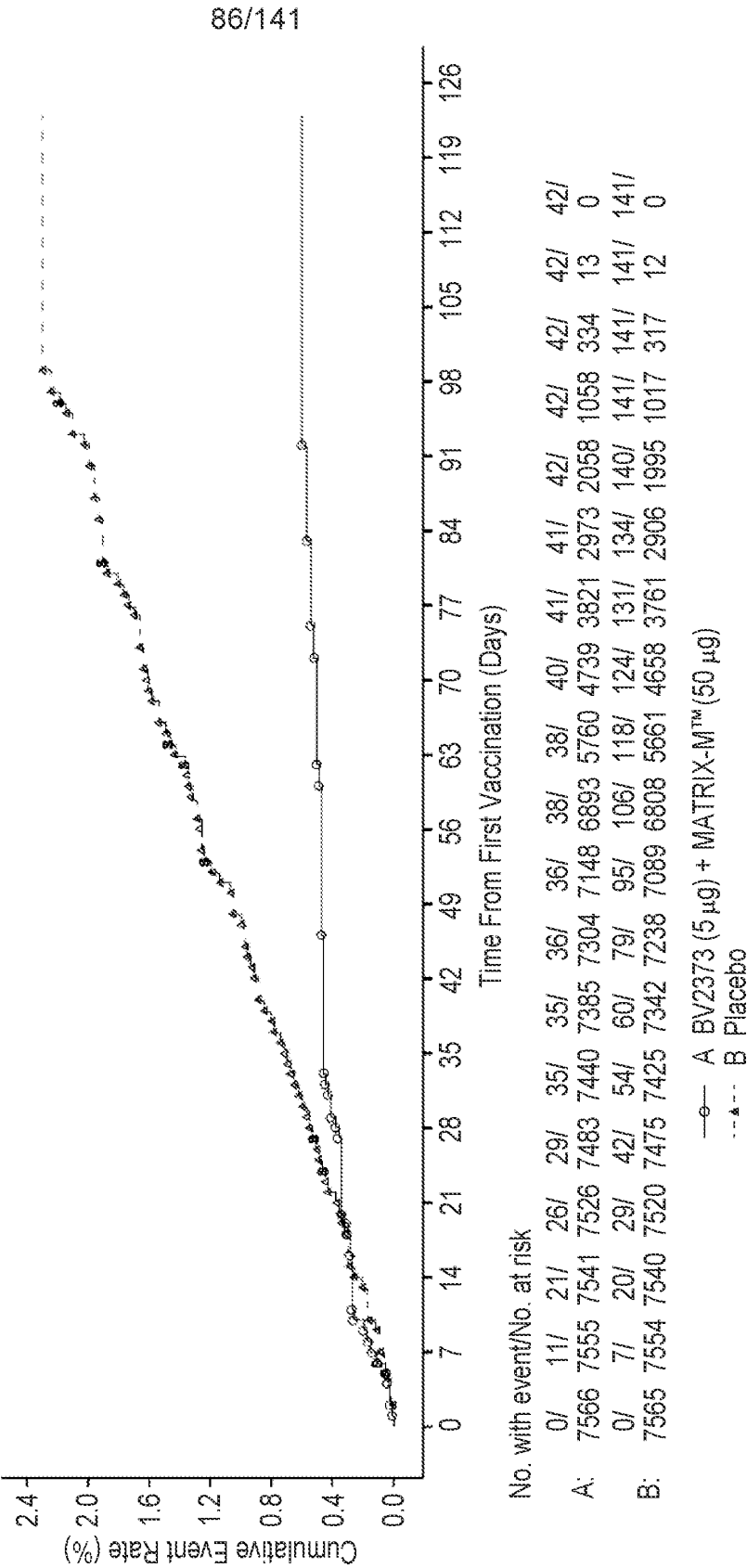
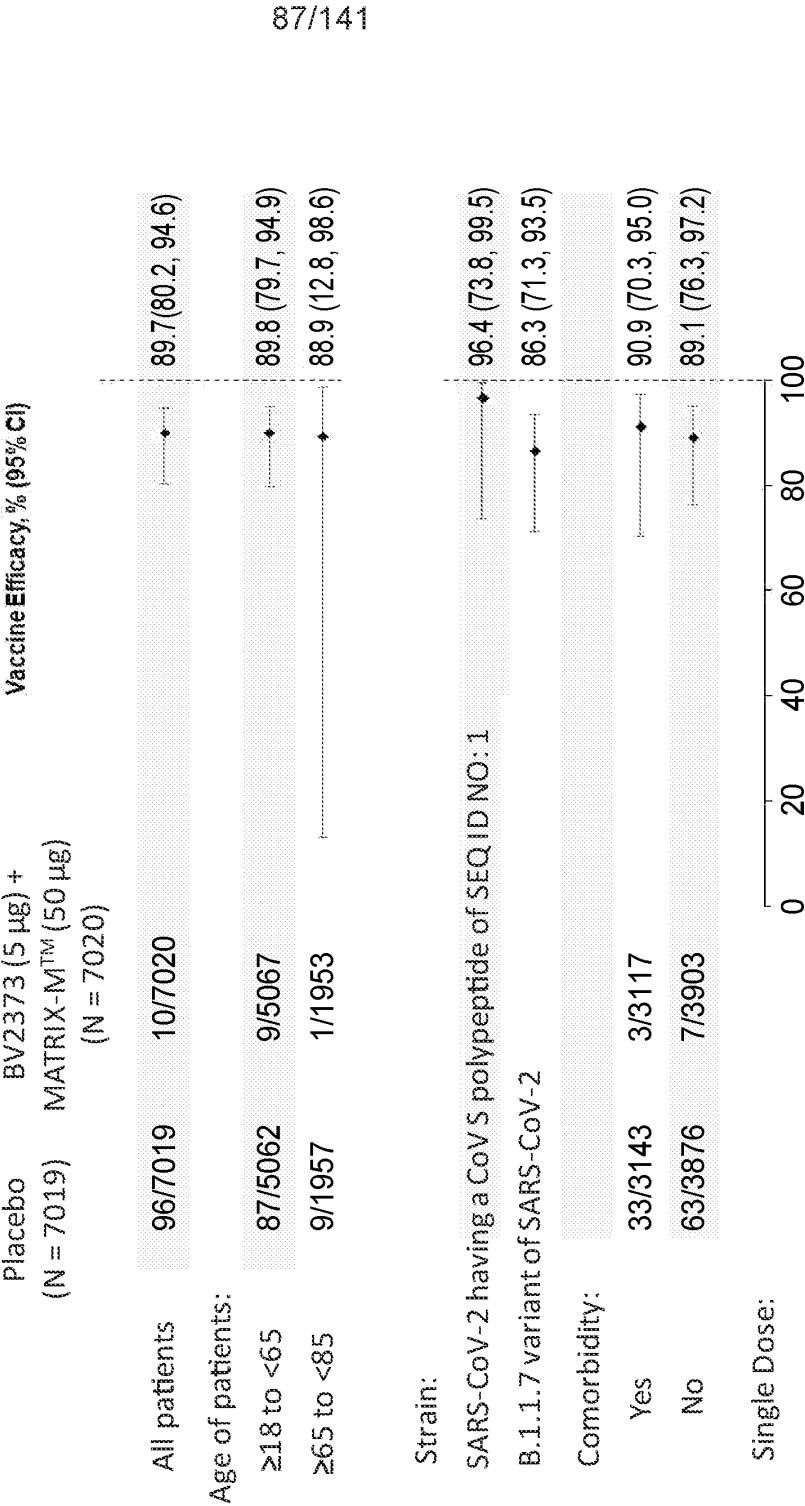


Fig. 49



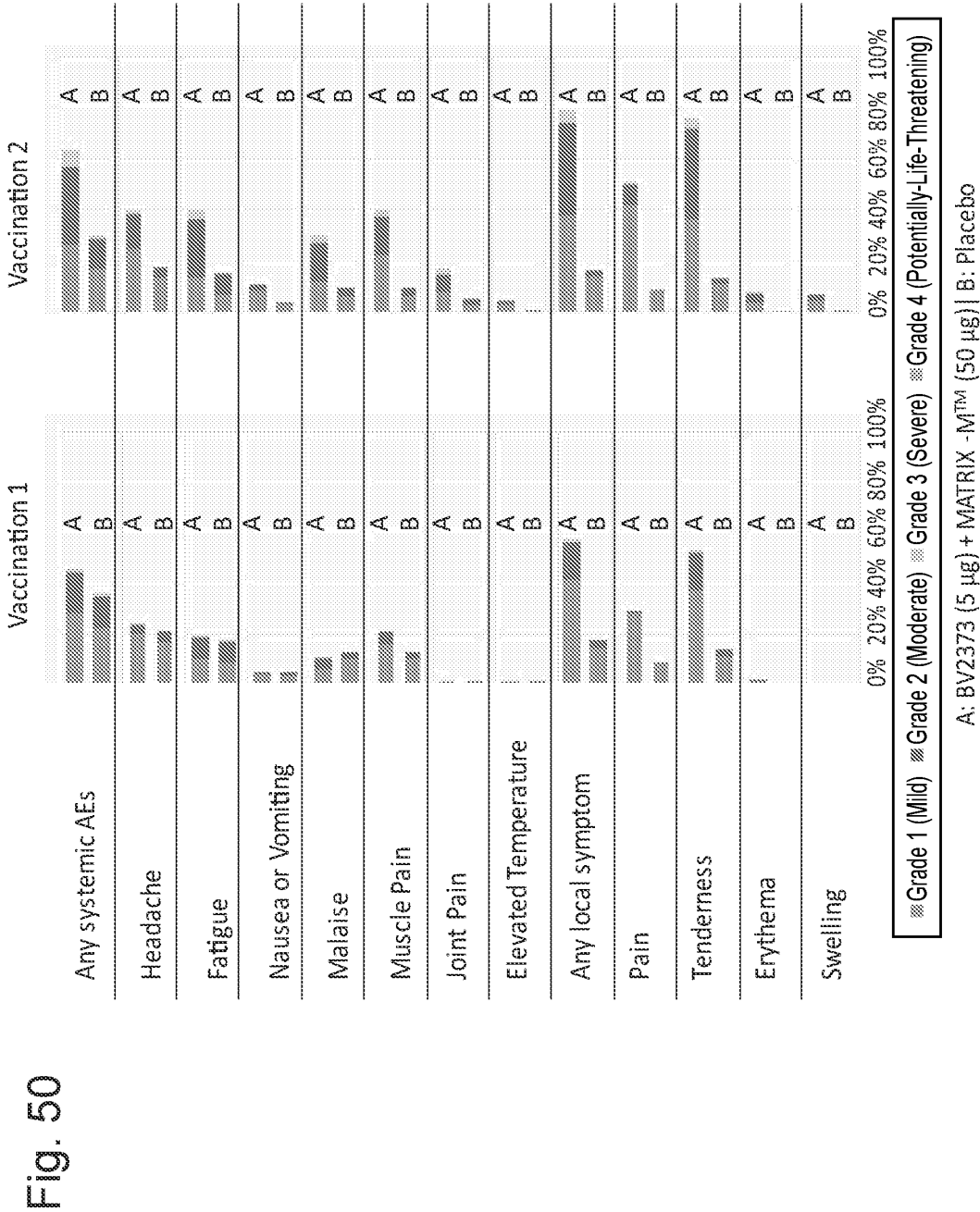
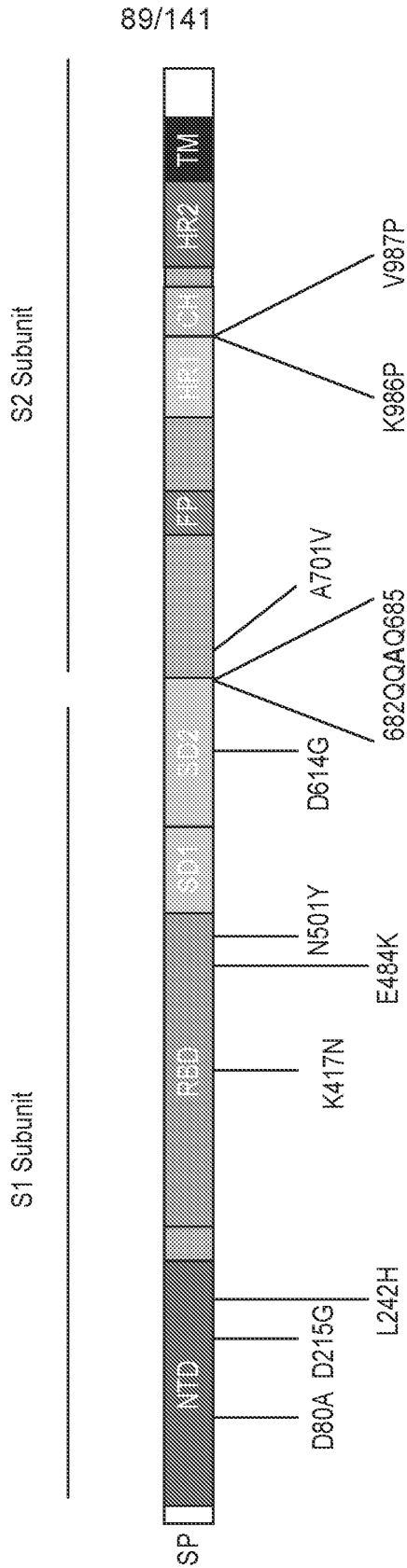


Fig. 51



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Fig. 52A

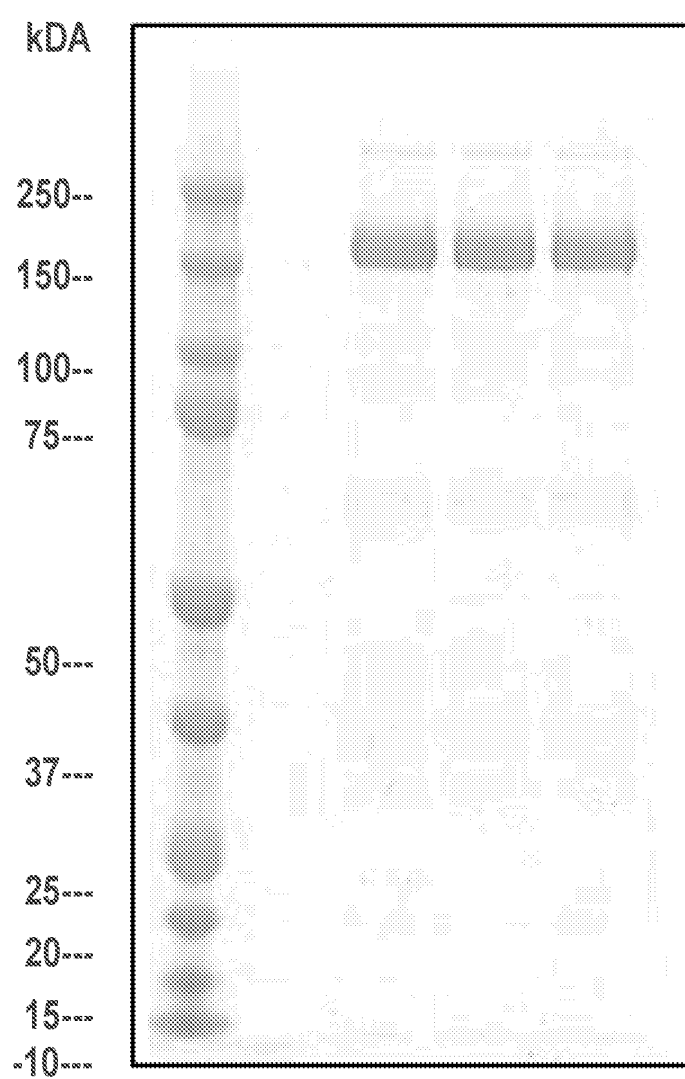
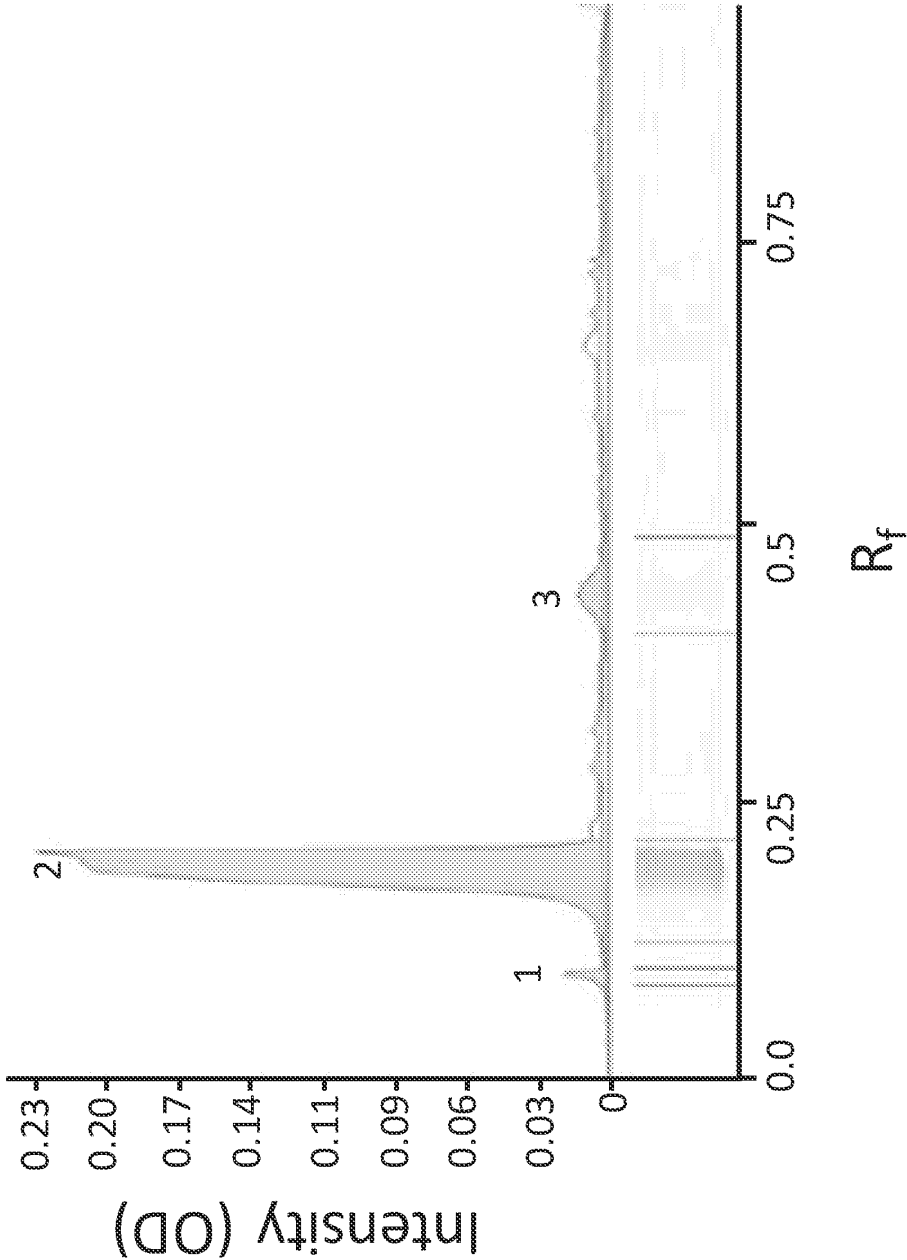


Fig. 52B



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Fig. 52C

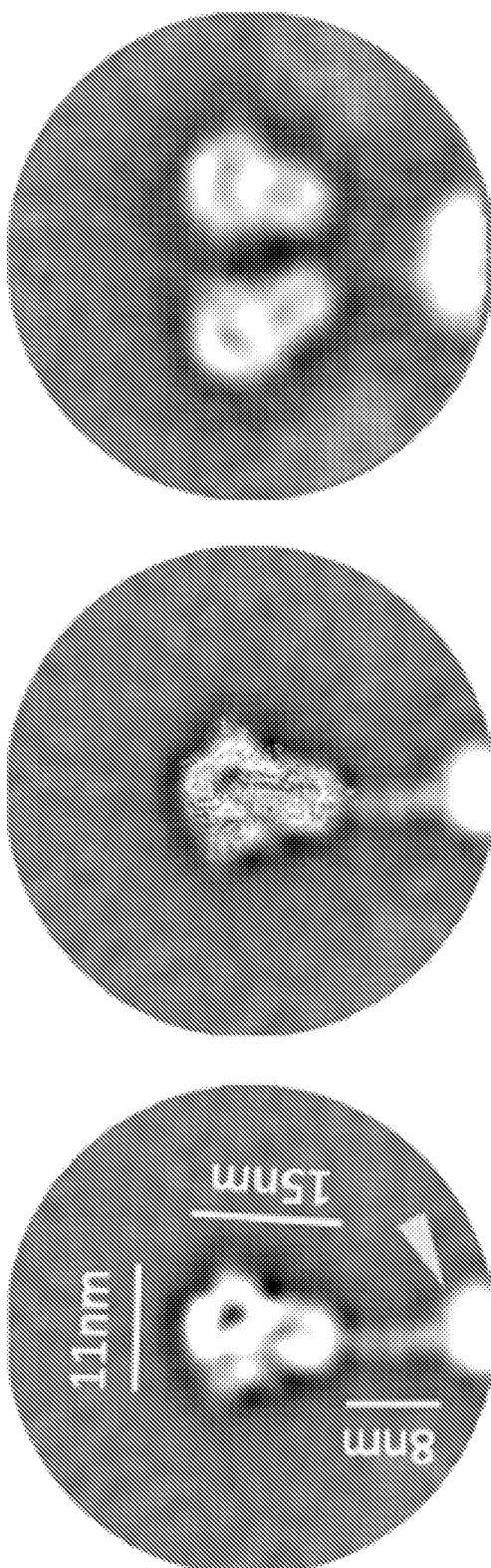


Fig. 53

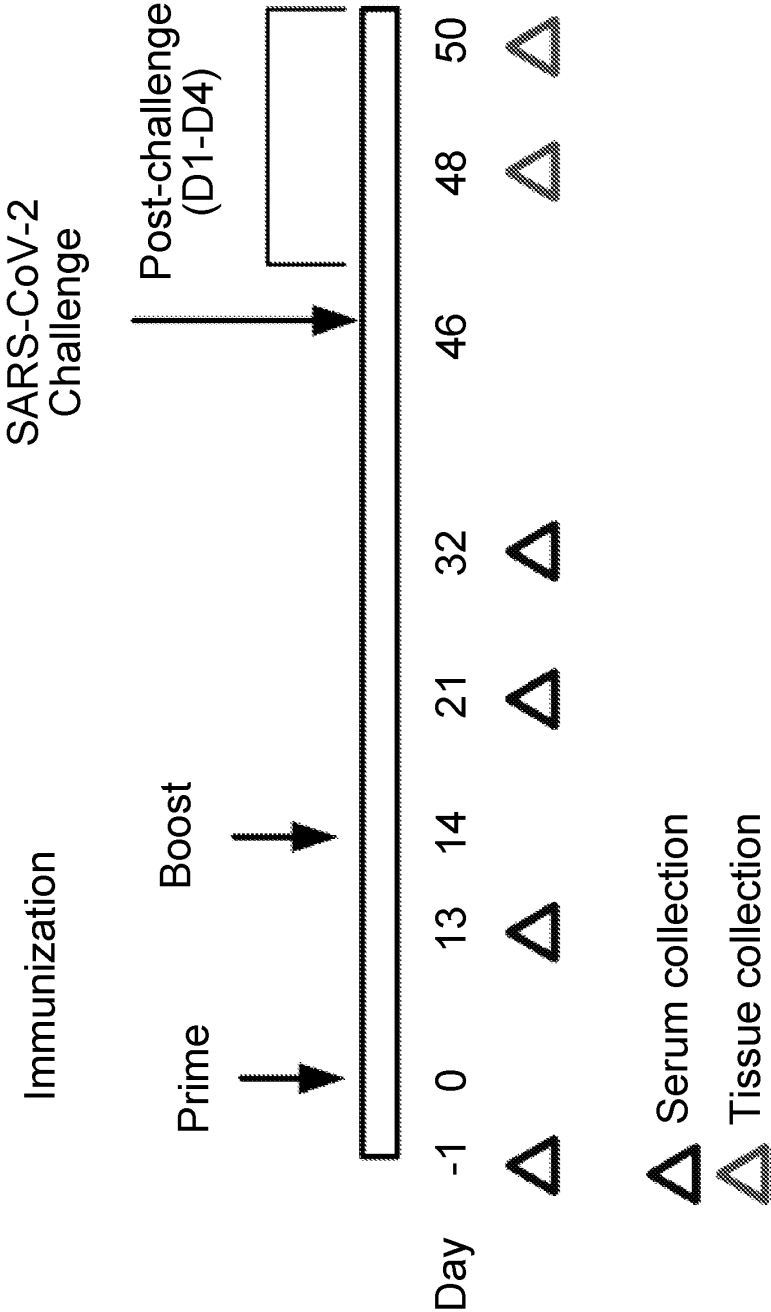


Fig. 54A

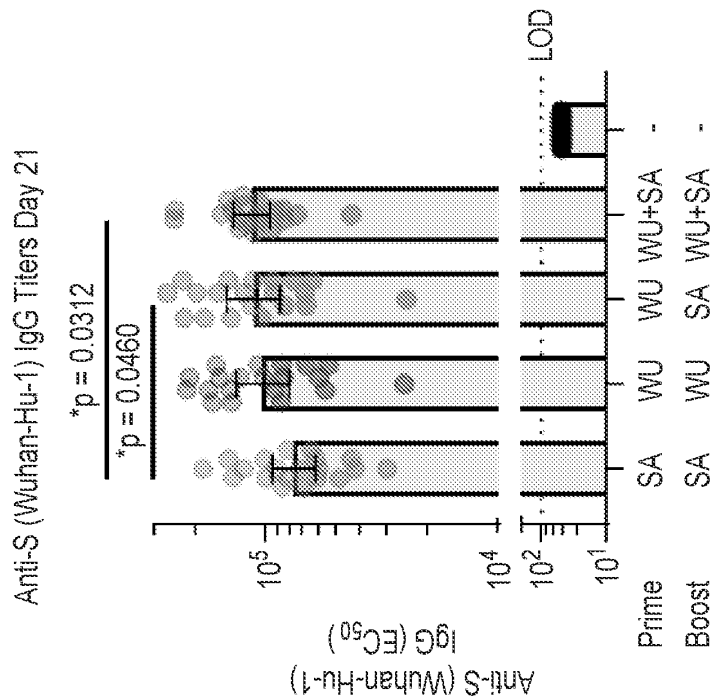


Fig. 54B

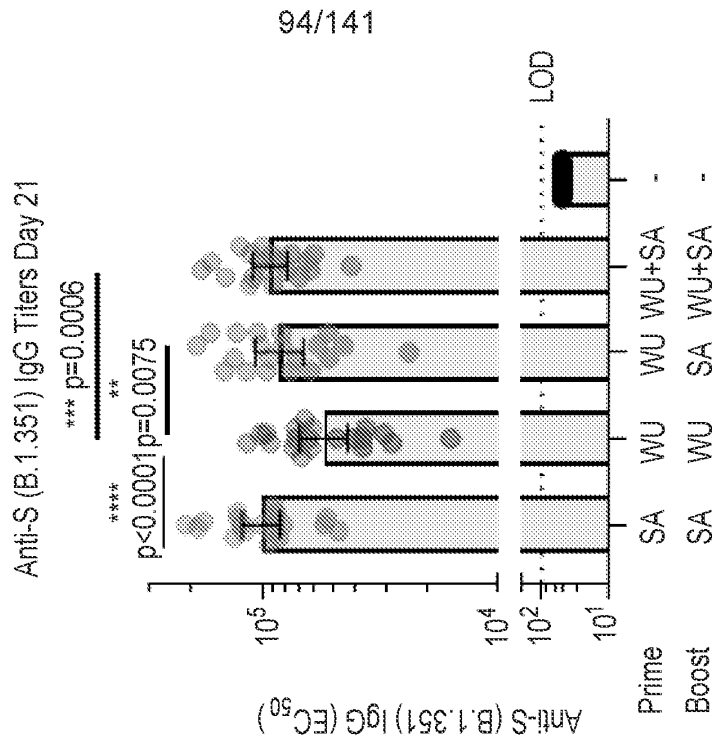


Fig. 54C

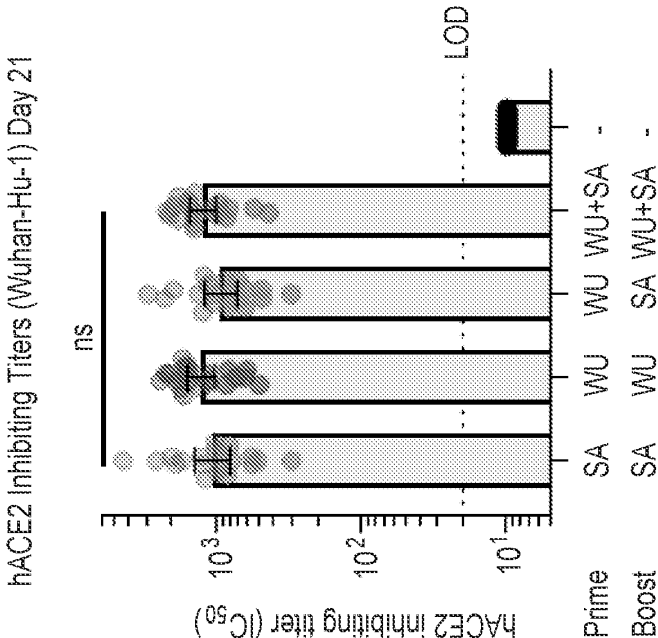


Fig. 54D

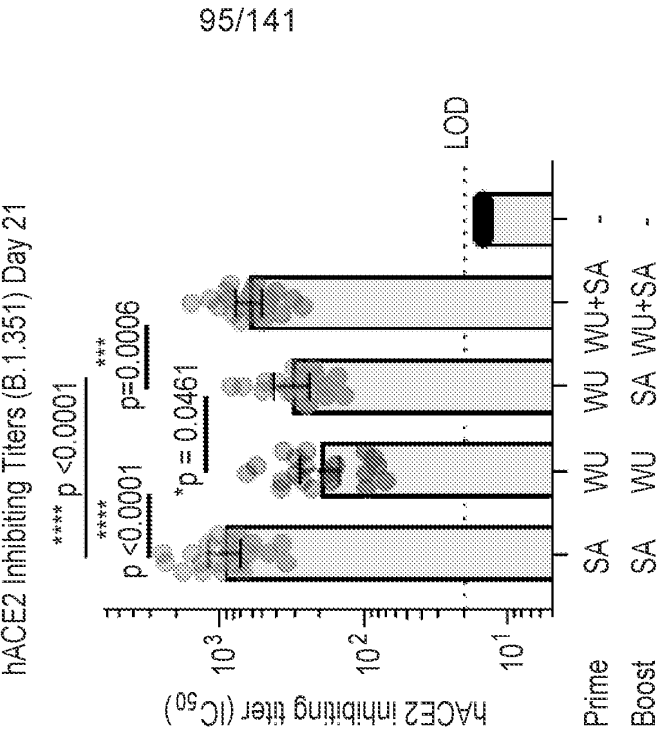
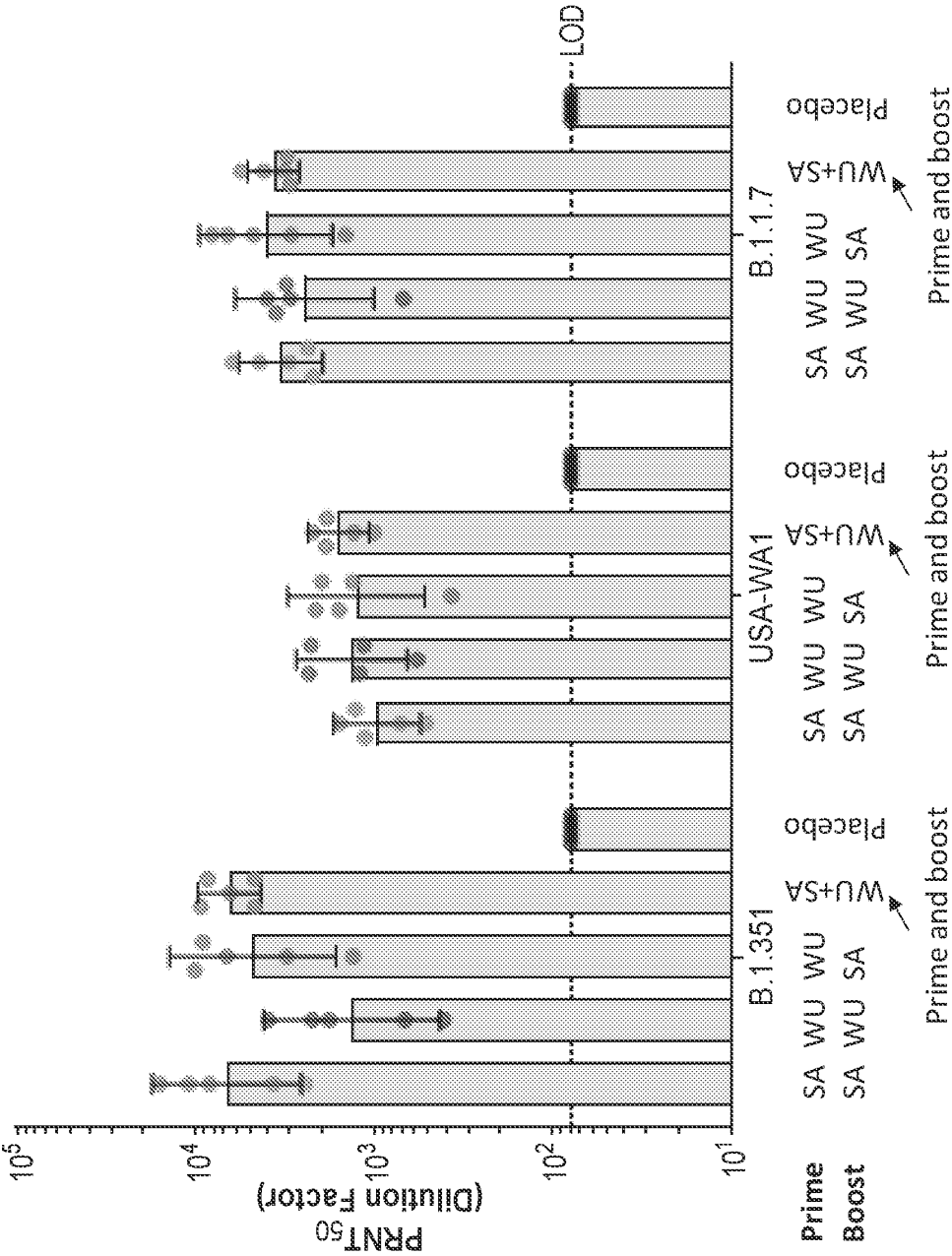


Fig. 54E



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Fig. 55A

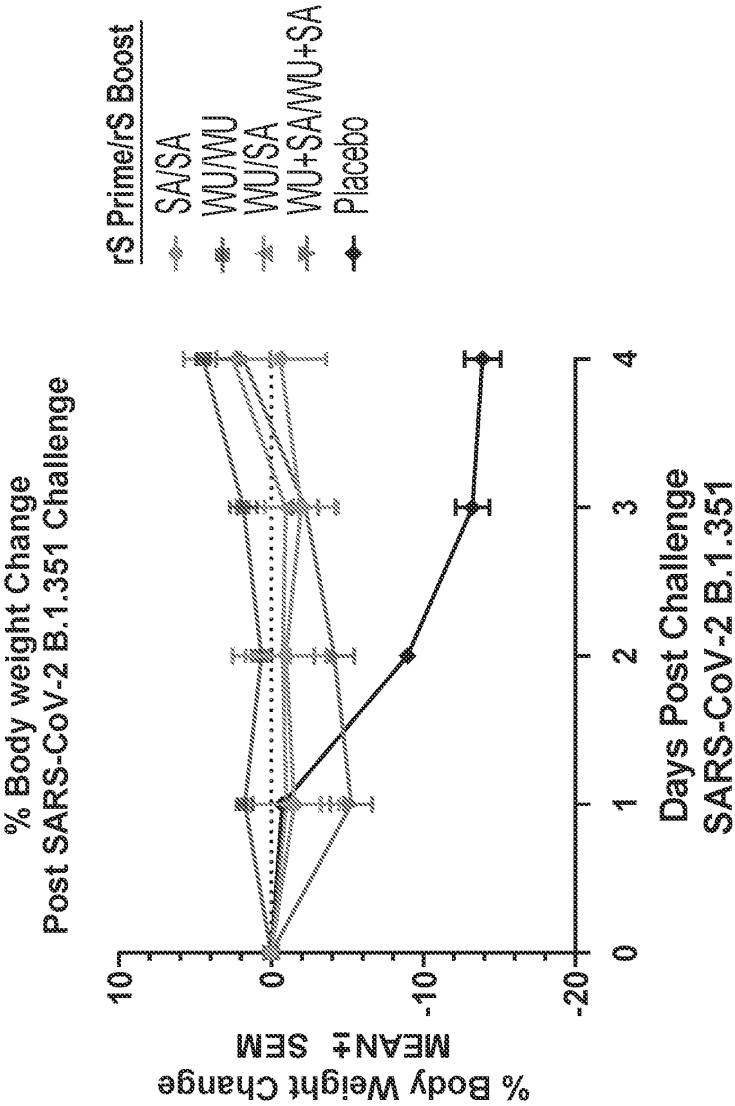


Fig. 55B

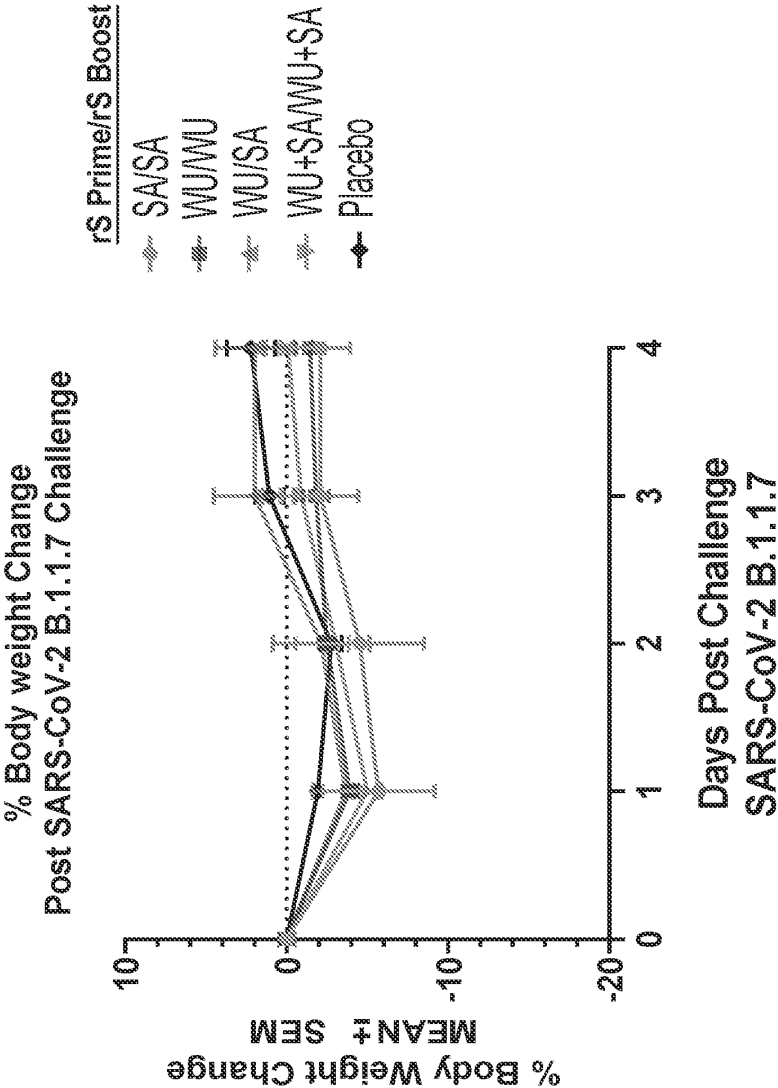
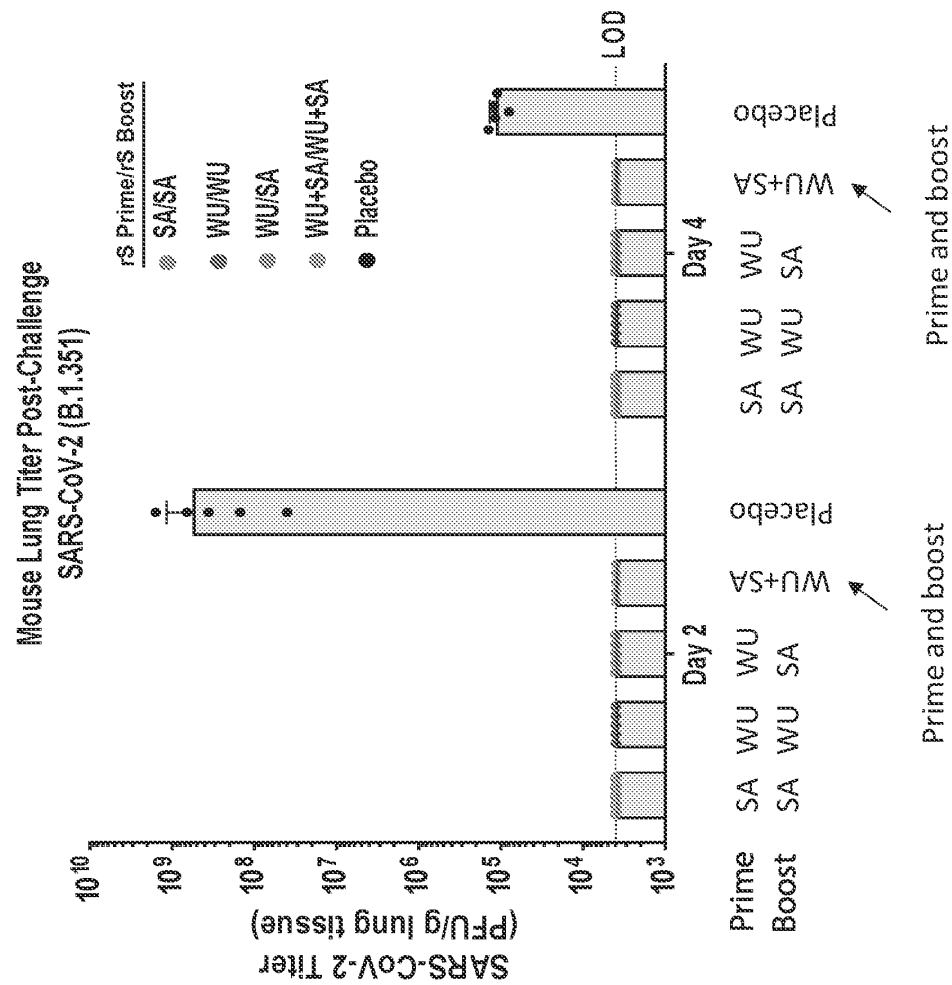


Fig. 55C



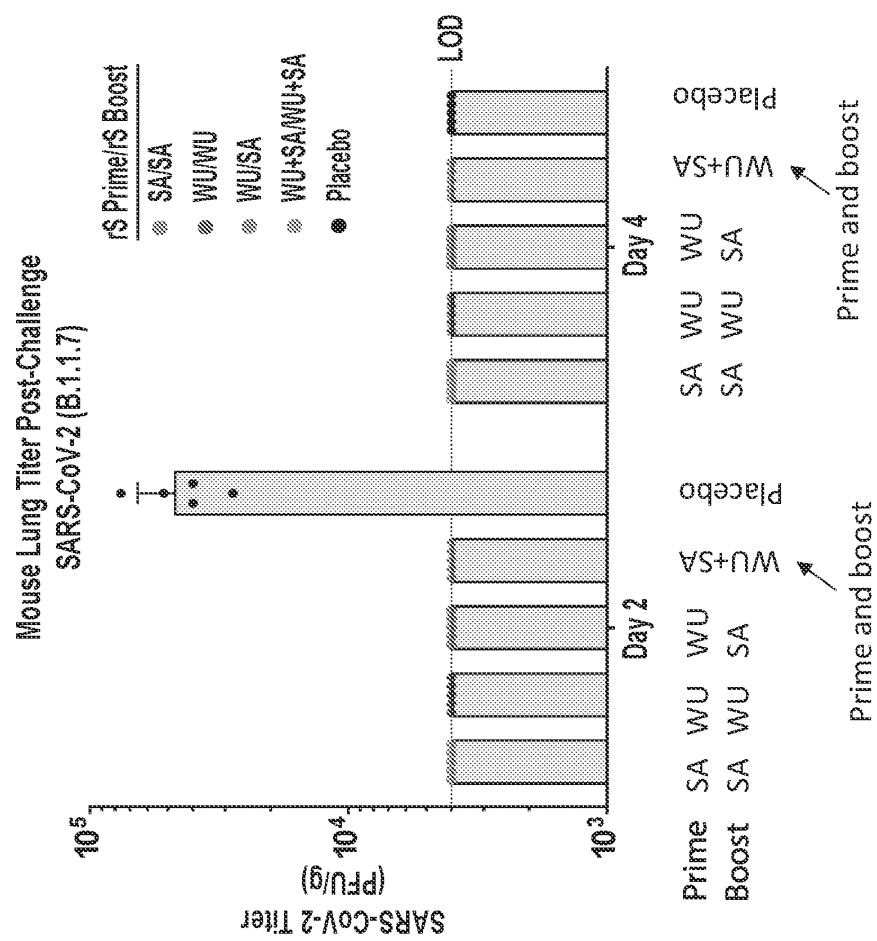
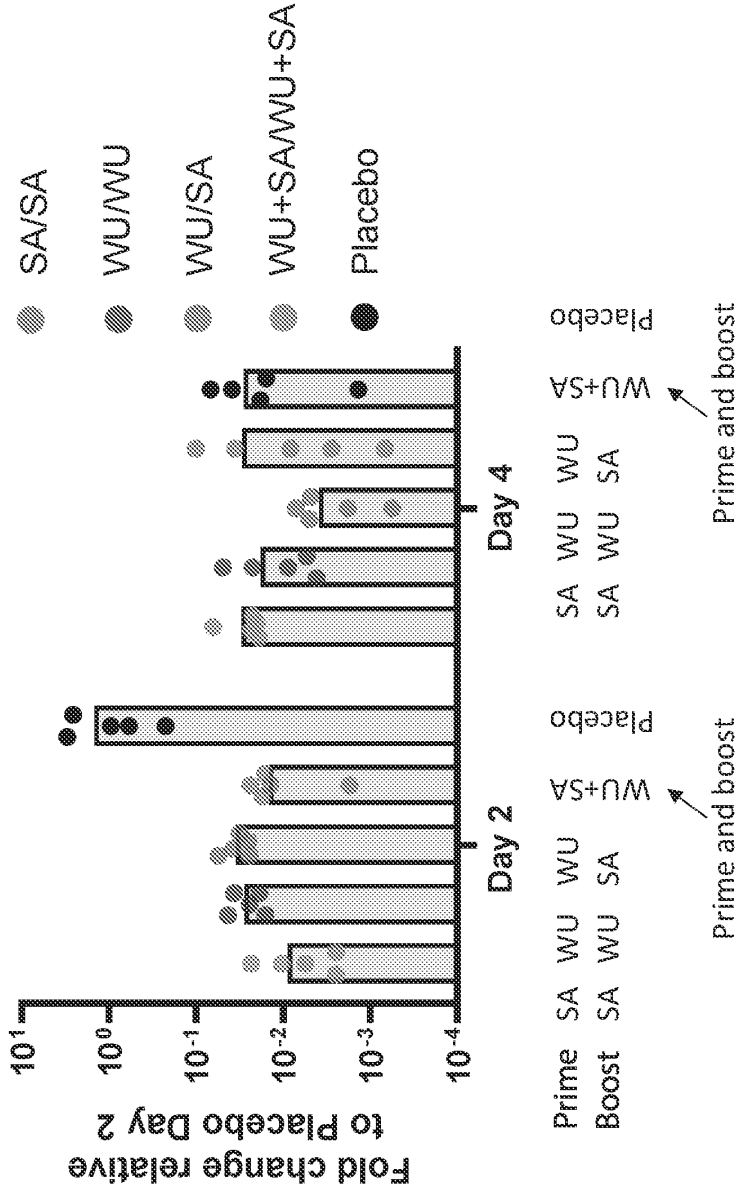


Fig. 55E

SARS-CoV-2 sgRNA in Lung Tissue
After B.1.351 challenge



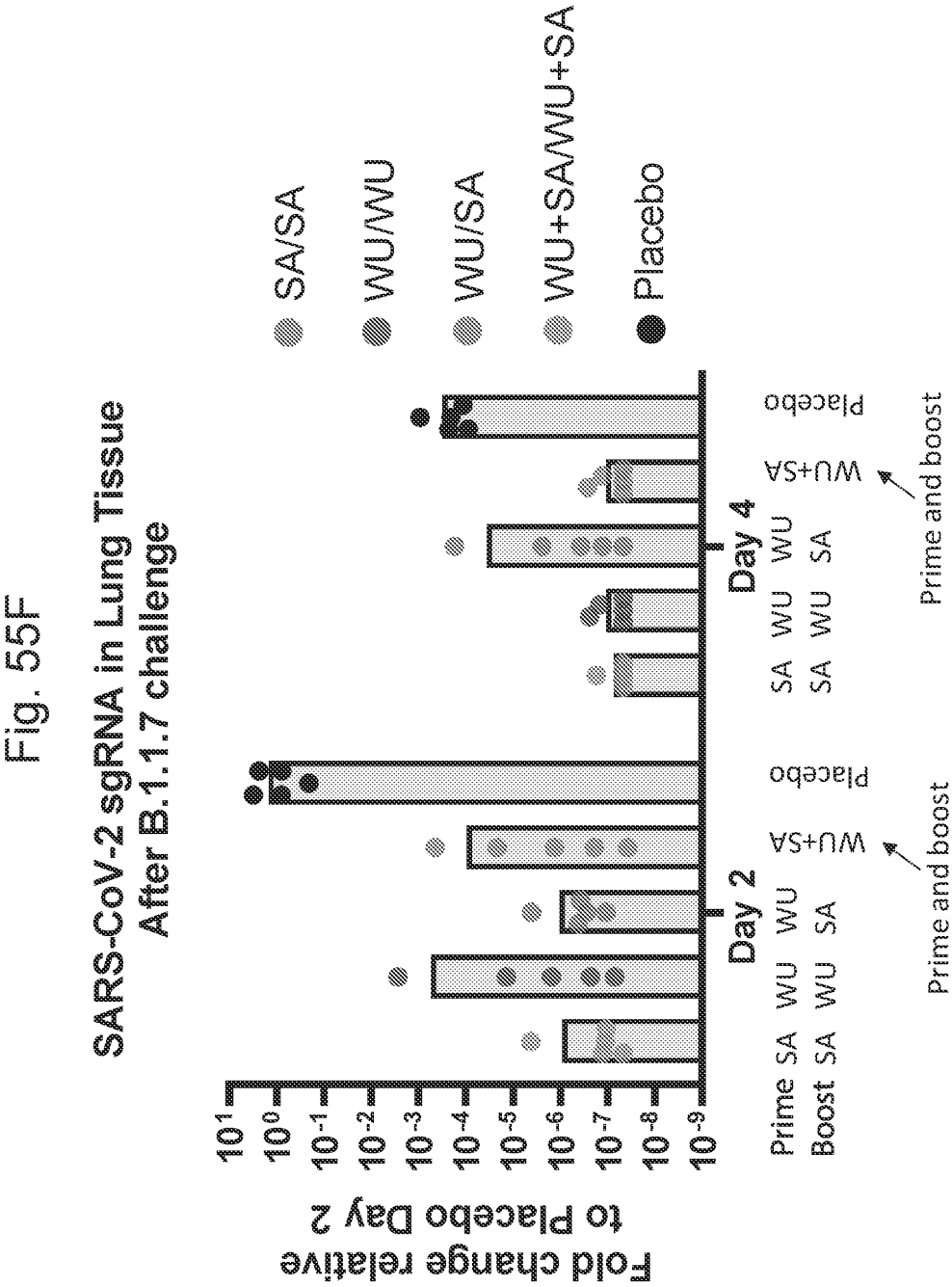


Fig. 56A

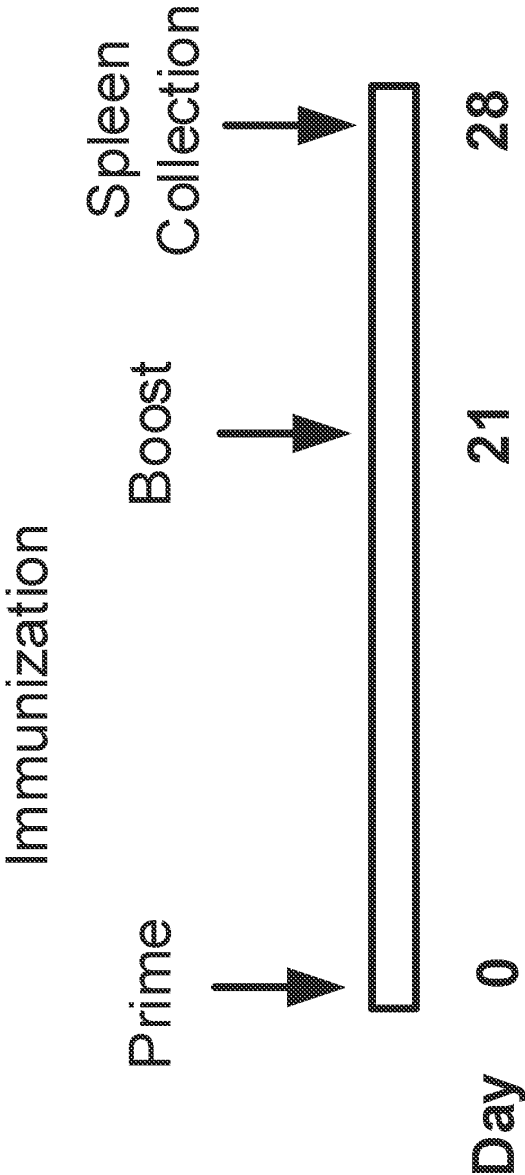


Fig. 56B

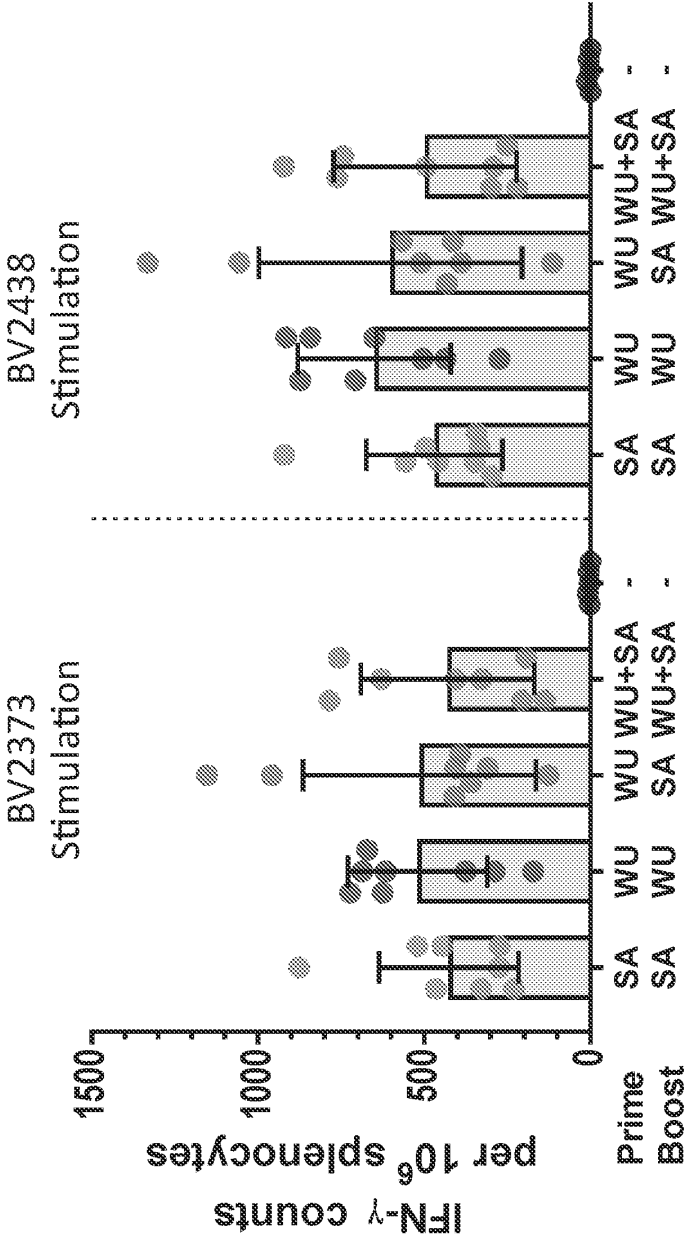


Fig. 56C

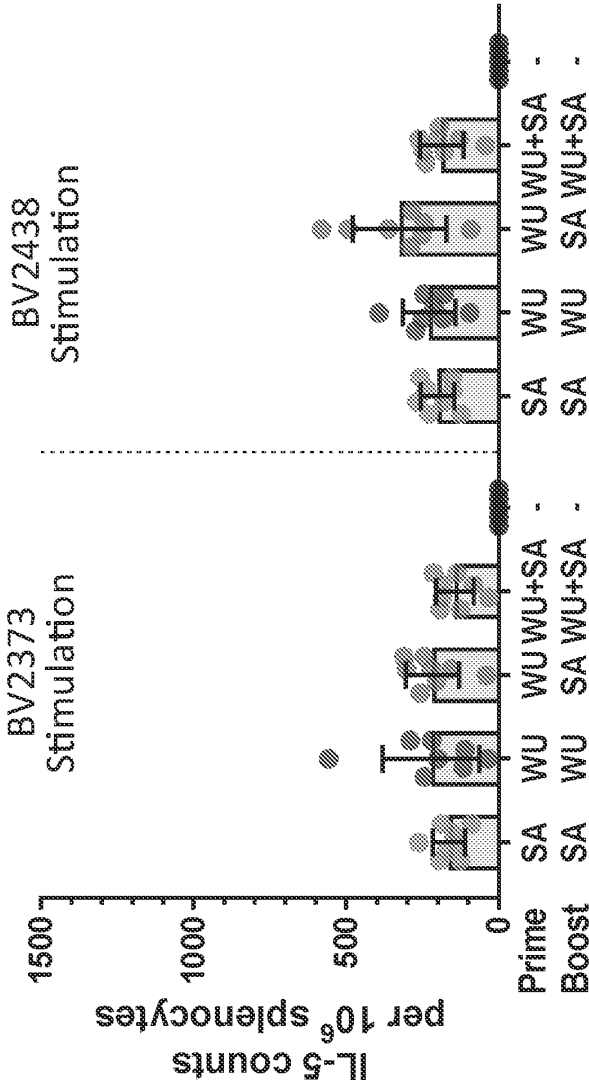
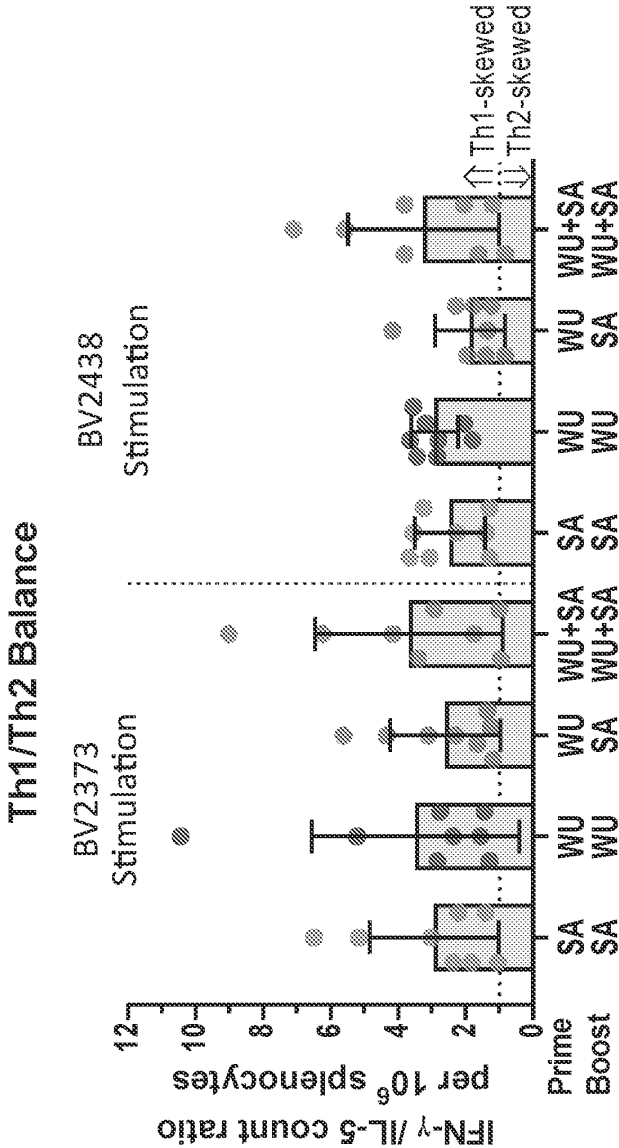


Fig. 56D



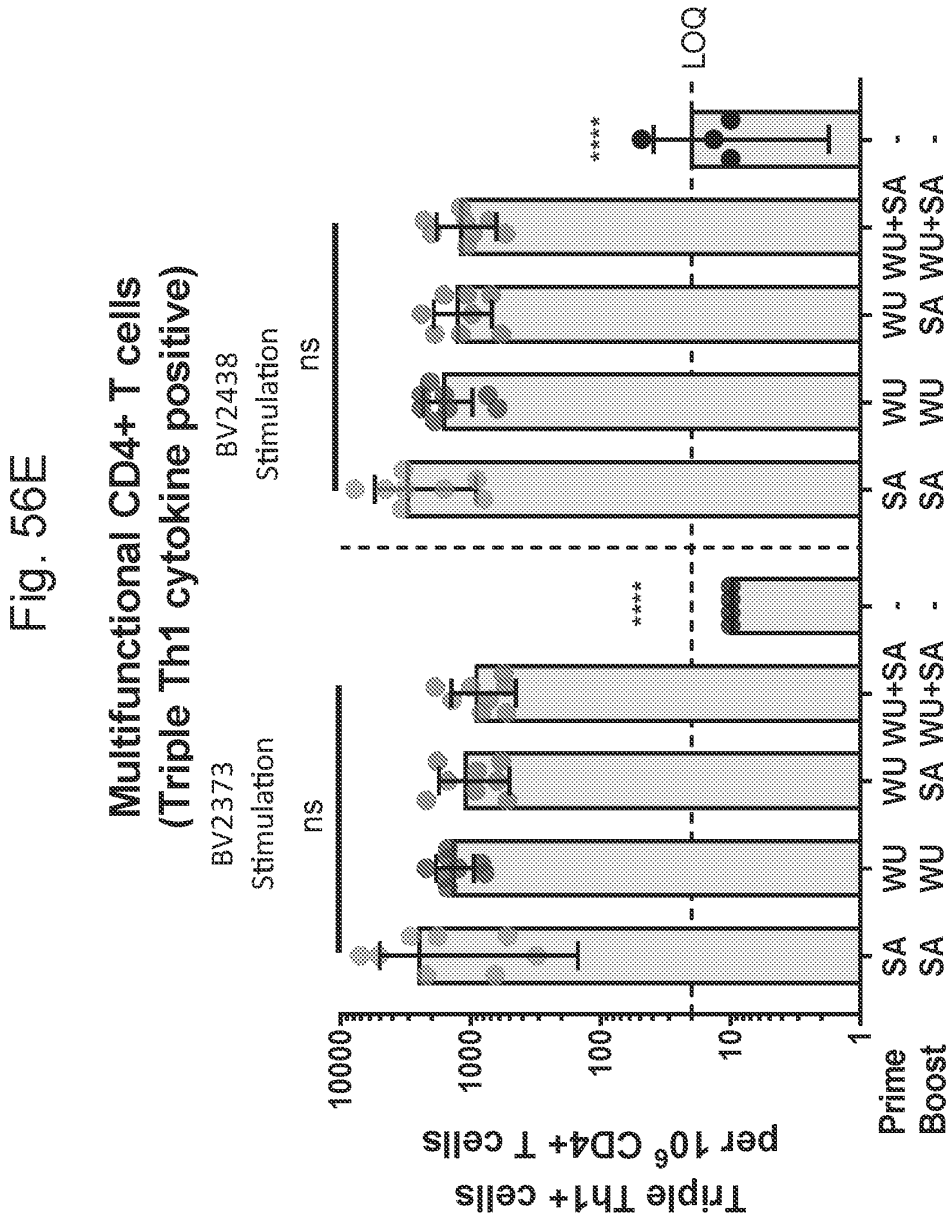
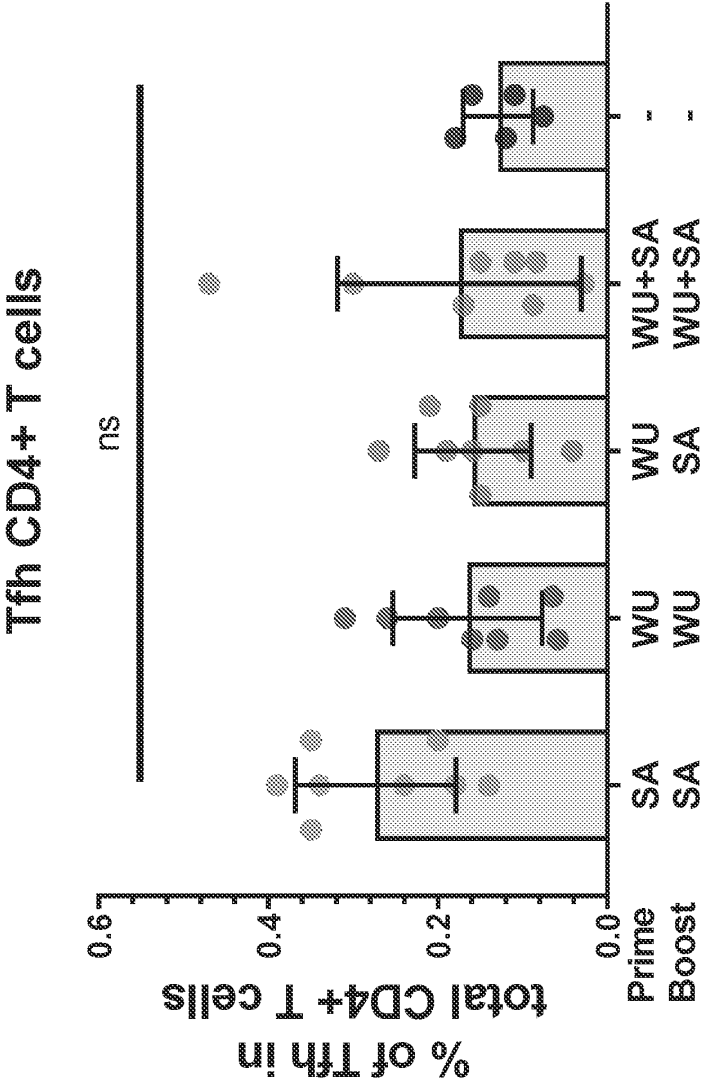


Fig. 56F



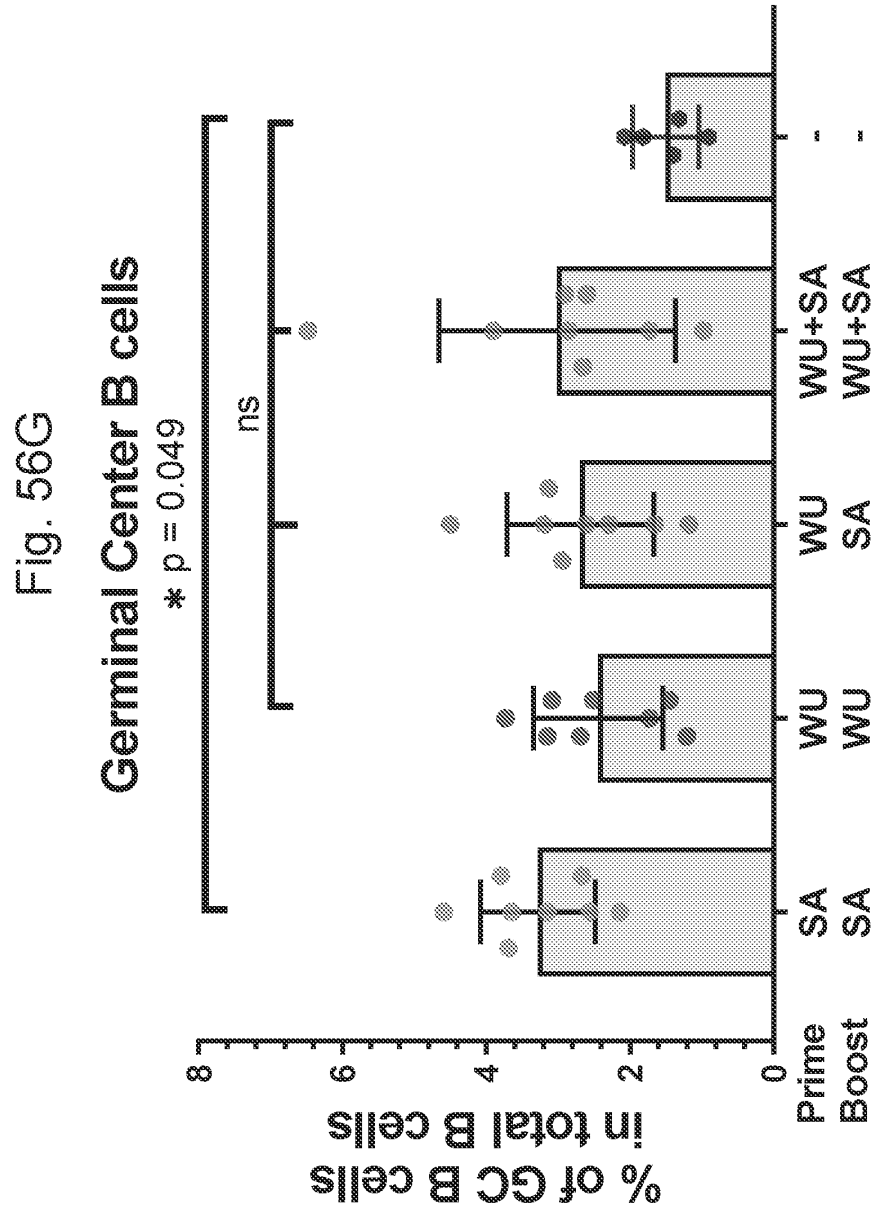


Fig. 56H

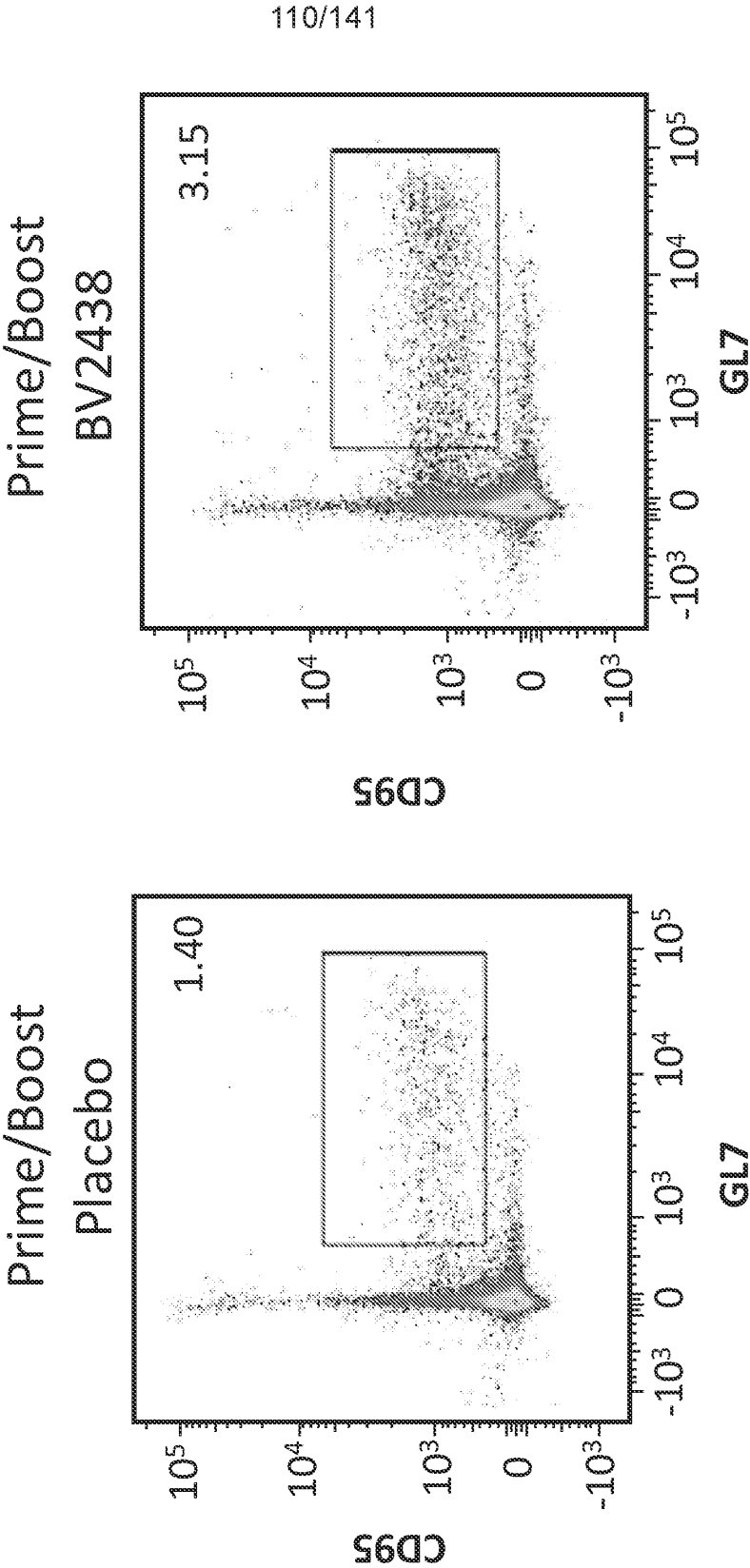
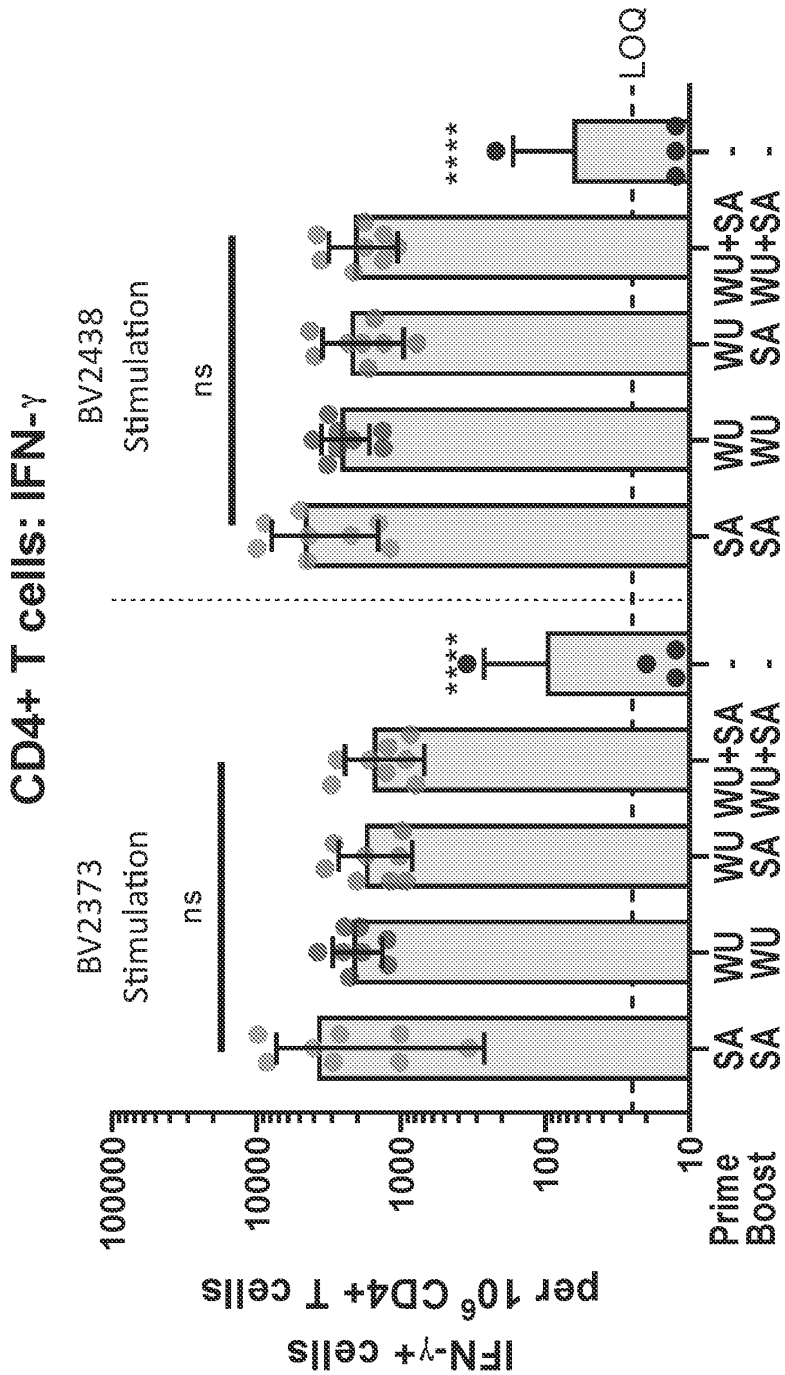


Fig. 57A



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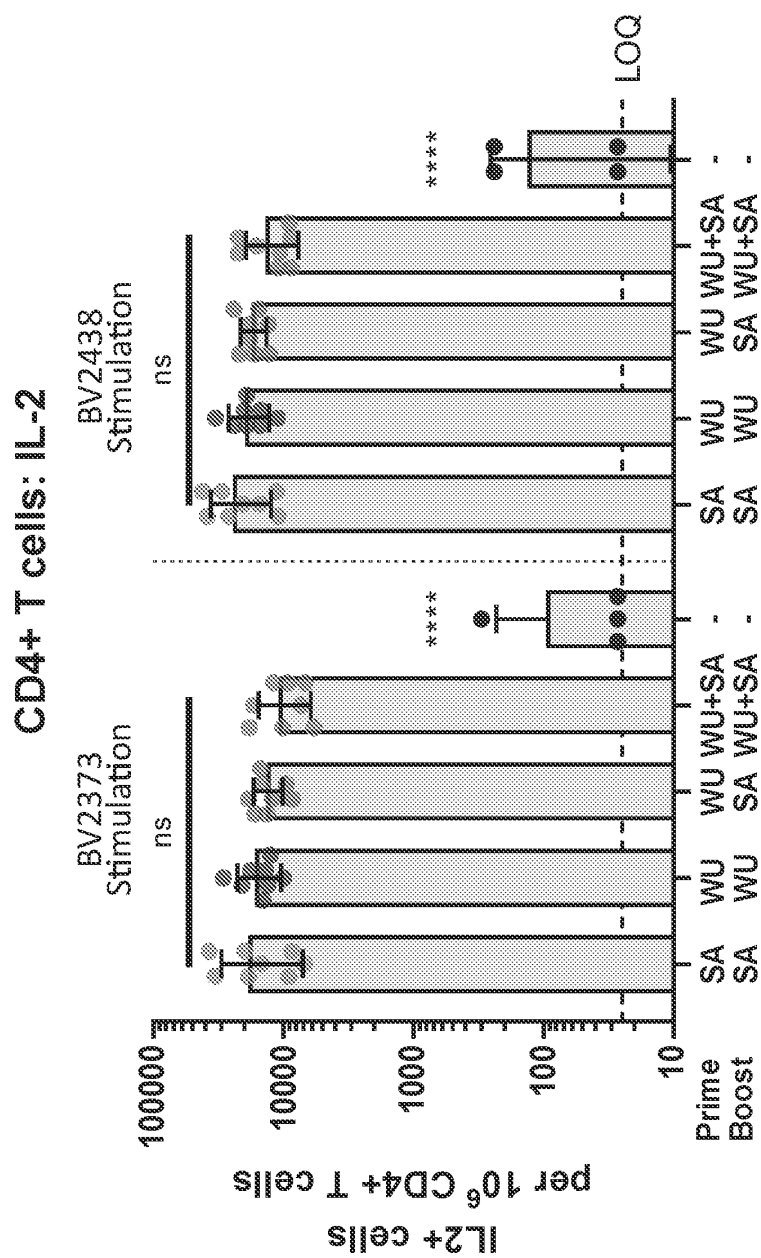


Fig. 57D

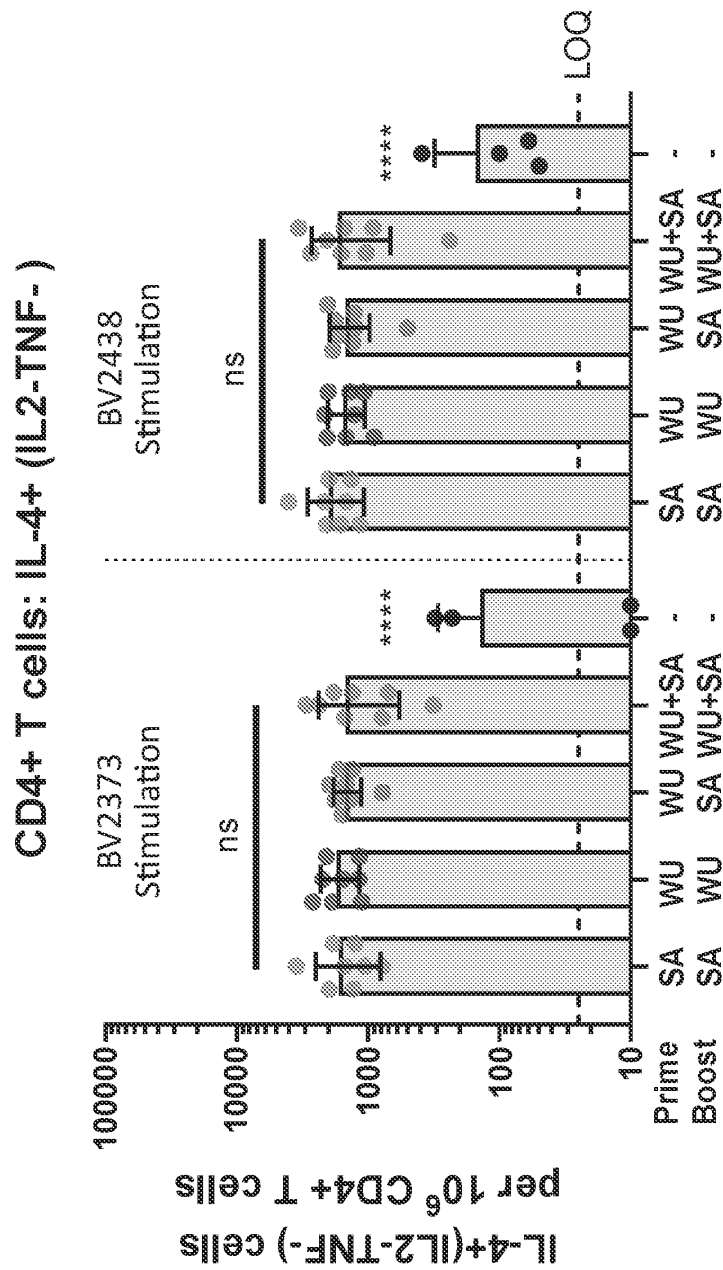


Fig. 57E

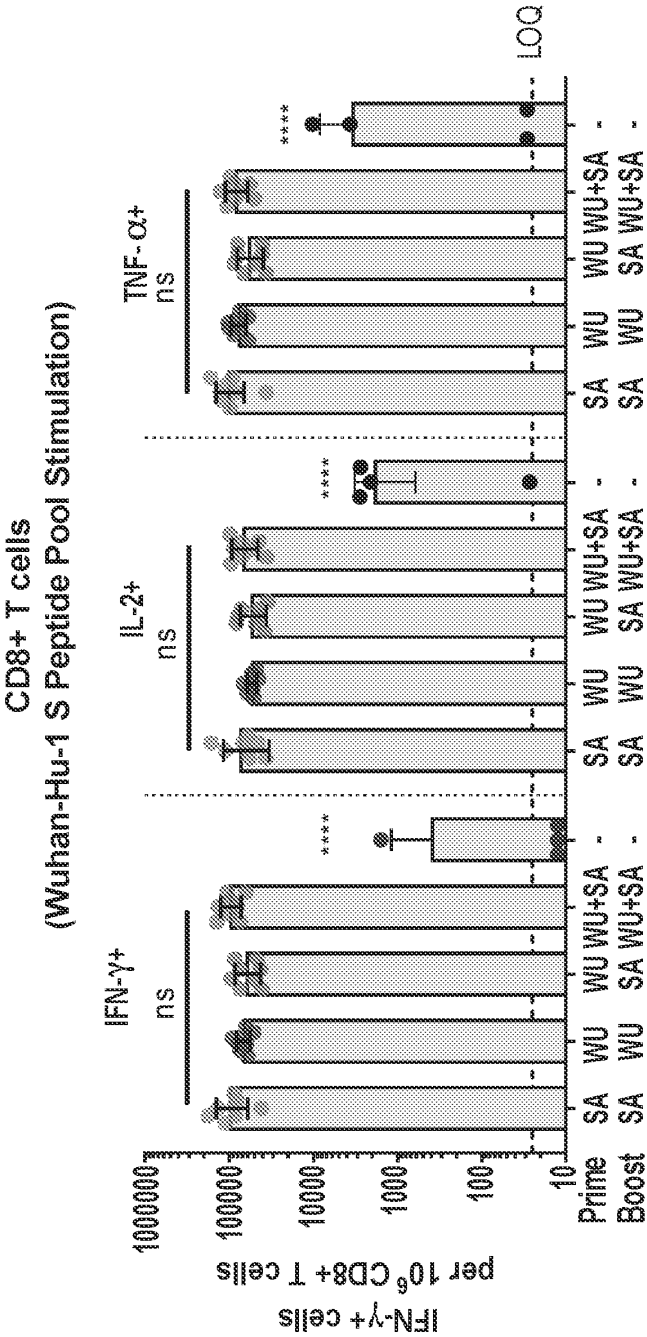


Fig. 58A

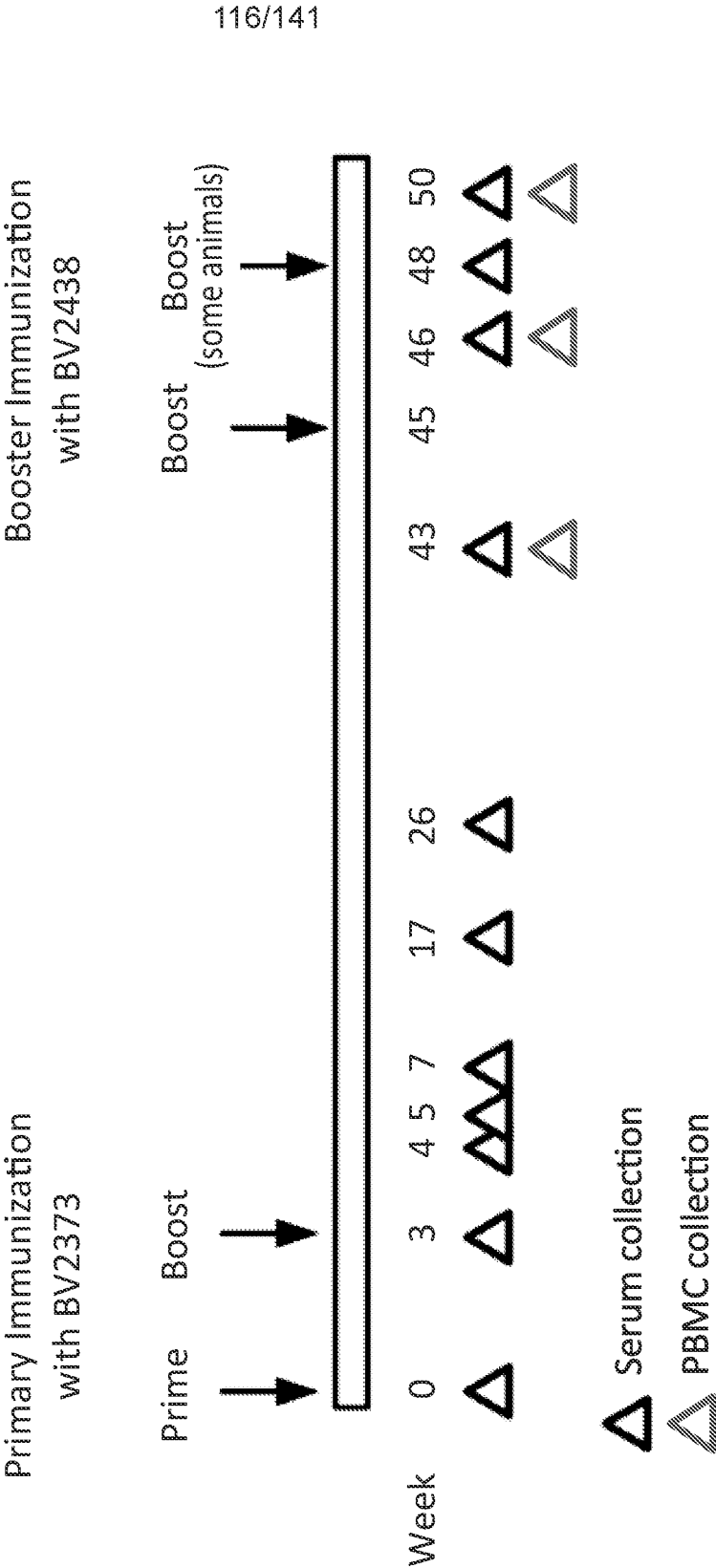
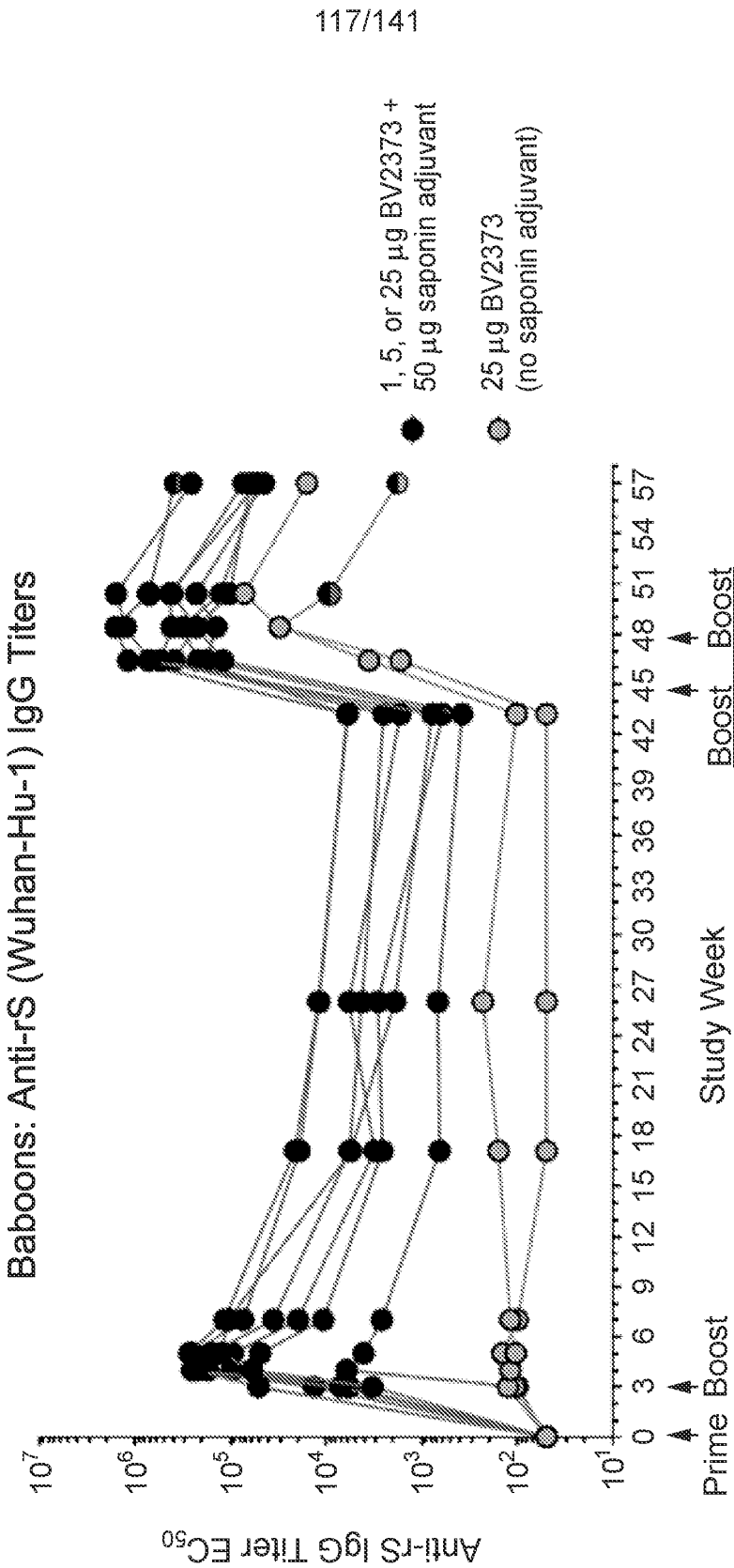
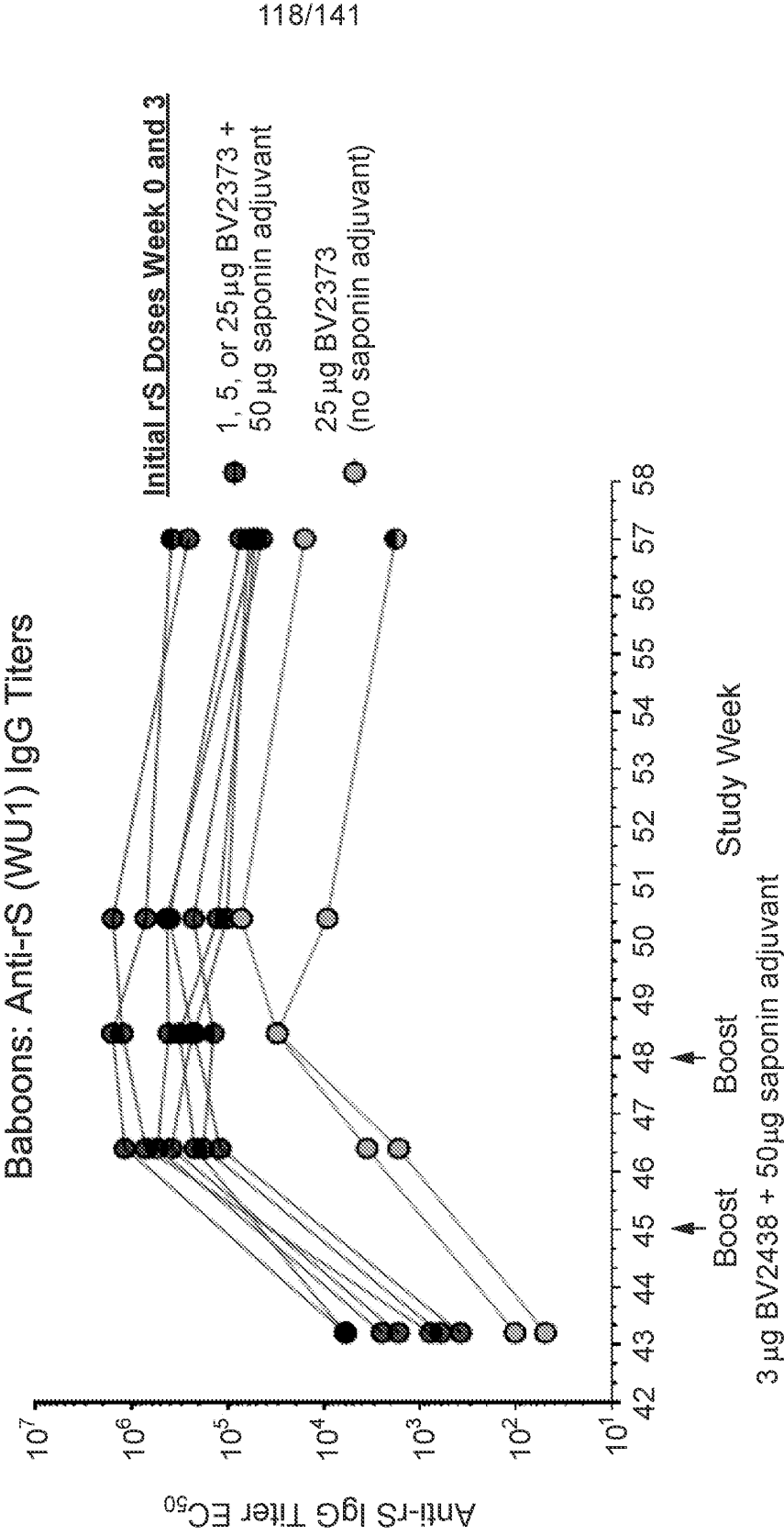


Fig. 58B



BV2373
(doses listed in figure
legend)

Fig. 58C



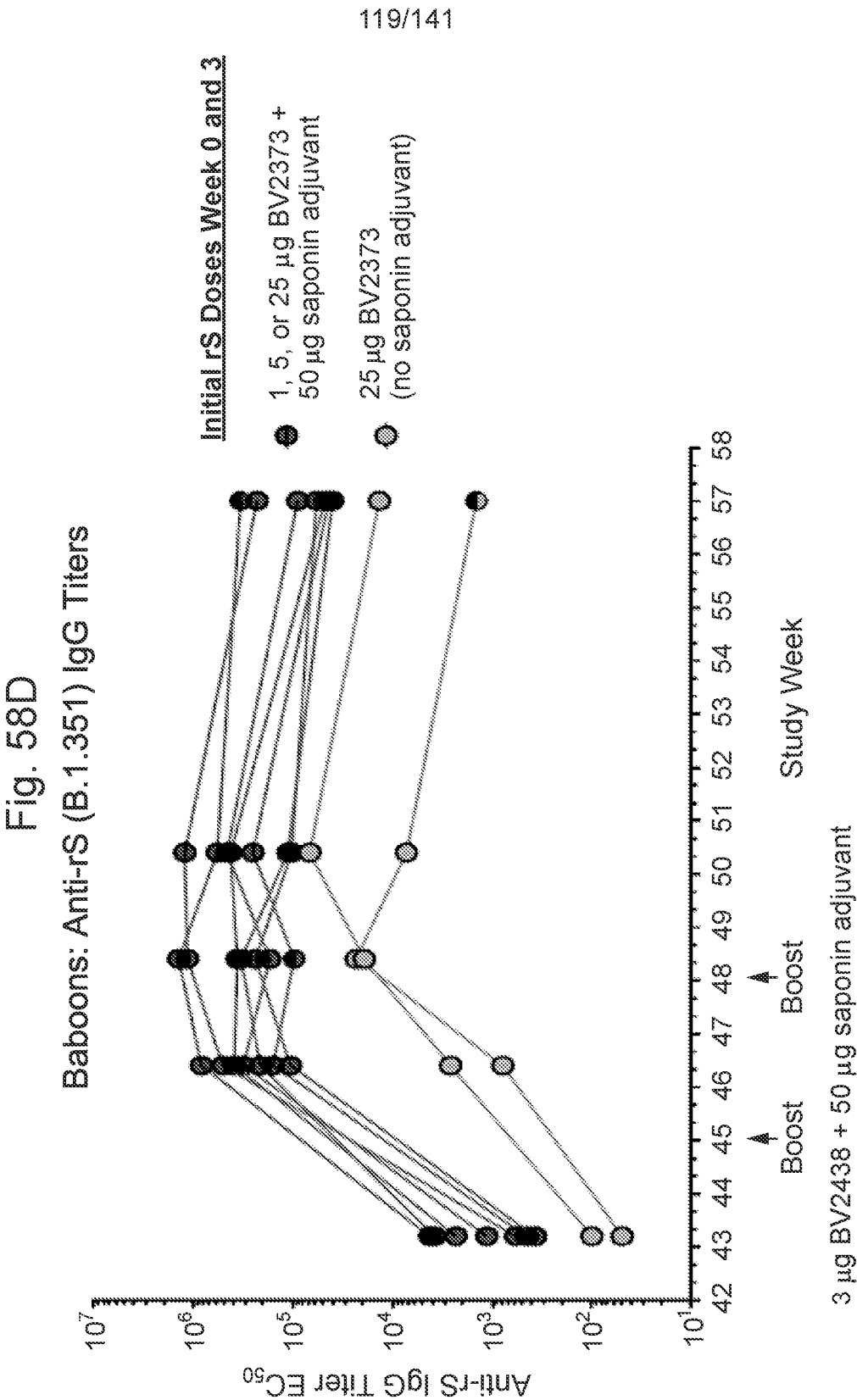


Fig. 58E

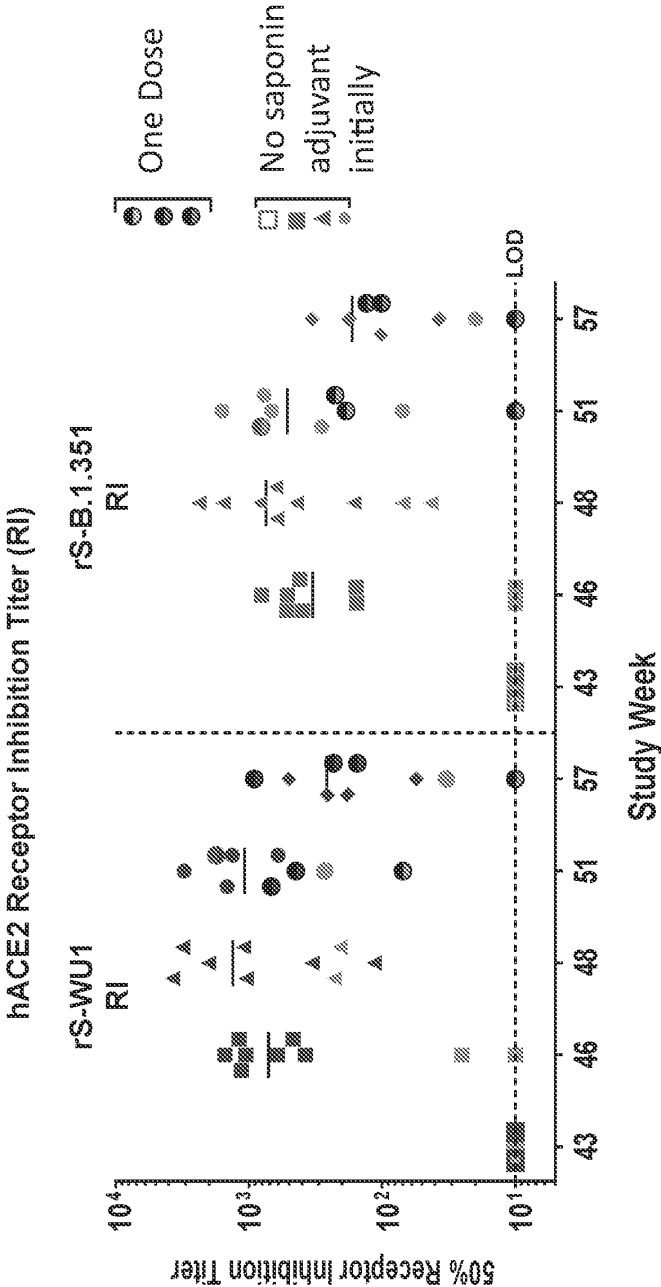


Fig. 58F

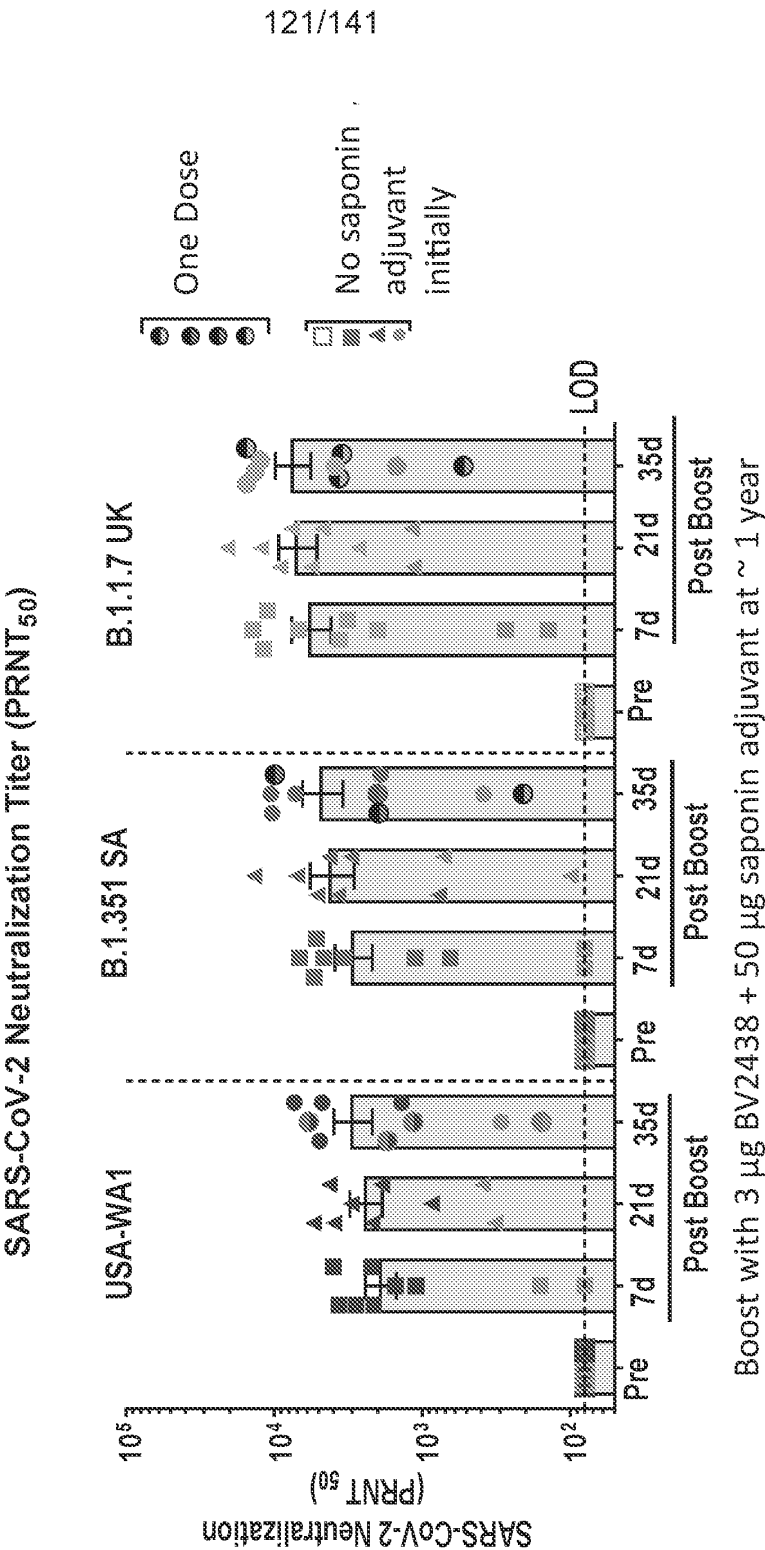
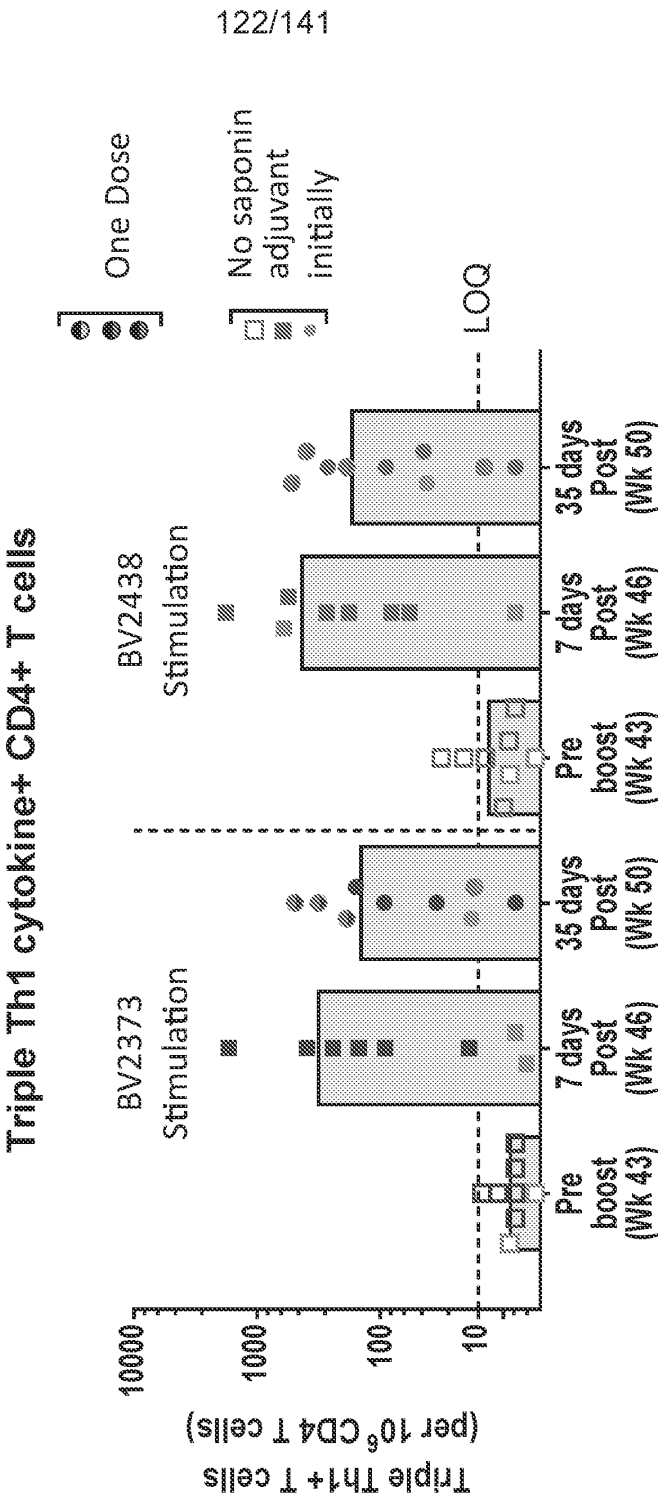


Fig. 58G



Boost with 3 µg BV2438 + 50 µg saponin adjuvant at ~ 1 year

Fig. 59A

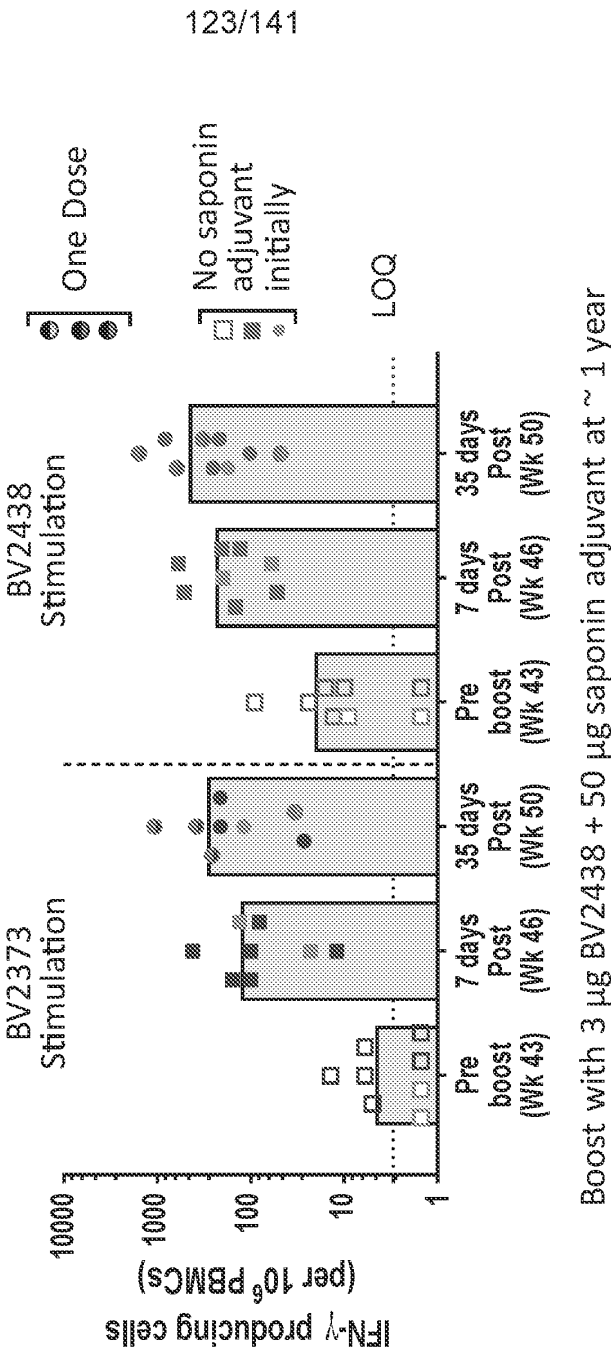
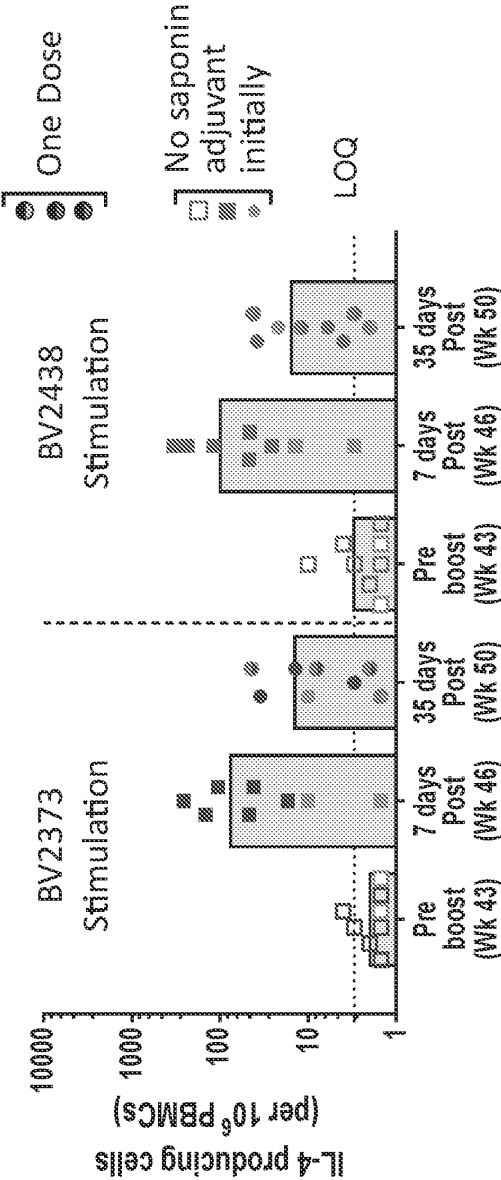


Fig. 59B



Boost with 3 μ g BV2438 + 50 μ g saponin adjuvant at ~ 1 year

Fig. 59C

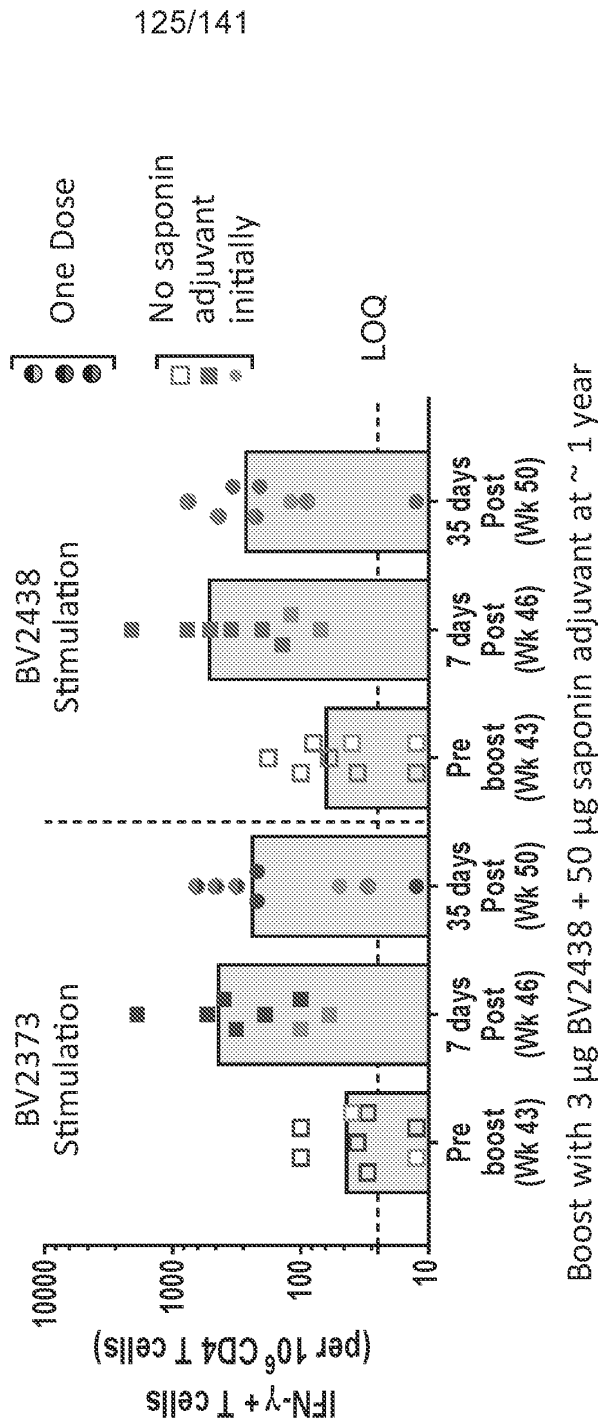
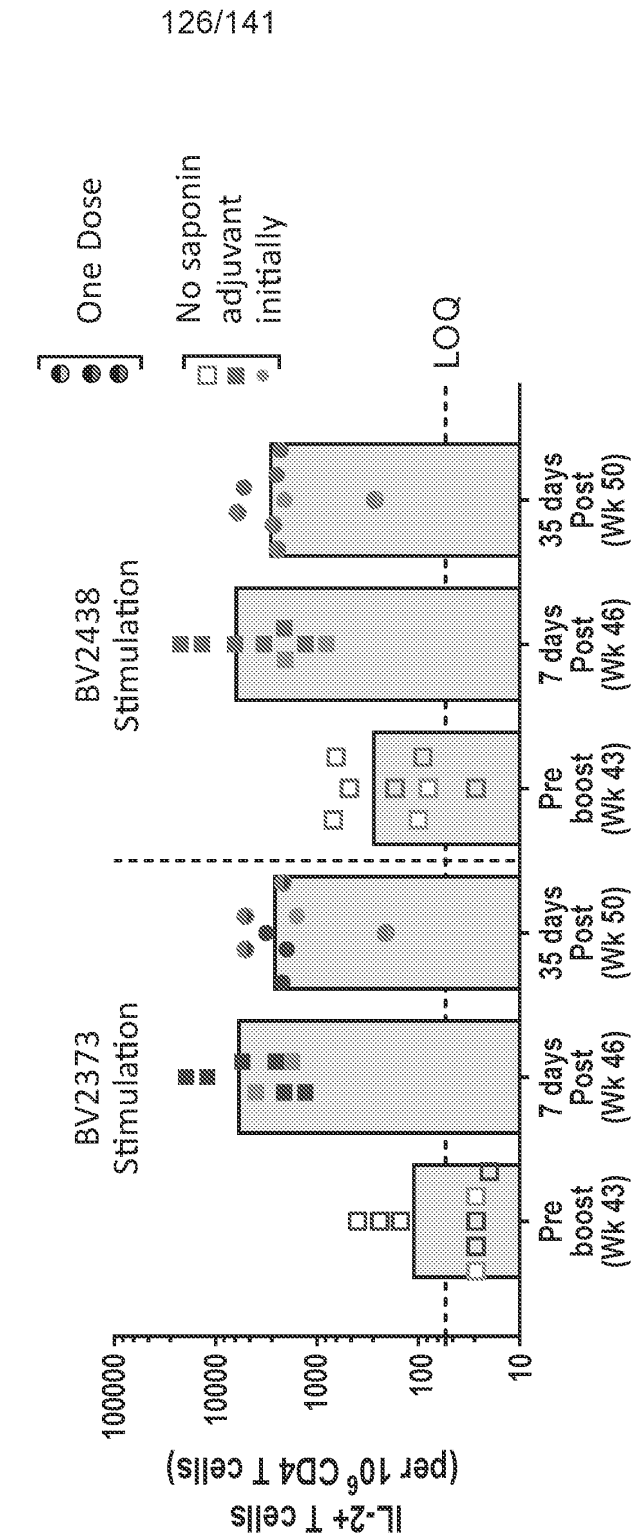
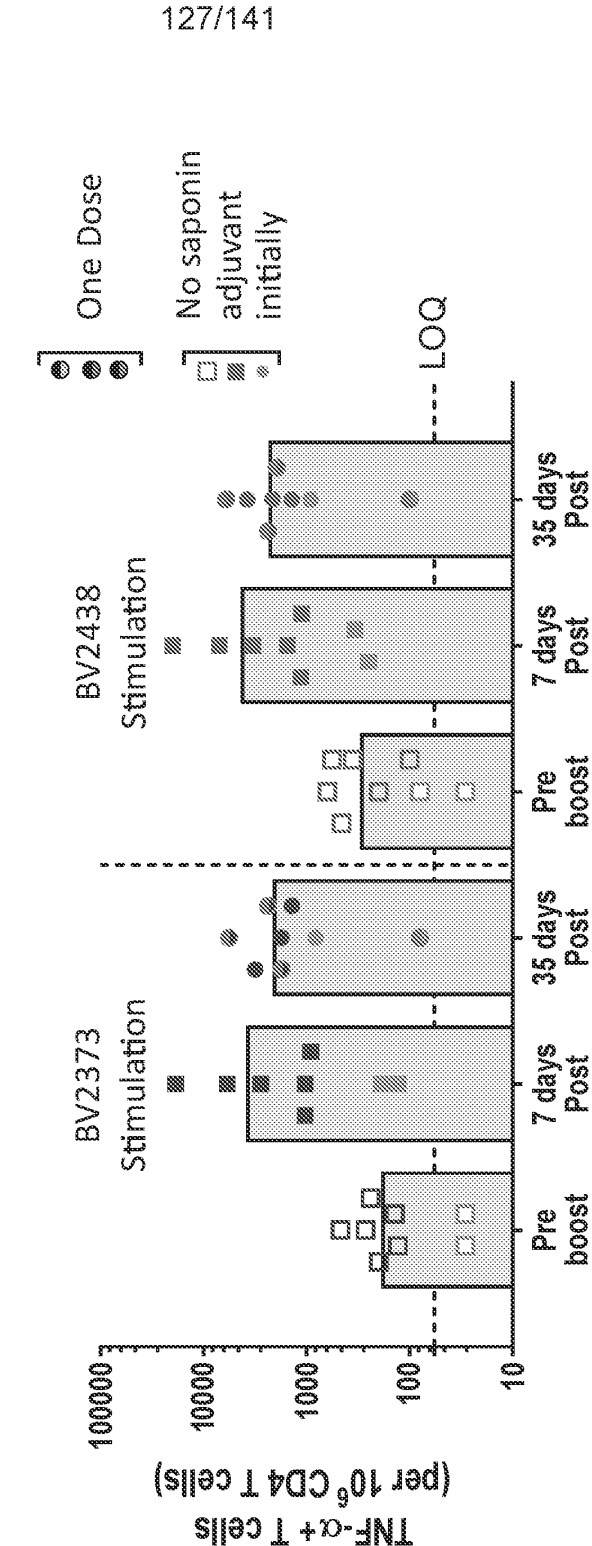


Fig. 59D



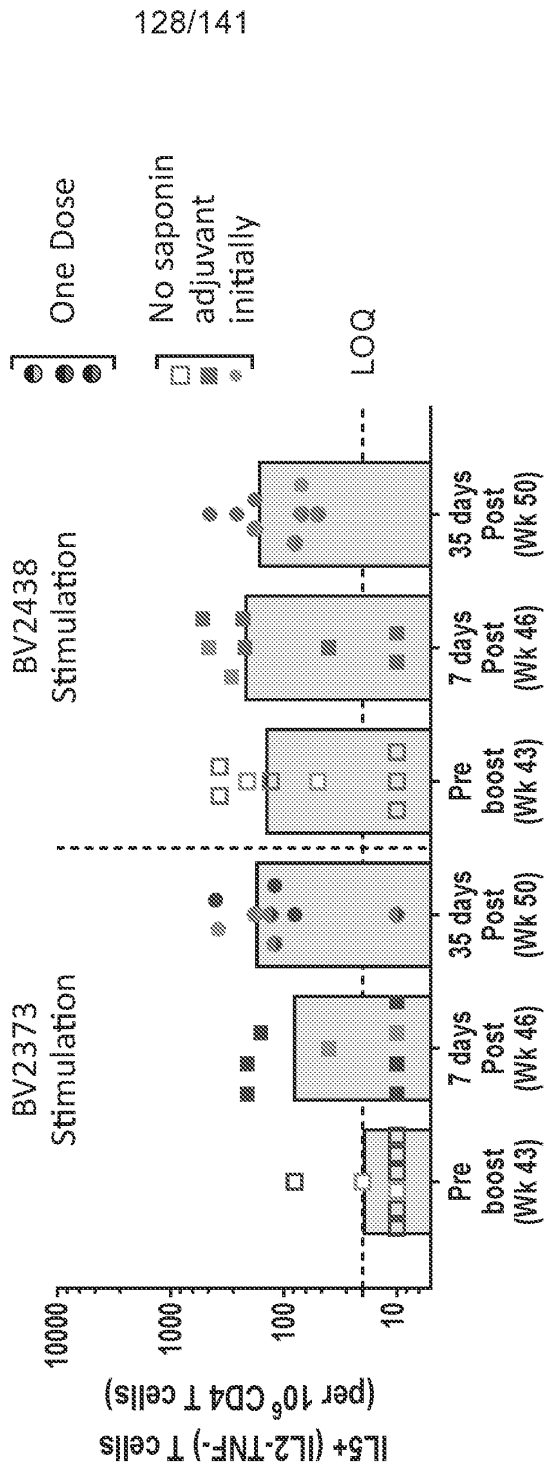
Boost with 3 μ g BV2438 + 50 μ g saponin adjuvant at ~ 1 year

Fig. 59E



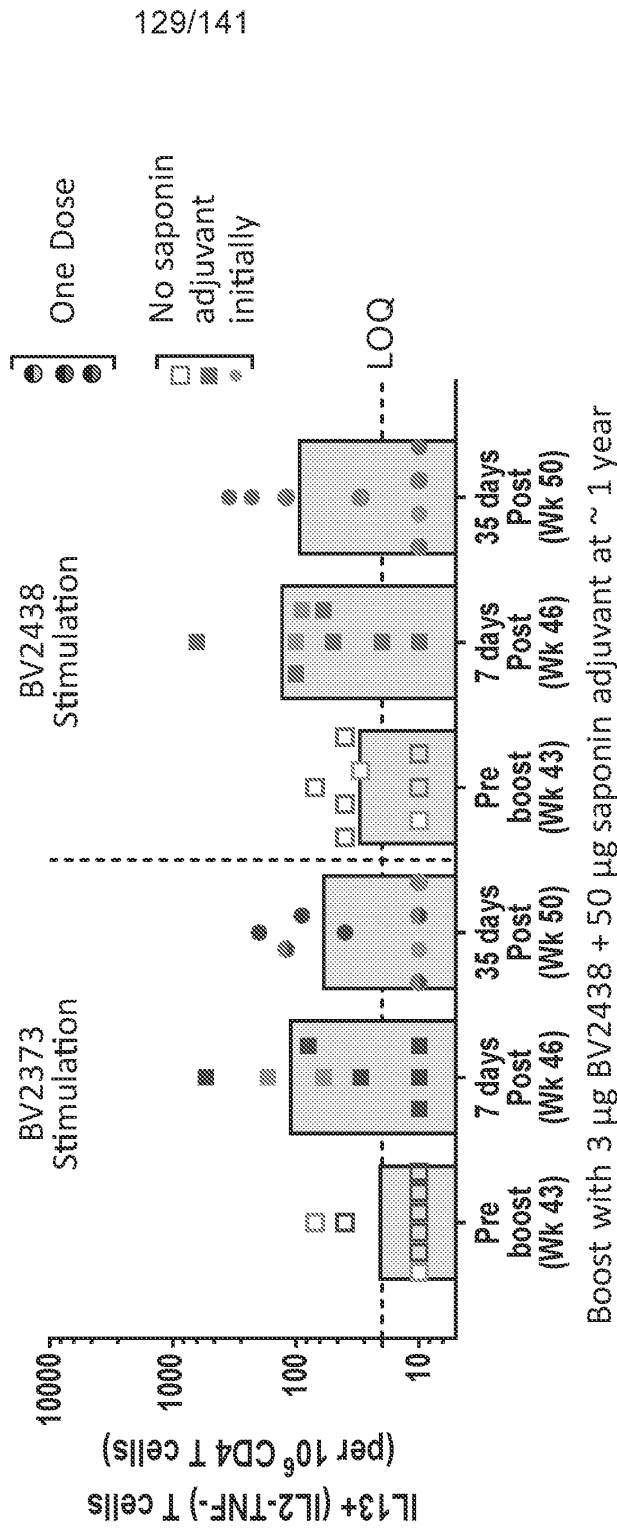
Boost with 3 μ g BV2438 + 50 μ g saponin adjuvant at ~ 1 year

Fig. 59F



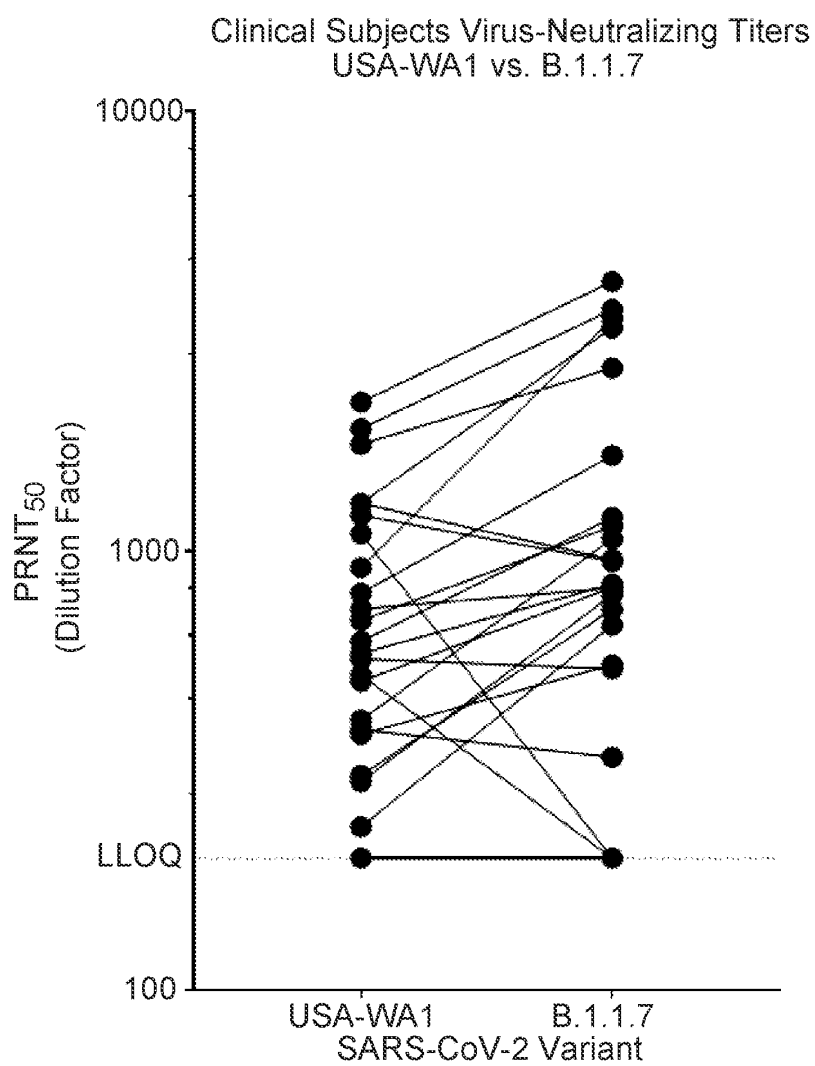
Boost with 3 µg BV2438 + 50 µg saponin adjuvant at ~ 1 year

Fig. 59G



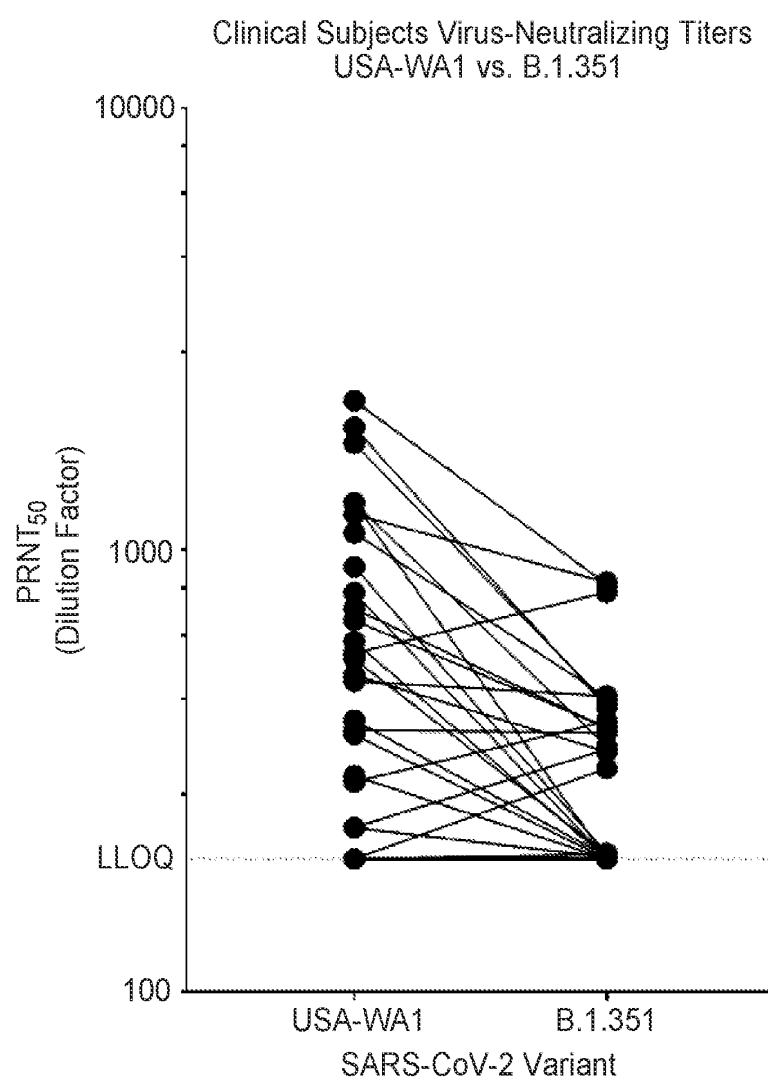
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Fig. 60A



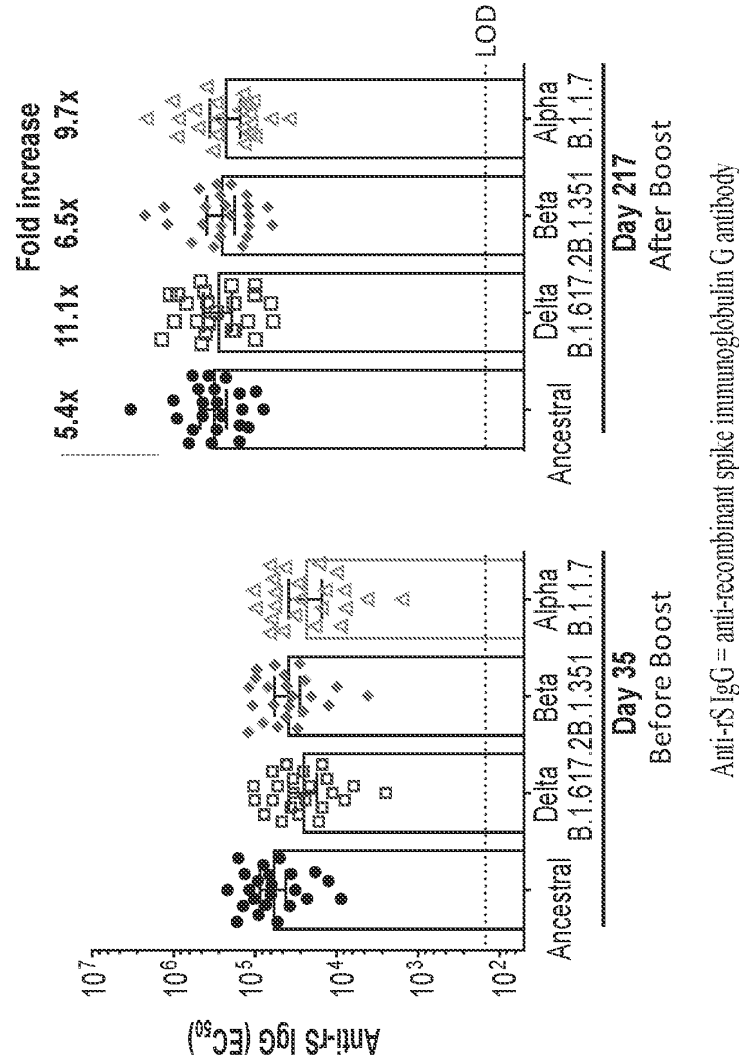
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Fig. 60B



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Fig. 61A



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Fig. 62A

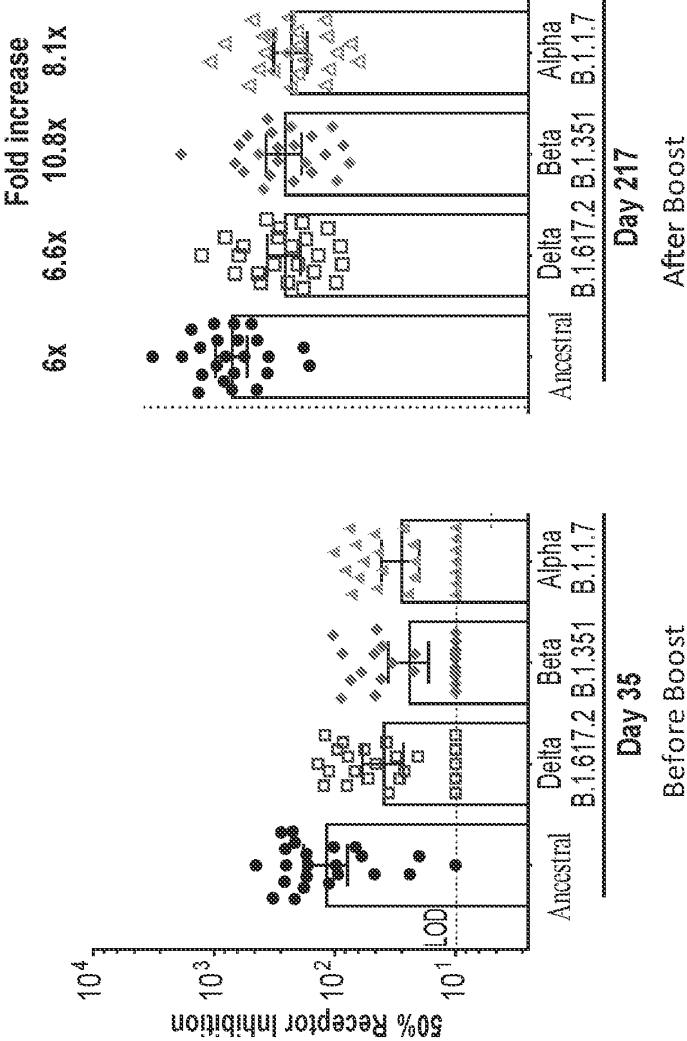
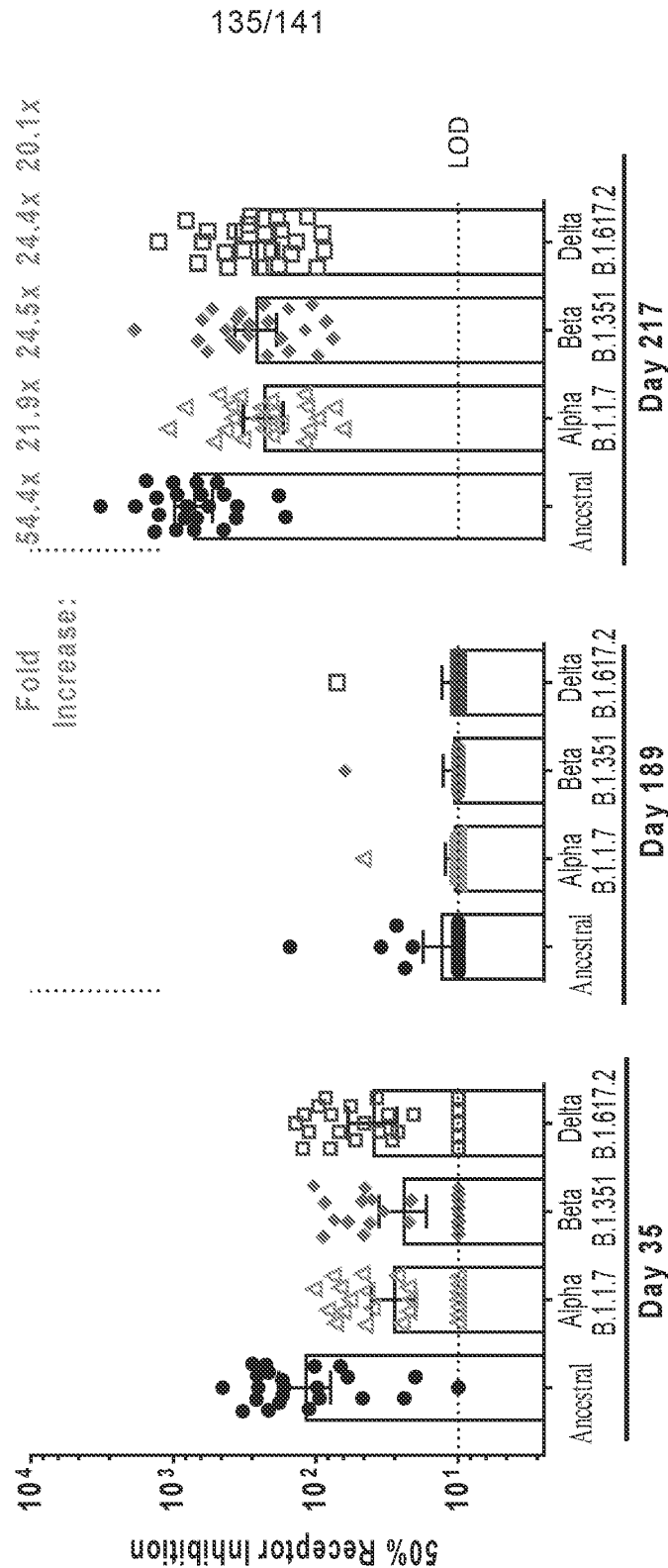


Fig. 62B



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Fig. 63

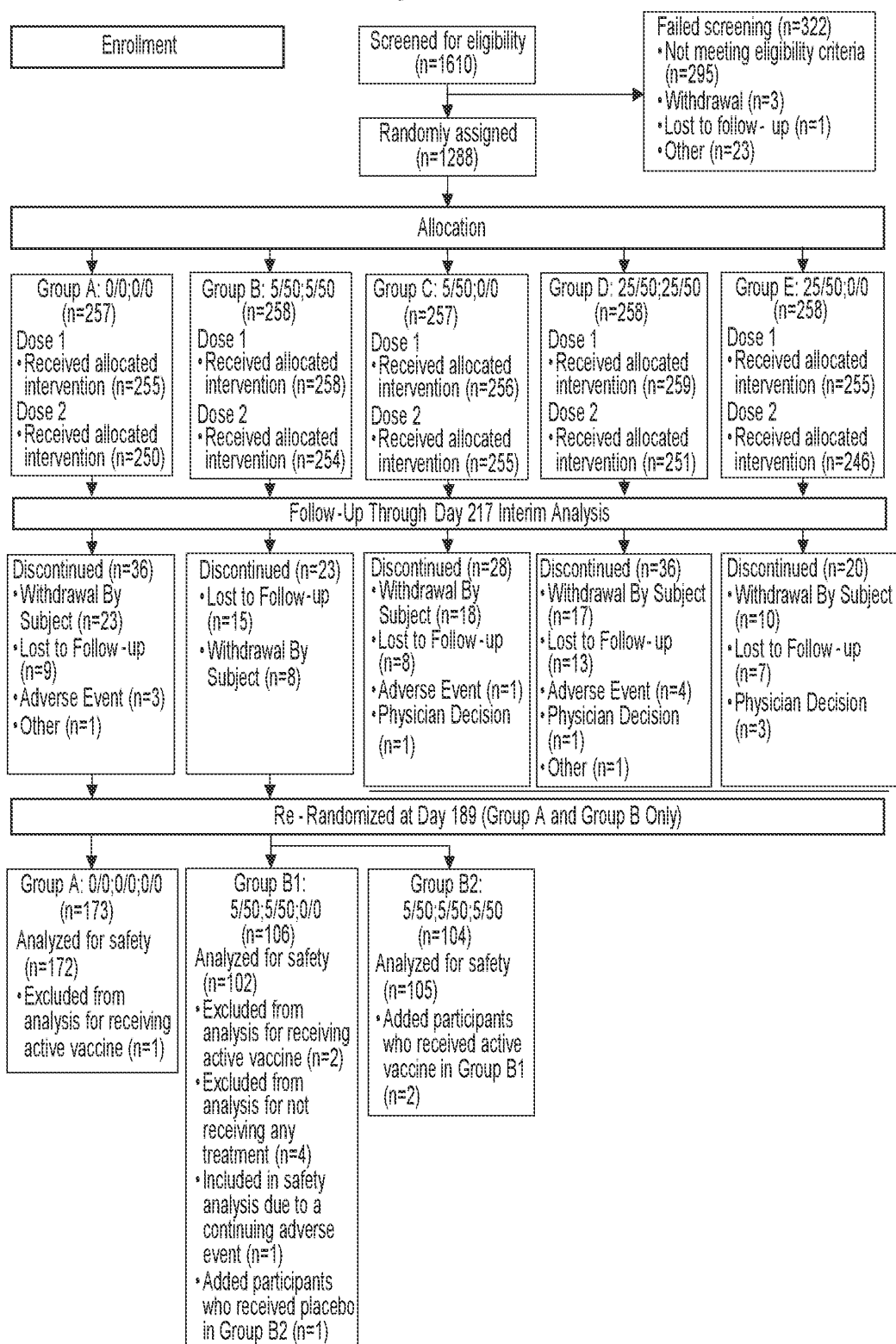


Fig. 64A

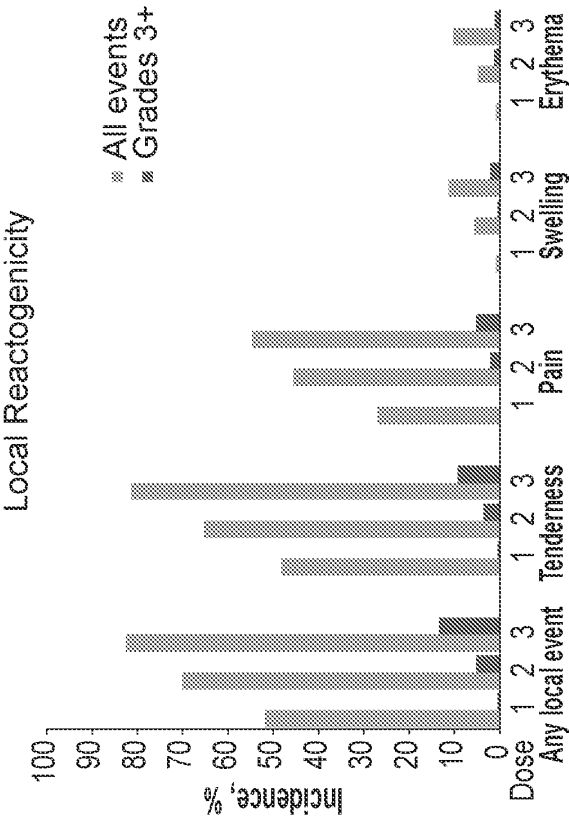
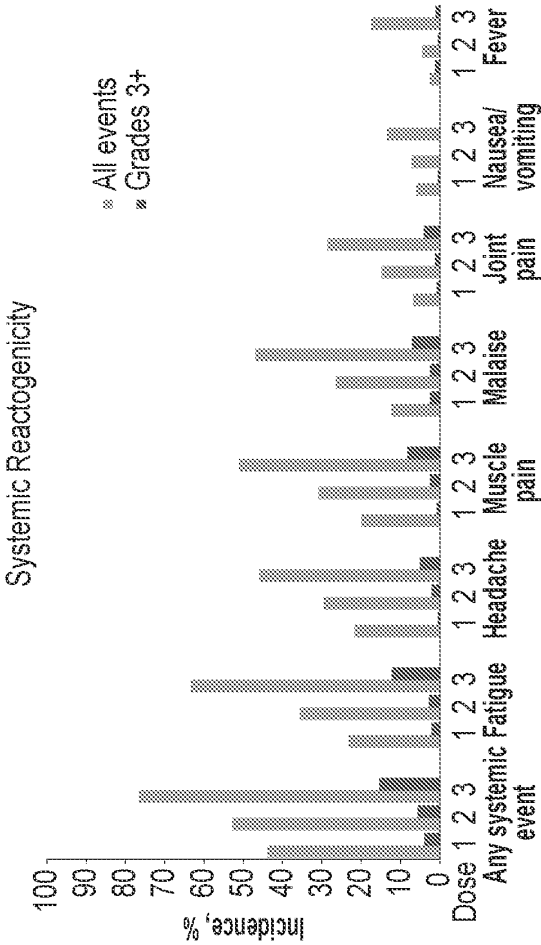


Fig. 64B



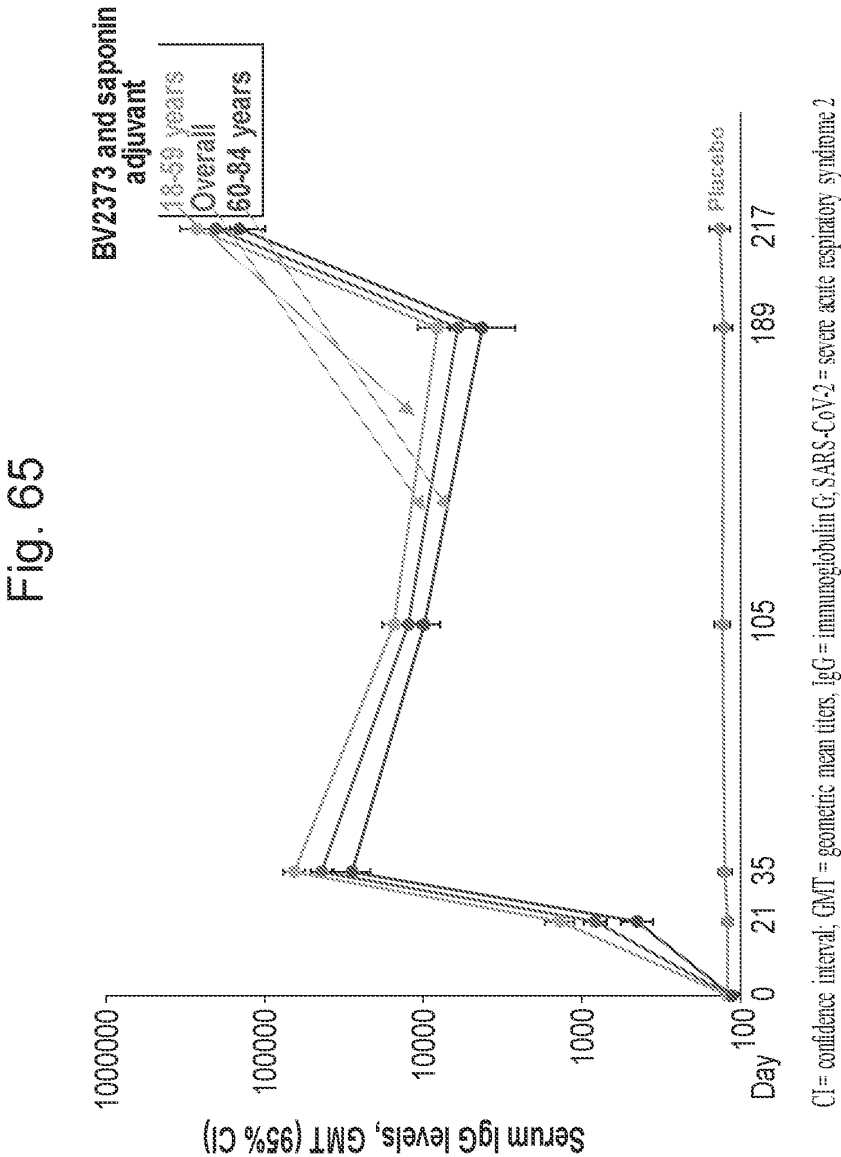


Fig. 66

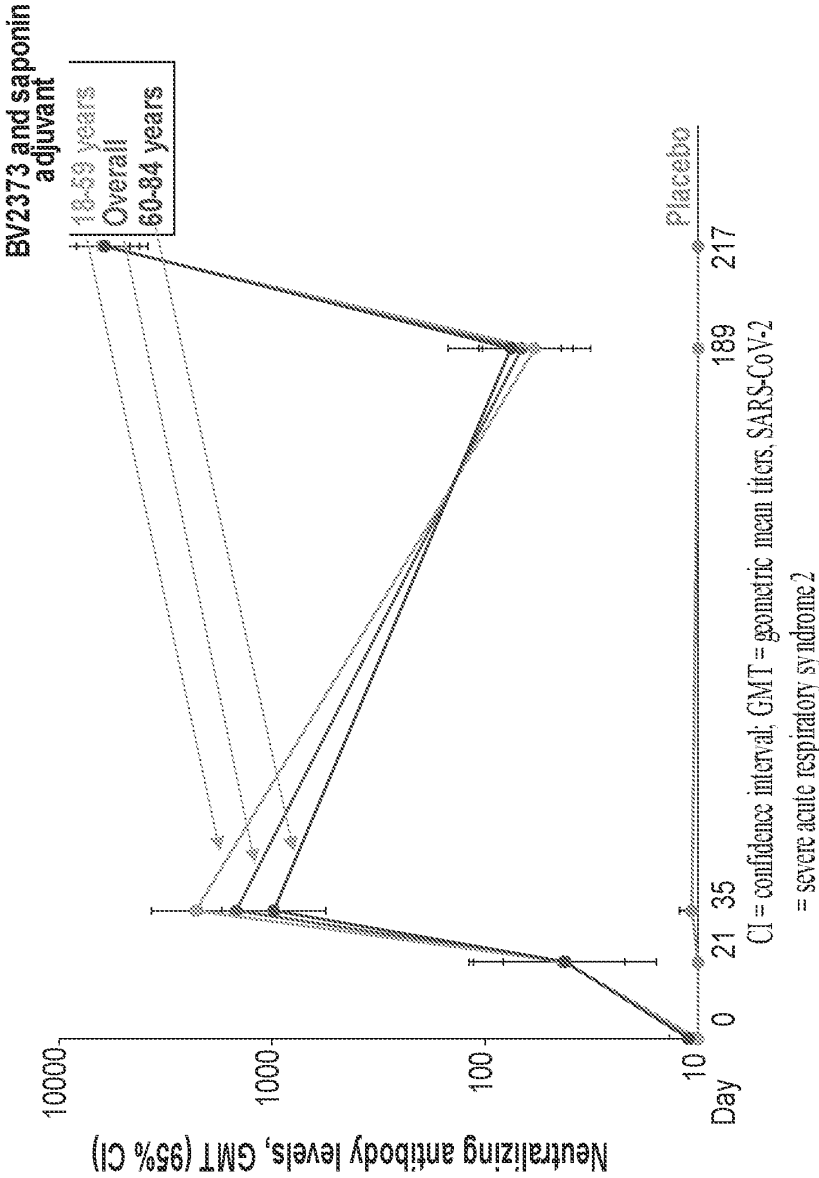


Fig. 67

