

Numbering according to Kabat (VH)	Numbering according to Chotia (VH)	Aho numbering	IMGT
11	11	12	12
14	14	15	15
41	41	48	46
42	42	49	47
87	87	101	99
89	89	103	101
108	108	144	---
110	110	146	---
112	112	148	---
Source: http://www.bioc.uzh.ch/plueckthun/antibody/Numbering/NumFrame.html			

FIG.1

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SEQ ID NO	Description	Sequence
1	Reference A WO 2008/071447, SEQ ID NO:1306 (11F01)	EVQLVESGGGLVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTAVYYCAAEMSGISGWDYWGQGTQVTVSS
2	CDR1 (Kabat)	FYGMG
3	CDR2 (Kabat)	DIRTSAGRTYYADSVKG
4	CDR3 (Kabat/Abm)	EMSGISGWDY
5	CDR1 (Abm)	GGTFSFYGMG
6	CDR2 (Abm)	DIRTSAGRTY
7	CDR3 (Kabat/Abm)	EMSGISGWDY
8	Reference A (89T)	EVQLVESGGGLVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTATYYCAAEMSGISGWDYWGQGTQVTVSS
9	Reference A (11V + 110K)	EVQLVESGGGVVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTAVYYCAAEMSGISGWDYWGQGTQVKVSS
10	Reference A (11V + 110Q)	EVQLVESGGGVVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTAVYYCAAEMSGISGWDYWGQGTQVQVSS
11	Reference A (11V + 112K)	EVQLVESGGGVVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTAVYYCAAEMSGISGWDYWGQGTQVTVKS
12	Reference A (11V + 112Q)	EVQLVESGGGVVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTAVYYCAAEMSGISGWDYWGQGTQVTVQS
13	Reference A (89L + 110K)	EVQLVESGGGLVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVKVSS

FIG.2-1

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SEQ ID NO	Description	Sequence
14	Reference A (89L + 110Q)	EVQLVESGGGLVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVQVSS
15	Reference A (89L + 112K)	EVQLVESGGGLVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVKS
16	Reference A (89L + 112Q)	EVQLVESGGGLVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVQS
17	Reference A (11V + 89L)	EVQLVESGGGVVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVSS
18	Reference A (11V + 89L + 110K)	EVQLVESGGGVVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVKVSS
19	Reference A (11V + 89L + 110Q)	EVQLVESGGGVVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVQVSS
20	Reference A (11V + 89L + 112K)	EVQLVESGGGVVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVKS
21	Reference A (11V + 89L + 112Q)	EVQLVESGGGVVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVQS
22	CTLA4 binding moiety/binder	EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTQVTVSS
23	CTLA4 binding moiety/binder	EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEREFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTQVTVSS

FIG.2-2

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SEQ ID NO	Description	Sequence
24	CTLA4 binding moiety/binder	DVQLVESGGGVVQPGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTQVTVSS
25	CTLA4 binding moiety/binder	DVQLVESGGGVVQPGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEREFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTQVTVSS
26	Reference A (89T)+ A	EVQLVESGGGLVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTATYYCAAEMSGISGWDYWGQGTQVTVSSA
27	Reference A (11V + 110K)+ A	EVQLVESGGGVVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTAVYYCAAEMSGISGWDYWGQGTQVQVSSA
28	Reference A (11V + 110Q)+ A	EVQLVESGGGVVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTAVYYCAAEMSGISGWDYWGQGTQVQVSSA
29	Reference A (11V + 112K)+ A	EVQLVESGGGVVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTAVYYCAAEMSGISGWDYWGQGTQVTVKSA
30	Reference A (11V + 112Q)+ A	EVQLVESGGGVVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTAVYYCAAEMSGISGWDYWGQGTQVTVQSA
31	Reference A (89L + 110K)+ A	EVQLVESGGGLVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVQVSSA
32	Reference A (89L + 110Q)+ A	EVQLVESGGGLVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVQVSSA
33	Reference A (89L + 112K)+A	EVQLVESGGGLVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVKSA

FIG.2-3

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SEQ ID NO	Description	Sequence
34	Reference A (89L + 112Q)+A	EVQLVESGGGLVQAGGSLRLSCAASGDTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVQSA
35	Reference A (11V + 89L)+ A	EVQLVESGGGVVQAGGSLRLSCAASGDTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVSSA
36	Reference A (11V + 89L + 110K)+ A	EVQLVESGGGVVQAGGSLRLSCAASGDTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVKVSSA
37	Reference A (11V + 89L + 110Q)+ A	EVQLVESGGGVVQAGGSLRLSCAASGDTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVQVSSA
38	Reference A (11V + 89L + 112K)+A	EVQLVESGGGVVQAGGSLRLSCAASGDTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVKSA
39	Reference A (11V + 89L + 112Q)+A	EVQLVESGGGVVQAGGSLRLSCAASGDTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVQSA
40	CTLA4 binding moiety/binder	EVQLVESGGGVVQPGGSLRLSCAASGDTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTLLTVSSA
41	CTLA4 binding moiety/binder	EVQLVESGGGVVQPGGSLRLSCAASGDTFSFYGMGWFRRQAP GKEREFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTLLTVSSA
42	CTLA4 binding moiety/binder	DVQLVESGGGVVQPGGSLRLSCAASGDTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTLLTVSSA
43	CTLA4 binding moiety/binder	DVQLVESGGGVVQPGGSLRLSCAASGDTFSFYGMGWFRRQAP GKEREFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTLLTVSSA

FIG.2-4

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SEQ ID NO	Description	Sequence
44	HIS6-FLAG3 tag	HHHHHHGAADYKDHDGDYKDHDIDYKDDDDKGAA
45	C-terminal end	VTVKS
46	C-terminal end	VTVQS
47	C-terminal end	VKVSS
48	C-terminal end	VQVSS
49	C-terminal end	VTVKSX(n)
50	C-terminal end	VTVQSX(n)
51	C-terminal end	VKVSSX(n)
52	C-terminal end	VQVSSX(n)
53	C-terminal end	VTVKSA
54	C-terminal end	VTVQSA
55	C-terminal end	VKVSSA
56	C-terminal end	VQVSSA
57	C-terminal end	VTVSS
58	C-terminal end	VTVSSX(n)
59	C-terminal end	VTVSSA

FIG.2-5

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		20	40	60
SEQIDNO:1	EVQLVESGGG	LVQAGGSLRL	SCAASGGTFS	FYGMGWFRQA PGKEQEFVAD IRTSAGRITYY 60
SEQIDNO:8				 60
SEQIDNO:9		V.....		 60
SEQIDNO:10		V.....		 60
SEQIDNO:11		V.....		 60
SEQIDNO:12		V.....		 60
SEQIDNO:13				 60
SEQIDNO:14				 60
SEQIDNO:15				 60
SEQIDNO:16				 60
SEQIDNO:17		V.....		 60
SEQIDNO:18		V.....		 60
SEQIDNO:19		V.....		 60
SEQIDNO:20		V.....		 60
SEQIDNO:21		V.....		 60
SEQIDNO:22		V..P.....		 60
SEQIDNO:23		V..P.....	R.....	 60
SEQIDNO:24	D.....	V..P.....		 60
SEQIDNO:25	D.....	V..P.....	R.....	 60
SEQIDNO:26				 60
SEQIDNO:27		V.....		 60
SEQIDNO:28		V.....		 60
SEQIDNO:29		V.....		 60
SEQIDNO:30		V.....		 60
SEQIDNO:31				 60
SEQIDNO:32				 60
SEQIDNO:33				 60
SEQIDNO:34				 60
SEQIDNO:35		V.....		 60
SEQIDNO:36		V.....		 60
SEQIDNO:37		V.....		 60
SEQIDNO:38		V.....		 60
SEQIDNO:39		V.....		 60
SEQIDNO:40		V..P.....		 60
SEQIDNO:41		V..P.....	R.....	 60
SEQIDNO:42	D.....	V..P.....		 60
SEQIDNO:43	D.....	V..P.....	R.....	 60

FIG.3A

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		80		100		120	
SEQIDNO:1	ADSVKGRFTI	SRDNAKNTVY	LQMNSLKPED	TAVYYCAAEM	SGISGWDYWG	QGTQVTVSS-	119
SEQIDNO:8				..T.....			119
SEQIDNO:9						...K...	119
SEQIDNO:10						...Q...	119
SEQIDNO:11						...K...	119
SEQIDNO:12						...Q...	119
SEQIDNO:13				..L.....		...K...	119
SEQIDNO:14				..L.....		...Q...	119
SEQIDNO:15				..L.....		...K...	119
SEQIDNO:16				..L.....		...Q...	119
SEQIDNO:17				..L.....			119
SEQIDNO:18				..L.....		...K...	119
SEQIDNO:19				..L.....		...Q...	119
SEQIDNO:20				..L.....		...K...	119
SEQIDNO:21				..L.....		...Q...	119
SEQIDNO:22		..S....	R..	..L.....		...L....	119
SEQIDNO:23		..S....	R..	..L.....		...L....	119
SEQIDNO:24		..S....	R..	..L.....		...L....	119
SEQIDNO:25		..S....	R..	..L.....		...L....	119
SEQIDNO:26				..T.....		A	120
SEQIDNO:27						...K...A	120
SEQIDNO:28						...Q...A	120
SEQIDNO:29						...K...A	120
SEQIDNO:30						...Q...A	120
SEQIDNO:31				..L.....		...K...A	120
SEQIDNO:32				..L.....		...Q...A	120
SEQIDNO:33				..L.....		...K...A	120
SEQIDNO:34				..L.....		...Q...A	120
SEQIDNO:35				..L.....		A	120
SEQIDNO:36				..L.....		...K...A	120
SEQIDNO:37				..L.....		...Q...A	120
SEQIDNO:38				..L.....		...K...A	120
SEQIDNO:39				..L.....		...Q...A	120
SEQIDNO:40		..S....	R..	..L.....		...L....A	120
SEQIDNO:41		..S....	R..	..L.....		...L....A	120
SEQIDNO:42		..S....	R..	..L.....		...L....A	120
SEQIDNO:43		..S....	R..	..L.....		...L....A	120

FIG.3B



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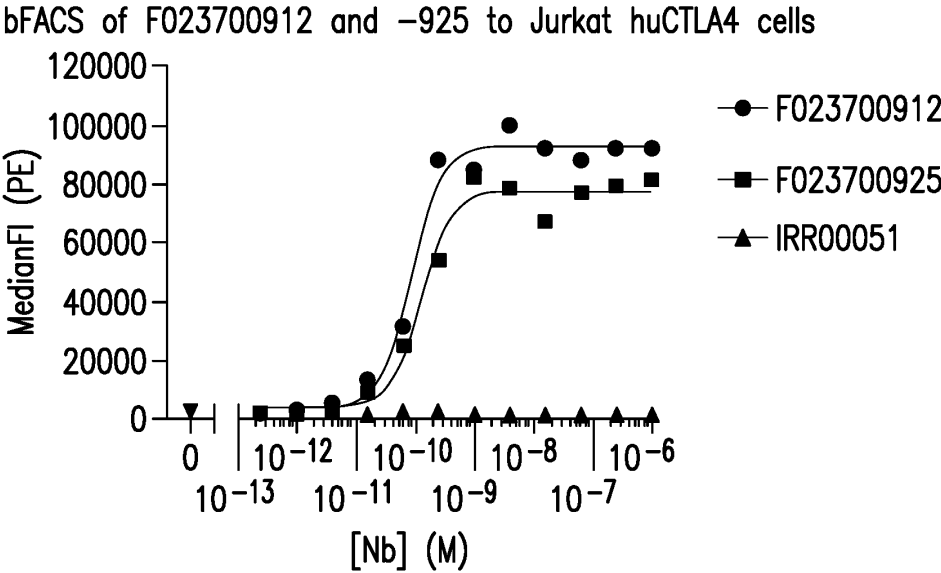


FIG.5A

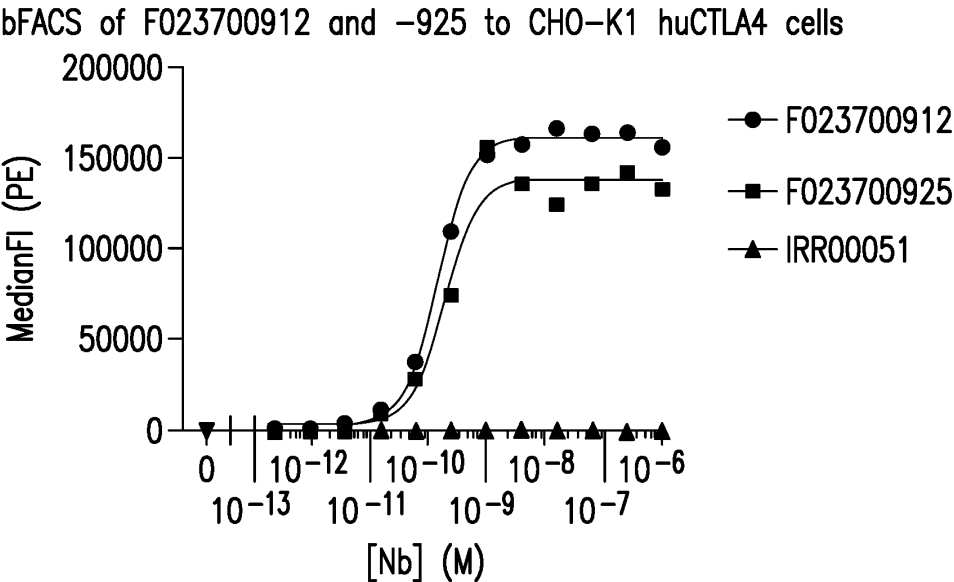


FIG.5B

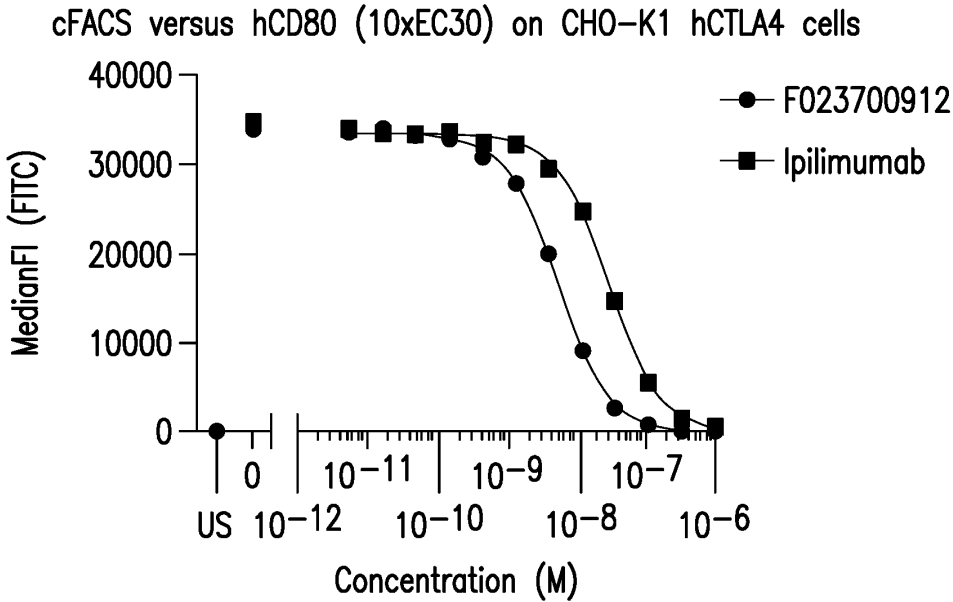


FIG.6A

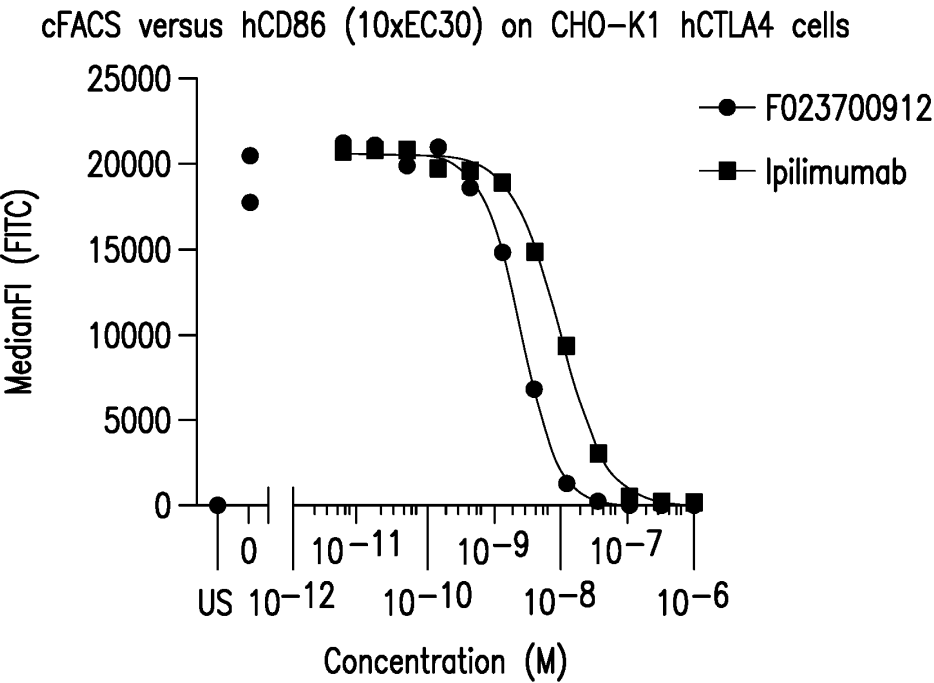


FIG.6B

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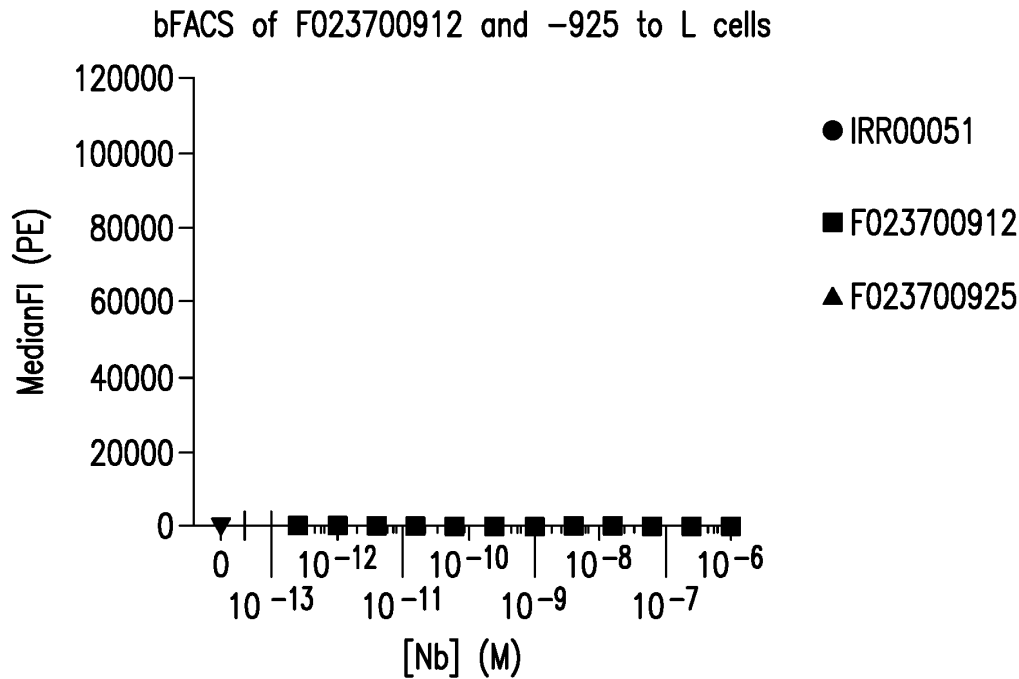


FIG.7A

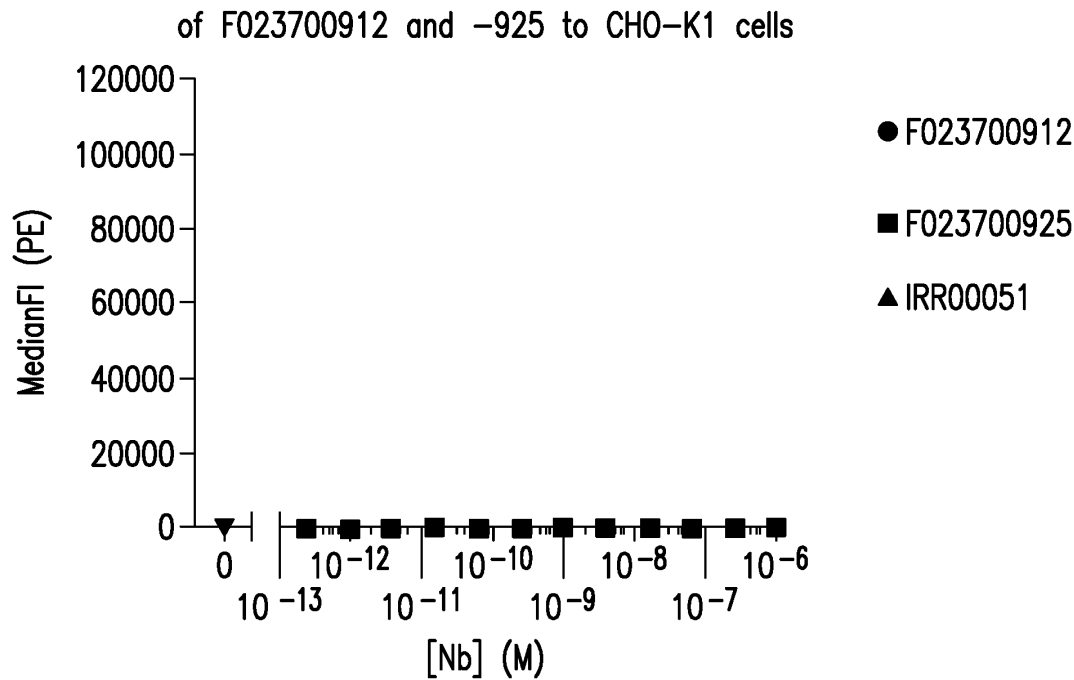


FIG.7B

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bFACS of F023700912 and -925 to L cells huCD28

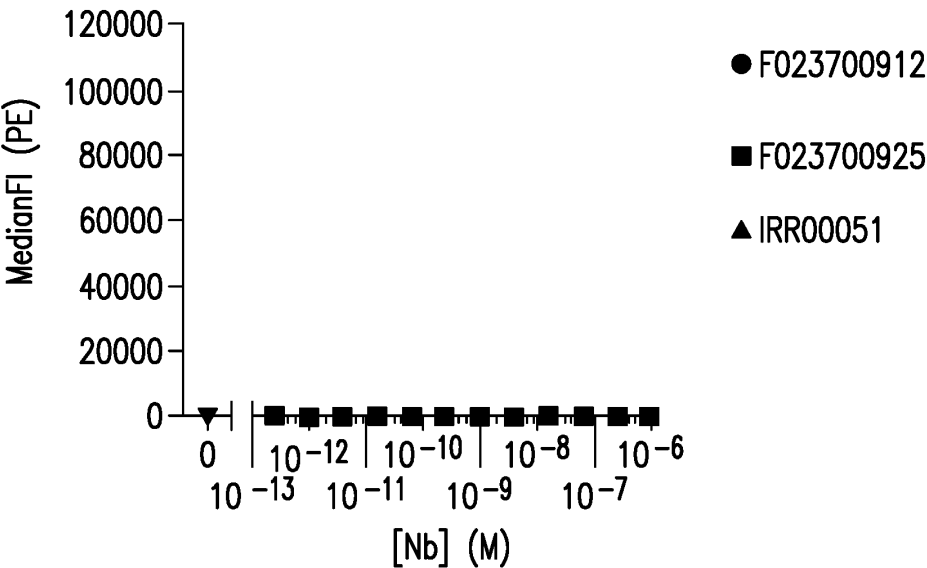


FIG.7C

bFACS of F023700912 and -925 to L cells huCD8alpha

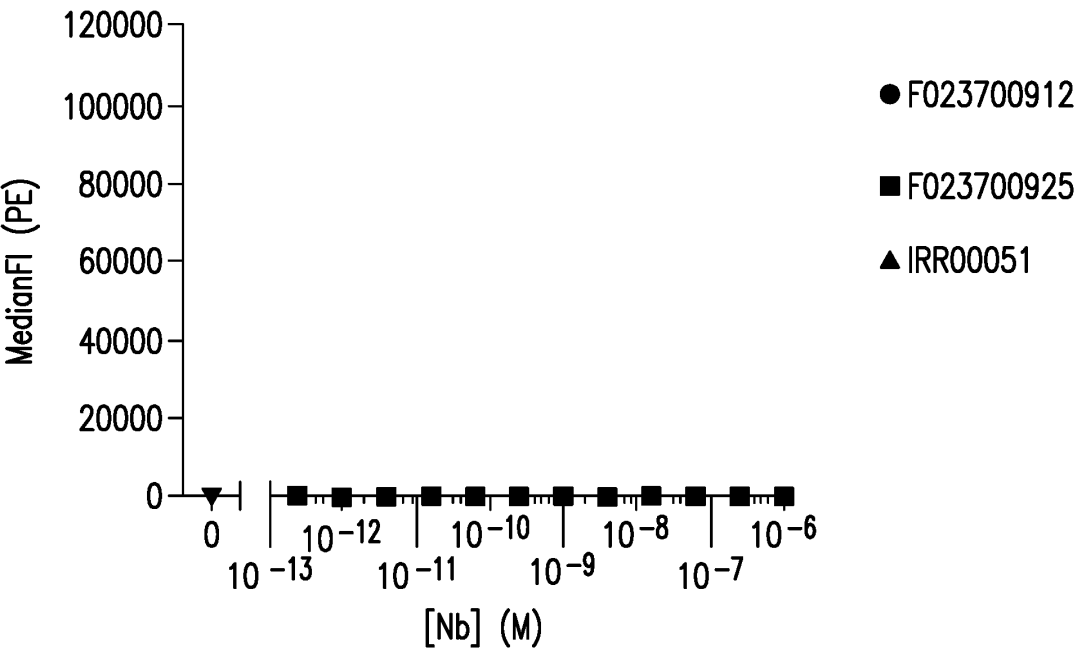


FIG.7D

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bFACS of F023700912 and -925 to CHO-K1 huLAG3 cells

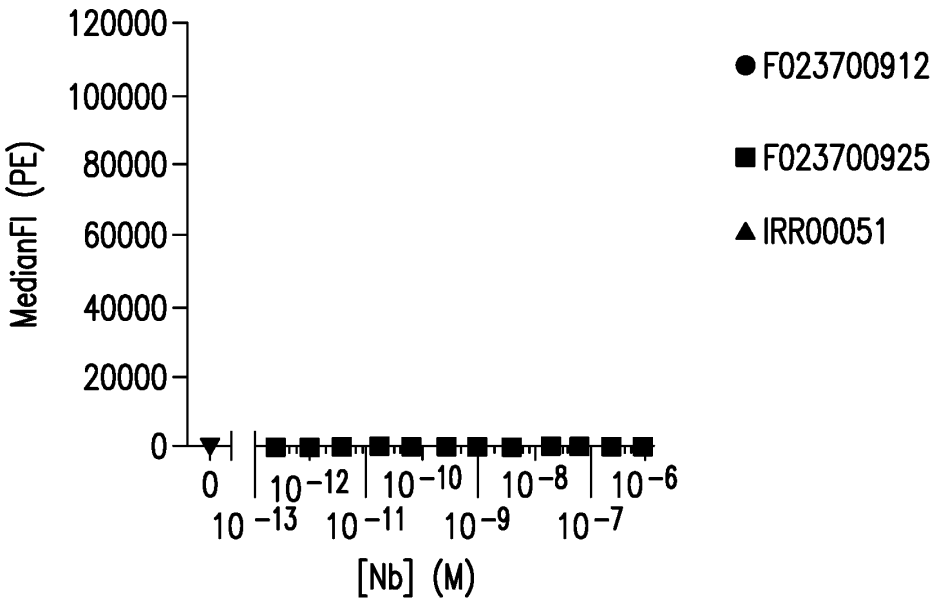


FIG.7E

bFACS of F023700912 and -925 to CHO-K1 huBTLA cells

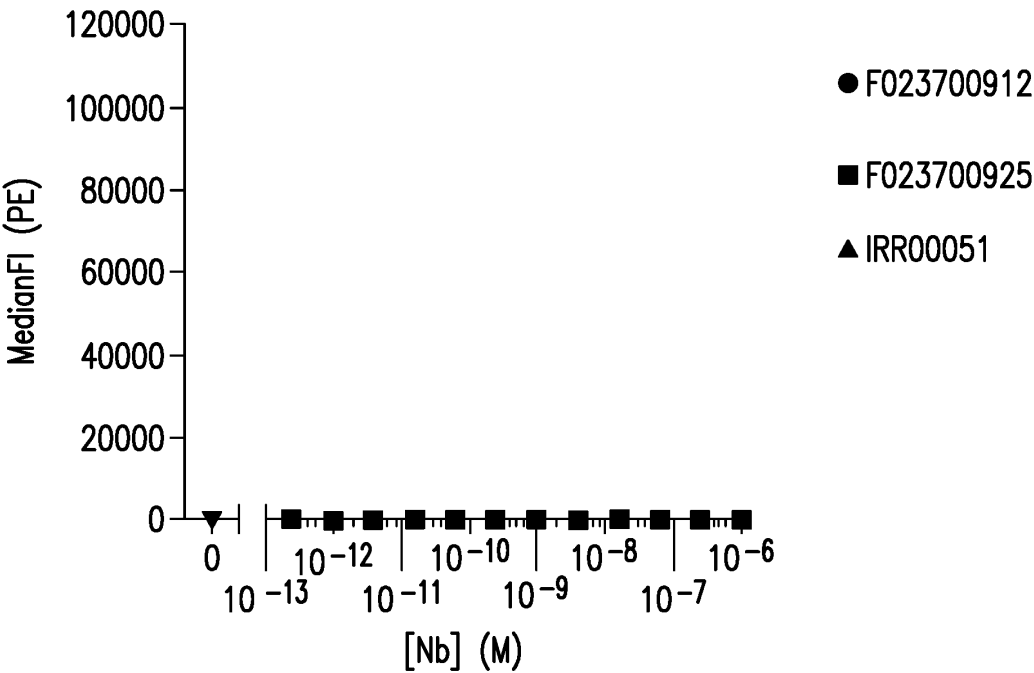


FIG.7F

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bFACS of F023700912 and -925 to CHO-K1 huCTLA4 cells

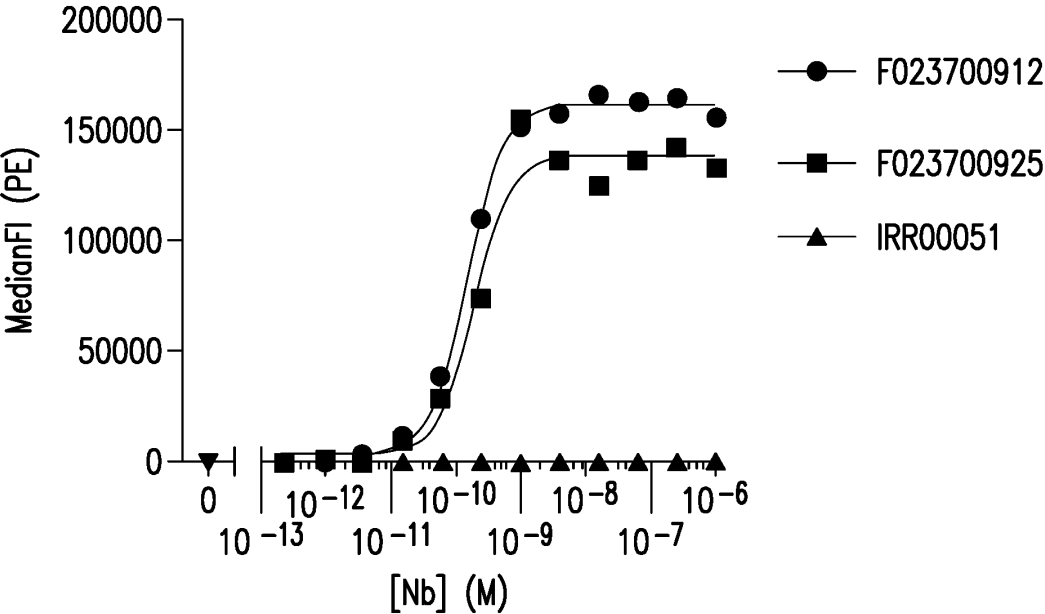


FIG.7G

bFACS of F023700912 and -925 to CHO-K1 huPD1 cells

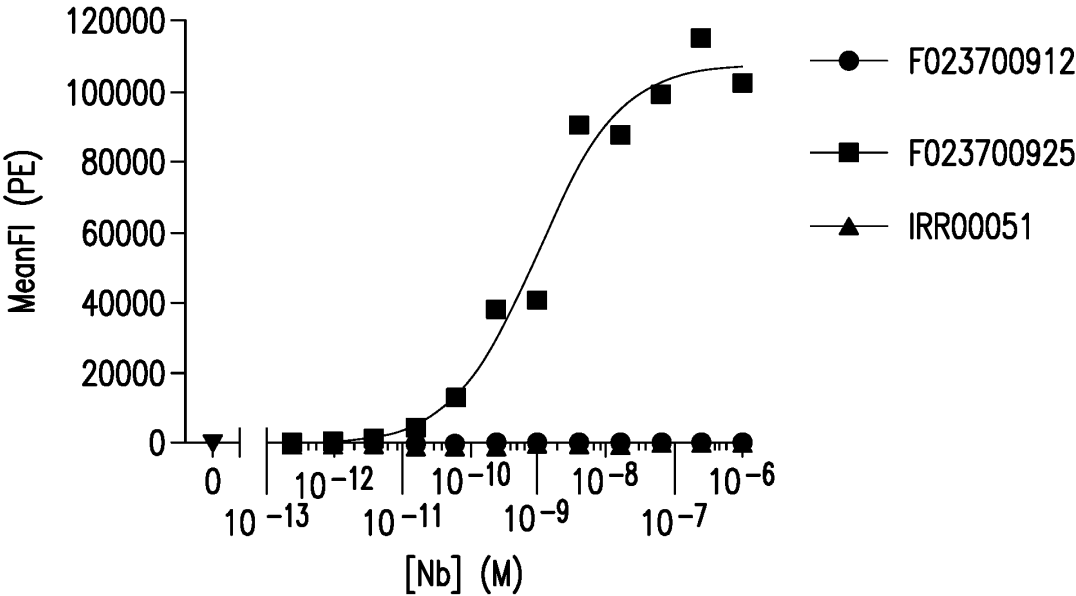


FIG.7H

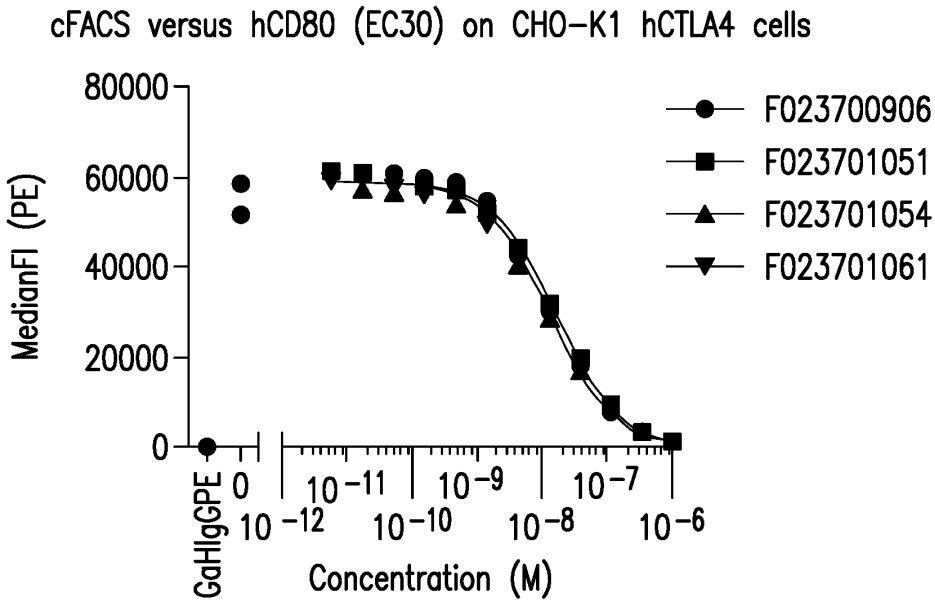


FIG.8A

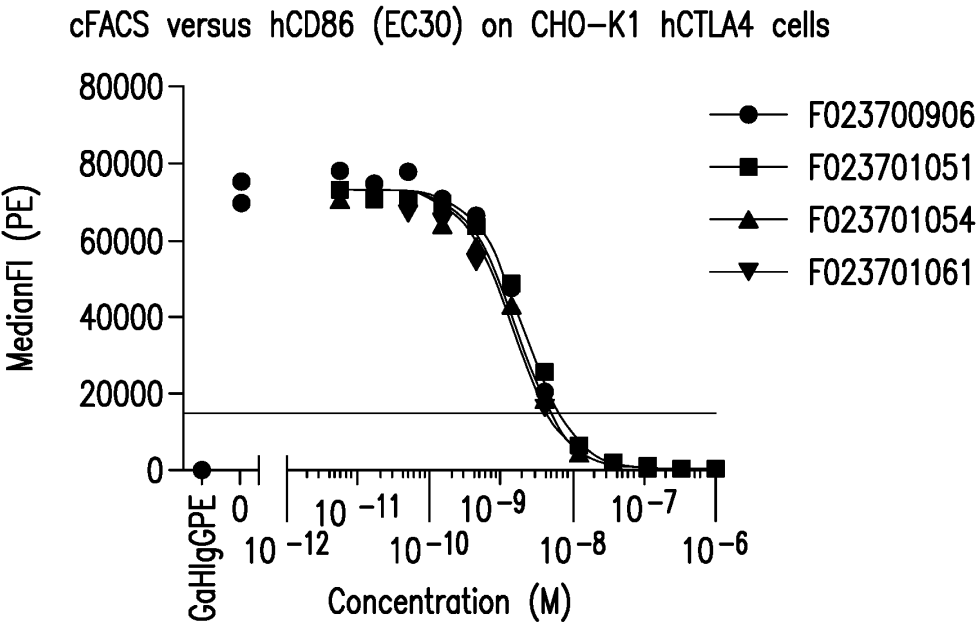


FIG.8B

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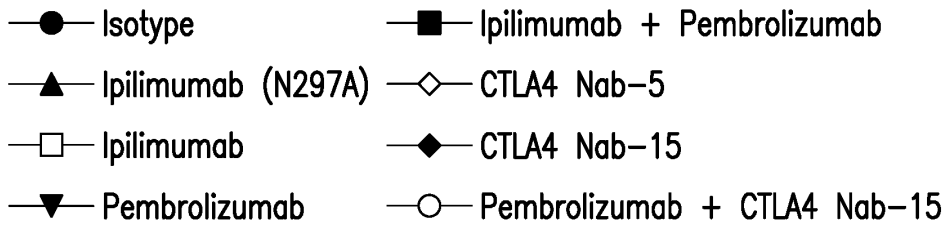
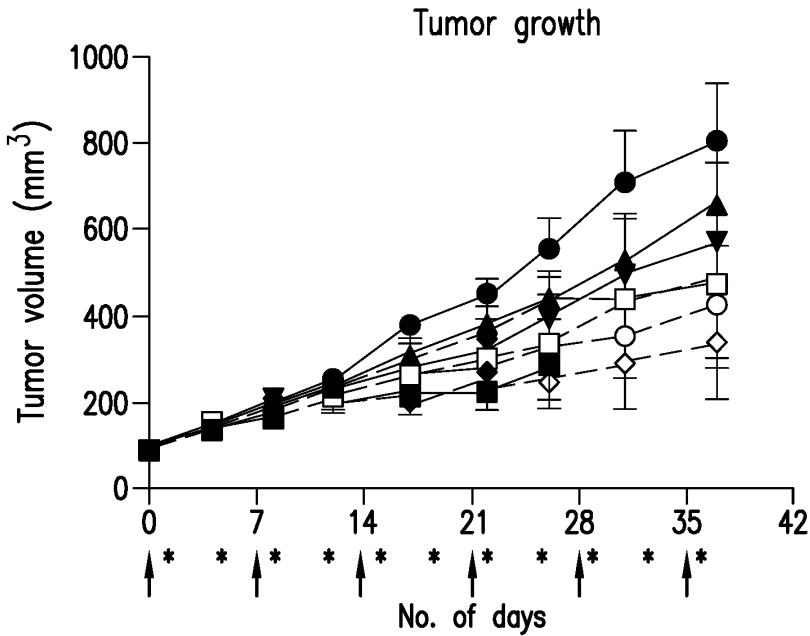


FIG.9A

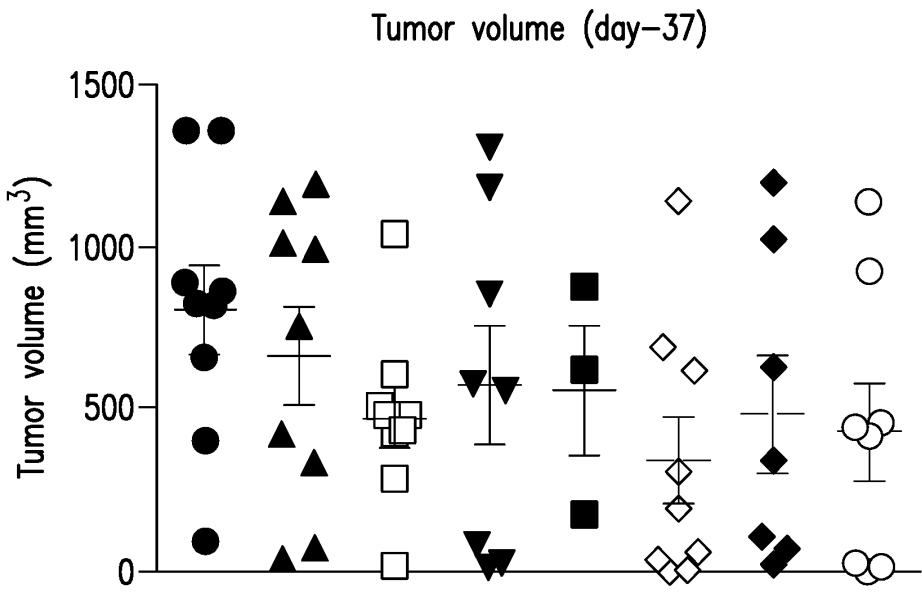


FIG.9B

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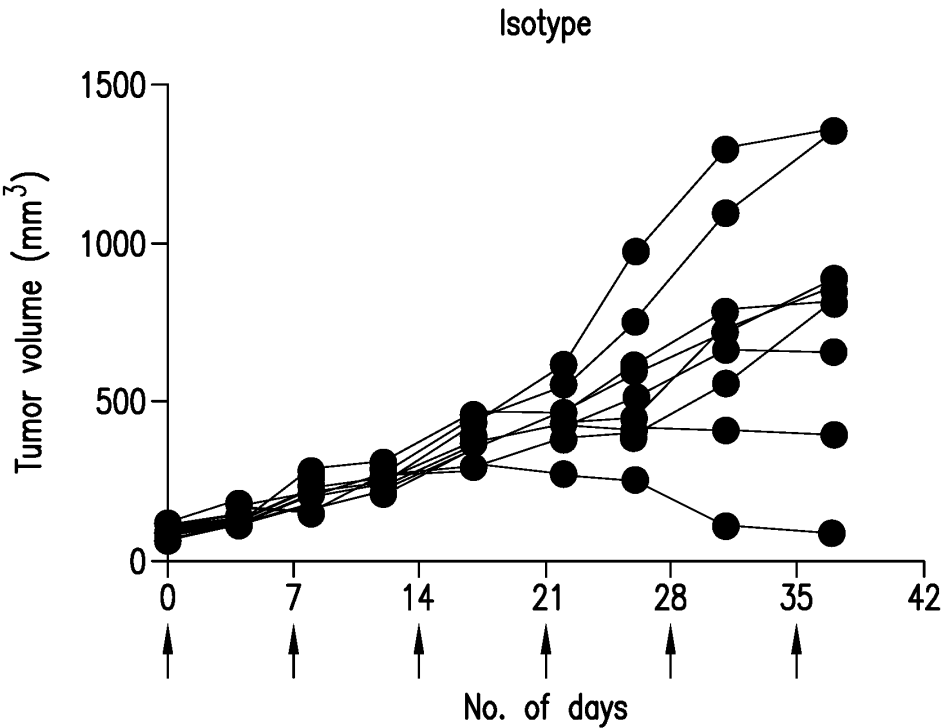


FIG.9C

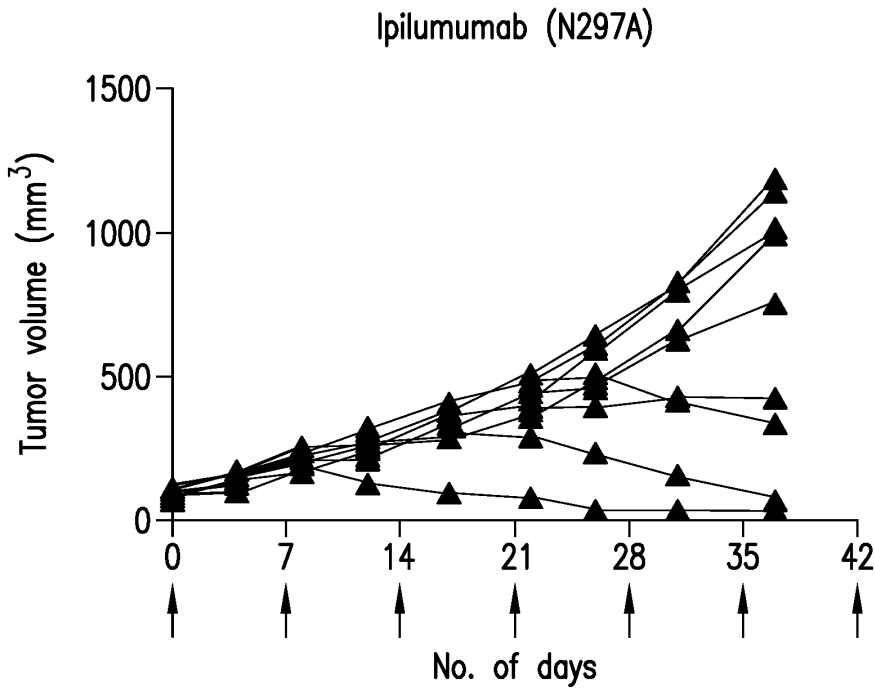


FIG.9D

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Ipilimumab

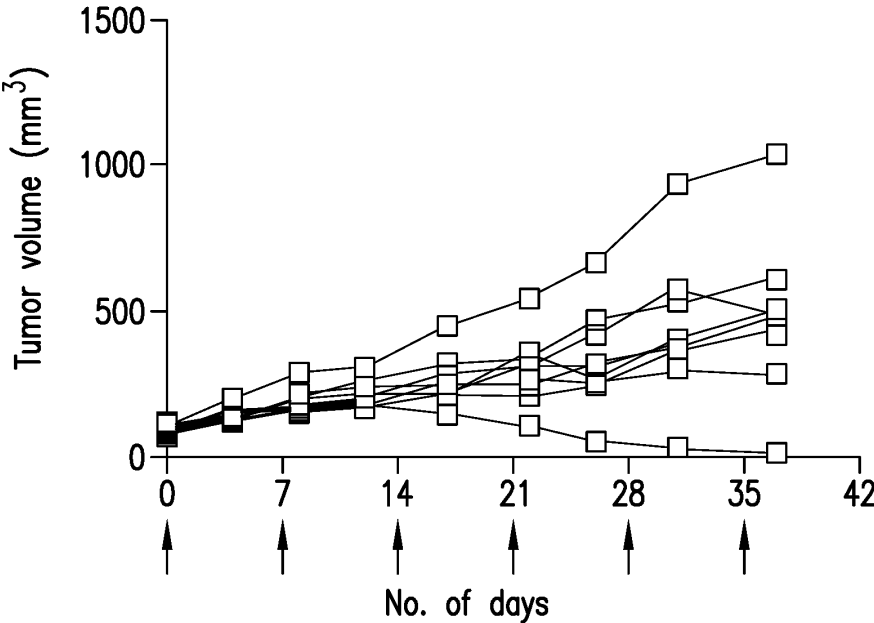


FIG.9E

Pembrolizumab

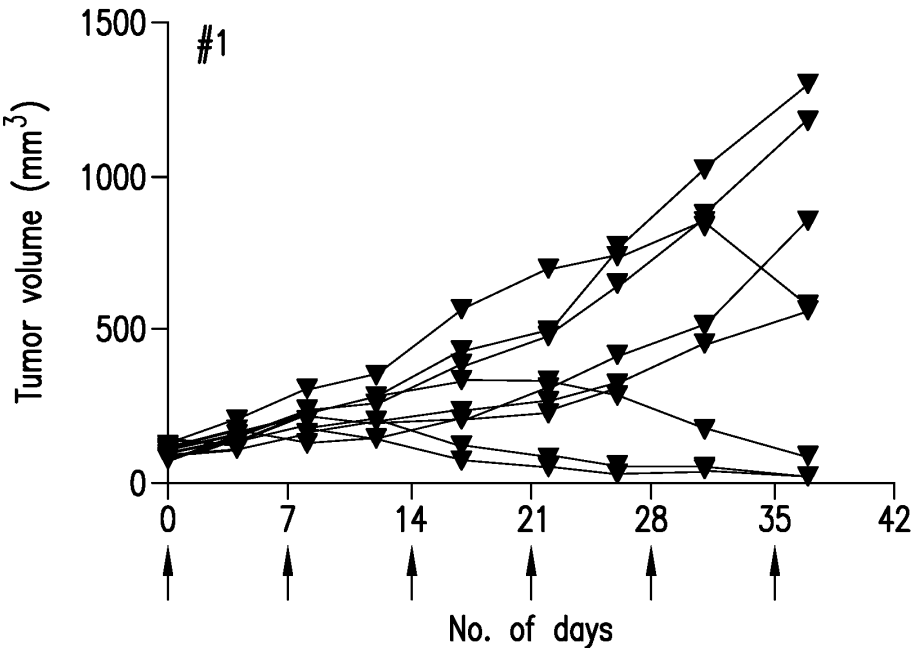


FIG.9F

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Ipilimumab+Pembrolizumab

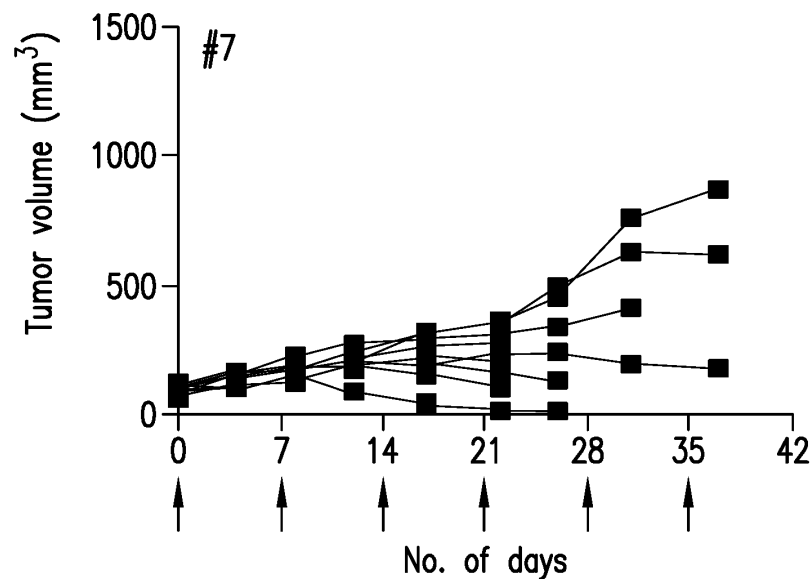


FIG.9G

CTLA4 Nab-5mpk

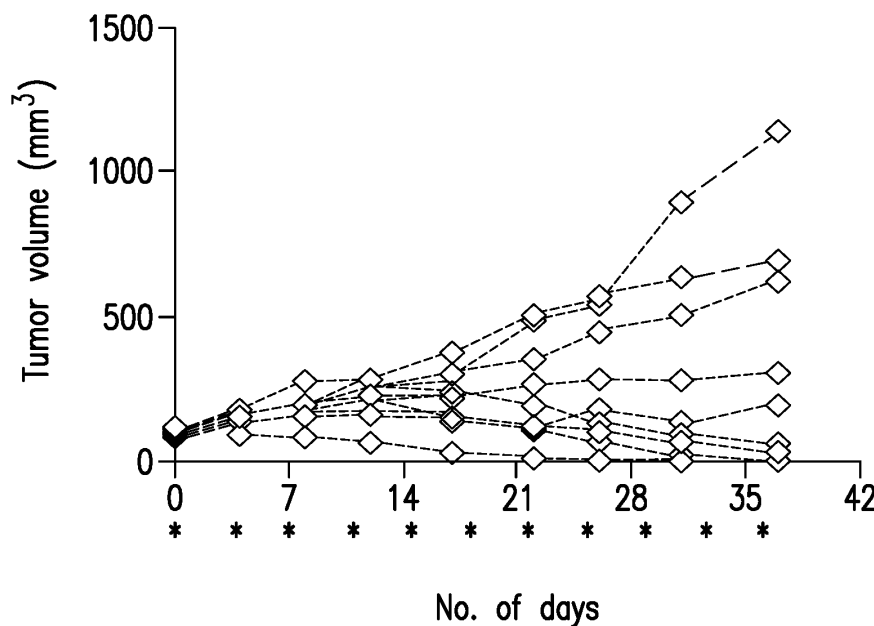


FIG.9H

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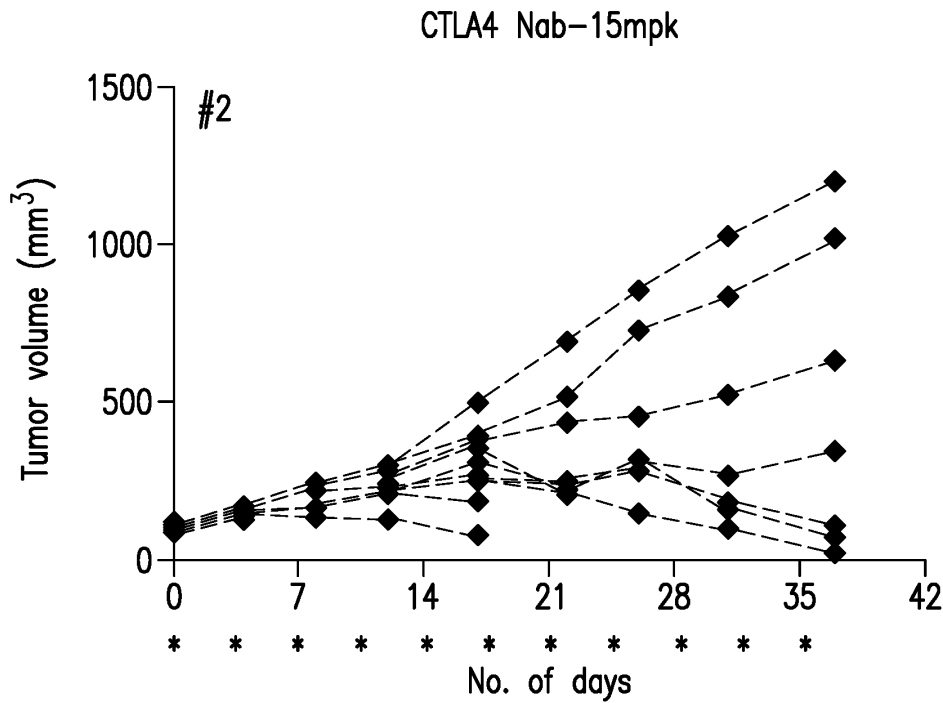


FIG. 9I

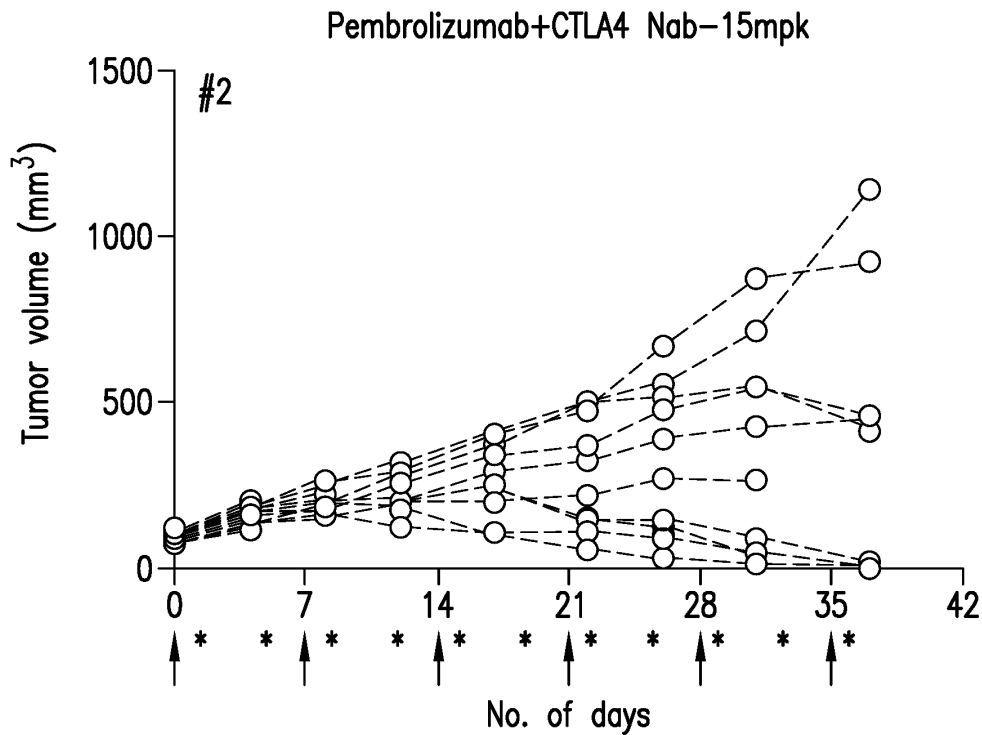


FIG. 9J

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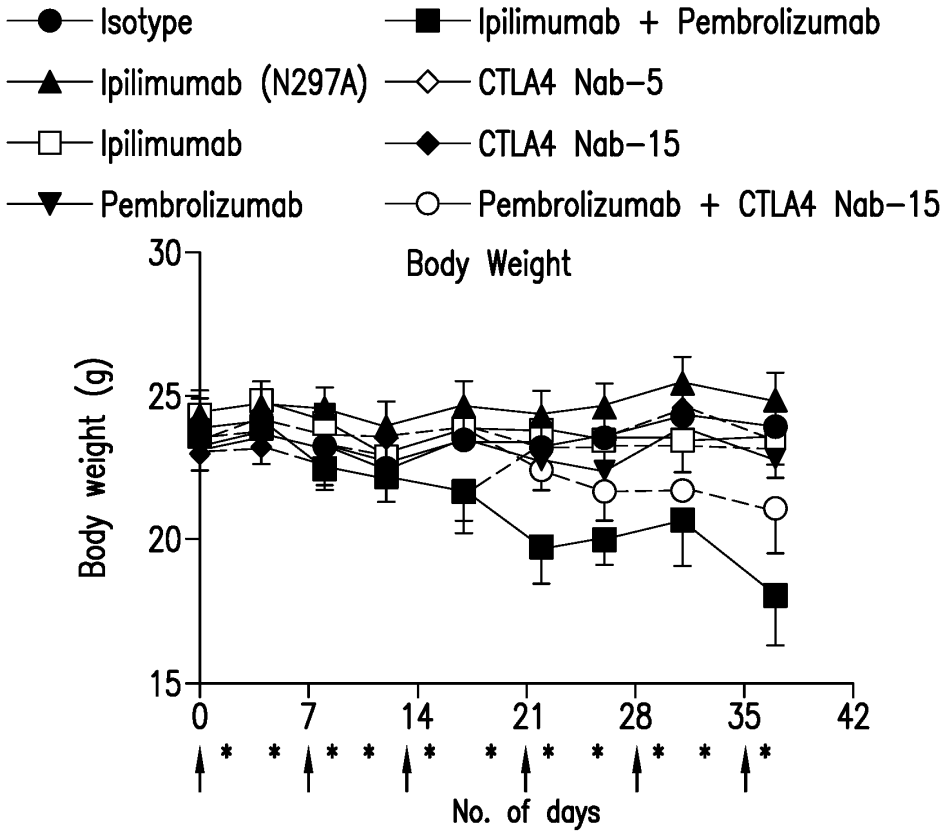


FIG.9K

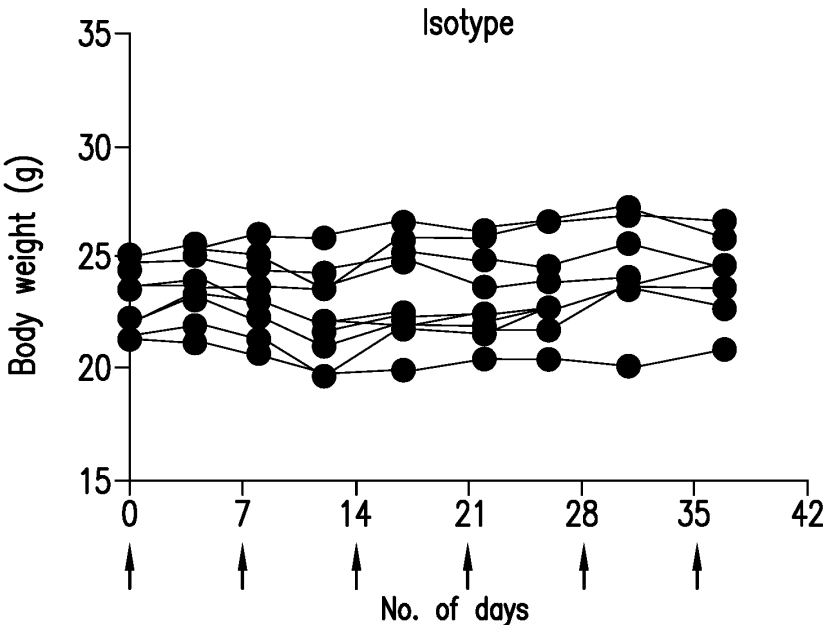


FIG.9L

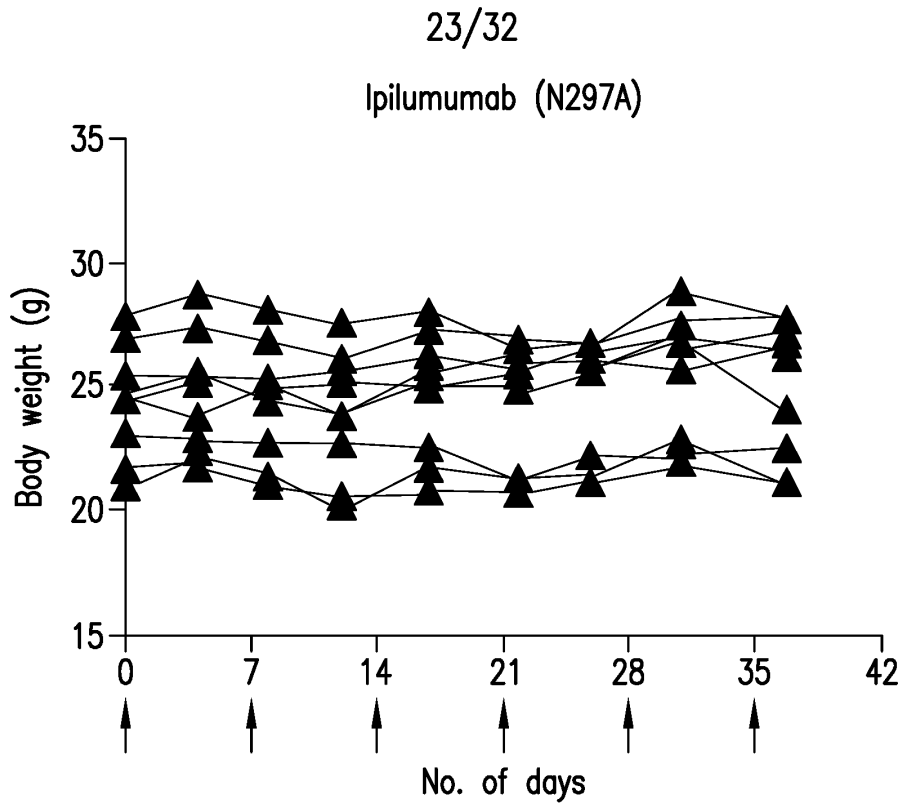


FIG.9M

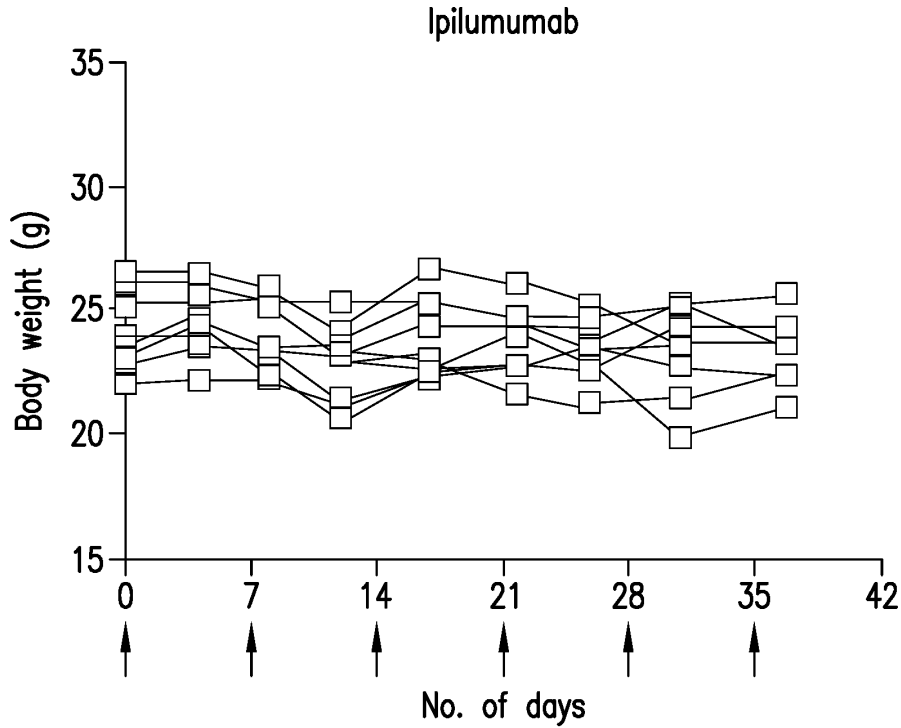


FIG.9N

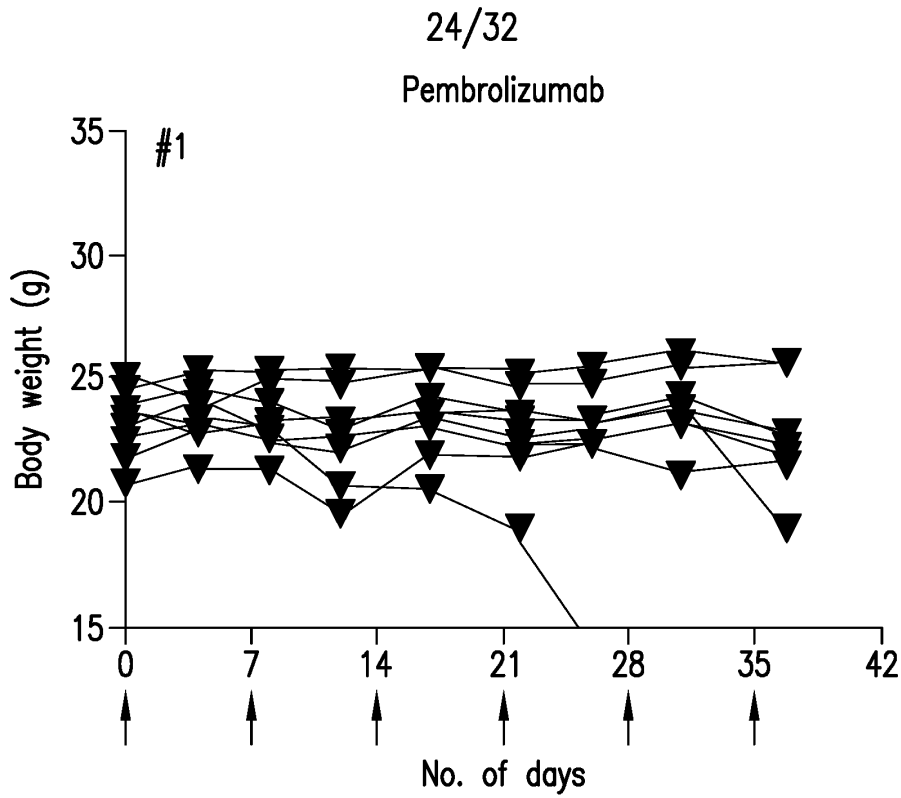


FIG.9O

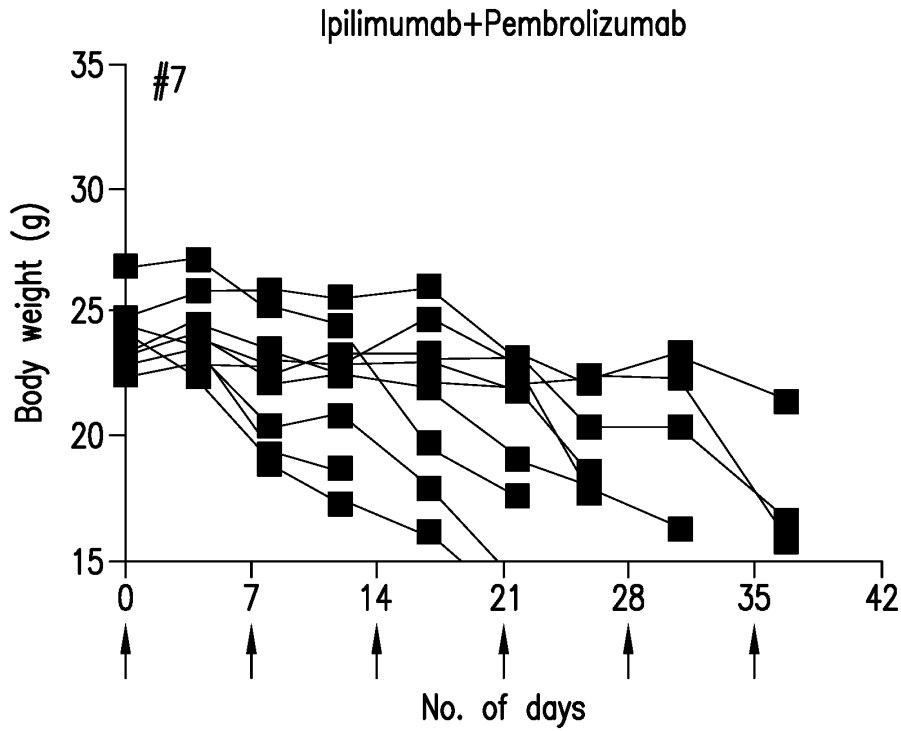


FIG.9P

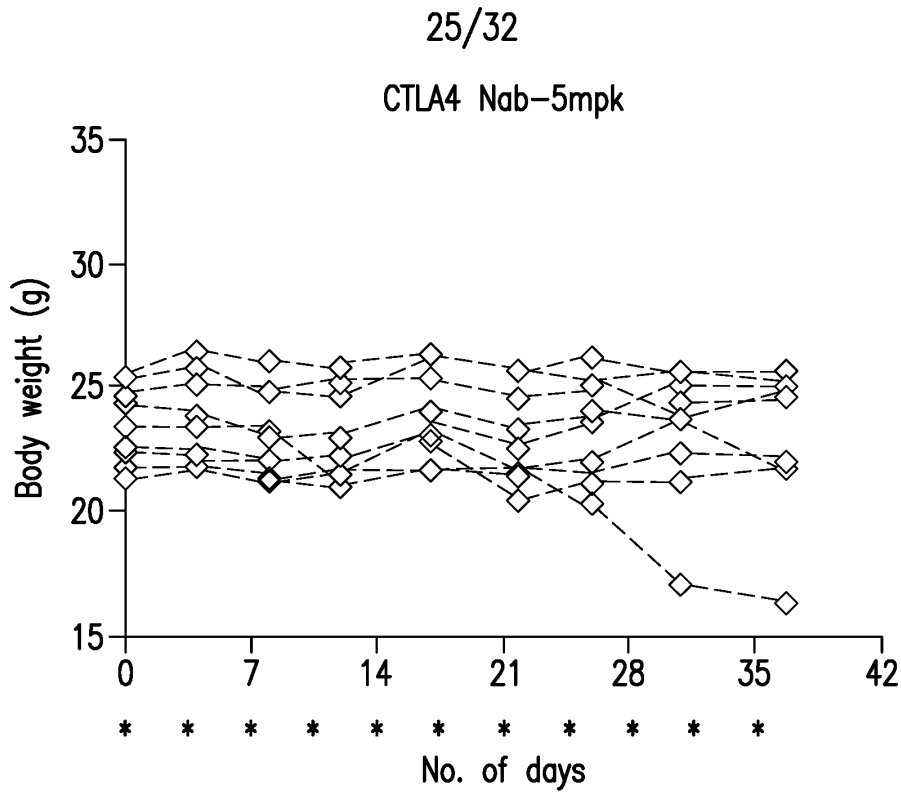


FIG.9Q

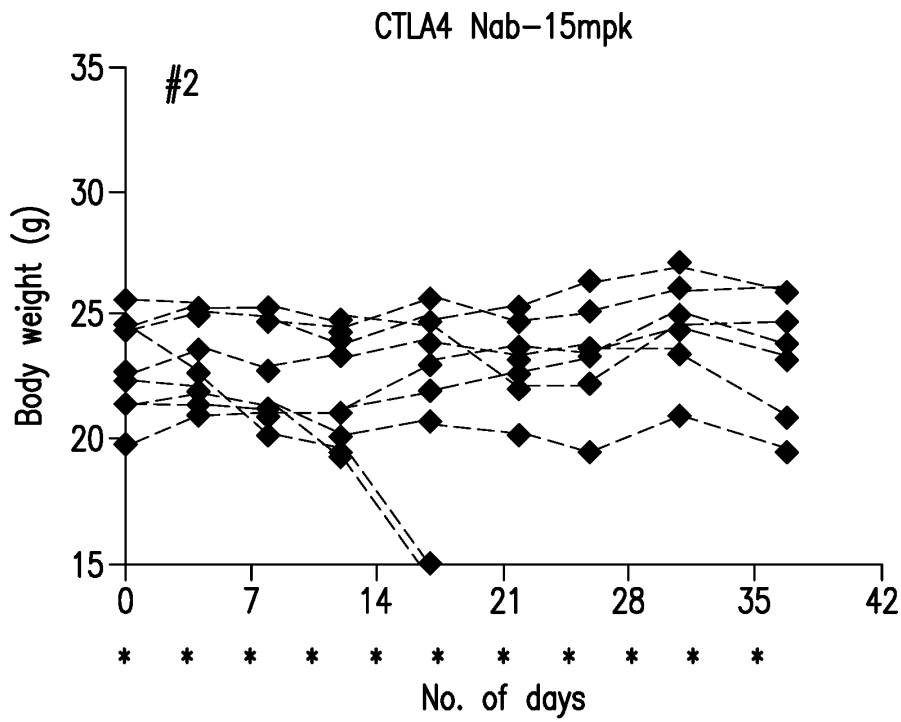


FIG.9R

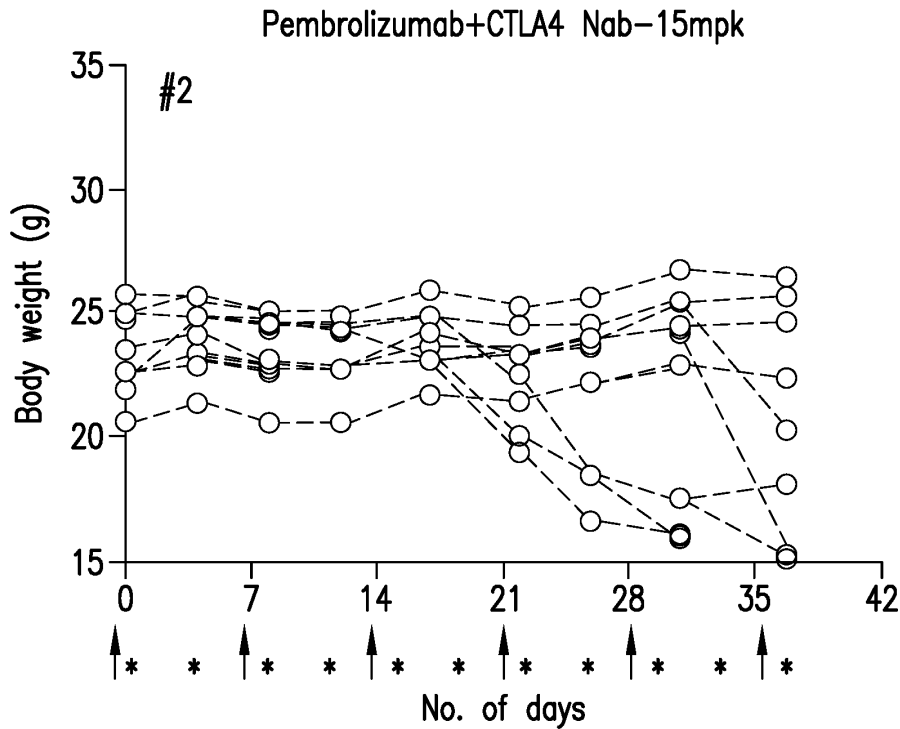


FIG.9S

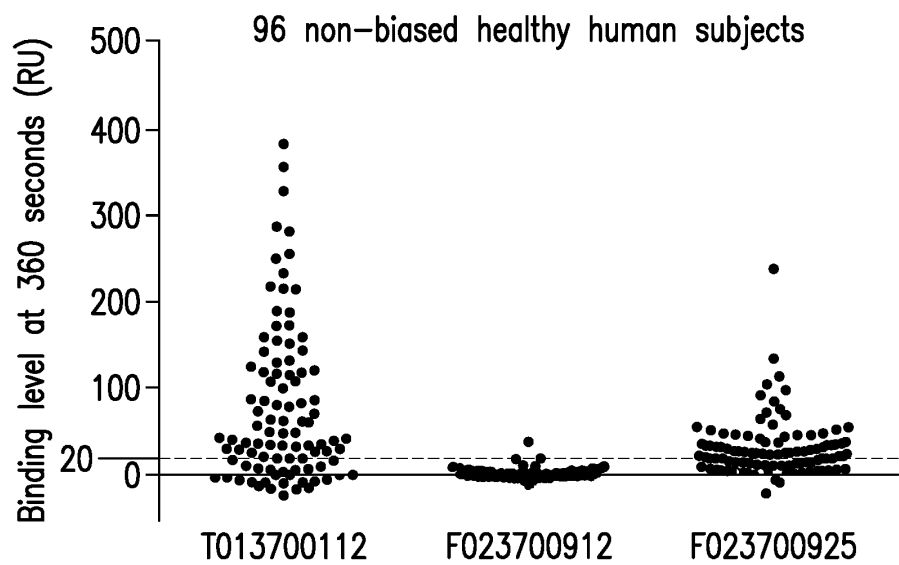


FIG.10A

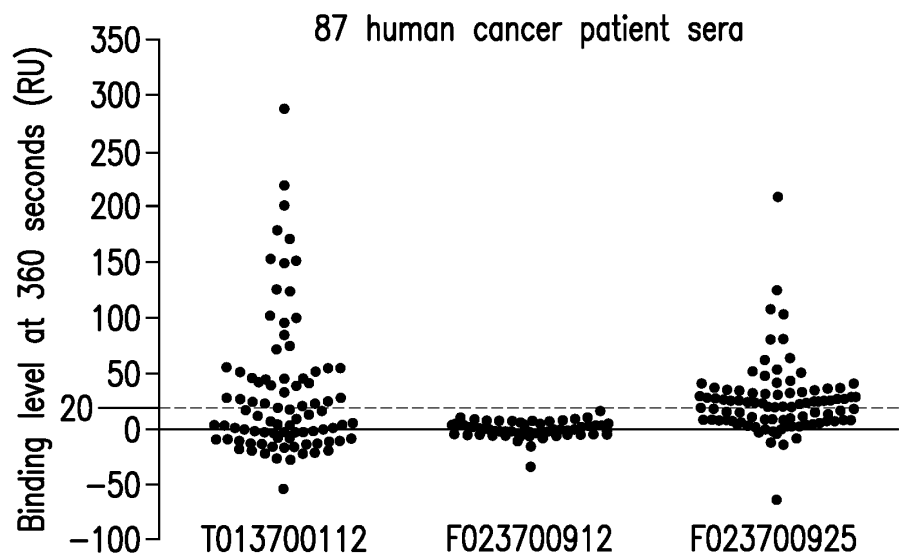


FIG.10B

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NanoBody	Description
F023700906	4CTLA011F01(L11V,A14P,Q45R,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023700912	4CTLA011F01(E1D,L11V,A14P,Q45R,A74S,K83R,V89L,M96P,Q108L)-35GS- 4CTLA011F01(L11V,A14P,Q45R,A74S,K83R,V89L,M96P,Q108L)-35GS-ALB11002-A
F023700914	4CTLA011F01(E1D,L11V,A14P,Q45R,A74S,K83R,V89L,M96P,Q108L)-35GS- ALB11002-A
F023701047	4CTLA011F01(L11V,A14P,Q45R,N73S,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701048	4CTLA011F01(L11V,A14P,Q45R,N73V,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701049	4CTLA011F01(L11V,A14P,Q45R,N73G,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701050	4CTLA011F01(L11V,A14P,Q45R,N73R,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701051	4CTLA011F01(L11V,A14P,Q45R,N73Q,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701052	4CTLA011F01(L11V,A14P,Q45R,N73M,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701053	4CTLA011F01(L11V,A14P,Q45R,N73H,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701054	4CTLA011F01(L11V,A14P,Q45R,N73T,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701055	4CTLA011F01(L11V,A14P,Q45R,N73D,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701056	4CTLA011F01(L11V,A14P,Q45R,N73E,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701057	4CTLA011F01(L11V,A14P,Q45R,N73W,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701058	4CTLA011F01(L11V,A14P,Q45R,N73F,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701059	4CTLA011F01(L11V,A14P,Q45R,N73K,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701060	4CTLA011F01(L11V,A14P,Q45R,N73A,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701061	4CTLA011F01(L11V,A14P,Q45R,N73Y,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6
F023701062	4CTLA011F01(L11V,A14P,Q45R,N73P,A74S,K83R,V89L,M96P,Q108L)-FLAG3-HIS6

FIG. 11

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>PF023700906.1 4CTLA011F01(L11V,A14P,Q45R,A74S,K83R,V89L,M96P,Q108L)–
FLAG3-HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDN
KNTVYLQMNSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 93)

>PF023700912.1 4CTLA011F01(E1D,L11V,A14P,Q45R,A74S,K83R,V89L,M96P,Q108L)–
35GS-4CTLA011F01(L11V,A14P,Q45R,A74S,K83R,V89L,M96P,Q108L)–35GS-ALB11002-A

DVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDN
KNTVYLQMNSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSGGGGSGGGSGGGSGGGSGGGSGGGSGGGSGG
GGGSEVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFQAPGKEREFVADIRTSAGRTYYADSVKGRFTIS
RDNSKNTVYLQMNSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSGGGGSGGGSGGGSGGGSGGGSGGGSGG
GGSGGGSEVQLVESGGGVVQPGNSLRSLCAASGTFSSFGMSWVRQAPGKLEWSSISGSGSDTLYADSVKGR
FTISRDNKTTLYLQMNSLRPEDTALYYCTIGGSLRSSQGTLLTVSSA (SEQ ID NO: 62)

>F023700914 4CTLA011F01(E1D,L11V,A14P,Q45R,A74S,K83R,V89L,M96P,Q108L)–
35GS-ALB11002-A

DVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDN
KNTVYLQMNSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSGGGGSGGGSGGGSGGGSGGGSGGGSGG
GGGSEVQLVESGGGVVQPGNSLRSLCAASGTFSSFGMSWVRQAPGKLEWSSISGSGSDTLYADSVKGRFTIS
RDNAKTTLYLQMNSLRPEDTALYYCTIGGSLRSSQGTLLTVSSA (SEQ ID NO: 64)

>PF023701047.1 4CTLA011F01(L11V,A14P,Q45R,N73S,A74S,K83R,V89L,M96P,Q108L)–
FLAG3-HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 94)

>PF023701048.1 4CTLA011F01(L11V,A14P,Q45R,N73V,A74S,K83R,V89L,M96P,Q108L)–
FLAG3-HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 95)

>PF023701049.1 4CTLA011F01(L11V,A14P,Q45R,N73G,A74S,K83R,V89L,M96P,Q108L)–
FLAG3-HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 96)

>PF023701050.1 4CTLA011F01(L11V,A14P,Q45R,N73R,A74S,K83R,V89L,M96P,Q108L)–
FLAG3-HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 97)

FIG. 12A

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>PF023701051.1 4CTLA011F01(L11V,A14P,Q45R,N73Q,A74S,K83R,V89L,M96P,Q108L)–
FLAG3-HIS6
EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRQAPGKEREVADIRTSAGRTYYADSVKGRFTISRQDS
KNTVYLMNLSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 98)

>PF023701052.1 4CTLA011F01(L11V,A14P,Q45R,N73M,A74S,K83R,V89L,M96P,Q108L)–
FLAG3-HIS6
EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRQAPGKEREVADIRTSAGRTYYADSVKGRFTISRQDS
KNTVYLMNLSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 99)

>PF023701053.1 4CTLA011F01(L11V,A14P,Q45R,N73H,A74S,K83R,V89L,M96P,Q108L)–
FLAG3-HIS6
EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRQAPGKEREVADIRTSAGRTYYADSVKGRFTISRQDS
KNTVYLMNLSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 100)

>PF023701054.1 4CTLA011F01(L11V,A14P,Q45R,N73T,A74S,K83R,V89L,M96P,Q108L)–
FLAG3-HIS6
EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRQAPGKEREVADIRTSAGRTYYADSVKGRFTISRQDS
KNTVYLMNLSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 101)

>PF023701055.1 4CTLA011F01(L11V,A14P,Q45R,N73D,A74S,K83R,V89L,M96P,Q108L)–
FLAG3-HIS6
EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRQAPGKEREVADIRTSAGRTYYADSVKGRFTISRQDS
KNTVYLMNLSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 102)

>PF023701056.1 4CTLA011F01(L11V,A14P,Q45R,N73E,A74S,K83R,V89L,M96P,Q108L)–
FLAG3-HIS6
EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRQAPGKEREVADIRTSAGRTYYADSVKGRFTISRQDS
KNTVYLMNLSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 103)

>PF023701057.1 4CTLA011F01(L11V,A14P,Q45R,N73W,A74S,K83R,V89L,M96P,Q108L)–
FLAG3-HIS6
EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRQAPGKEREVADIRTSAGRTYYADSVKGRFTISRQDS
KNTVYLMNLSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 104)

>PF023701058.1 4CTLA011F01(L11V,A14P,Q45R,N73F,A74S,K83R,V89L,M96P,Q108L)–
FLAG3-HIS6
EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRQAPGKEREVADIRTSAGRTYYADSVKGRFTISRQDS
KNTVYLMNLSLRPEDTALYYCAAEPGSGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 105)

FIG. 12B

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>PF023701059.1 4CTLA011F01(L11V,A14P,Q45R,N73K,A74S,K83R,V89L,M96P,Q108L)–
FLAG3–HIS6
EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDKS
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 106)

>PF023701060.1 4CTLA011F01(L11V,A14P,Q45R,N73A,A74S,K83R,V89L,M96P,Q108L)–
FLAG3–HIS6
EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 107)

>PF023701061.1 4CTLA011F01(L11V,A14P,Q45R,N73Y,A74S,K83R,V89L,M96P,Q108L)–
FLAG3–HIS6
EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 108)

>PF023701062.1 4CTLA011F01(L11V,A14P,Q45R,N73P,A74S,K83R,V89L,M96P,Q108L)–
FLAG3–HIS6
EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDP
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 109)

FIG. 12C

