

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	DVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTLLTVSS
25	CTLA4 binding moiety/binder	DVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEREFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTLLTVSS
26	Reference A (89T)+ A	EVQLVESGGGLVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTATYYCAAEMSGISGWDYWGQGTQVTVSSA
27	Reference A (11V + 110K)+ A	EVQLVESGGGVVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTAVYYCAAEMSGISGWDYWGQGTQVKVSSA
28	Reference A (11V + 110Q)+ A	EVQLVESGGGVVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTAVYYCAAEMSGISGWDYWGQGTQVQVSSA
29	Reference A (11V + 112K)+ A	EVQLVESGGGVVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTAVYYCAAEMSGISGWDYWGQGTQVTVKSA
30	Reference A (11V + 112Q)+ A	EVQLVESGGGVVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTAVYYCAAEMSGISGWDYWGQGTQVTVQSA
31	Reference A (89L + 110K)+ A	EVQLVESGGGLVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVKVSSA
32	Reference A (89L + 110Q)+ A	EVQLVESGGGLVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVQVSSA
33	Reference A (89L + 112K)+A	EVQLVESGGGLVQAGGSLRLSCAASGGTFSFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVKSA

FIG.2-3

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SEQ ID NO	Description	Sequence
34	Reference A (89L + 112Q)+A	EVQLVESGGGLVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVQSA
35	Reference A (11V + 89L)+ A	EVQLVESGGGVVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVSSA
36	Reference A (11V + 89L + 110K)+ A	EVQLVESGGGVVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVKVSSA
37	Reference A (11V + 89L + 110Q)+ A	EVQLVESGGGVVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVQVSSA
38	Reference A (11V + 89L + 112K)+A	EVQLVESGGGVVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVKSA
39	Reference A (11V + 89L + 112Q)+A	EVQLVESGGGVVQAGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQ MNSLKPEDTALYYCAAEMSGISGWDYWGQGTQVTVQSA
40	CTLA4 binding moiety/binder	EVQLVESGGGVVQPGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTQVTVSSA
41	CTLA4 binding moiety/binder	EVQLVESGGGVVQPGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEREVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTQVTVSSA
42	CTLA4 binding moiety/binder	DVQLVESGGGVVQPGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEQEFVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTQVTVSSA
43	CTLA4 binding moiety/binder	DVQLVESGGGVVQPGGSLRLSCAASGGTF SFYGMGWFRRQAP GKEREVADIRTSAGRTYYADSVKGRFTISRDNKNTVYLQM NSLRPEDTALYYCAAEMSGISGWDYWGQGTQVTVSSA

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	FYGMGWFRA PGKEQEFVAD IRTSAGRYY 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	SGISGWYDYG	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

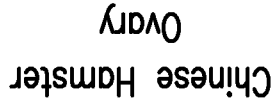


FIG. 4

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bFACS of F023700912 and -925 to Jurkat huCTLA4 cells

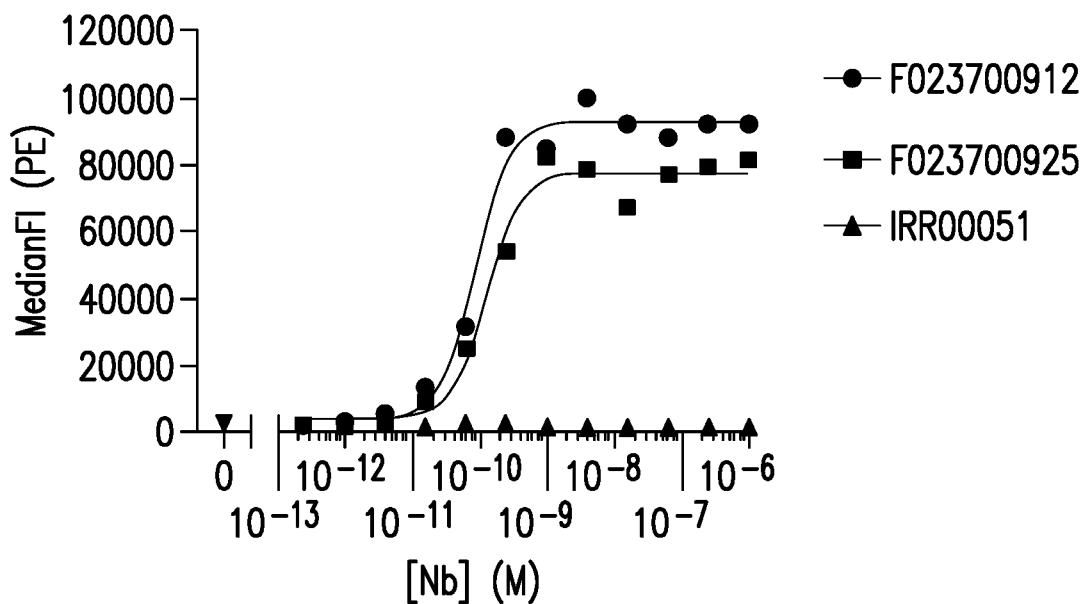


FIG.5A

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

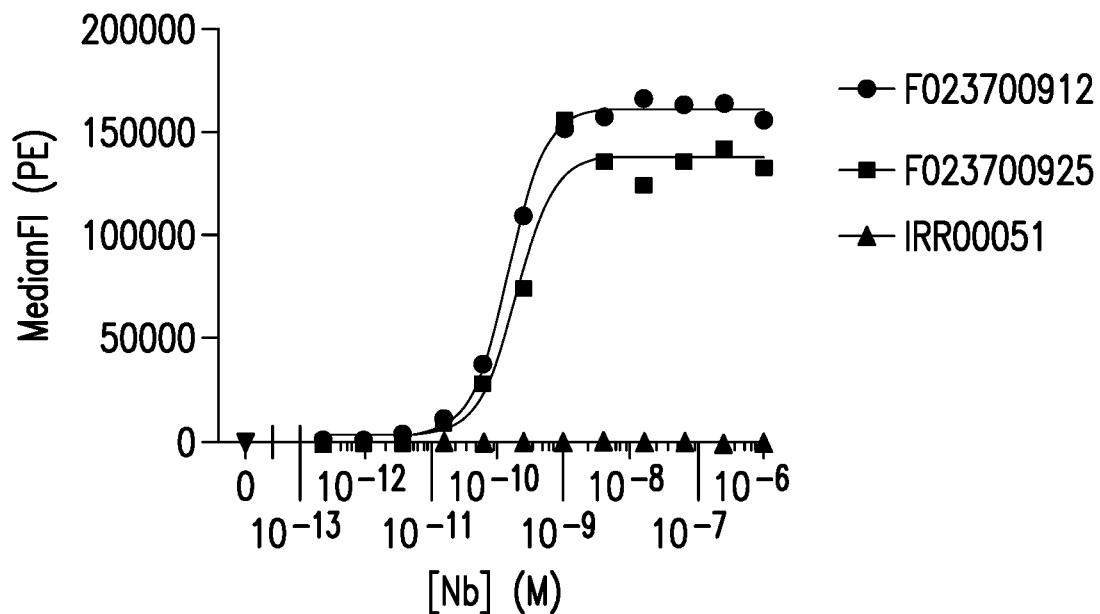


FIG.5B

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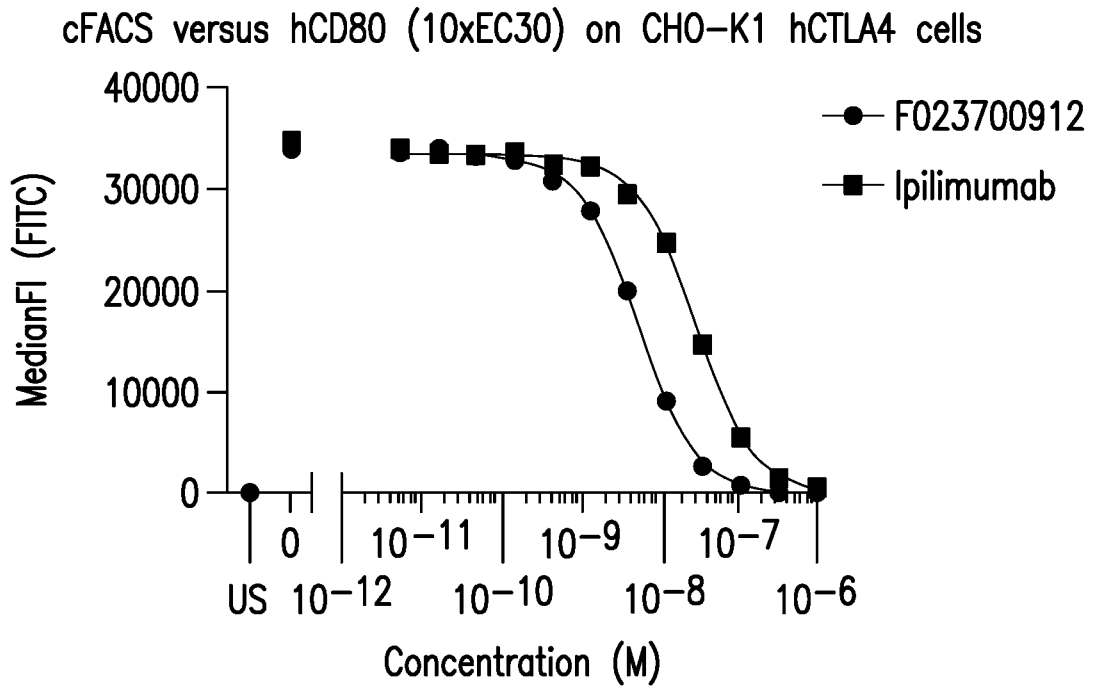


FIG.6A

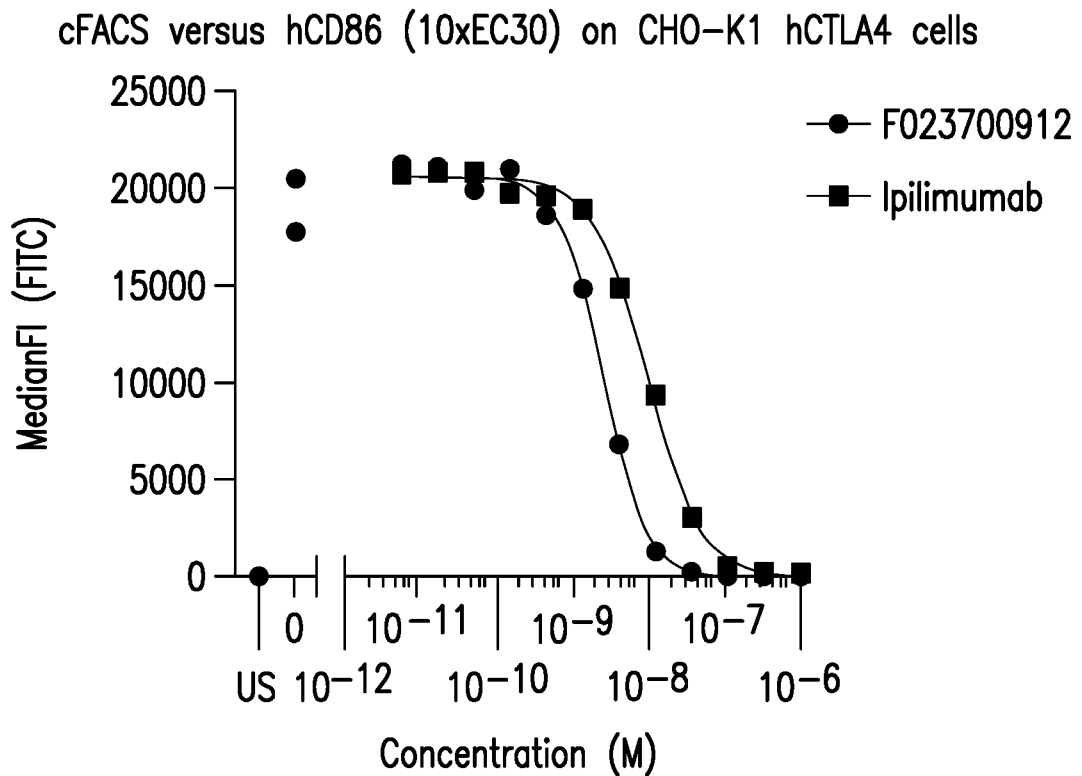


FIG.6B

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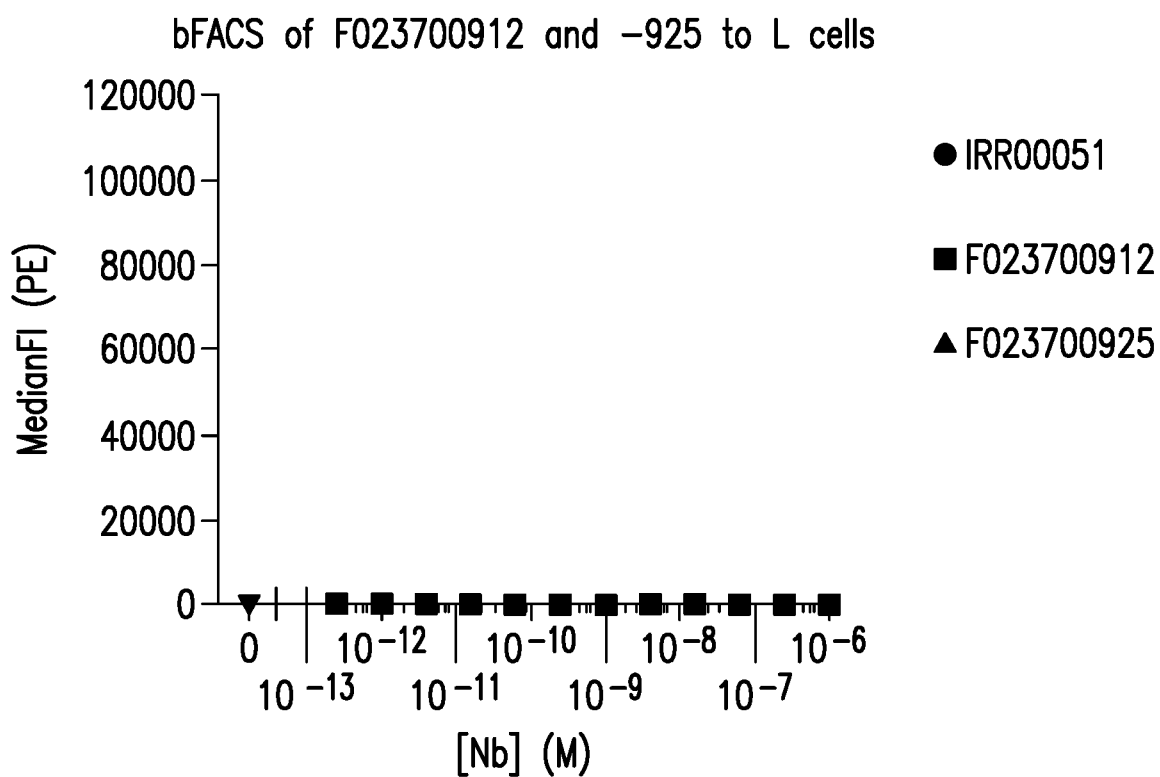


FIG.7A

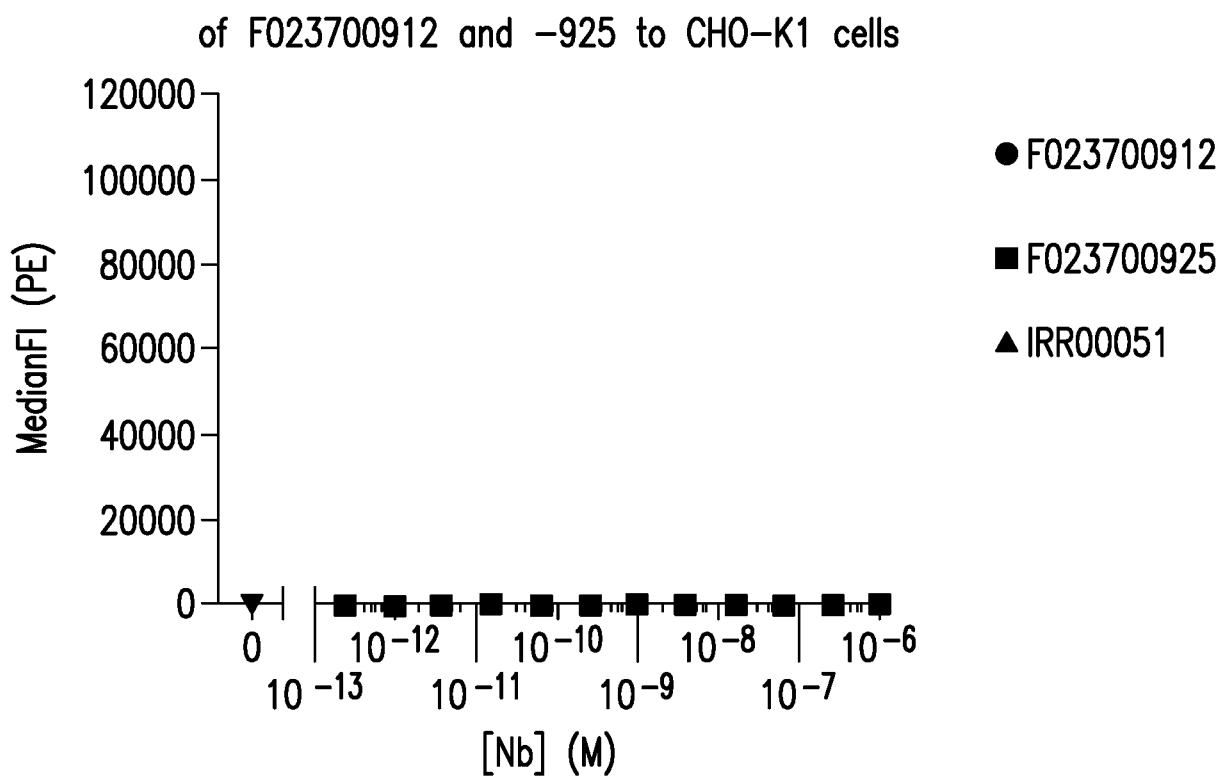


FIG.7B

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bFACS of F023700912 and -925 to L cells huCD28

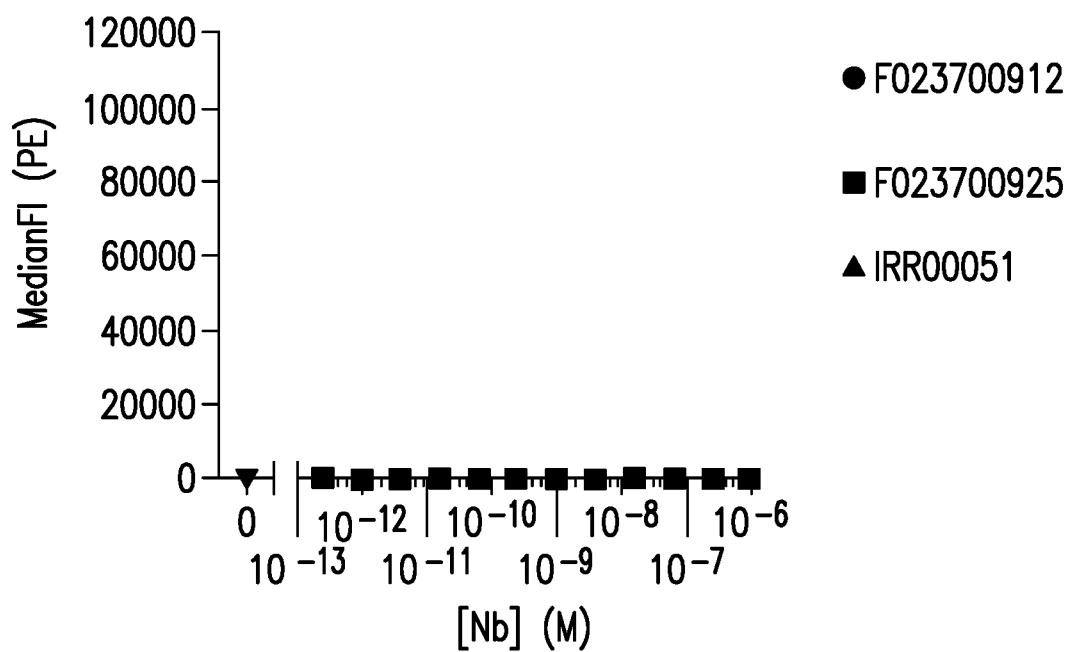


FIG.7C

bFACS of F023700912 and -925 to L cells huCD8alpha

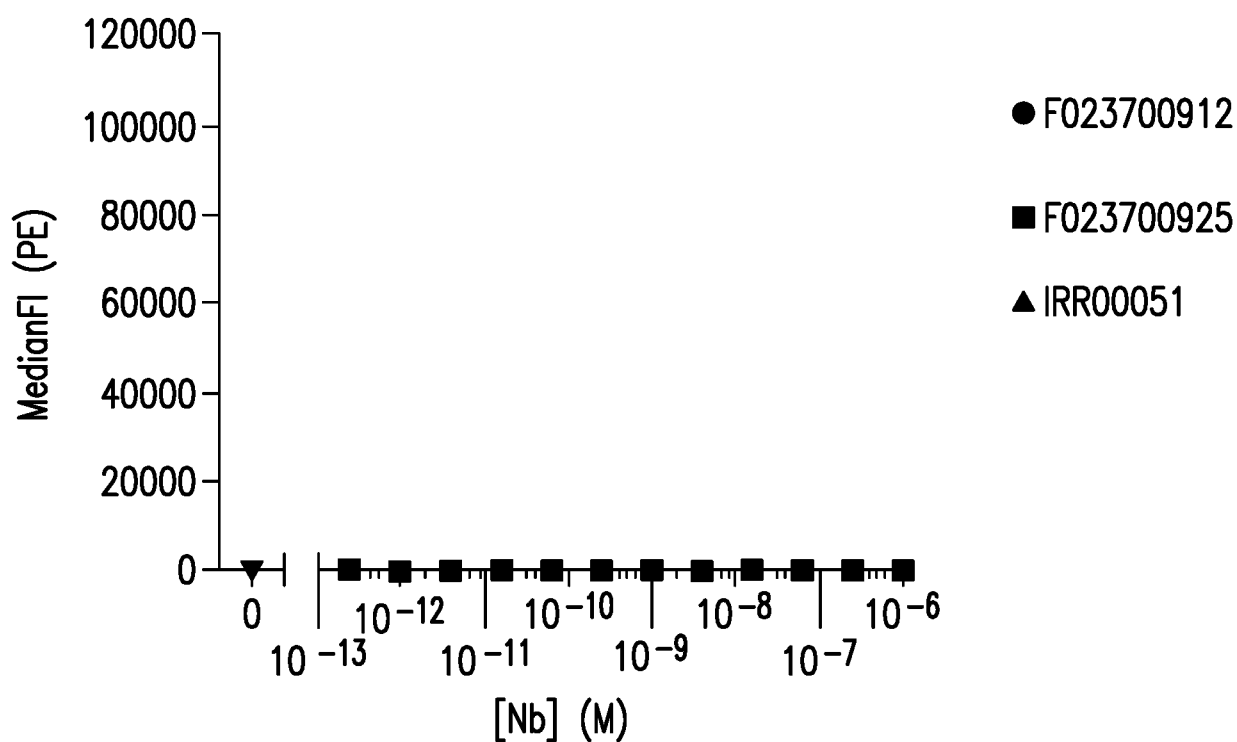


FIG.7D

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

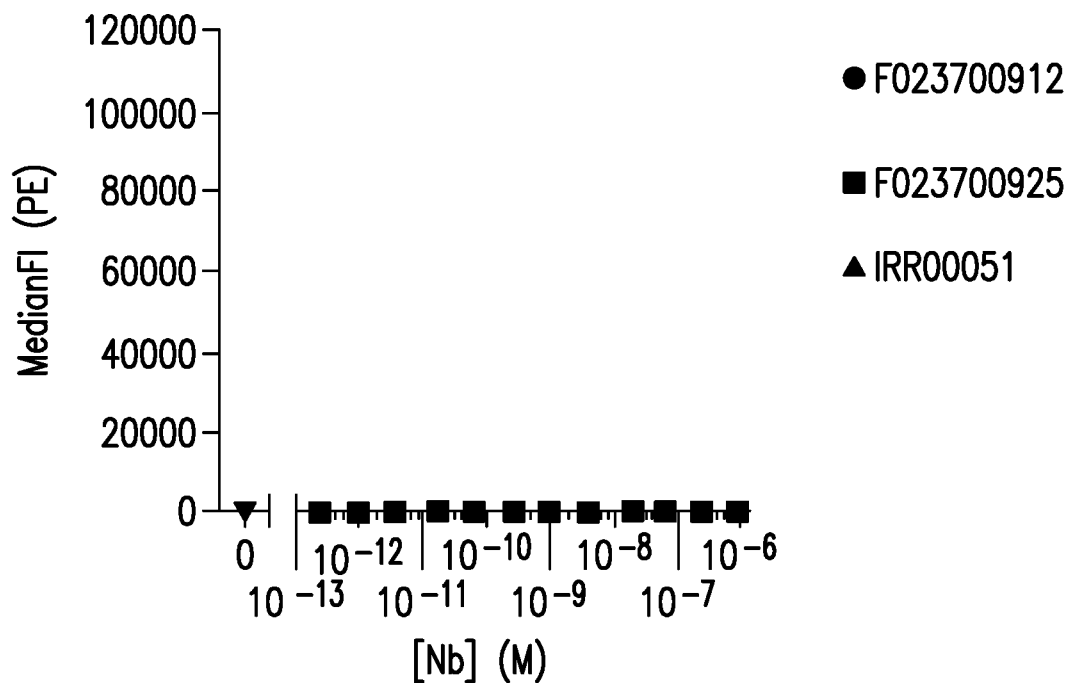


FIG. 7E

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

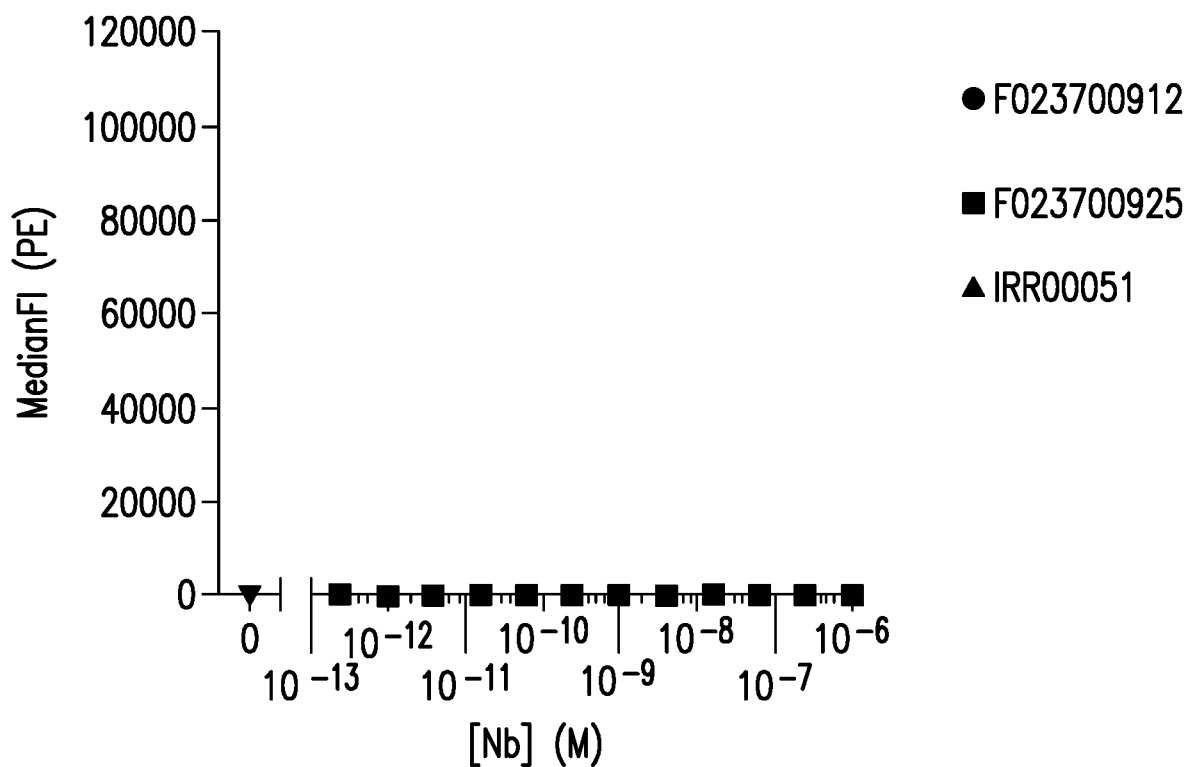


FIG. 7F

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

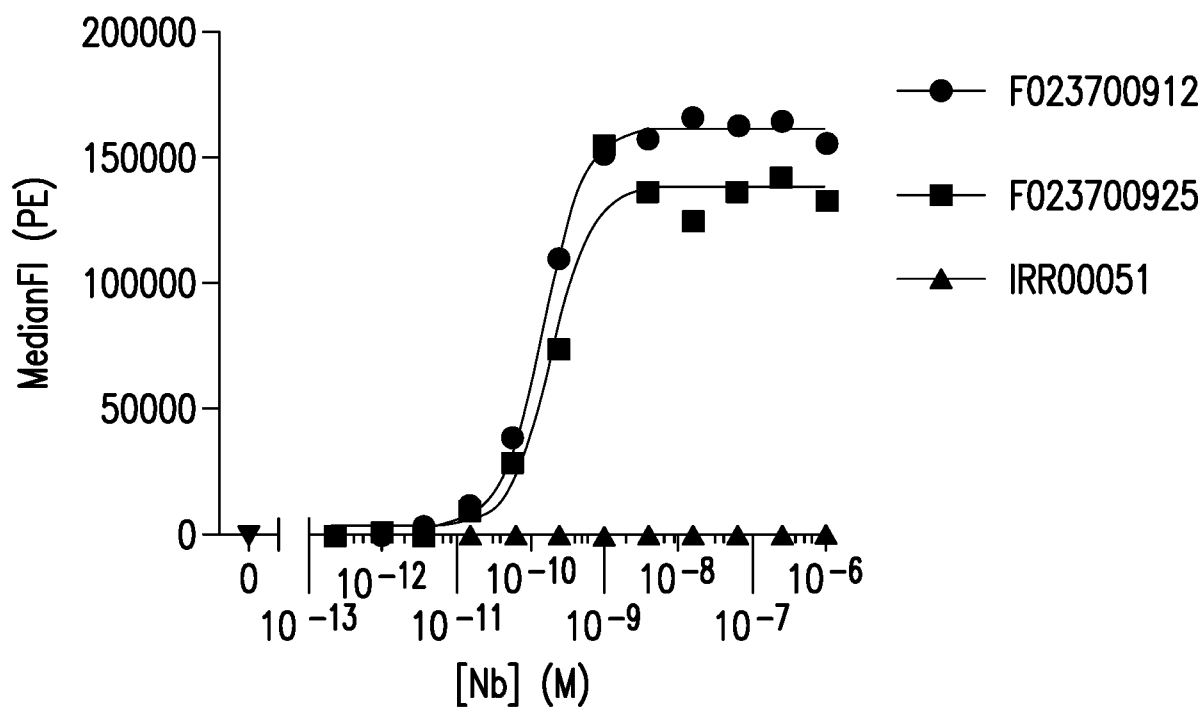


FIG.7G

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

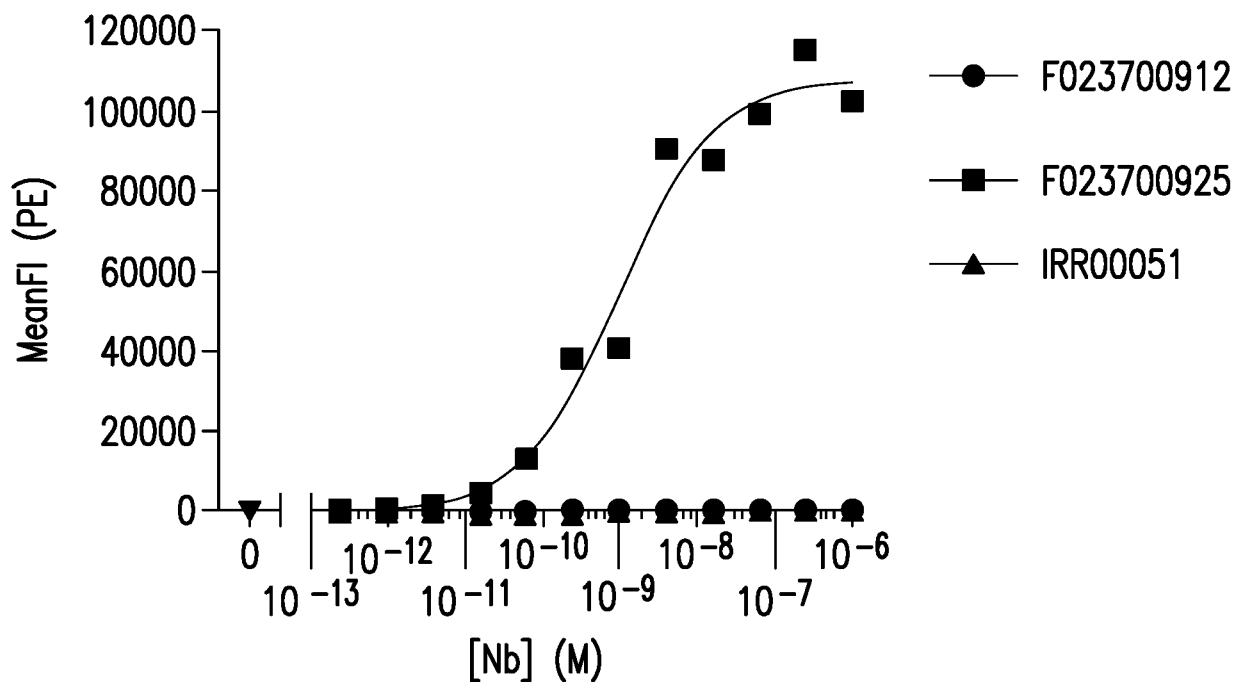


FIG.7H

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cFACS versus hCD80 (EC30) on CHO-K1 hCTLA4 cells

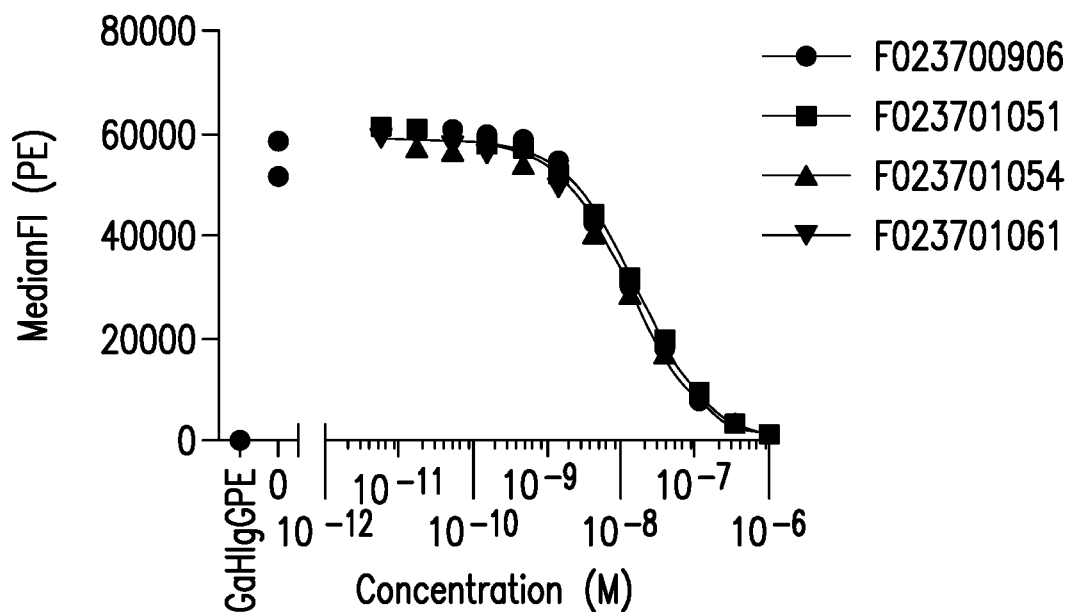


FIG. 8A

cFACS versus hCD86 (EC30) on CHO-K1 hCTLA4 cells

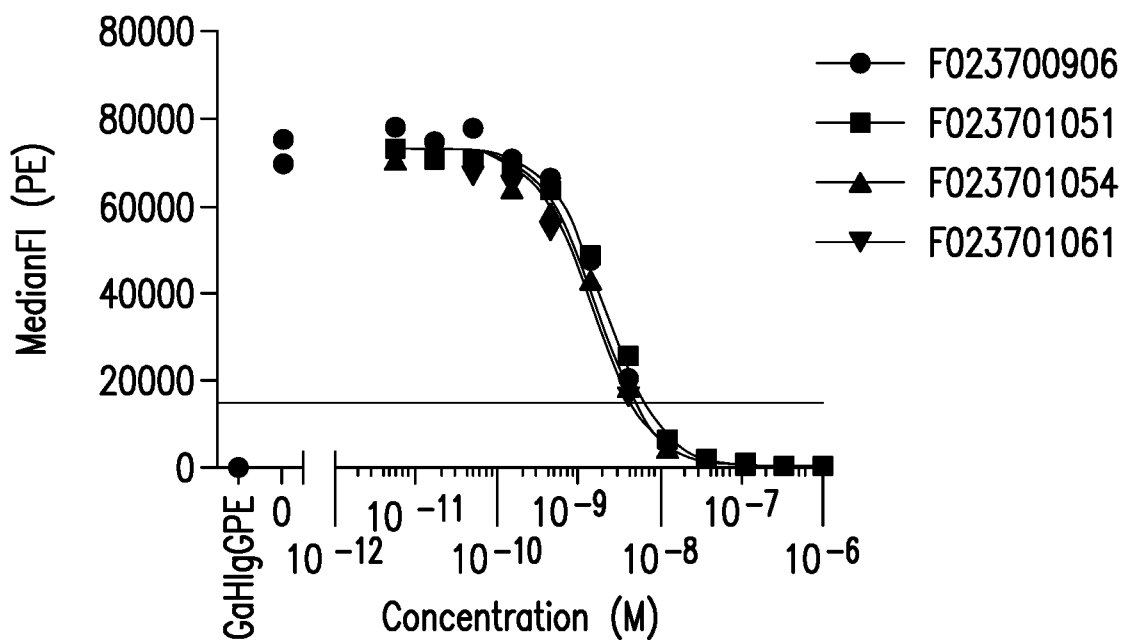


FIG. 8B

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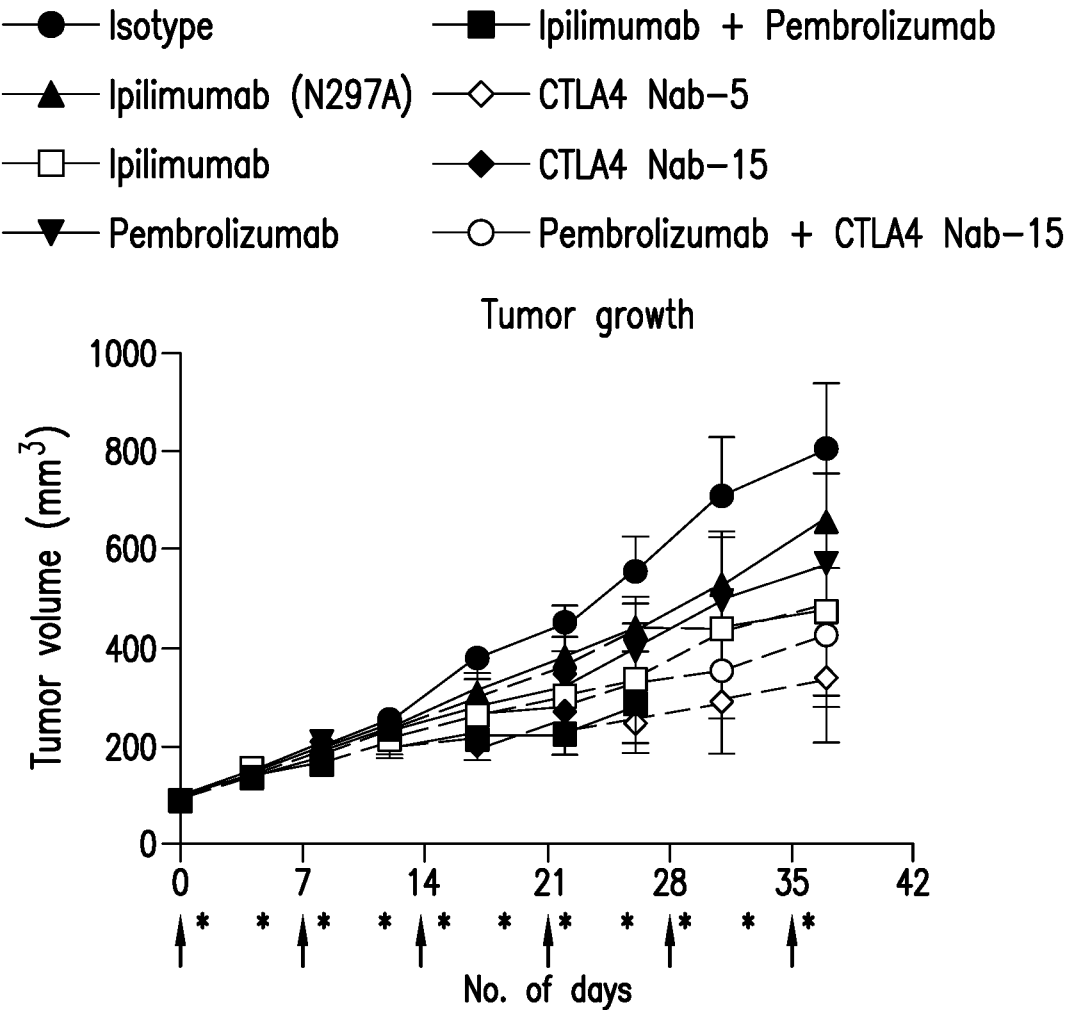


FIG.9A

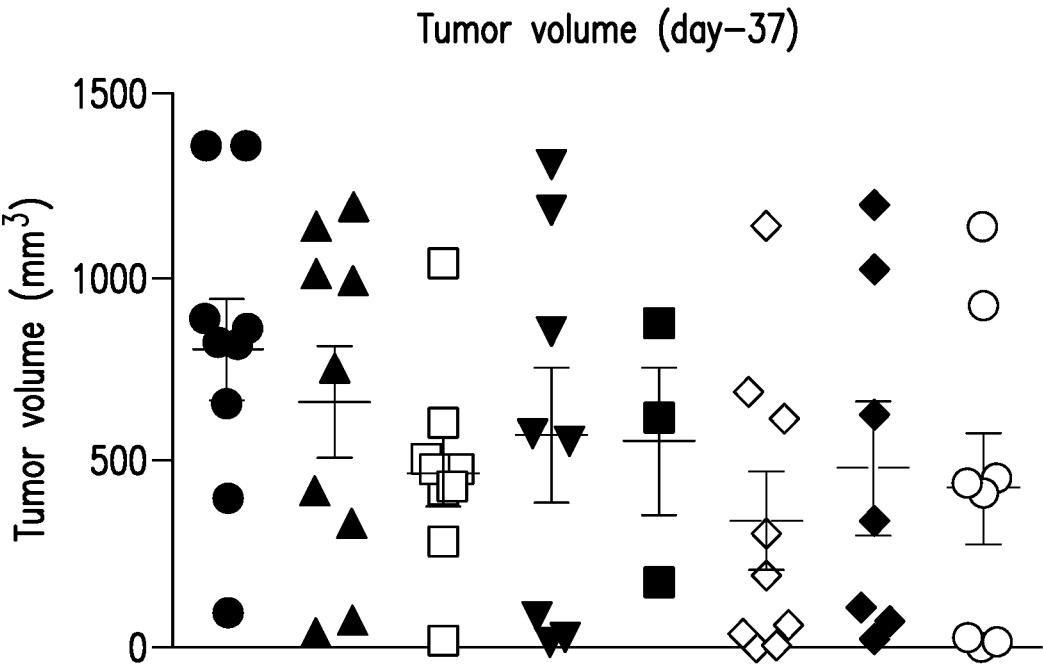


FIG.9B

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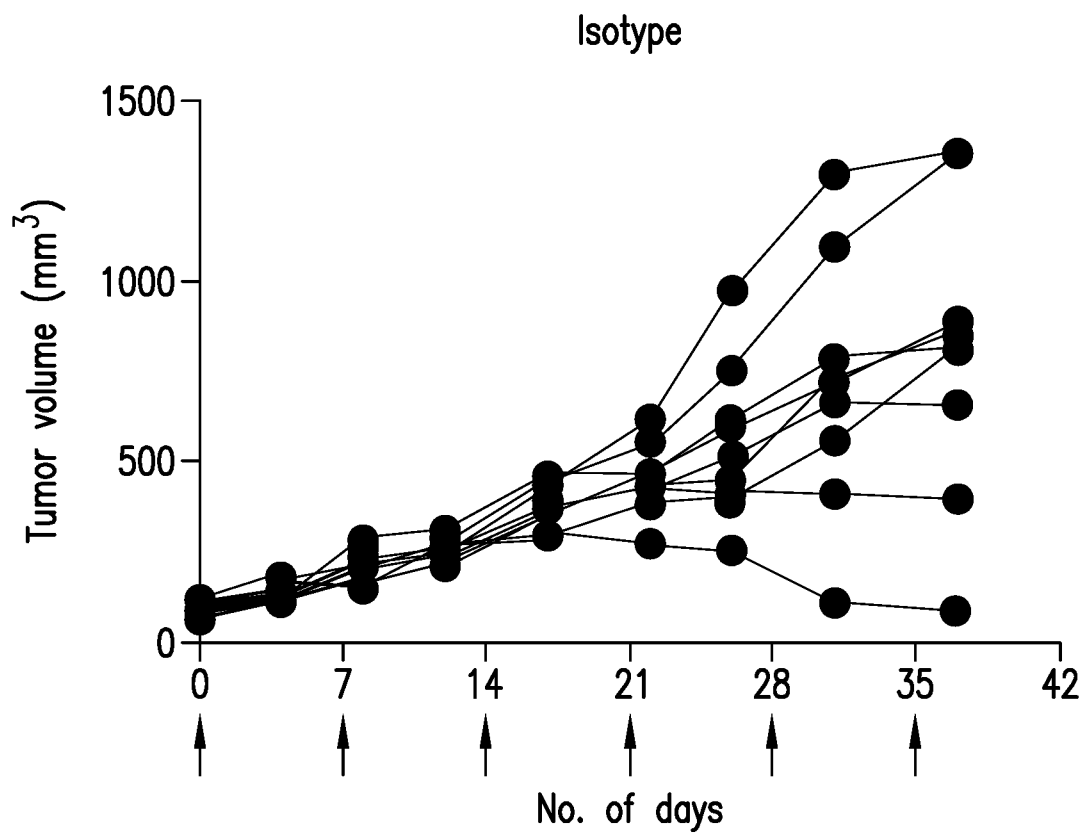


FIG.9C

Ipilimumab (N297A)

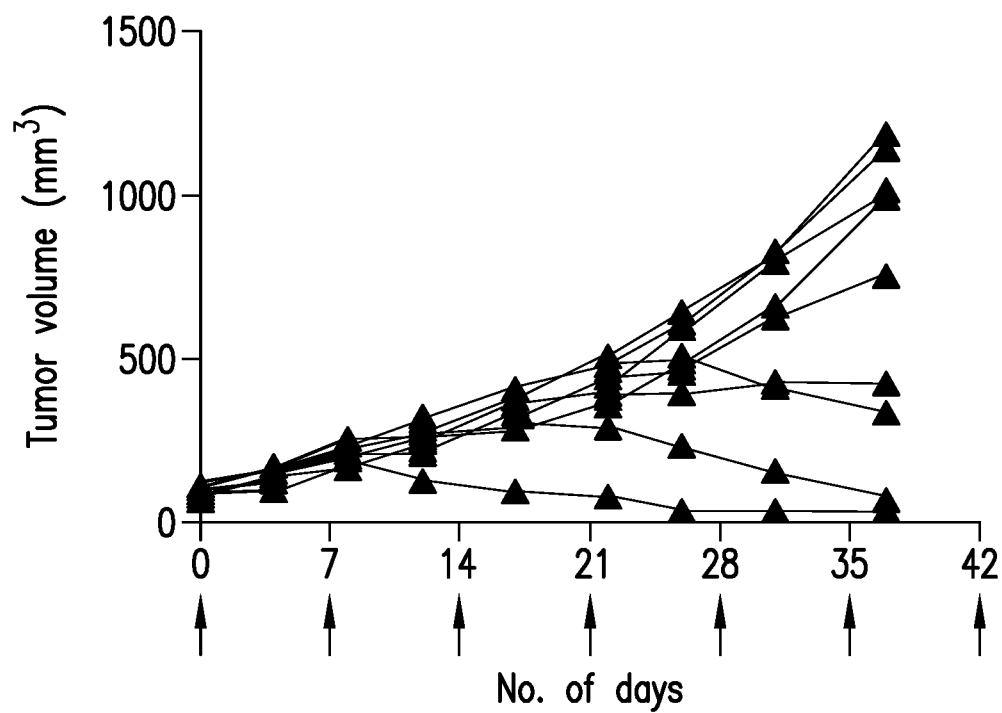


FIG.9D

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Ipilimumab

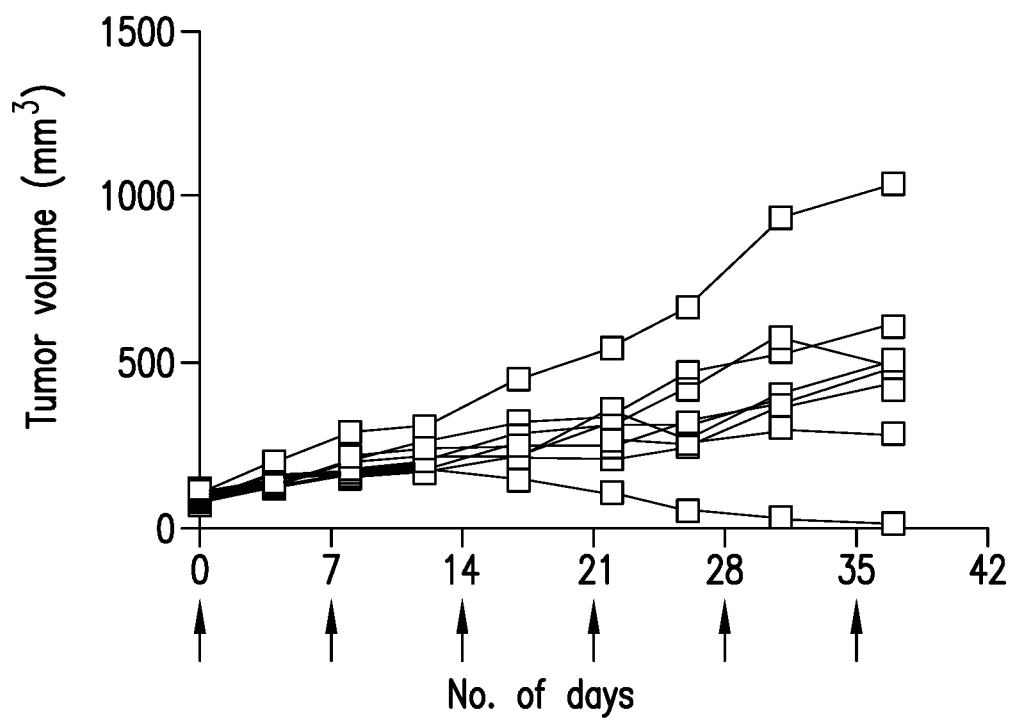


FIG. 9E

Pembrolizumab

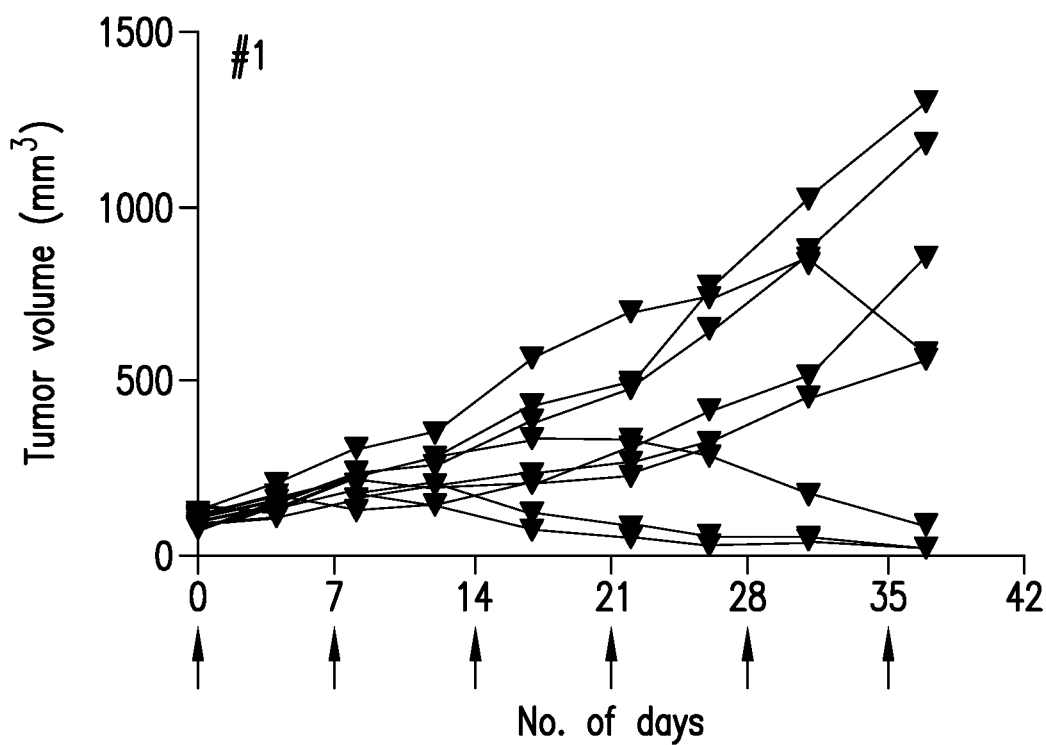


FIG. 9F

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Ipilimumab+Pembrolizumab

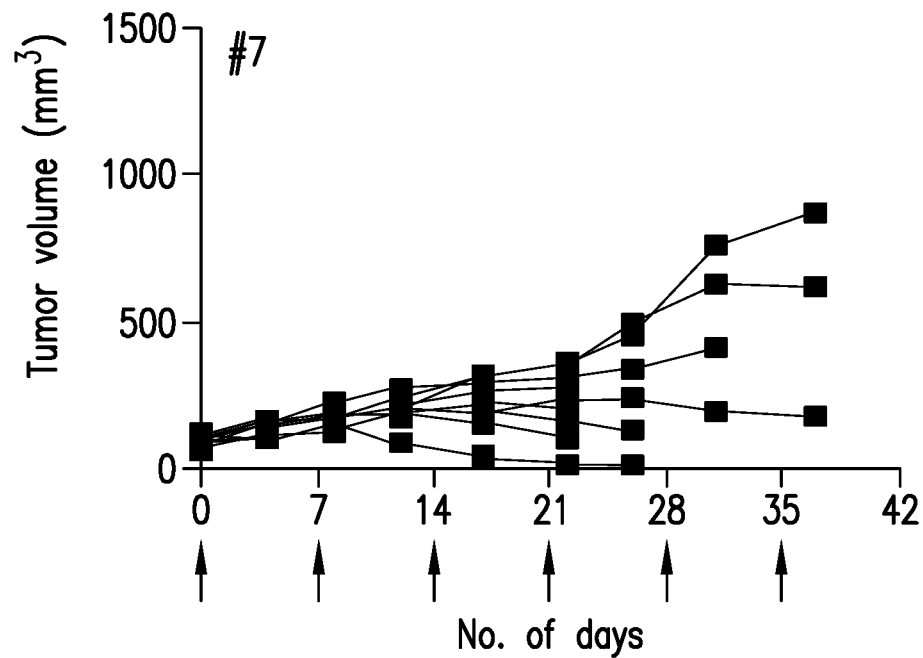


FIG.9G

CTLA4 Nab-5mpk

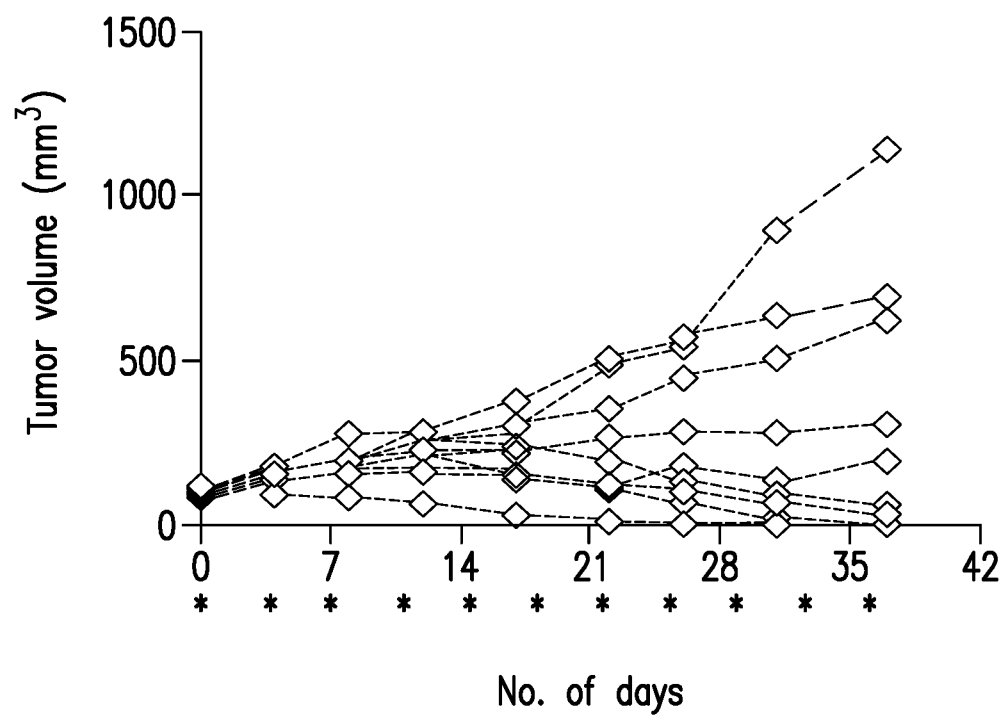


FIG.9H

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CTLA4 Nab-15mpk

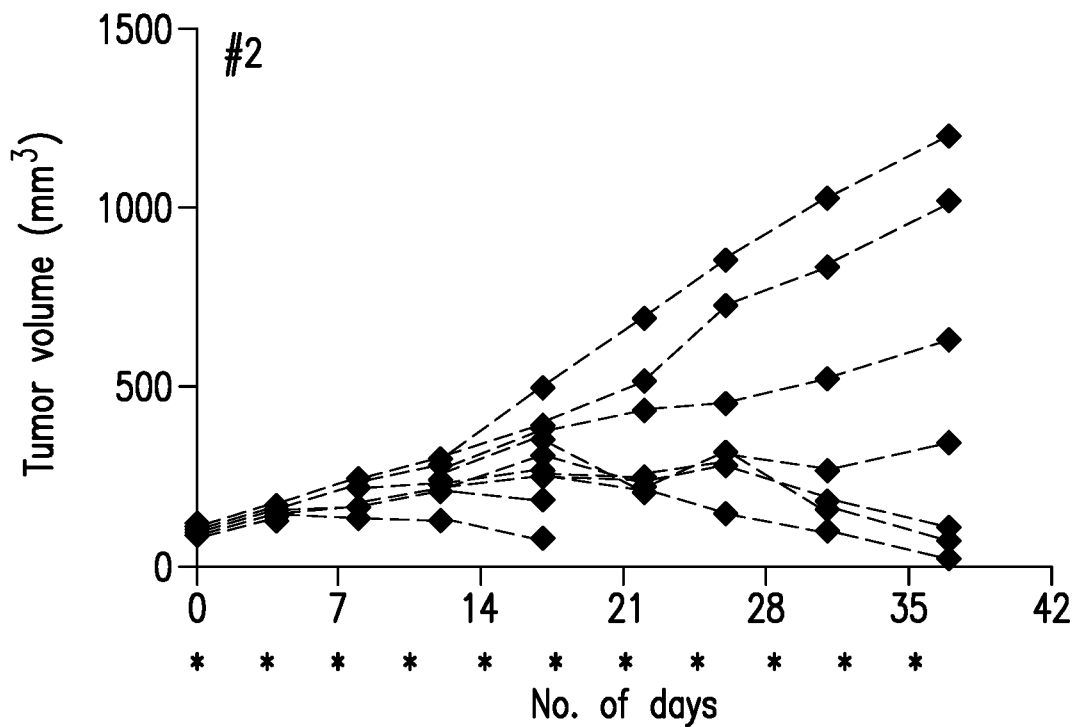


FIG. 9I

Pembrolizumab+CTLA4 Nab-15mpk

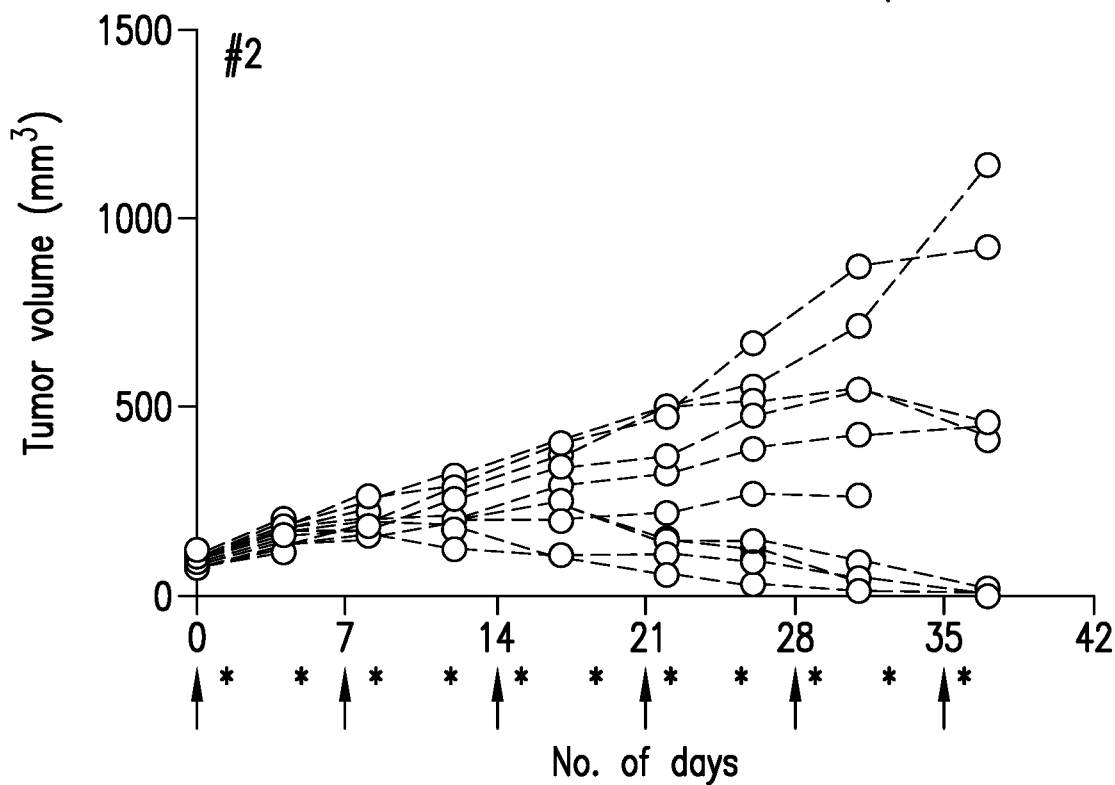


FIG. 9J

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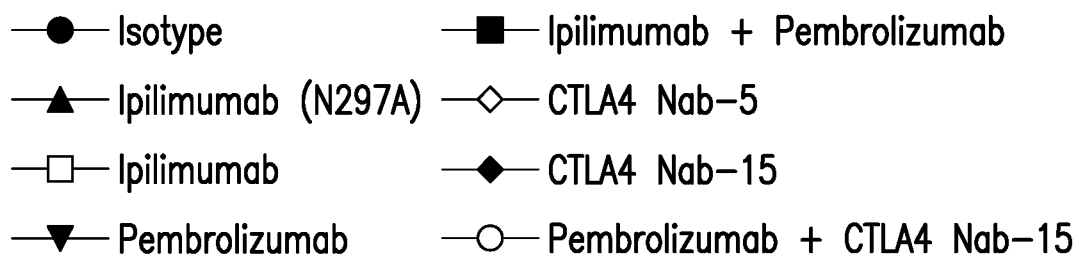
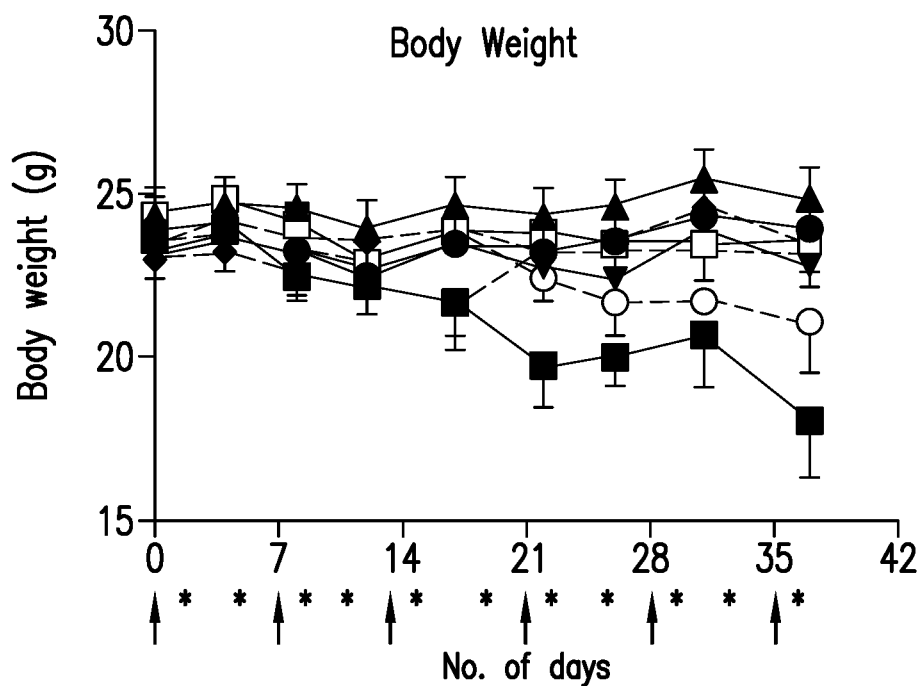


FIG. 9K

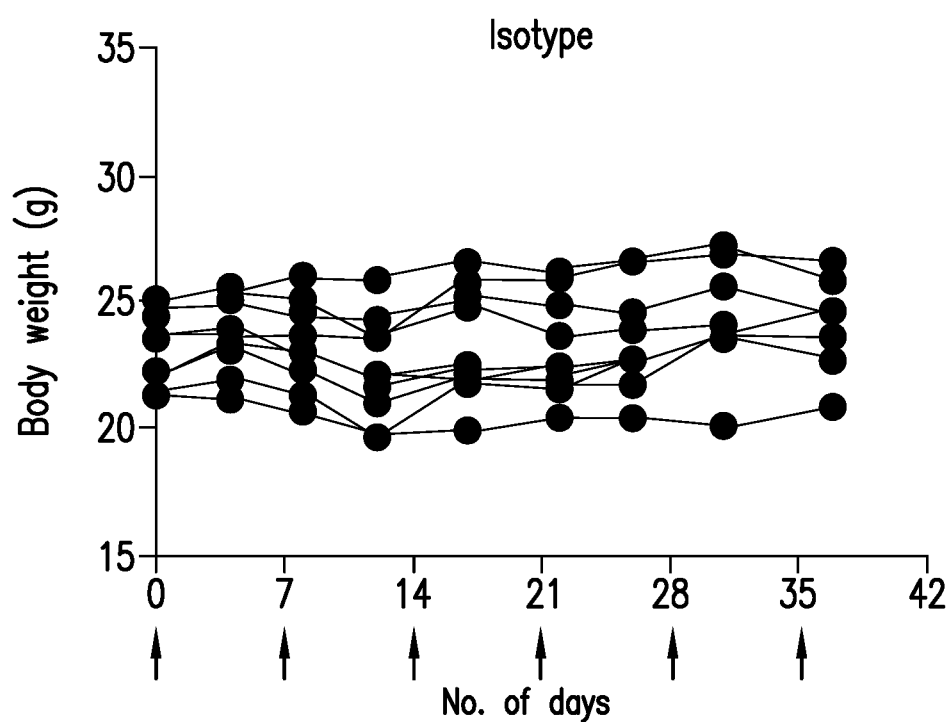
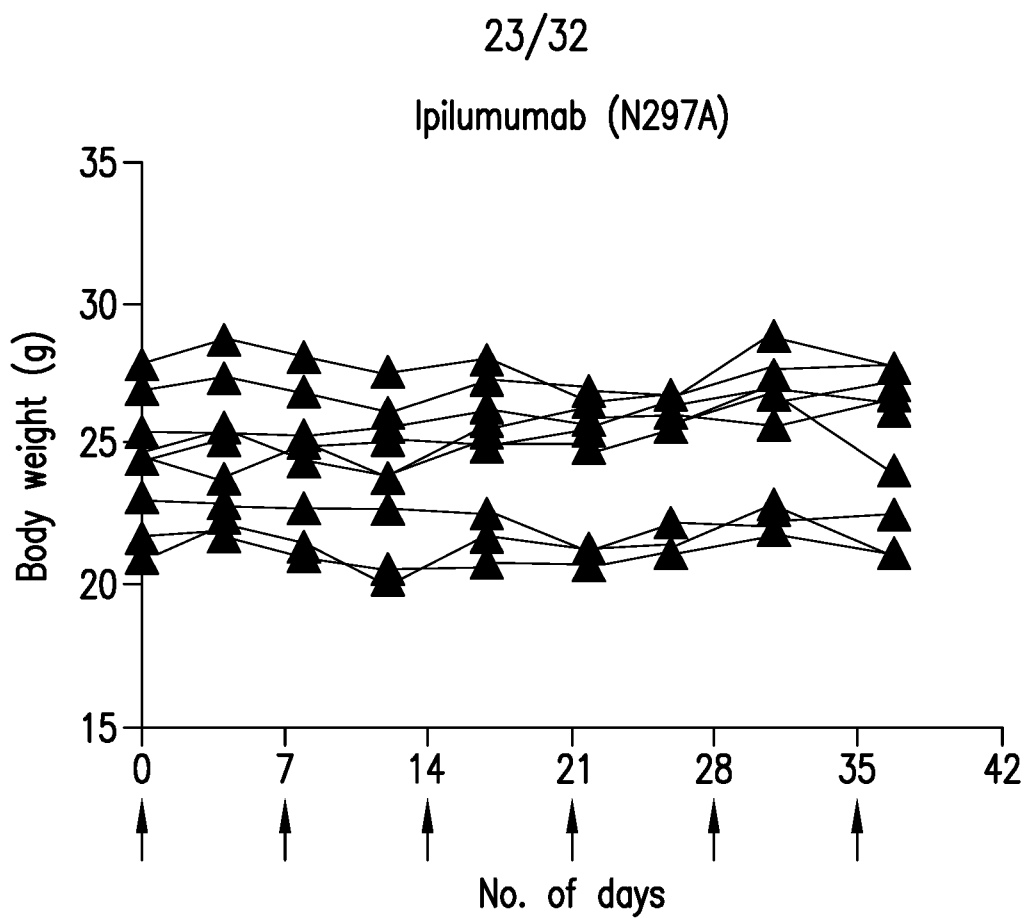
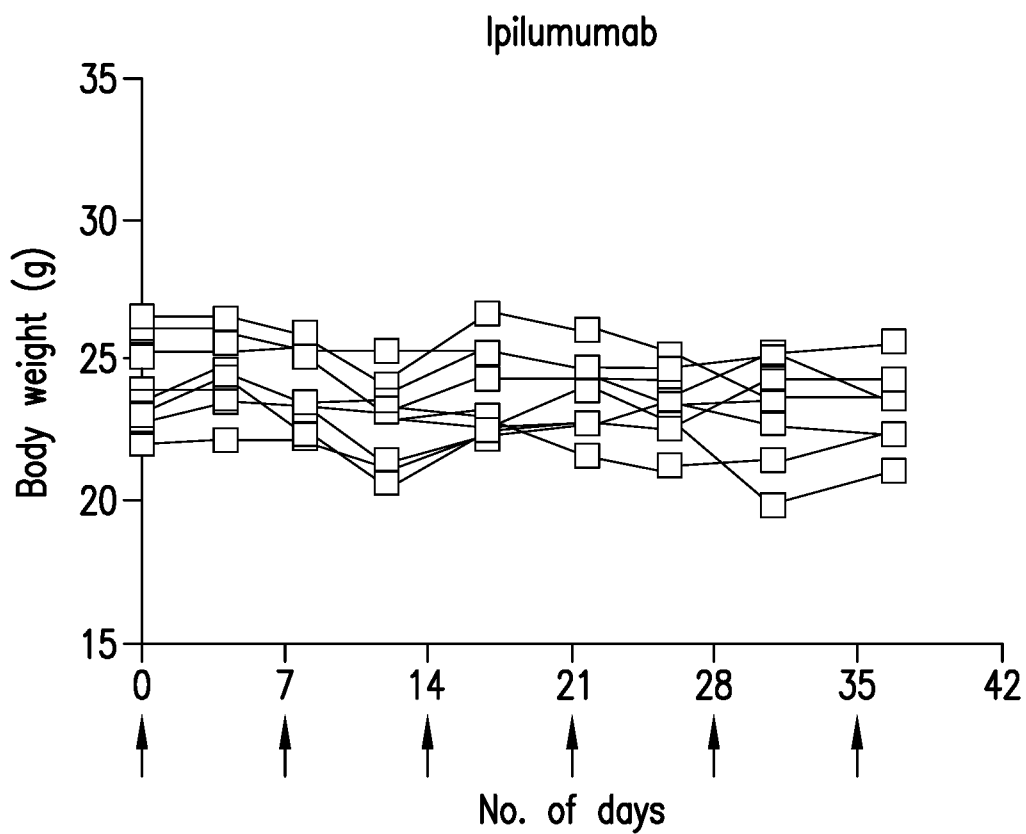


FIG. 9L



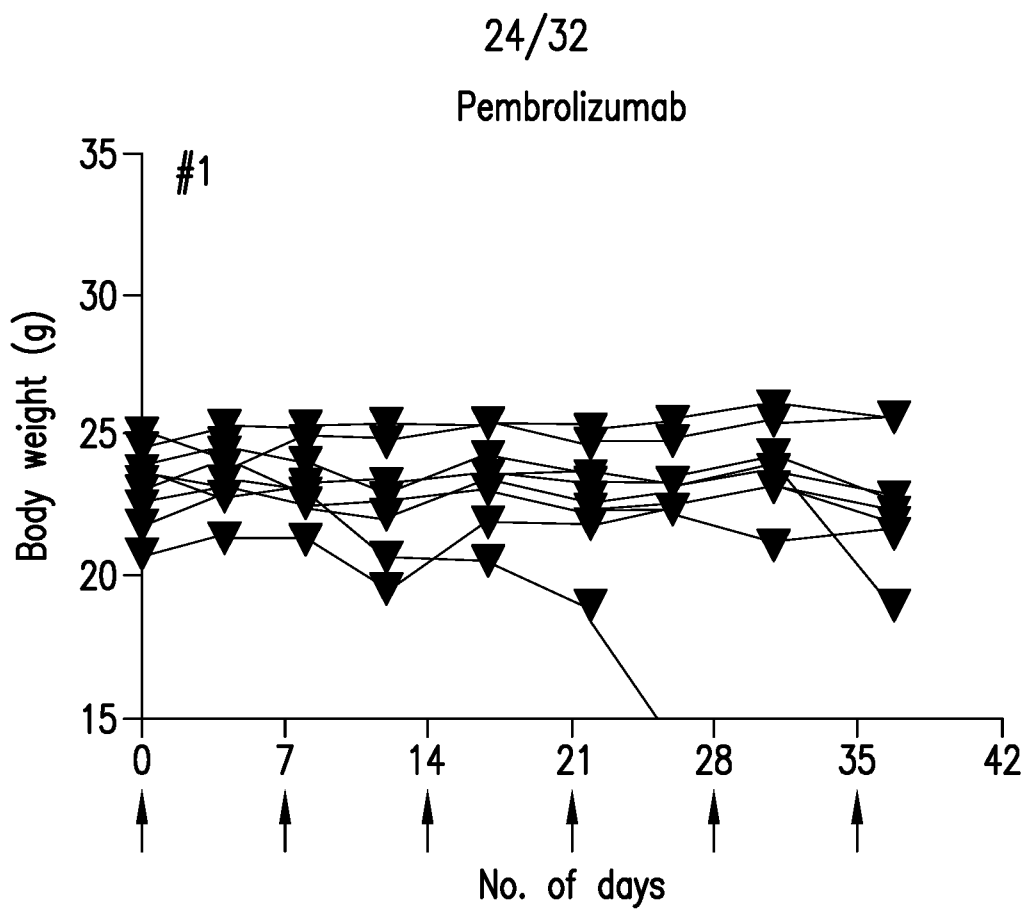


FIG.9O

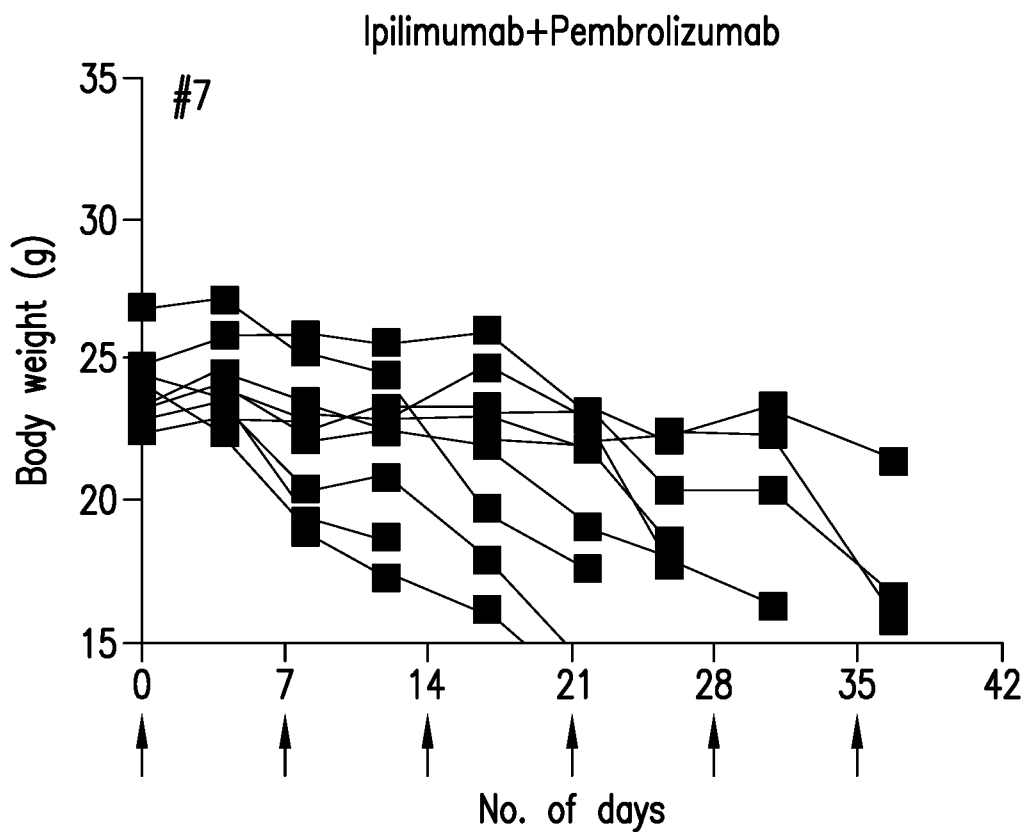


FIG.9P

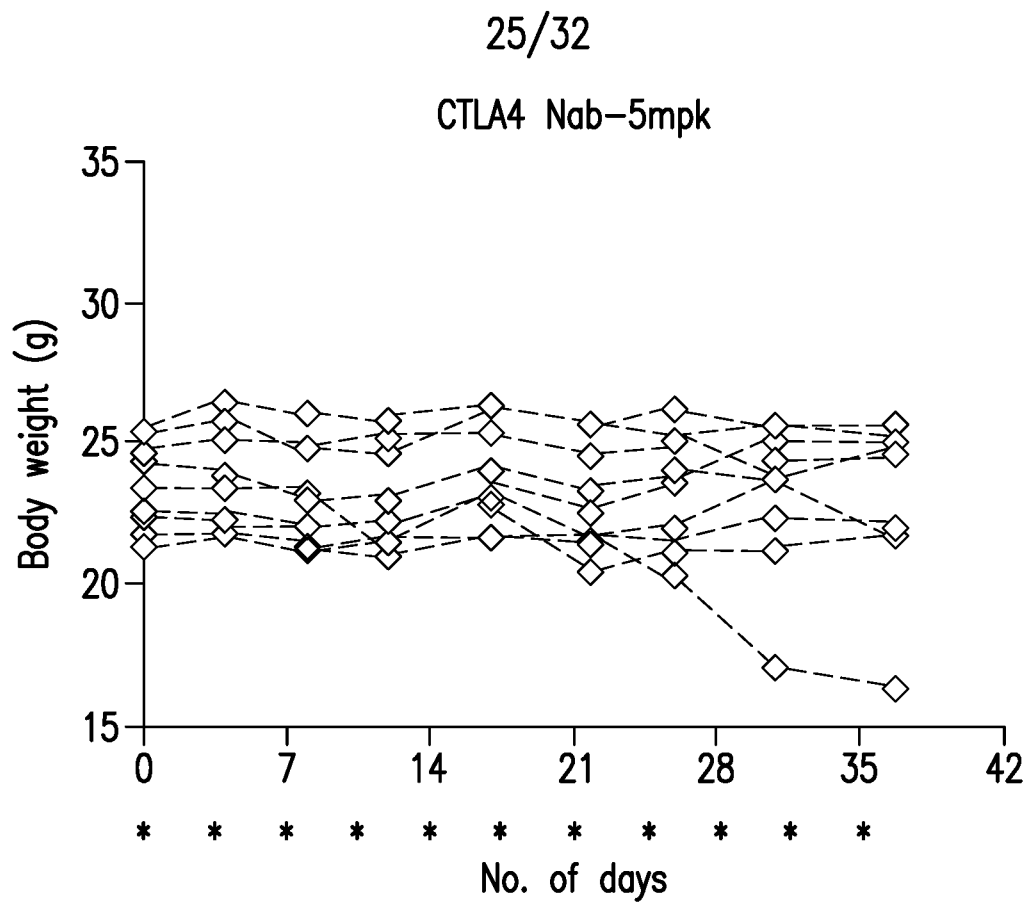


FIG.9Q

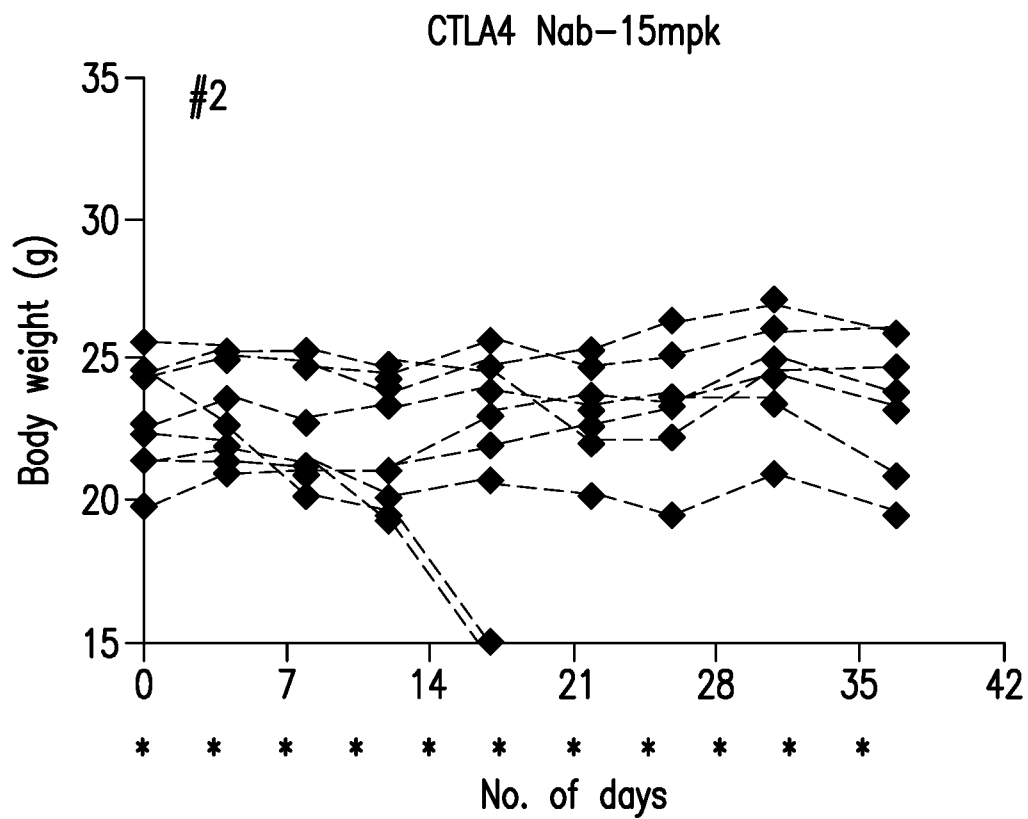


FIG.9R

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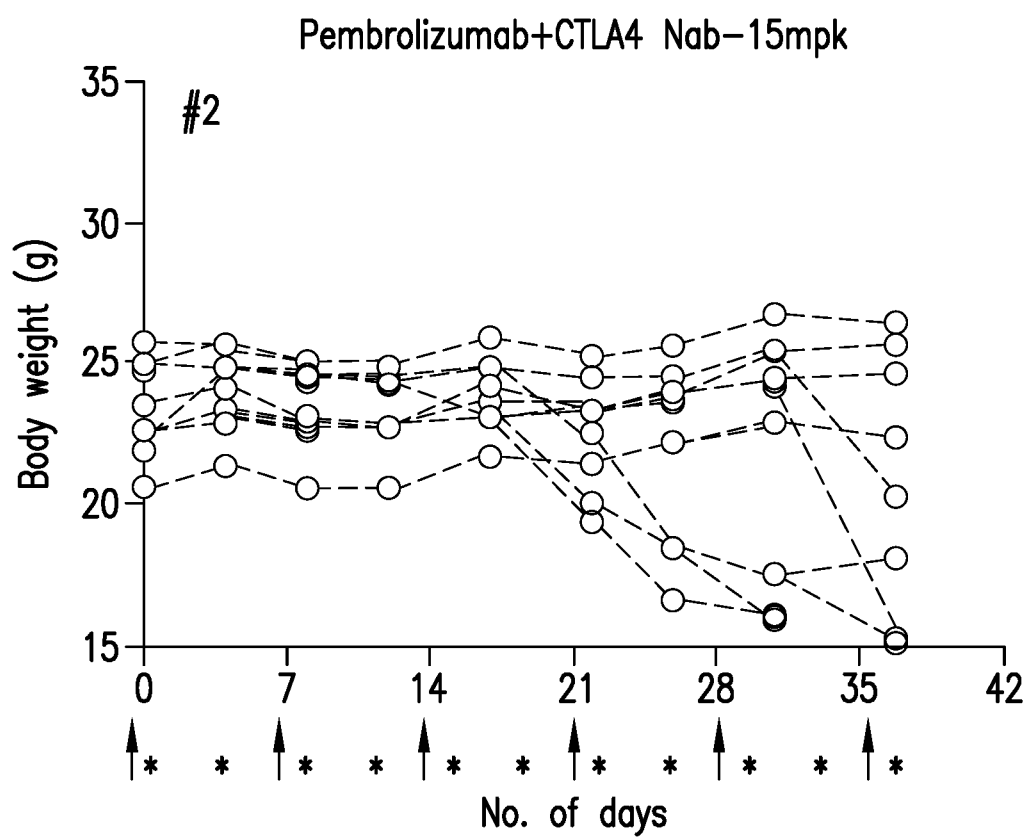


FIG.9S

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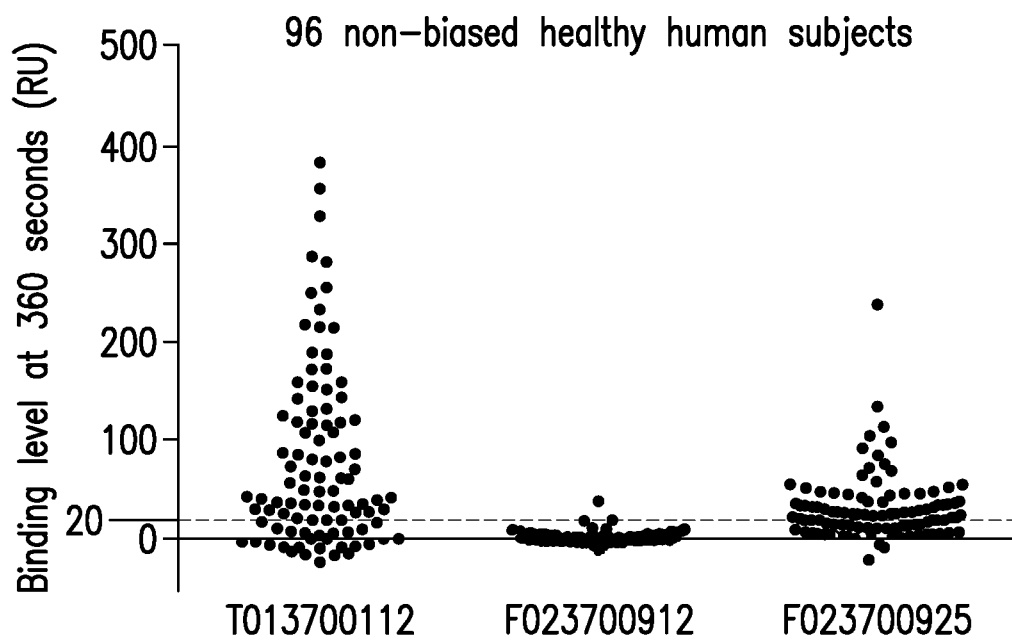


FIG.10A

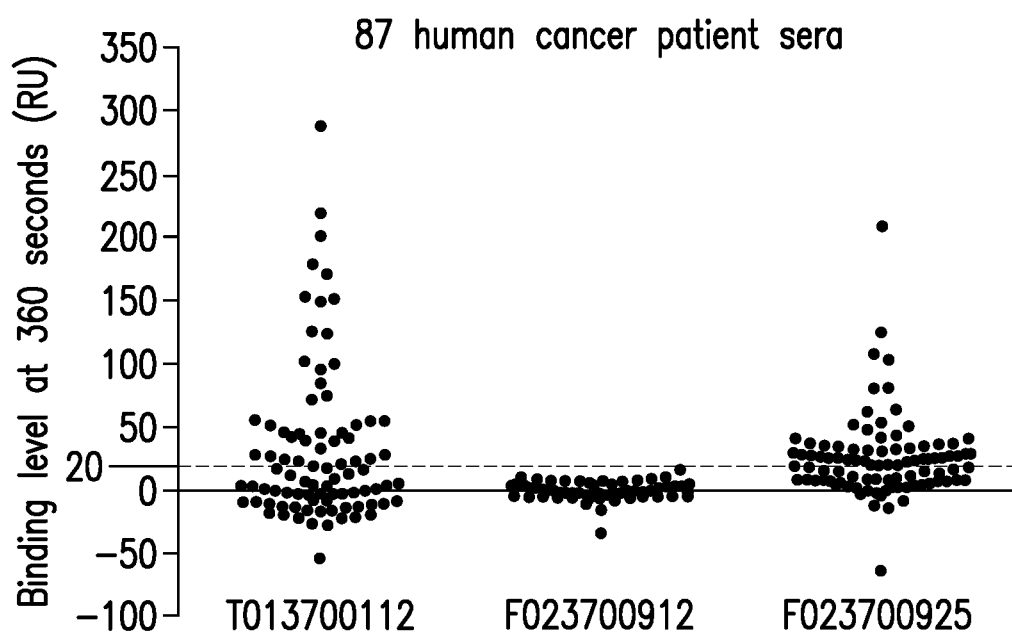


FIG.10B

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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

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDN
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDKDHDIDYKDDDDKGAHHH
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

DVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDN
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSGGGGSGGGSGGGSGGGSGGGSGGGSGG
GGGSEVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTIS
RDNSKNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSGGGGSGGGSGGGSGGGSGGGSGG
GGSGGGGSEVQLVESGGGVVQPGNSLRRLSCAASGTFSSFGMSWVRQAPGKLEWVSSISGSGSDTLYADSVKGR
FTISRDNKTTLYLQMNSLRPEDTALYYCTIGGSLSRSSQGTLLTVSSA (SEQ ID NO: 62)

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

DVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDN
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSGGGGSGGGSGGGSGGGSGGGSGG
GGGSEVQLVESGGGVVQPGNSLRRLSCAASGTFSSFGMSWVRQAPGKLEWVSSISGSGSDTLYADSVKGRFTIS
RDNAKTTLYLQMNSLRPEDTALYYCTIGGSLSRSSQGTLLTVSSA (SEQ ID NO: 64)

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

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 94)

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

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 95)

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

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 96)

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

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDRS
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDKDHDIDYKDDDDKGAHHH
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

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRQDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 98)

>PF023701052.1 4CTLA011F01(L11V,A14P,Q45R,N73M,A74S,K83R,V89L,M96P,Q108L)–
FLAG3–HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDM
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 99)

>PF023701053.1 4CTLA011F01(L11V,A14P,Q45R,N73H,A74S,K83R,V89L,M96P,Q108L)–
FLAG3–HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 100)

>PF023701054.1 4CTLA011F01(L11V,A14P,Q45R,N73T,A74S,K83R,V89L,M96P,Q108L)–
FLAG3–HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 101)

>PF023701055.1 4CTLA011F01(L11V,A14P,Q45R,N73D,A74S,K83R,V89L,M96P,Q108L)–
FLAG3–HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 102)

>PF023701056.1 4CTLA011F01(L11V,A14P,Q45R,N73E,A74S,K83R,V89L,M96P,Q108L)–
FLAG3–HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDE
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 103)

>PF023701057.1 4CTLA011F01(L11V,A14P,Q45R,N73W,A74S,K83R,V89L,M96P,Q108L)–
FLAG3–HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 104)

>PF023701058.1 4CTLA011F01(L11V,A14P,Q45R,N73F,A74S,K83R,V89L,M96P,Q108L)–
FLAG3–HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDS
KNTVYLQMNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
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
KNTVYLGQNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 106)

>PF023701060.1 4CTLA011F01(L11V,A14P,Q45R,N73A,A74S,K83R,V89L,M96P,Q108L)-
FLAG3-HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDKS
KNTVYLGQNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 107)

>PF023701061.1 4CTLA011F01(L11V,A14P,Q45R,N73Y,A74S,K83R,V89L,M96P,Q108L)-
FLAG3-HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDIS
KNTVYLGQNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 108)

>PF023701062.1 4CTLA011F01(L11V,A14P,Q45R,N73P,A74S,K83R,V89L,M96P,Q108L)-
FLAG3-HIS6

EVQLVESGGGVVQPGGSLRLSCAASGGTFSFYGMGWFRRQAPGKEREFVADIRTSAGRTYYADSVKGRFTISRDPK
KNTVYLGQNSLRPEDTALYYCAAEPGSGISGWDYWGQGTLLTVSSAAADYKDHDGDYKDHDIDYKDDDDKGAHHH
HHH (SEQ ID NO: 109)

FIG.12C

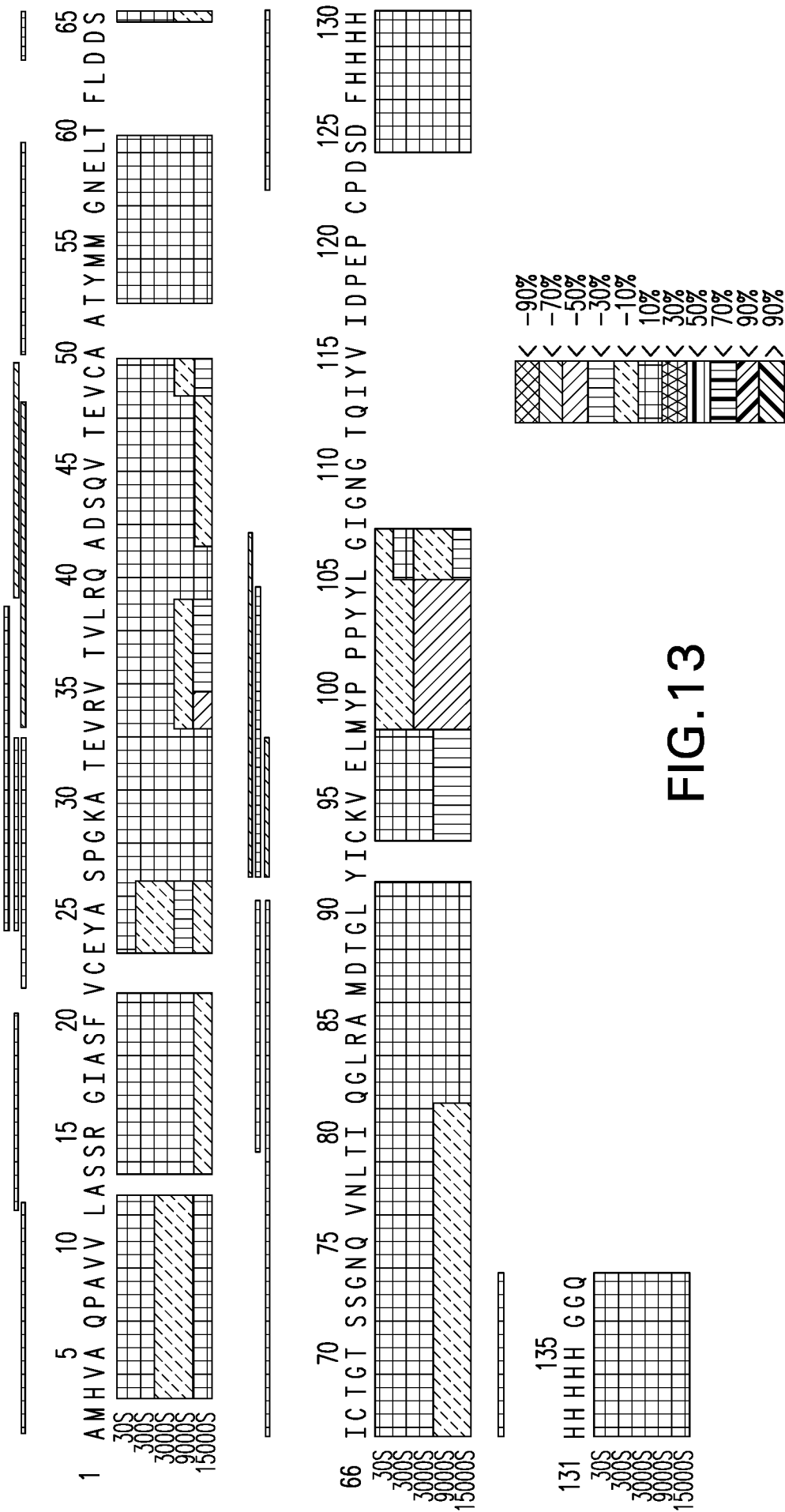


FIG.13