

		CDRH1																				alt. CDRH2																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20																	
Ab 10	L/H chains	E	V	Q	L	Q	Q	S	G	P	E	L	V	K	K	S	C	K	A	S	G	Y	T	F	T	D	N	Y	M	I	W	V	K	Q	S	H	G	K
cAb0301 human acceptor A	parental	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	T	P	T	D	N	Y	M	I	W	V	R	Q	A	P	G	Q
	Ab1	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	T	P	T	D	N	Y	M	I	W	V	R	Q	A	P	G	Q
	Ab2	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	T	P	T	D	N	Y	M	I	W	V	R	Q	A	P	G	Q
	Ab3	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	T	P	T	D	N	Y	M	I	W	V	R	Q	A	P	G	Q
	Ab4	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	T	P	T	D	N	Y	M	I	W	V	R	Q	A	P	G	Q
	Ab5	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	T	P	T	D	N	Y	M	I	W	V	R	Q	A	P	G	Q
Ab6	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	T	P	T	D	N	Y	M	I	W	V	R	Q	A	P	G	Q	
cAb0302 human acceptor B	parental	E	I	Q	L	Q	Q	S	G	P	E	L	V	K	K	S	C	K	A	S	G	Y	T	F	S	D	P	N	I	H	W	V	K	Q	K	P	G	Q
	Ab7	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	T	P	S	D	P	N	I	H	W	V	R	Q	A	P	G	Q
	Ab8	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	T	P	S	D	P	N	I	H	W	V	R	Q	A	P	G	Q
	Ab9	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	T	P	S	D	P	N	I	H	W	V	R	Q	A	P	G	Q
	Ab10	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	T	P	S	D	P	N	I	H	W	V	R	Q	A	P	G	Q
	Ab11	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	T	P	S	D	P	N	I	H	W	V	R	Q	A	P	G	Q
Ab12	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	T	P	S	D	P	N	I	H	W	V	R	Q	A	P	G	Q	
cAb 0311 human acceptor C	parental	E	I	Q	L	Q	Q	S	G	P	E	D	L	M	K	K	S	C	K	A	S	G	Y	I	F	T	D	Y	N	M	H	W	V	K	Q	N	Q	K
	Ab13	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	I	F	T	D	Y	N	M	H	W	V	R	Q	A	P	G	Q
	Ab14	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	I	F	T	D	Y	N	M	H	W	V	R	Q	A	P	G	Q
	Ab15	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	I	F	T	D	Y	N	M	H	W	V	R	Q	A	P	G	Q
	Ab16	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	I	F	T	D	Y	N	M	H	W	V	R	Q	A	P	G	Q
	Ab16	Q	V	Q	L	V	Q	S	G	A	E	V	K	K	V	S	C	K	A	S	G	Y	I	F	T	D	Y	N	M	H	W	V	R	Q	A	P	G	Q

FIG. 1A

Ab ID	L/H chains	CDRH2																				C	L	H	L																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
cAb0301 human acceptor A	parental	S	L	E	W	I	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

FIG. 1B

Ab ID	L/H chains	CDRH3																SEQ ID NO
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
cAb0301	parental	N	S	L	T	S	E	D	S	A	V	Y	Y	C	A	R	R	9
	human acceptor A	S	S	L	R	S	E	D	T	A	V	Y	Y	C	A	R	R	69-72
	Ab1 h0301-L0H0	S	S	L	R	S	E	D	T	A	V	Y	Y	C	A	R	R	39
	Ab2 h0301-L0H1	S	S	L	R	S	E	D	T	A	V	Y	Y	C	A	R	R	40
	Ab3 h0301-L0H2	S	S	L	R	S	E	D	T	A	V	Y	Y	C	A	R	R	41
	Ab4 h0301-L1H0	S	S	L	R	S	E	D	T	A	V	Y	Y	C	A	R	R	39
	Ab5 h0301-L1H1	S	S	L	R	S	E	D	T	A	V	Y	Y	C	A	R	R	40
cAb0302	parental	S	S	L	R	S	E	D	T	A	V	Y	Y	C	A	R	R	41
	human acceptor B	S	S	L	T	S	E	D	S	A	V	Y	Y	C	A	R	R	11
	Ab7 h0302-L0H1	S	S	L	R	S	E	D	T	A	V	Y	Y	C	A	R	R	73-76
	Ab8 h0302-L1H1	S	S	L	R	S	E	D	T	A	V	Y	Y	C	A	R	R	42
	Ab9 h0302-L2H1	S	S	L	R	S	E	D	T	A	V	Y	Y	C	A	R	R	42
	Ab10 h0302-L0H2	S	S	L	R	S	E	D	T	A	V	Y	Y	C	A	R	R	42
	Ab11 h0302-L1H2	S	S	L	R	S	E	D	T	A	V	Y	Y	C	A	R	R	43
cAb 0311	parental	S	S	L	R	S	E	D	T	A	V	Y	Y	C	A	R	R	43
	human acceptor C	H	S	L	T	S	E	D	S	A	V	Y	Y	C	T	R	R	13
	Ab13 h0311-L0H1	S	S	L	R	S	E	D	T	A	V	Y	Y	C	T	R	R	77-80
	Ab14 h0311-L1H1	S	S	L	R	S	E	D	T	A	V	Y	Y	C	T	R	R	44
	Ab15 h0311-L0H2	S	S	L	R	S	E	D	T	A	V	Y	Y	C	T	R	R	44
	Ab16 h0311-L1H2	S	S	L	R	S	E	D	T	A	V	Y	Y	C	T	R	R	45
		S	S	L	R	S	E	D	T	A	V	Y	Y	C	T	R	R	45

FIG. 1C

Ab ID	L/R chains	CD3L1																						
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
cAb0301	parental	N	I	V	L	T	Q	S	P	A	S	L	A	V	S	L	G	Q	R	A	T	I	S	C
	human acceptor D	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab1 h0301-L0H0	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab2 h0301-L0H1	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab3 h0301-L0H2	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab4 h0301-L1H0	N	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab5 h0301-L1H1	N	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
Ab6 h0301-L1H2	N	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C	
cAb0302	parental	D	V	V	V	T	Q	T	P	A	S	L	A	V	S	L	G	Q	R	A	T	I	S	C
	human acceptor E	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab7 h0302-L0H1	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab8 h0302-L1H1	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab9 h0302-L2H1	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab10 h0302-L0H2	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab11 h0302-L1H2	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
Ab12 h0302-L2H2	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C	
cAb 0311	parental	D	I	V	L	T	Q	S	P	A	S	L	A	V	S	L	G	Q	R	A	T	I	S	C
	human acceptor F	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab13 h0311-L0H1	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab14 h0311-L1H1	D	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab15 h0311-L0H2	E	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
	Ab16 h0311-L1H2	D	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C
		D	I	V	L	T	Q	S	P	A	T	L	S	L	S	P	G	E	R	A	T	L	S	C

FIG. 2A

Ab ID	L/H chains	CDRL2															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
cAb0301 human parental	parental	W	Y	Q	Q	K	P	G	Q	P	K	L	L	I	Y	A	G
	human acceptor D	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	G	I
	Ab1	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	A	G
	Ab2	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	A	G
	Ab3	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	A	G
	Ab4	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	A	G
	Ab5	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	A	G
cAb0302 human parental	parental	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	A	G
	human acceptor E	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	T	G
	Ab7	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	T	G
	Ab8	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	T	G
	Ab9	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	T	G
	Ab10	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	T	G
	Ab11	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	T	G
cAb 0311 human parental	parental	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	T	G
	human acceptor F	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	T	G
	Ab13	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	T	G
	Ab14	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	T	G
	Ab15	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	T	G
	Ab16	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	T	G
	Ab16	W	Y	Q	Q	K	P	G	Q	A	P	R	L	I	Y	T	G

FIG. 2B

Ab ID	L/H chains	CDRL3																SEQ ID NO
		71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	
Ab0301	parental	F	T	L	N	I	H	P	V	E	E	E	D	A	A	T	Y	10
human acceptor D		F	T	L	T	I	S	S	L	E	E	E	D	F	A	V	Y	81-84
Ab1	h0301-L0H0	F	T	L	T	I	S	S	L	E	E	E	D	F	A	V	Y	45
Ab2	h0301-L0H1	F	T	L	T	I	S	S	L	E	E	E	D	F	A	V	Y	46
Ab3	h0301-L0H2	F	T	L	T	I	S	S	L	E	E	E	D	F	A	V	Y	46
Ab4	h0301-L1H0	F	T	L	T	I	S	S	L	E	E	E	D	F	A	V	Y	47
Ab5	h0301-L1H1	F	T	L	T	I	S	S	L	E	E	E	D	F	A	V	Y	47
Ab6	h0301-L1H2	F	T	L	T	I	S	S	L	E	E	E	D	F	A	V	Y	47
Ab0302	parental	F	T	L	T	I	D	P	V	E	E	E	L	P	W	T	T	12
human acceptor E		F	T	L	T	I	S	S	L	E	E	E	L	P	W	T	T	85-88
Ab7	h0302-L0H1	F	T	L	T	I	S	S	L	E	E	E	L	P	W	T	T	48
Ab8	h0302-L1H1	F	T	L	T	I	S	S	L	E	E	E	L	P	W	T	T	49
Ab9	h0302-L2H1	F	T	L	T	I	S	S	L	E	E	E	L	P	W	T	T	50
Ab10	h0302-L0H2	F	T	L	T	I	S	S	L	E	E	E	L	P	W	T	T	48
Ab11	h0302-L1H2	F	T	L	T	I	S	S	L	E	E	E	L	P	W	T	T	49
Ab12	h0302-L2H2	F	T	L	T	I	S	S	L	E	E	E	L	P	W	T	T	50
Ab0311	parental	F	T	L	T	I	H	P	V	E	E	E	D	P	W	T	T	14
human acceptor F		F	T	L	T	I	S	S	L	E	E	E	D	P	W	T	T	89-92
Ab13	h0311-L0H1	F	T	L	T	I	S	S	L	E	E	E	D	P	W	T	T	51
Ab14	h0311-L1H1	F	T	L	T	I	S	S	L	E	E	E	D	P	W	T	T	52
Ab15	h0311-L0H2	F	T	L	T	I	S	S	L	E	E	E	D	P	W	T	T	53
Ab16	h0311-L1H2	F	T	L	T	I	S	S	L	E	E	E	D	P	W	T	T	54

FIG. 2C

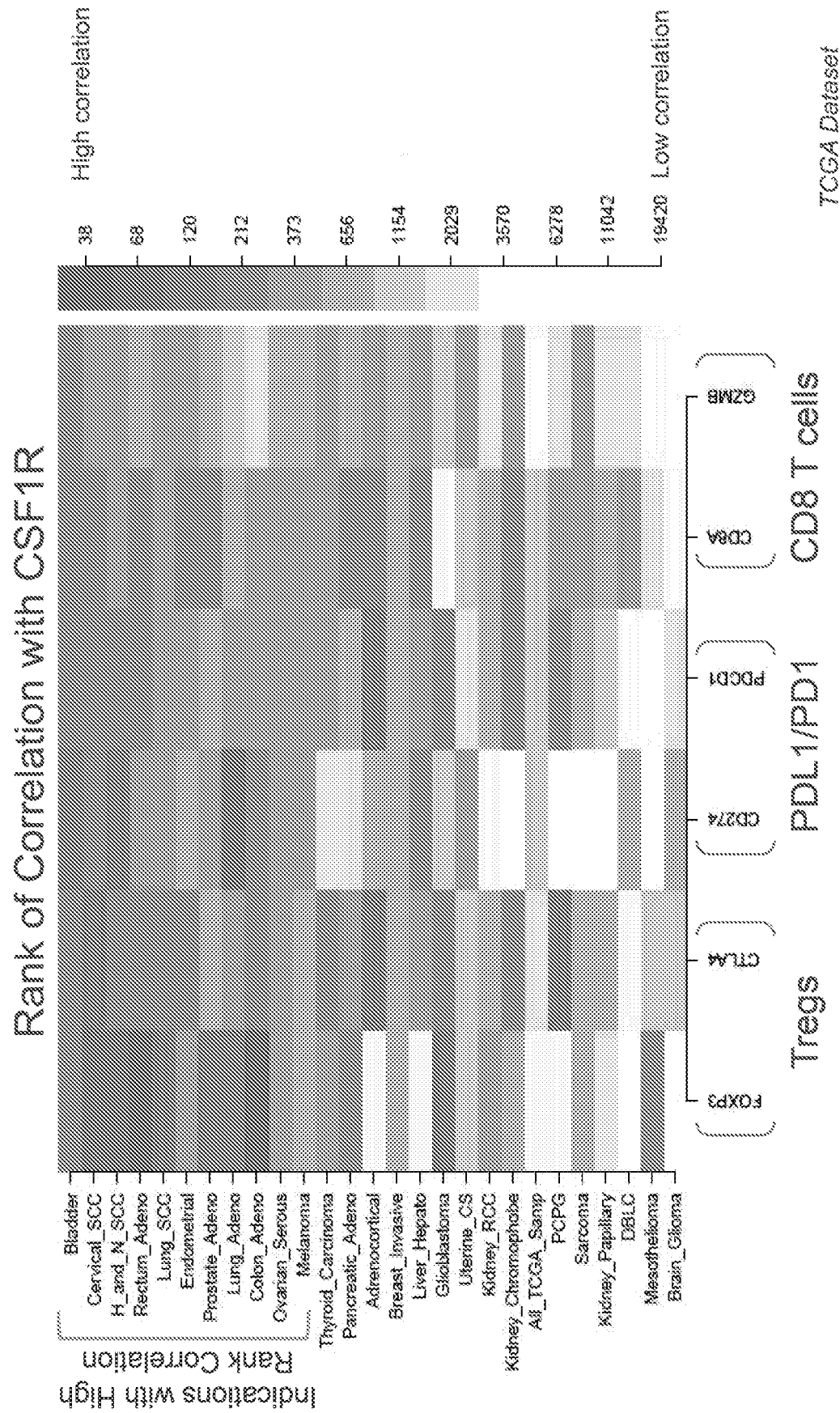


FIG. 3

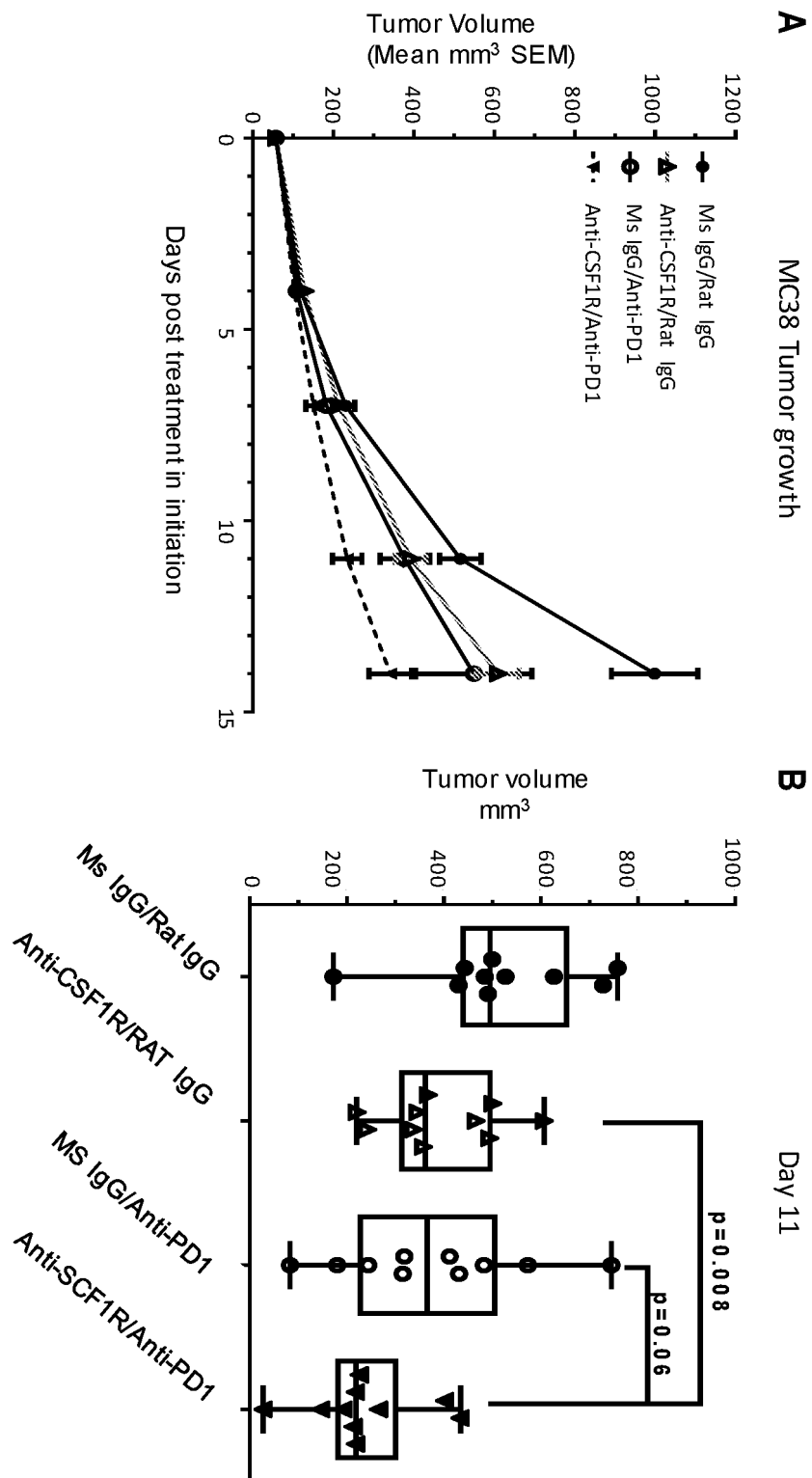
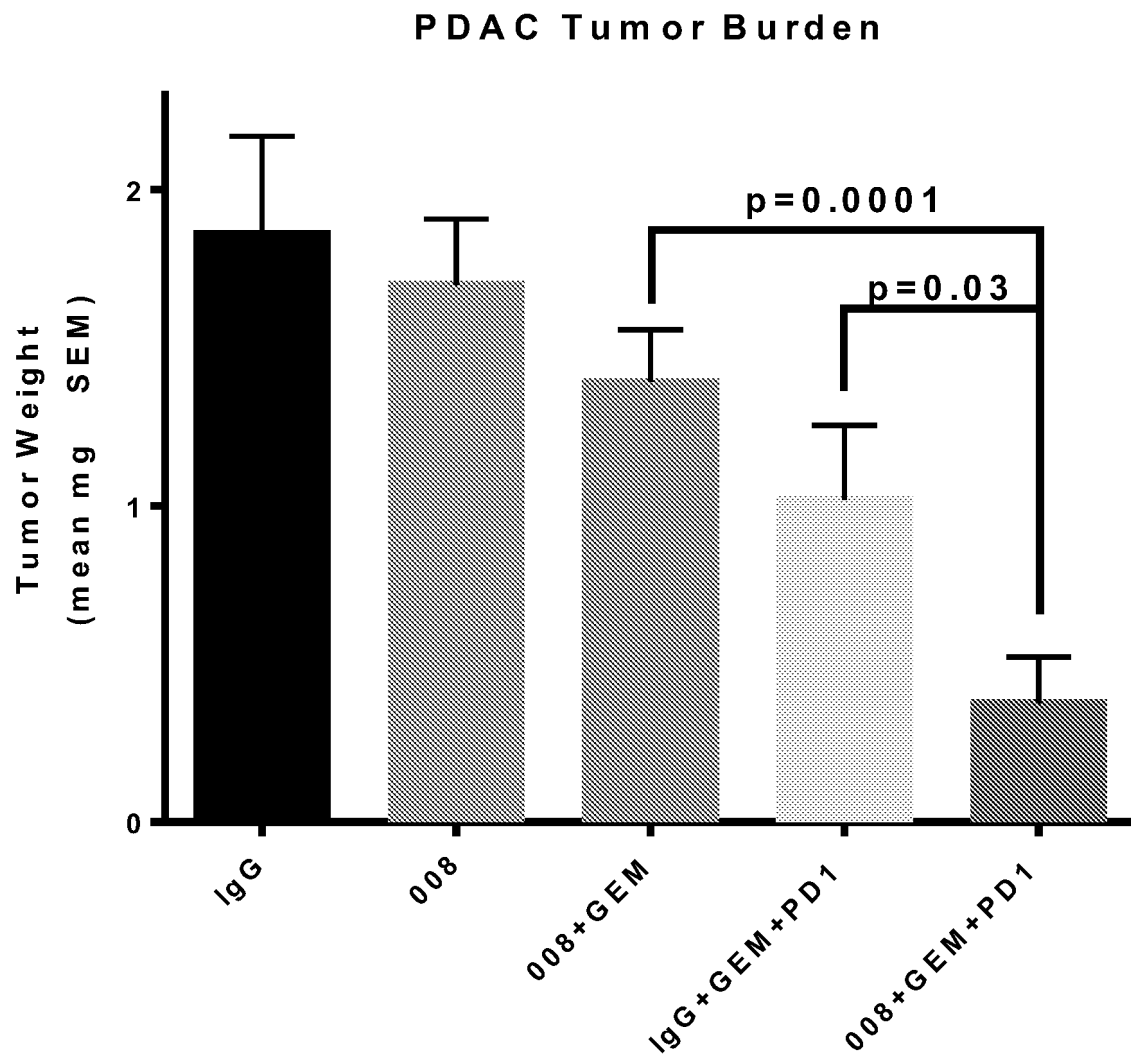


FIG. 4A and 4B

**FIG. 5**

Summary of Study Design

Screening Assessments (All Cohorts): Within 28 days of first study drug dose

Phase 1a

- 1) HuAB1 Monotherapy (two cohorts)
- 2) HuAB1 + Nivolumab Dose Escalation (three cohorts)

HuAB1 Monotherapy (q2w)**Cohort 1aM1:**

2 mg/kg HuAB1(FPA008)

Cohort 1aM2:

4 mg/kg HuAB1

(6 - 12 pts with advanced cancers)

3+3 Dose Escalation Combinational Therapy (q2w):**Cohort 1aC1:**

1 mg/kg HuAB1 + 3 mg/kg nivolumab

Cohort 1aC2:

2 mg/kg HuAB1 + 3 mg/kg nivolumab

Cohort 1aC3:

4 mg/kg HuAB1 + 3 mg/kg nivolumab

(9 - 18 pts with advanced cancers)

Phase 1b Dose Expansion at the Recommended Combination Dose of HuAB1 + Nivolumab**Cohort 1b1:** Squamous/Non-squamous NSCLC (Second/third line, anti-PD-1 therapy naïve)**Cohort 1b2:** NSCLC (Refractory on anti-PD-1 targeting drug)**Cohort 1b3:** Melanoma (anti-PD-1 therapy naïve)**Cohort 1b4:** Melanoma (Refractory/Relapse on anti-PD-1 targeting drug)**Cohort 1b5:** SCCHN (Second line)**Cohort 1b6:** Pancreatic Cancer (Second line)**Cohort 1b7:** Colorectal Cancer (Third line)**Cohort 1b8:** GBM (1st Recurrence)

(About 30 pts per cohort, a total of 240 pts)

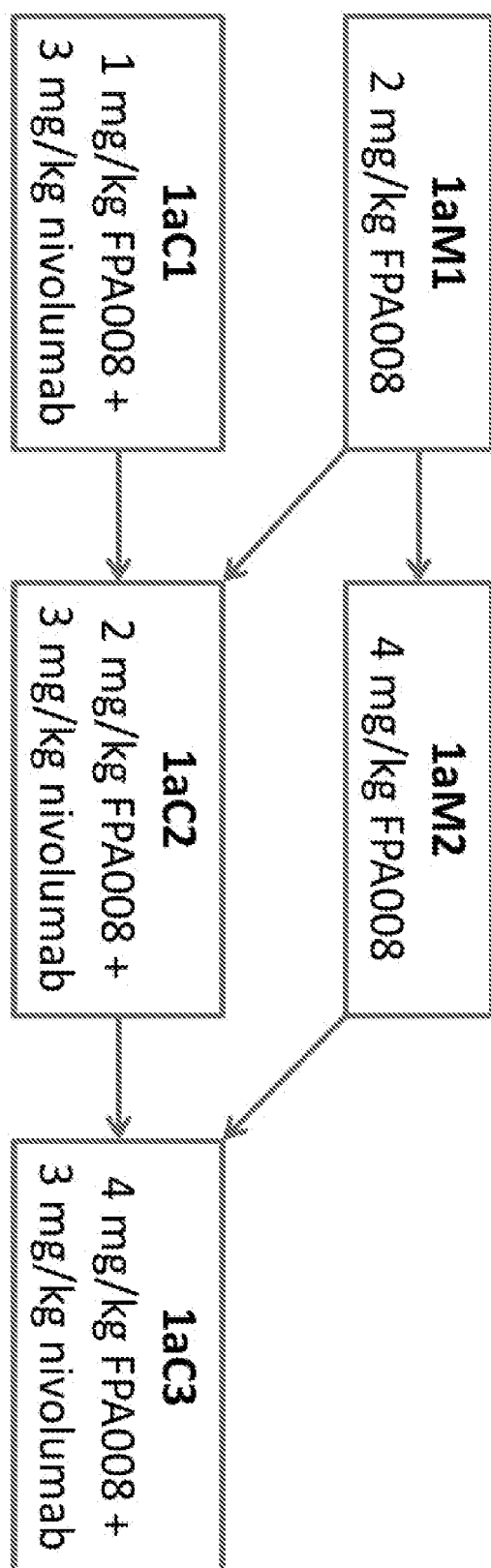
Recommended Dose



Treatment Completion/Early Termination Visit:

28 Days after last dose of study drug(s)

FIG. 6

**FIG. 7**

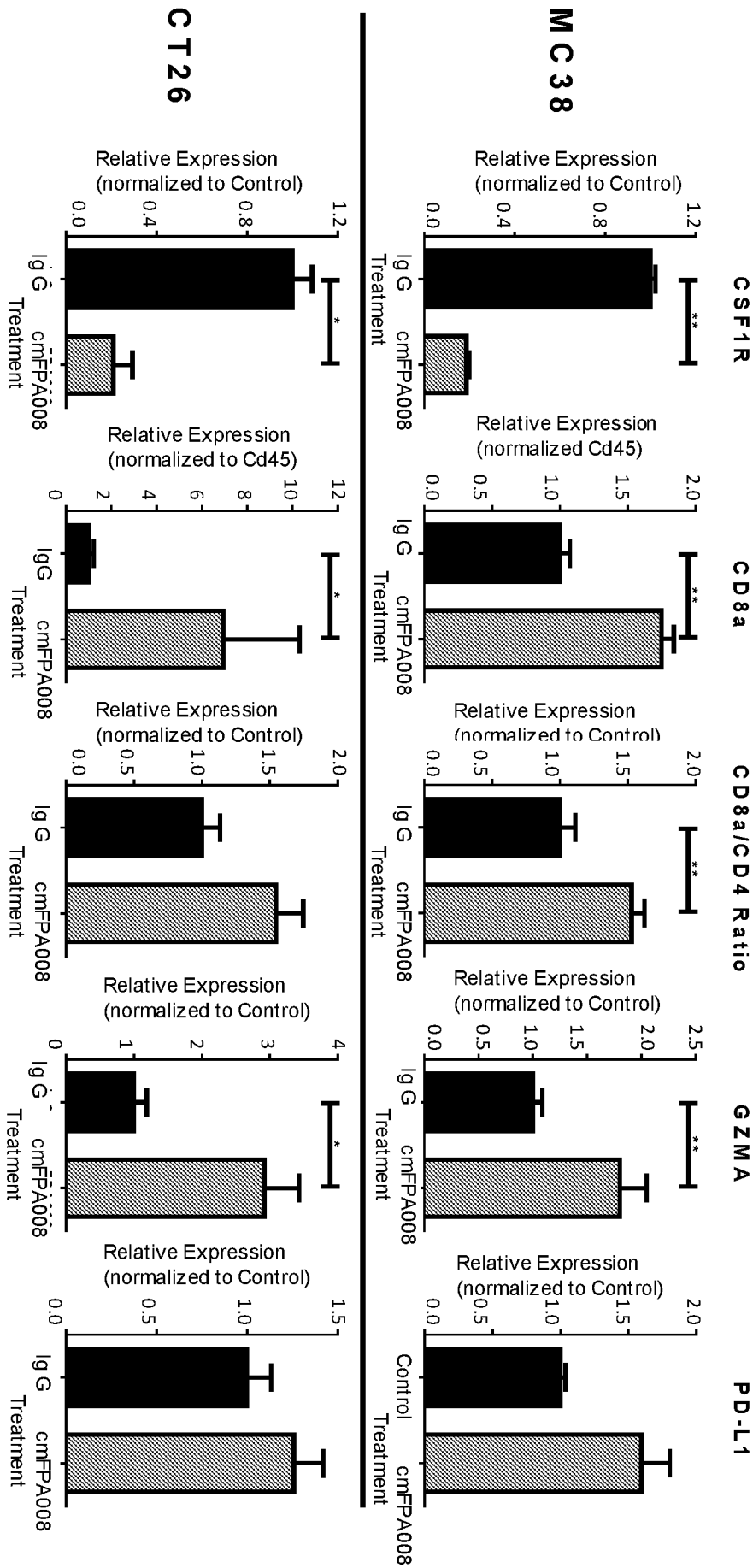


FIG. 8