FIGURE 1

Anti-STEAP1

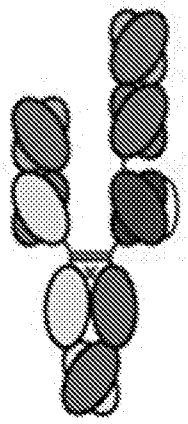

FIGURE 2

MQSGTHWRVLGLCLLSVGVWGQDGNEEMGGITQTPYKVSISGTTVILTCPQYPGSEILWQHNDKNIGGDE
DDKNIGSDEDHLSLKEFSELEQSGYYVCYPRGSKPEDANFYLYLRARVCENCMEMDVMSVATIVIVDICITGG
LLLLVYYWSKNRKAKAKPVTRGAGAGGRQRGQNKERPPPVPNPDYEPIRKGQRDLYSGLNQRRI (**SEQ ID NO: 1**)

FIGURE 3

MESRKDITNQEELWKMKPRRNLEEDDYLHKDTGETSMLKRPVLLHLHQTAHADEFDCPSE
LQHTQELFPQWHLPIKIAAIIASLTFLYTLLREVIHPLATSHQQYFYKIPILVINKVLPM
VSITLLALVYLPGVIAAIVQLHNGTKYKKFPHWLDKWMLTRKQFGLLSFFFAVLHAIYSL
SYPMRRSYRYKLLNWAYQQVQQNKEDAWIEHDVWRMEIYVSLGIVGLAILALLAVTSIPS
VSDSLTWREFHYIQSKLGIVSLLLGTIHALIFAWNKWIDIKQFVWYTPPTFMIAVFLPIV
VLIFKSILFLPCLRKKILKIRHGWEDVTKINKTEICSQL (**SEQ ID NO: 2**)

FIGURE 4A

Monomer 1	Monomer 2
F405A	T394F
S364D	Y349K
S364E	L368K
S364E	Y349K
S364F	K370G
S364H	Y349K
S364H	Y349T
S364Y	K370G
T411K	K370E
V397S/F405A	T394F
K370R/T411K	K370E/T411E
L351E/S364D	Y349K/L351K
L351E/S364E	Y349K/L351K
L351E/T366D	L351K/T366K
P395T/V397S/F405A	T394F
S364D/K370G	S364Y/K370R
S364D/T394F	Y349K/F405A
S364E/F405A	Y349K/T394F
S364E/F405S	Y349K/T394Y
S364E/T411E	Y349K/D401K
S364H/D401K	Y349T/T411E
S364H/F405A	Y349T/T394F
S364H/T394F	Y349T/F405A
Y349C/S364E	Y349K/S354C
L351E/S364D/F405A	Y349K/L351K/T394F
L351K/S364H/D401K	Y349T/L351E/T411E
S364E/T411E/F405A	Y349K/T394F/D401K
S364H/D401K/F405A	Y349T/T394F/T411E
S364H/F405A/T411E	Y349T/T394F/D401K

FIGURE 4B

Monomer 1	Monomer 2
K370E/T411D	T411K
L368E/K409E	L368K
Y349T/T394F/S354C	S364H/F405A/Y349C
T411E	D401K
T411E	D401R/T411R
Q347E/K360E	Q347R
L368E	S364K
L368E/K370S	S364K
L368E/K370T	S364K
L368E/D401R	S364K
L368E/D401N	S364K
L368E	E357S/S364K
L368E	S364K/K409E
L368E	S364K/K409V
L368D	S364K
L368D/K370S	S364K
L368D/K370S	S364K/E357L
L368D/K370S	S364K/E357Q
T411E/K360E/Q362E	D401K
K370S	S364K
L368E/K370S	S364K/E357Q
K370S	S364K/E357Q
T411E/K360D	D401K
T411E/K360E	D401K
T411E/Q362E	D401K
T411E/N390D	D401K
T411E	D401K/Q347K
T411E	D401K/Q347R
T411E/K360D/Q362E	D401K

FIGURE 4C

Monomer 1	Monomer 2
T411E/K360E/N390D	D401K
T411E/Q362E/N390D	D401K
T411E/Q347R	D401K/K360D
T411E/Q347R	D401K/K360E
T411E/K360	D401K/Q347K
T411E/K360D	D401K/Q347R
T411E/K360E	D401K/Q347K
T411E/K360E	D401K/Q347R
T411E/S364K	D401K/K370S
T411E/K370S	D401K/S364K
Q347E	E357Q
Q347E	E357Q/Q362K
K360D/Q362E	Q347R
K360D/Q362E	D401K
K360D/Q362E	Q347R/D401K
K360E/Q362E	Q347R
K360E/Q362E	D401K
K360E/Q362E	Q347R/D401K
Q362E/N390D	D401K
Q347E/K360D	D401N
K360D	Q347R/N390K
K360D	N390K/D401N
K360E	Y349H
K370S/Q347E	S364K
K370S/E357L	S364K
K370S/E357Q	S364K
K370S/Q347E/E357L	S364K
K370S/Q347E/E357Q	S364K

FIGURE 4D

Monomer 1	Monomer 2
L368D/K370S/Q347E	S364K
L368D/K370S/E357L	S364K
L368D/K370S/E357Q	S364K
L368D/K370S/Q347E/E357L	S364K
L368D/K370S/Q347E/E357Q	S364K
L368E/K370S/Q347E	S364K
L368E/K370S/E357L	S364K
L368E/K370S/E357Q	S364K
L368E/K370S/Q347E/E357L	S364K
L368E/K370S/Q347E/E357Q	S364K
L368D/K370T/Q347E	S364K
L368D/K370T/E357L	S364K
L368D/K370T/E357Q	S364K
L368D/K370T/Q347E/E357L	S364K
L368D/K370T/Q347E/E357Q	S364K
L368E/K370T/Q347E	S364K
L368E/K370T/E357L	S364K
L368E/K370T/E357Q	S364K
L368E/K370T/Q347E/E357L	S364K
L368E/K370T/Q347E/E357Q	S364K
T411E/Q362E	D401K/T411K
T411E/N390D	D401K/T411K
T411E/Q362E	D401R/T411R
T411E/N390D	D401R/T411R
Y407T	T366Y
F405A	T394W
T366Y/F405A	T394W/Y407T
Y407A	T366W
T366S/L368A/Y407V	T366W
T366S/L368A/Y407V/Y349C	T366W/S354C

FIGURE 4E

Monomer 1	**Monomer 2**
K392D/K409D	E356K/D399K
K370D/K392D/K409D	E356K/E357K/D399K
I199T/N203D/K247Q/R355Q/N384S/K392N/V397M/Q419E/K447_	Q196K/I199T/P217R/P228R/N276K
I199T/N203D/K247Q/R355Q/N384S/K392N/V397M/Q419E/K447_	Q196K/I199T/N276K
N384S/K392N/V397M/Q419E	N276K
D221E/P228E/L368E	D221R/P228R/K409R
C220E/P228E/L368E	C220R/E224R/P228R/K409R
F405L	K409R
T366I/K392M/T394W	F405A/Y407V
T366V/K409F	L351Y/Y407A
T366A/K392E/K409F/T411E	D399R/S400R/Y407A
L351K	L351E
I199T/N203D/K247Q/R355Q/Q419E/K447_	Q196K/I199T/P217R/P228R/N276K
I199T/N203D/K247Q/R355Q/Q419E/K447_	Q196K/I199T/N276K
I199T N203D K274Q R355Q N384S K392N V397M Q419E DEL447	
N208D Q295E N384D Q418E N421D	
N208D Q295E Q418E N421D	
Q196K I199T P217R P228R N276K	
Q196K I199T N276K	
E269Q E272Q E283Q E357Q	
E269Q E272Q E283Q	
E269Q E272Q	
E269Q E283Q	
E272Q E283Q	
E269Q	

FIGURE 5

pI variants

Variant constant region	**Substitutions**
pI_ISO(-)	I199T N203D K274Q R355Q N384S K392N V397M Q419E DEL447
pI_(-)_isosteric_A	N208D Q295E N384D Q418E N421D
pI_(-)_isosteric_B	N208D Q295E Q418E N421D
pI_ISO(+RR)	Q196K I199T P217R P228R N276K
pI_ISO(+)	Q196K I199T N276K
pI_(+)_isosteric_A	E269Q E272Q E283Q E357Q
pI_(+)_isosteric_B	E269Q E272Q E283Q
pI_(+)_isosteric_E269Q/E272Q	E269Q E272Q
pI_(+)_isosteric_E269Q/E283Q	E269Q E283Q
pI_(+)_isosteric_E272Q/E283Q	E272Q E283Q
pI_(+)_isosteric_E269Q	E269Q

FIGURE 6

Ablation variants

Variant	Variant(s), cont.
G236R	P329K
S239G	A330L
S239K	A330S/P331S
S239Q	I332K
S239R	I332R
V266D	V266D/A327Q
S267K	V266D/P329K
S267R	S267R/A327Q
H268K	S267R/P329K
E269R	G236R/L328R
299R	E233P/L234V/L235A/G236del/S239K
299K	E233P/L234V/L235A/G236del/S267K
K322A	E233P/L234V/L235A/G236del/S239K/A327G
A327G	E233P/L234V/L235A/G236del/S267K/A327G
A327L	E233P/L234V/L235A/G236del
A327N	S239K/S267K
A327Q	267K/P329K
L328E	
L328R	
P329A	
P329H	

FIGURE 7

scFv monomer (+)	**Fab monomer (-)**
Heterodimerization skew variants S364K/E357Q	**Heterodimerization skew variants L368D/K370S**
Optional scFv charged linker including but not limited to $(GKPGS)_4$	**Isosteric pI substitutions N208D/Q295E/N384D/Q418E/N421D**
FcKO E233P/L234V/L235A/G236del/S267K	**FcKO E233P/L234V/L235A/G236del/S267K**
± 428L/434S for FcRn	**± 428L/434S for FcRn**
scFv of anti-CD3	**Fv sequences for anti-STEAP1**

scFv monomer	**Fab monomer**
Heterodimerization skew variants S364K/E357Q	**Heterodimerization skew variants L368D/K370S**
Optional scFv charged linker including, but not limited to $(GKPGS)_4$	**pI substitutions I199T N203D K274Q R355Q Q419E K447del**
FcKO E233P/L234V/L235A/G236del/S267K	**FcKO E233P/L234V/L235A/G236del/S267K**
± 428L/434S for FcRn (optional)	**± 428L/434S for FcRn (optional)**
scFv of anti-CD3	**scFv of anti- STEAP1**

FIGURE 8A

Positive charged scFv linkers

Name	Sequence	Length	Charge	SEQ ID NO:
Gly-Ser 15	GGGGSGGGGSGGGGS	15	0	143
Whitlow linker	GSTSGSGKPGSGEGSTKG	18	+1	144
6paxA_1 (+A)	IRPRAIGGSKPRVA	14	+4	145
+B	GKGGSGKGGSGKGGS	15	+3	146
+C	GGKGSGGKGSGGKGS	15	+3	147
+D	GGGKSGGGKSGGGKS	15	+3	148
+E	GKGKSGKGKSGKGKS	15	+6	149
+F	GGGKSGGKGSGKGGS	15	+3	150
+G	GKPGSGKPGSGKPGS	15	+3	151
+H	GKPGSGKPGSGKPGSGKPGS	20	+4	152
+I	GKGKSGKGKSGKGKSGKGKS	20	+8	153

Negative charged scFv linkers

Name	Sequence	Length	Charge	SEQ ID NO:
Gly-Ser 15	GGGGSGGGGSGGGGSGGGGS	20	0	154
3hsc_2 (-A)	STAGDTHLGGEDFD	14	-4	155
-B	GEGGSGEGGSGEGGS	15	-3	156
-C	GGEGSGGEGSGGEGS	15	-3	157
-D	GGGESGGGESGGGES	15	-3	158
-E	GEGESGEGESGEGES	15	-6	159
-F	GGGESGGEGSGEGGS	15	-3	160
-G	GEGESGEGESGEGESGEGES	20	-8	161

FIGURE 8B

scFv Linkers

GGGGSGGGGSGGGGS	(SEQ ID NO: 162)
GGGGSGGGGSGGGGSGGGGS	(SEQ ID NO: 163)
GSTSGSGKPGSGEGSTKG	(SEQ ID NO: 164)
PRGASKSGSASQTGSAPGS	(SEQ ID NO: 165)
GTAAAGAGAAGGAAAGAAG	(SEQ ID NO: 166)
GTSGSSGSGSGGSGSGGGG	(SEQ ID NO: 167)
GKPGSGKPGSGKPGSGKPGS	(SEQ IS NO: 168)

Useful domain linkers

KTHTCPPCP (“half hinge”)	SEQ ID NO:210
EPKSSDKTHTCPPCP (“full hinge C220S variant”)	SEQ ID NO:211
GGGGSGGGGSKTHTCPPCP (“flex half hinge”)	SEQ ID NO:212
GKPGSGKPGSKTHTCPPCP (“charged half hinge1”)	SEQ ID NO:213
GKPGSKTHTCPPCP (“charged half hinge2”)	SEQ ID NO:214

FIGURE 9

XENP	Heterodimer-skewing variant, Chain 1	Heterodimer-skewing variant, Chain 2	Heterodimer Yield (%)	CH3 Tm (°C)
12757	none	none	52.7	83.1
12758	L368D/K370S	S364K	94.4	76.6
12759	L368D/K370S	S364K/E357L	90.2	77.2
12760	L368D/K370S	S364K/E357Q	95.2	77.5
12761	T411E/K360E/Q362E	D401K	85.6	80.6
12496	L368E/K370S	S364K	91.5	n.d.
12511	K370S	S364K	59.9	n.d.
12840	L368E/K370S	S364K/E357Q	59.5	n.d.
12841	K370S	S364K/E357Q	90.4	n.d.
12894	L368E/K370S	S364K	41.0	n.d.
12895	K370S	S364K	49.3	n.d.
12896	L368E/K370S	S364K/E357Q	73.9	n.d.
12901	K370S	S364K/E357Q	87.9	n.d.

FIGURE 10A

VH ID	VL ID	VH Substitutions	VL Substitutions
H1	L1.4		
H1.30	L1.47	N30S/N100D	Q42K/A43S/L75I/E85D/L95H
H1.33	L1.47	N30S/N100D/A101D	Q42K/A43S/L75I/E85D/L95H
H1.31	L1.47	N30S/N35S/N100D	Q42K/A43S/L75I/E85D/L95H
H1.32	L1.47	N30S/Y52CA/N100D	Q42K/A43S/L75I/E85D/L95H
H1.88	L1.47	N30S/N100P	Q42K/A43S/L75I/E85D/L95H
H1.89	L1.47	N30S/N100D/S100AE	Q42K/A43S/L75I/E85D/L95H
H1.90	L1.47	N30S/N100D/S100AP	Q42K/A43S/L75I/E85D/L95H
H1.91	L1.47	N30S/Y52CA/N100D	Q42K/A43S/L75I/E85D/L95H
H1.92	L1.47	N30S/Y58A/N100D	Q42K/A43S/L75I/E85D/L95H
H1.93	L1.47	N30S/N100E	Q42K/A43S/L75I/E85D/L95H
H1.94	L1.47	N30S/N100Q	Q42K/A43S/L75I/E85D/L95H
H1.96	L1.47	N30S/N100D/S100AN	Q42K/A43S/L75I/E85D/L95H
H1.97	L1.47	N30S/N100D/S100AQ	Q42K/A43S/L75I/E85D/L95H
H1.98	L1.47	N30S/Y52CA/N100D/A101D	Q42K/A43S/L75I/E85D/L95H
H1.99	L1.47	N30S/Y58A/N100D/A101D	Q42K/A43S/L75I/E85D/L95H
H1.100	L1.47	N30S/N100A/A101D	Q42K/A43S/L75I/E85D/L95H
H1.101	L1.47	N30S/N100Q/A101D	Q42K/A43S/L75I/E85D/L95H
H1.102	L1.47	N30S/N100D/S100AE/A101D	Q42K/A43S/L75I/E85D/L95H
H1.103	L1.47	N30S/N100D/S100AN/A101D	Q42K/A43S/L75I/E85D/L95H
H1.104	L1.47	N30S/N100D/S100AP/A101D	Q42K/A43S/L75I/E85D/L95H
H1.105	L1.47	N30S/N100D/S100AQ/A101D	Q42K/A43S/L75I/E85D/L95H

FIGURE 10B

VH ID	VL ID	VH Substitutions	VL Substitutions
H1.106	L1.47	N30S/Y52CA/Y58A/N100D	Q42K/A43S/L75I/E85D/L95H
H1.107	L1.47	N30S/Y52CA/Y58A/N100A	Q42K/A43S/L75I/E85D/L95H
H1.108	L1.47	N30S/Y52CA/Y58A/N100Q	Q42K/A43S/L75I/E85D/L95H
H1.109	L1.47	N30S/Y52CA/Y58A/N100D/A101D	Q42K/A43S/L75I/E85D/L95H

FIGURE 11

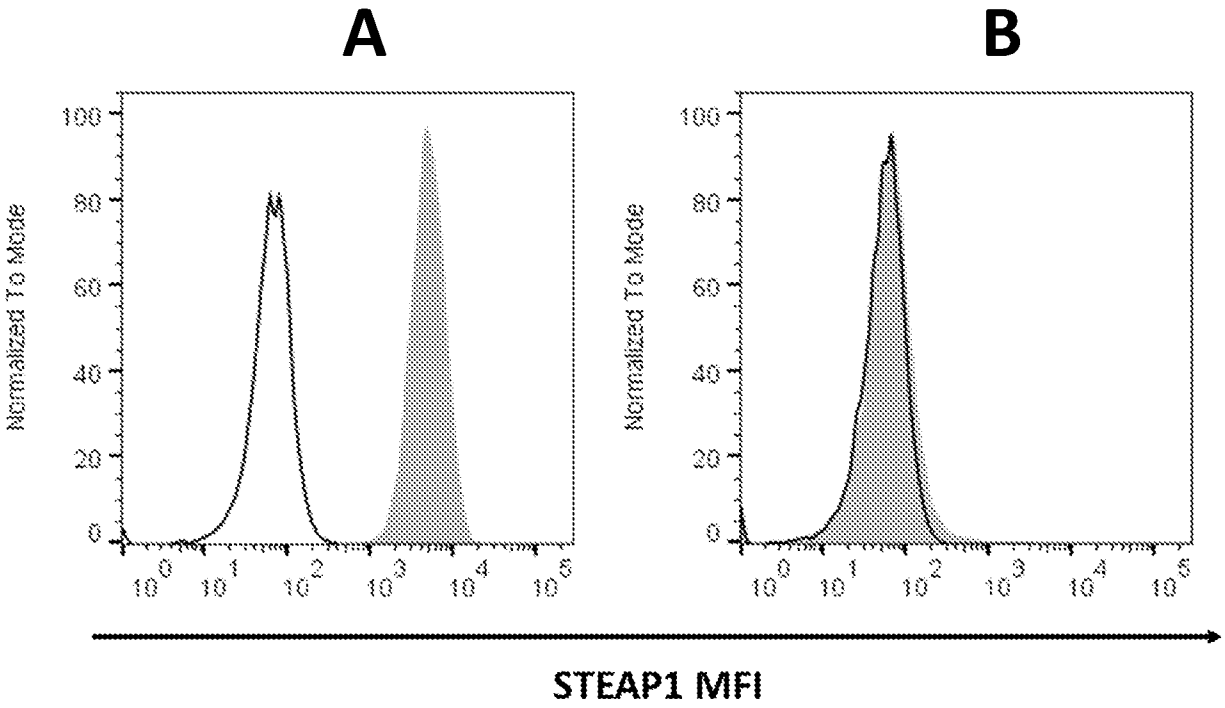

FIGURE 12A

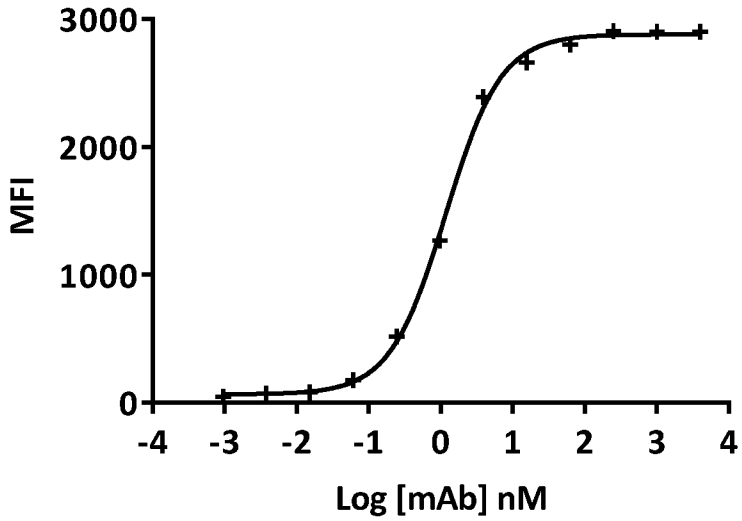

FIGURE 12B

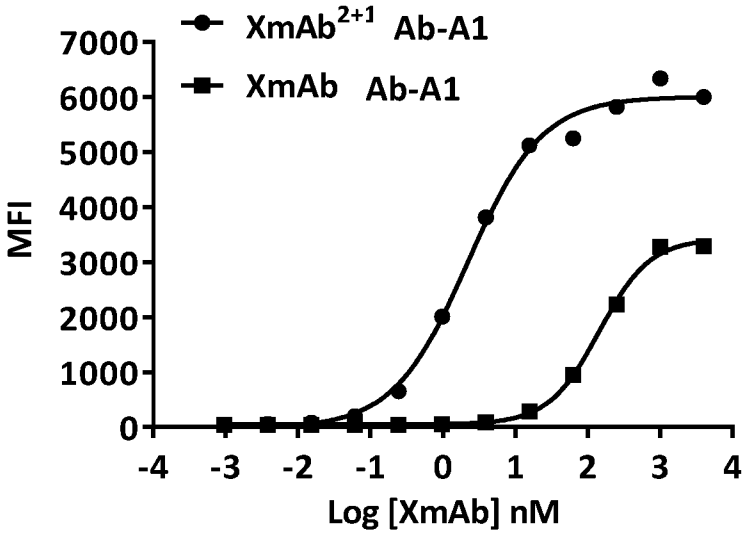

FIGURE 12C

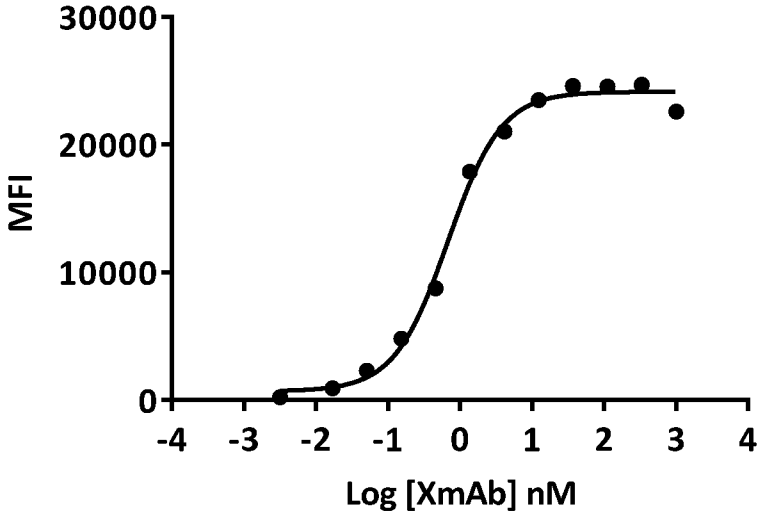

FIGURE 13

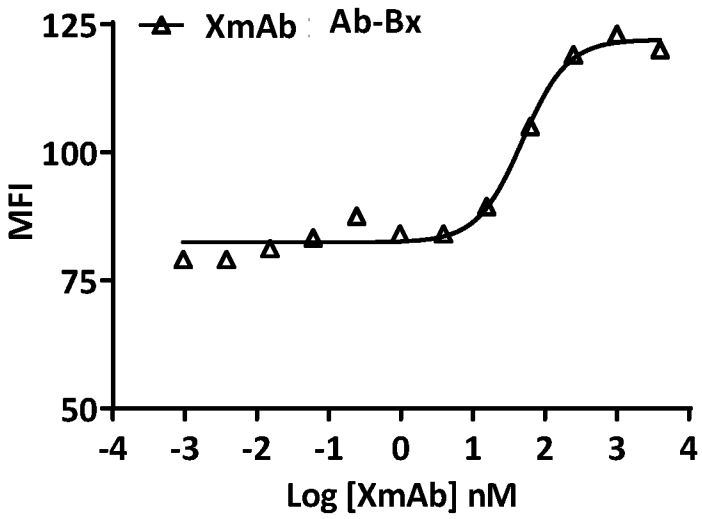

FIGURE 14

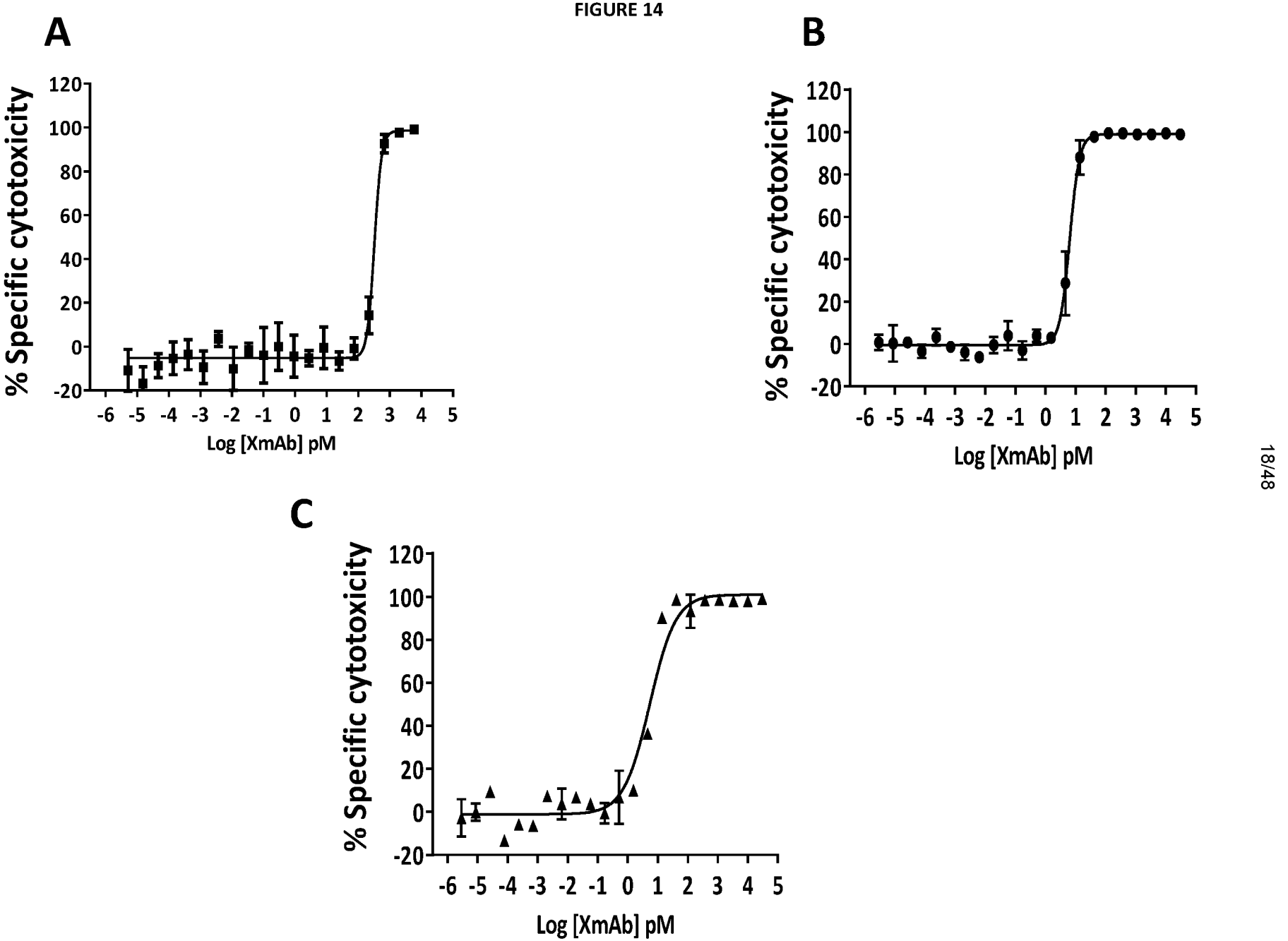
A
% Specific cytotoxicity
120
100
80
60
40
20
0
-20
-6 -5 -4 -3 -2 -1 0 1 2 3 4 5
Log [XmAb] pM
B
% Specific cytotoxicity
120
100
80
60
40
20
0
-20
-6 -5 -4 -3 -2 -1 0 1 2 3 4 5
Log [XmAb] pM
C
% Specific cytotoxicity
120
100
80
60
40
20
0
-20
-6 -5 -4 -3 -2 -1 0 1 2 3 4 5
Log [XmAb] pM

FIGURE 15

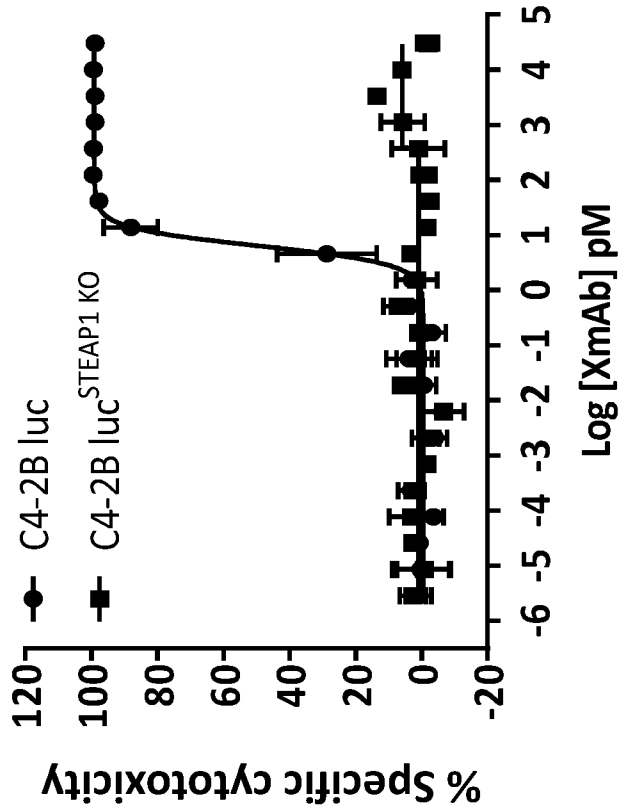
% Specific cytotoxicity
120
100
80
60
40
20
0
-20
-6 -5 -4 -3 -2 -1 0 1 2 3 4 5
Log [XmAb] pM
C4-2B luc
C4-2B luc STEAP1 KO

FIGURE 16

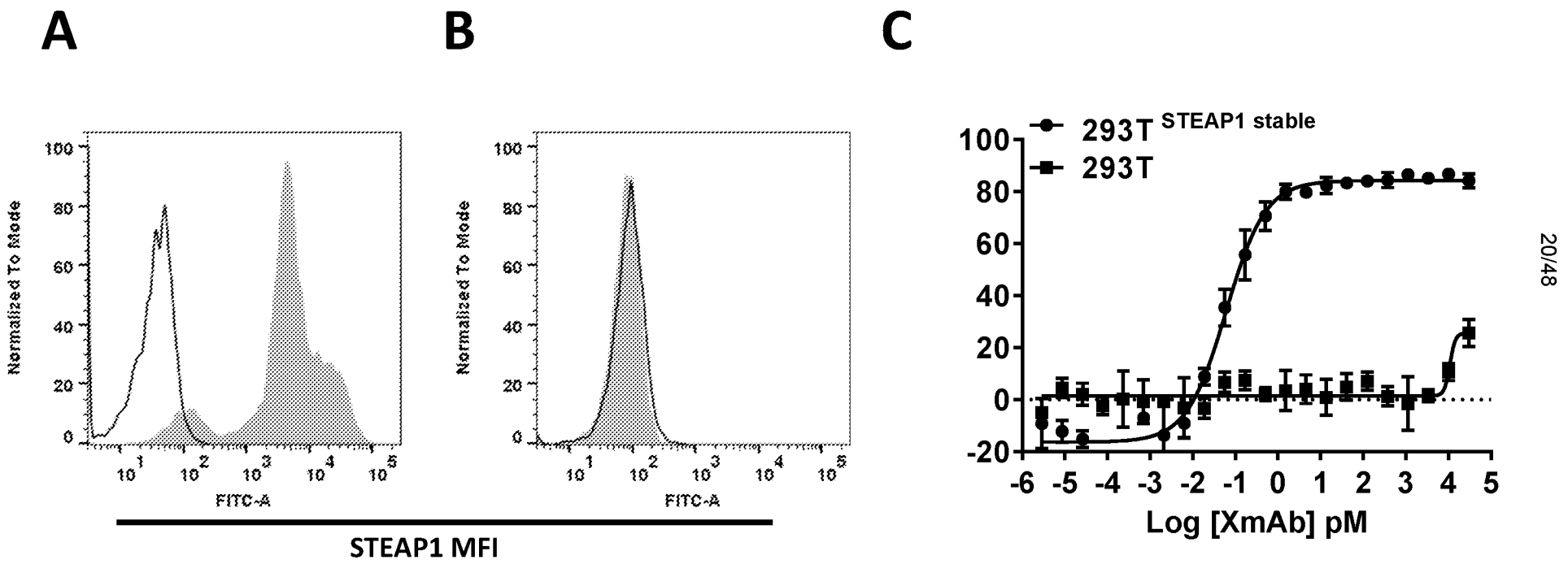
A
B
C
Normalized To Mode
FITC-A
STEAP1 MFI
293T STEAP1 stable
293T
Log [XmAb] pM

FIGURE 17

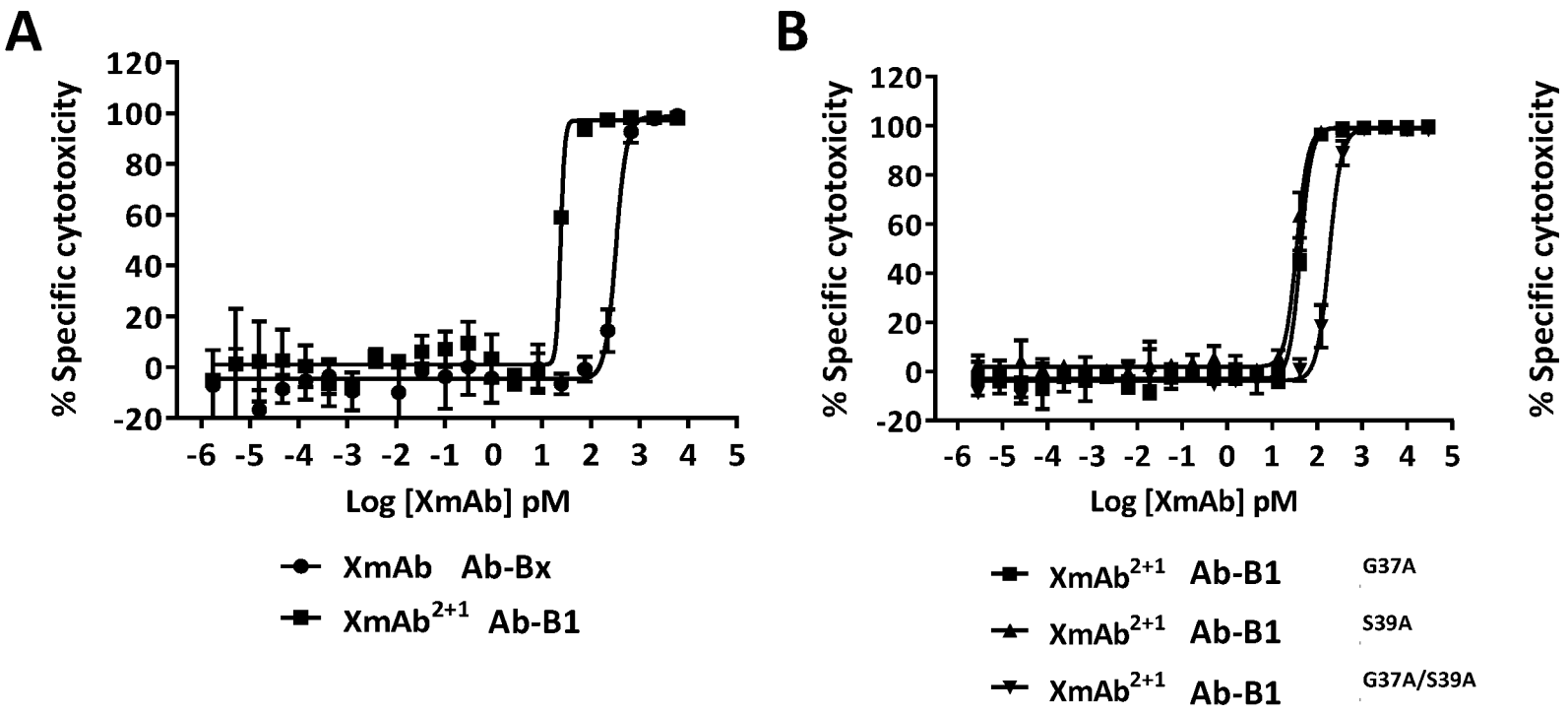
A
% Specific cytotoxicity
120
100
80
60
40
20
0
-20
-6 -5 -4 -3 -2 -1 0 1 2 3 4 5
Log [XmAb] pM
XmAb Ab-Bx
XmAb2+1 Ab-B1
B
% Specific cytotoxicity
120
100
80
60
40
20
0
-20
-6 -5 -4 -3 -2 -1 0 1 2 3 4 5
Log [XmAb] pM
XmAb2+1 Ab-B1 G37A
XmAb2+1 Ab-B1 S39A
XmAb2+1 Ab-B1 G37A/S39A
% Specific cytotoxicity

FIGURE 17C

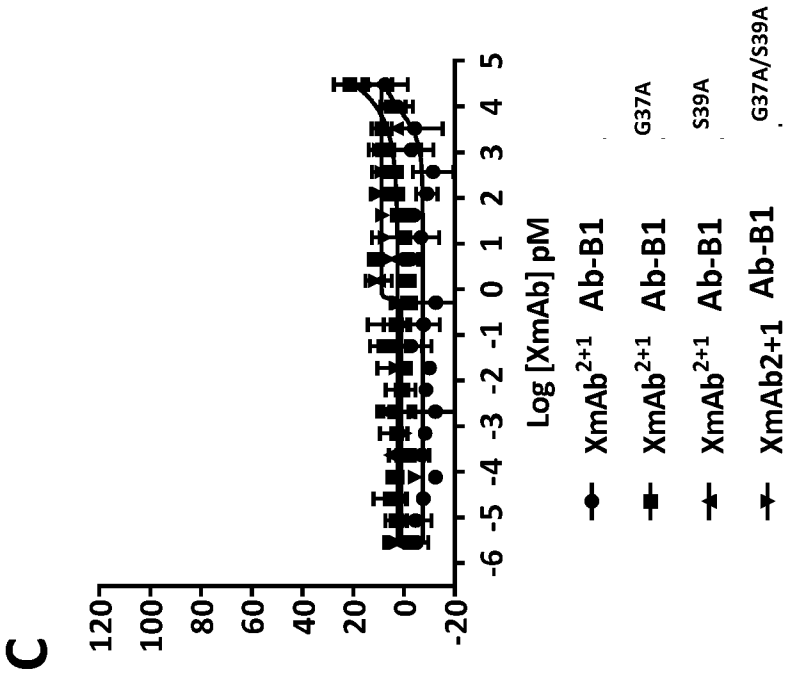
C
120
100
80
60
40
20
0
-20
-6 -5 -4 -3 -2 -1 0 1 2 3 4 5
Log [XmAb] pM
XmAb2+1 Ab-B1
XmAb2+1 Ab-B1 G37A
XmAb2+1 Ab-B1 S39A
XmAb2+1 Ab-B1 G37A/S39A

FIGURE 18A-E

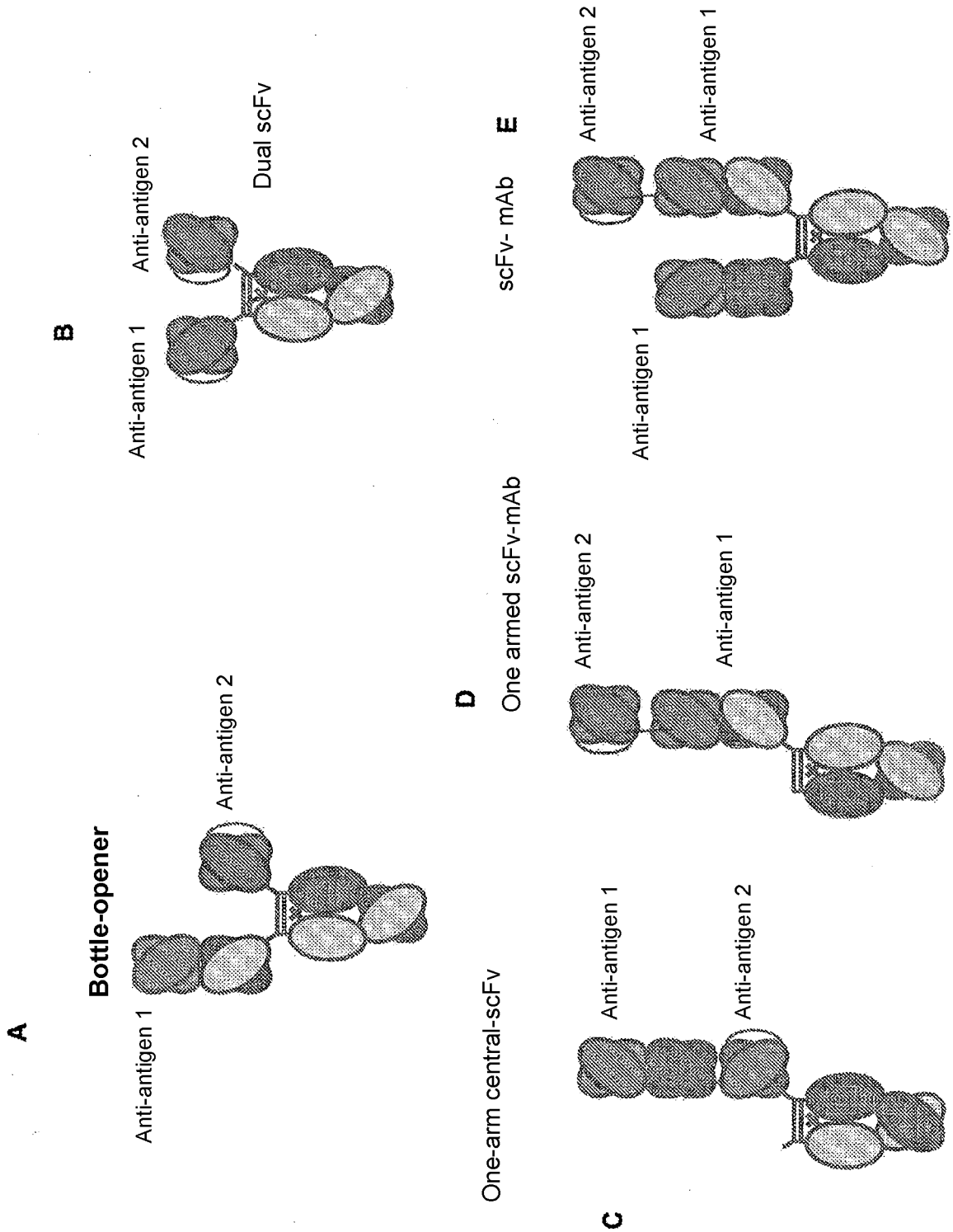
A
Bottle-opener
Anti-antigen 1
Anti-antigen 2
B
Anti-antigen 1
Anti-antigen 2
Dual scFv
C
One-arm central-scFv
Anti-antigen 1
Anti-antigen 2
D
One armed scFv-mAb
Anti-antigen 2
Anti-antigen 1
E
scFv- mAb
Anti-antigen 2
Anti-antigen 1

FIGURE 18F-I

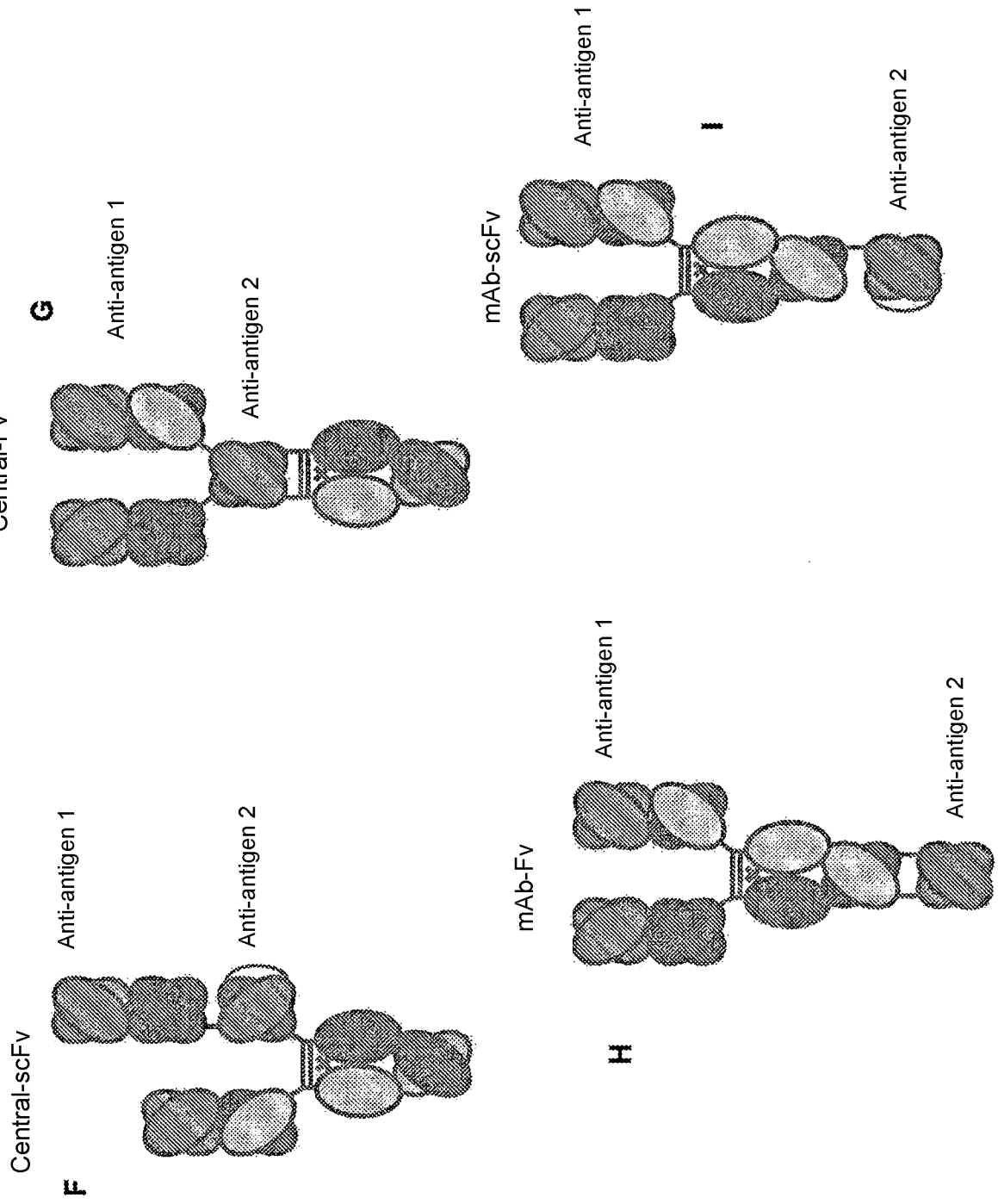
Central-scFv
Anti-antigen 1
Anti-antigen 2
F
Central-Fv
Anti-antigen 1
Anti-antigen 2
G
mAb-Fv
Anti-antigen 1
Anti-antigen 2
H
mAb-scFv
Anti-antigen 1
Anti-antigen 2
I

FIGURE 19

SEQ ID NO:	Description	Sequence
1.	CD3 epsilon chain - human	MQSGTHWRVLGLCLLSVGVWGQDGNEEMGGITQTPYKVSISGTTVILTCPQYPGSEILWQHNDKNIGGDEDDKNI GSDEDHLSLKEFSELEQSGYYVCYPRGSKPEDANFYLYLRARVCENCMEMDVMSVATIVIVDICITGGLLLLVYYWSK NRKAKAKPVTRGAGAGGRQRGQNKERPPPVPNPDYEPIRKGQRDLYSGLNQRRI
2.	STEAP-1 – human	MESRKDITNQEELWKMKPRRNLEEDDYLHKDTGETSMLKRPVLLHLHQTAHADEFDCPSE LQHTQELFPQWHLPIKIAAIIASLTFLYTLLREVIHPLATSHQQYFYKIPILVINKVLPM VSITLLALVYLPGVIAAIVQLHNGTKYKKFPHWLDKWMLTRKQFGLLSFFFAVLHAIYSL SYPMRRSYRYKLLNWAYQQVQQNKEDAWIEHDVWRMEIYVSLGIVGLAILALLAVTSIPS VSDSLTWREFHYIQSKLGIVSLLLGTIHALIFAWNKWIDIKQFVWYTPPTFMIAVFLPIV VLIFKSILFLPCLRKKILKIRHGWEDVTKINKTEICSQL
3.	Ab-A HC variable	QVQLQQSGAEMMKPGASVKISCKATGYTFSTYWIEWVKQRPGHGLEWIGEILPGSGNTDFNEKFKGKATFTADTS SDTAYMHLSSLTSEDSAVYYCTRWGYYGTRGYFNVWGAGSTVTVSS
4.	Ab-A HCDR1	TYWIE
5.	Ab-A HCDR2	EILPGSGNTDFNEKFKG
6.	Ab-A HCDR3	WGYYGTRGYFNV
7.	Ab-A LC variable	QIVLTQSPAIMSASPGEKVTITCSASSSVSYMHWFQQKPGTSPKLWIYSTSNLASGVPARFSGSGSGTSYSLTISRME AEDAATYYCQQRRSFPYTFGGGTKLEIK
8.	Ab-A LCDR1	SASSSVSYMH
9.	Ab-A LCDR2	STSNLAS
10.	Ab-A LCDR3	QQRRSFPYT
11.	Ab-A1/A2 (N67Q) Xmab^{2+1} LCDR1	RASSSVSYMH

FIGURE 19 Cont.

12.	Ab-A1/A2(N67Q) Xmab^{2+1} LCDR2	STSNLAS
13.	Ab-A1/A2 (N67Q) Xmab^{2+1} LCDR3	QQRRSFPYT
14.	Ab-A1/A2 (N67Q) Xmab^{2+1} HCDR1	TYWIE
15.	Ab-A1 Xmab^{2+1} HCDR2	EILPGSGNTDFNEKFQG
16.	Ab-A1/A2 (N67Q) Xmab^{2+1} HCDR3	WGYYGTRGYFNV
17.	Ab-A1/A2 (N67Q) Xmab^{2+1} light chain	MGWSCIILFLVATATGVHSEIVLTQSPATLSLSPGERATLSCRASSSVSYMHWFQQKPGQAPRLLIYSTSNLASGIPAR FSGSGSGTDYTLTISSLEPEDFAVYYCQQRRSFPYTFGQGTKLEIKRTVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYP REAKVQWKVDNALQSGNSQESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRGEC
18.	Ab-A1 Xmab^{2+1} heavy chain	MGWSCIILFLVATATGVHSQVQLVQSGAEVKKPGASVKVSCKASGYTFSTYWIEWVRQAPGQRLEWMGEILPGSG NTDFNEKFQGRVTFTADTSSDTAYMELSSLRSEDTAVYYCTRWGYYGTRGYFNVWGQGTLVTVSSASTKGPSVFPL APSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPS DTKVDKKVEPKSCDKTHTCPPCPAPPVAGPSVFLFPPKPKDTLMISRTPEVTCVVVDVKHEDPEVKFNWYVDGVEV HNAKTKPREEEYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREEMTKN QVSLTCDVSGFYPSDIAVEWESDGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWEQGDVFSCSVMHEALHNHYT QKSLSLSPGK
19.	Ab-A1 Xmab^{2+1} XVHMx	MGWSCIILFLVATATGVHSQVQLVQSGAEVKKPGASVKVSCKASGYTFSTYWIEWVRQAPGQRLEWMGEILPGSG NTDFNEKFQGRVTFTADTSSDTAYMELSSLRSEDTAVYYCTRWGYYGTRGYFNVWGQGTLVTVSSASTKGPSVFPL APSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPS NTKVDKKVEPKSCGGGGSGGGGSEVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRI RSKYNNYATYYADSVKGRFTISRDDSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSG KPGSGKPGSGKPGSGKPGSQAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKR APGVPARFSGSLLGGKAALTISGAQPEDEADYYCALWYSNHWVFGGGTKLTVLGGGGSGGGGSKTHTCPPCPAPP VAGPSVFLFPPKPKDTLMISRTPEVTCVVVDVKHEDPEVKFNWYVDGVEVHNAKTKPREEQYNSTYRVVSVLTVLH QDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREQMTKNQVKLTCLVKGFYPSDIAVEWESNGQ PENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK

FIGURE 19 Cont.

20.	Ab-A2 (N67Q) Xmab^{2+1} XVHMx	MDMRVPAQLLGLLLLWLRGARCQVQLVQSGAEVKKPGASVKVSCKASGYTFSTYWIEWVRQAPGQRLEWMGEIL PGSGQTDFNEKFQGRVTFTADTSSDTAYMELSSLRSEDTAVYYCTRWGYYGTRGYFNVWGQGTLVTVSSASTKGPS VFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVN HKPSNTKVDKKVEPKSCGGGGSGGGGSEVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEW VGRIRSKYNNYATYYADSVKGRFTISRDDSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTV SSGKPGSGKPGSGKPGSGKPGSQAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTN KRAPGVPARFSGSLLGGKAALTISGAQPEDEADYYCALWYSNHWVFGGGTKLTVLGGGGSGGGGSKTHTCPPCPA PPVAGPSVFLFPPKPKDTLMISRTPEVTCVVVDVKHEDPEVKFNWYVDGVEVHNAKTKPCEEQYGSTYRCVSVLTVL HQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREQMTKNQVKLTCLVKGFYPSDIAVEWESNG QPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK
21.	Ab-A2 (N67Q) Xmab^{2+1} HCDR2 (all other CDRs the same as Ab-A1 Xmab^{2+1})	EILPGSGQTDFNEKFQG
22.	Ab-B1 heavy variable	QIQLVQSGPELKKPGETVKISCKASGYTFTNYGMNWVKQAPGKGLQWMGWMNTYTGEPTYADDFKGRFAFSLET SARTVSLDINDLKNEDTATYFCTRAGGQLRPGAMDYWGQGTSVTVSS
23.	Ab-B1 HCDR1	NYGMN
24.	Ab-B1 HCDR2	WMNTYTGEPTYADDFKG
25.	Ab-B1 HCDR3	AGGQLRPGAMDY
26.	Ab-B1 light variable	DIVLTQSPASLAVSLGQRATISCKASQSVDYDGDSFMNWYQQKPGQPPKLLIYVASNLESGIPDRFSGSGSGTDFTLN IHPVEEEDAATYYCQQSNEEPPTFGGGTKLEIK
27.	Ab-B1 LCDR1	KASQSVDYDGDSFMN
28.	Ab-B1 LCDR2	VASNLES
29.	Ab-B1 LCDR3	QQSNEEPPT
30.	Ab-B1 Xmab^{2+1}	KASQSVDYDGDSFMN

FIGURE 19 Cont.

	LCDR1	
31.	Ab-B1 Xmab^{2+1} LCDR2	VASNLES
32.	Ab-B1 Xmab^{2+1} LCDR3	QQSNEEPPT
33.	Ab-B1 Xmab^{2+1} HCDR1	NYGMN
34.	Ab-B1 Xmab^{2+1} HCDR2	WMNTYTGEPTYADKFQG
35.	Ab-B1 Xmab^{2+1} HCDR3	AGGQLRPGAMDY
36.	Ab-B1 Xmab^{2+1} Light chain	MGWSCIILFLVATATGVHSDIVLTQTPLSLSVTPGQPASISCKASQSVDYDGDSFMNWYLQKPGQPPQLLIYVASNL ESGVPDRFSGSGSGTDFTLKISRVEAEDVGVYYCQQSNEEPPTFGQGTKLEIKRTVAAPSVFIFPPSDEQLKSGTASVV CLLNNFYPREAKVQWKVDNALQSGNSQESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFN RGEC
37.	Ab-B1 Xmab^{2+1} Heavy chain	MGWSCIILFLVATATGVHSEIQLVQSGAEVKKPGATVKISCKASGYTFTNYGMNWVQQAPGQGLEWMGWMNTY TGEPTYADKFQGRVTFTLDTSARTVYMELSSLRSEDTAVYFCARAGGQLRPGAMDYWGQGTMVTVSS ASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQ TYICNVNHKPSDTKVDKKVEPKSCDKTHTCPPCPAPPVAGPSVFLFPPKPKDTLMISRTPEVTCVVVDVKHEDPEVKF NWYVDGVEVHNAKTKPREEEYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLP PSREEMTKNQVSLTCDVSGFYPSDIAVEWESDGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWEQGDVFSCSVM HEALHNHYTQKSLSLSPGK
38.	Ab-B1 Xmab^{2+1} XMVHx	MGWSCIILFLVATATGVHSEIQLVQSGAEVKKPGATVKISCKASGYTFTNYGMNWVQQAPGQGLEWMGWMNTY TGEPTYADKFQGRVTFTLDTSARTVYMELSSLRSEDTAVYFCARAGGQLRPGAMDYWGQGTMVTVSSASTKGPSV FPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNH KPSNTKVDKKVEPKSCGGGGSGGGGSEVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWV GRIRSKYNNYATYYADSVKGRFTISRDDSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVS SGKPGSGKPGSGKPGSGKPGSQAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTN KRAPGVPARFSGSLLGGKAALTISGAQPEDEADYYCALWYSNHWVFGGGTKLTVLGGGGSGGGGSKTHTCPPCPA PPVAGPSVFLFPPKPKDTLMISRTPEVTCVVVDVKHEDPEVKFNWYVDGVEVHNAKTKPREEQYNSTYRVVSVLTVL HQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREQMTKNQVKLTCLVKGFYPSDIAVEWESNG QPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK
39.	Anti-CD3 H1_L1.4	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV

FIGURE 19 Cont.

		TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
40.	Anti-CD3 H1_L1.4	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
41.	Anti-CD3 H1_L1.4	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSS
42.	Anti-CD3 H1_L1.4	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
43.	Anti-CD3 H1.30_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
44.	Anti-CD3 H1.30_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
45.	Anti-CD3 H1.30_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSS
46.	Anti-CD3 H1.30_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
47.	Anti-CD3 H1.33_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
48.	Anti-CD3 H1.33_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
49.	Anti-CD3 H1.33_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFDYWGQGTLVTVSS
50.	Anti-CD3 H1.33_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL

FIGURE 19 Cont.

51.	Anti-CD3 H1.31_L147	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMSWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRDD SKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVVT QEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQP EDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
52.	Anti-CD3 H1.31_L147	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMSWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRDD SKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVVT QEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQP EDEADYYCALWYSNHWVFGGGTKLTVL
53.	Anti-CD3 H1.31_L147	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMSWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRDD SKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSS
54.	Anti-CD3 H1.31_L147	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
55.	Anti-CD3 H1.32_L147	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
56.	Anti-CD3 H1.32_L147	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
57.	Anti-CD3 H1.32_L147	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSS
58.	Anti-CD3 H1.32_L147	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
59.	Anti-CD3 H1.88_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGPSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
60.	Anti-CD3 H1.88_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGPSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
61.	Anti-CD3 H1.88_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGPSYVSWFAYWGQGTLVTVSS

RECTIFIED SHEET (RULE 91) ISA/EP

FIGURE 19 Cont.

62.	Anti-CD3 H1.88_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
63.	Anti-CD3 H1.89_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDEYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
64.	Anti-CD3 H1.89_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDEYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
65.	Anti-CD3 H1.89_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDEYVSWFAYWGQGTLVTVSS
66.	Anti-CD3 H1.89_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
67.	Anti-CD3 H1.90_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDPYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
68.	Anti-CD3 H1.90_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDPYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
69.	Anti-CD3 H1.90_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDPYVSWFAYWGQGTLVTVSS
70.	Anti-CD3 H1.90_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
71.	Anti-CD3 H1.91_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
72.	Anti-CD3 H1.91_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL

FIGURE 19 Cont.

73.	Anti-CD3 H1.91_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSS
74.	Anti-CD3 H1.91_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
75.	Anti-CD3 H1.92_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
76.	Anti-CD3 H1.92_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
77.	Anti-CD3 H1.92_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSS
78.	Anti-CD3 H1.92_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
79.	Anti-CD3 H1.93_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGESYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
80.	Anti-CD3 H1.93_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGESYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
81.	Anti-CD3 H1.93_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGESYVSWFAYWGQGTLVTVSS
82.	Anti-CD3 H1.93_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
83.	Anti-CD3 H1.94_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGQSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
84.	Anti-CD3 H1.94_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGQSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV

FIGURE 19 Cont.

		TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
85.	Anti-CD3 H1.94_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGQSYVSWFAYWGQGTLVTVSS
86.	Anti-CD3 H1.94_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
87.	Anti-CD3 H1.96_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDNYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
88.	Anti-CD3 H1.96_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDNYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
89.	Anti-CD3 H1.96_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDNYVSWFAYWGQGTLVTVSS
90.	Anti-CD3 H1.96_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
91.	Anti-CD3 H1.97_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDQYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
92.	Anti-CD3 H1.97_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDQYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
93.	Anti-CD3 H1.97_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDQYVSWFAYWGQGTLVTVSS
94.	Anti-CD3 H1.97_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
95.	Anti-CD3 H1.98_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH

FIGURE 19 Cont.

96.	Anti-CD3 H1.98_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
97.	Anti-CD3 H1.98_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFDYWGQGTLVTVSS
98.	Anti-CD3 H1.98_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
99.	Anti-CD3 H1.99_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
100.	Anti-CD3 H1.99_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
101.	Anti-CD3 H1.99_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFDYWGQGTLVTVSS
102.	Anti-CD3 H1.99_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
103.	Anti-CD3 H1.100_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGASYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
104.	Anti-CD3 H1.100_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGASYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
105.	Anti-CD3 H1.100_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGASYVSWFDYWGQGTLVTVSS
106.	Anti-CD3 H1.100_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
107.	Anti-CD3 H1.101_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGQSYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV

FIGURE 19 Cont.

		TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
108.	Anti-CD3 H1.101_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGQSYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
109.	Anti-CD3 H1.101_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGQSYVSWFDYWGQGTLVTVSS
110.	Anti-CD3 H1.101_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
111.	Anti-CD3 H1.102_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDEYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
112.	Anti-CD3 H1.102_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDEYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
113.	Anti-CD3 H1.102_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDEYVSWFDYWGQGTLVTVSS
114.	Anti-CD3 H1.102_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
115.	Anti-CD3 H1.103_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDNYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
116.	Anti-CD3 H1.103_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDNYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
117.	Anti-CD3 H1.103_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDNYVSWFDYWGQGTLVTVSS
118.	Anti-CD3 H1.103_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL

FIGURE 19 Cont.

119.	Anti-CD3 H1.104_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDPYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
120.	Anti-CD3 H1.104_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDPYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
121.	Anti-CD3 H1.104_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDPYVSWFDYWGQGTLVTVSS
122.	Anti-CD3 H1.104_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
123.	Anti-CD3 H1.105_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDQYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAV VTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGA QPEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
124.	Anti-CD3 H1.105_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDQYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAV VTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGA QPEDEADYYCALWYSNHWVFGGGTKLTVL
125.	Anti-CD3 H1.105_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDQYVSWFDYWGQGTLVTVSS
126.	Anti-CD3 H1.105_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
127.	Anti-CD3 H1.106_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
128.	Anti-CD3 H1.106_L1.47 (ScFv)	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
129.	Anti-CD3 H1.106_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSS

FIGURE 19 Cont.

130.	Anti-CD3 H1.106_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
131.	Anti-CD3 H1.107_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGASYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
132.	Anti-CD3 H1.107_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGASYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
133.	Anti-CD3 H1.107_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGASYVSWFAYWGQGTLVTVSS
134.	Anti-CD3 H1.107_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
135.	Anti-CD3 H1.108_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGQSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
136.	Anti-CD3 H1.108_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGQSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL
137.	Anti-CD3 H1.108_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGQSYVSWFAYWGQGTLVTVSS
138.	Anti-CD3 H1.108_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
139.	Anti-CD3 H1.109_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVLGSHHHHHH
140.	Anti-CD3 H1.109_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFDYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPGSQAVV TQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTISGAQ PEDEADYYCALWYSNHWVFGGGTKLTVL

FIGURE 19 Cont.

141.	Anti-CD3 H1.109_L1.47	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKANNYATAYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFDYWGQGTLVTVSS
142.	Anti-CD3 H1.109_L1.47	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
143.	Linker	GGGGSGGGGSGGGGS
144.	Whitlow linker	GSTSGSGKPGSGEGSTKG
145.	Linker	IRPRAIGGSKPRVA
146.	Linker	GKGGSGKGGSGKGGS
147.	Linker	GGKGSGGKGSGGKGS
148.	Linker	GGGKSGGGKSGGGKS
149.	Linker	GKGKSGKGKSGKGKS
150.	Linker	GGGKSGGKGSGKGGS
151.	Linker	GKPGSGKPGSGKPGS
152.	Linker	GKPGSGKPGSGKPGSGKPGS
153.	Linker	GKGKSGKGKSGKGKSGKGKS
154.	Linker	GGGGSGGGGSGGGGSGGGGS
155.	Linker	STAGDTHLGGEDFD
156.	Linker	GEGGSGEGGSGEGGS
157.	Linker	GGEGSGGEGSGGEGS
158.	Linker	GGGESGGGESGGGES
159.	Linker	GEGESGEGESGEGES
160.	Linker	GGGESGGEGSGEGGS
161.	Linker	GEGESGEGESGEGESGEGES
162.	Linker	GGGGSGGGGSGGGGS
163.	Linker	GGGGSGGGGSGGGGSGGGGS
164.	Linker	GSTSGSGKPGSGEGSTKG
165.	Linker	PRGASKSGSASQTGSAPGS
166.	Linker	GTAAAGAGAAGGAAAGAAG
167.	Linker	GTSGSSGSGSGGSGSGGGG
168.	Linker	GKPGSGKPGSGKPGSGKPGS
169.	Ab-A1 XmAb^{2+1}, Ab-A2 (N67Q) XmAb^{2+1}, Ab-B1 XmAb^{2+1}	EVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGRFTISRD DSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSS

FIGURE 19 Cont.

	Anti-CD3, heavy variable	
170.	Ab-A1 XmAb^{2+1}, Ab-A2 (N67Q) XmAb^{2+1}, Ab-B1 XmAb^{2+1} Anti-CD3, HCDR1	TYAMN
171.	Ab-A1 XmAb^{2+1}, Ab-A2 (N67Q) XmAb^{2+1}, Ab-B1 XmAb^{2+1} Anti-CD3, HCDR2	RIRSKYNNYATYYADSVKG
172.	Ab-A1 XmAb^{2+1}, Ab-A2 (N67Q) XmAb^{2+1}, Ab-B1 XmAb^{2+1} Anti-CD3, HCDR3	HGNFGDSYVSWFAY
173.	Ab-A1 XmAb^{2+} , Ab-A2 (N67Q) XmAb^{2+1}, Ab-B1 XmAb^{2+1} Anti-CD3, light variable	QAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAALTI SGAQPEDEADYYCALWYSNHWVFGGGTKLTVL
174.	Ab-A1 XmAb^{2+1}, Ab-A2 (N67Q) XmAb^{2+1}, Ab-B1 XmAb^{2+1} Anti-CD3, LCDR1	GSSTGAVTTSNYAN
175.	Ab-A1 XmAb^{2+1}, Ab-A2 (N67Q) XmAb^{2+1}, Ab-B1 XmAb^{2+1} Anti-CD3, LCDR2	GTNKRAP
176.	Ab-A1 XmAb^{2+1}, Ab-A2 (N67Q) XmAb^{2+1}, Ab-B1 XmAb^{2+1} Anti-CD3, LCDR3	ALWYSNHWV
177.	STEAP2 - human	MESISMMGSPKSLSETFLPNGINGIKDARKVTVGVIGSGDFAKSLTIRLIRCGYHVVIGS RNPKFASEFFPHVVDVTHHEDALTKTNIIFVAIHREHYTSLWDLRHLLVGKILIDVSNNM RINQYPESNAEYLASLFPDSLIVKGFNVVSAWALQLGPKDASRQVYICSNNIQARQQVIE

FIGURE 19 Cont.

		LARQLNFIPIDLGSLSSAREIENLPLRLFTLWRGPVVVAISLATFFFLYSFVRDVIHPYA RNQQSDFYKIPIEIVNKTLPIVAITLLSLVYLAGLLAAAYQLYYGTKYRRFPPWLETWLQ CRKQLGLLSFFFAMVHVAYSLCLPMRRSERYLFLNMAYQQVHANIENSWNEEEVWRIEMY ISFGIMSLGLLSLLAVTSIPSVSNALNWREFSFIQSTLGYVALLISTFHVLIYGWKRAFE EEYYRFYTPPNFVLALVLPSIVILGKIILFLPCISRKLKRIKKGWEKSQFLEEGMGGTIP HVSPERVTVM
178.	Linker	GSGGS
179.	Linker	GGGGS
180.	Linker	GGGS
181.	Linker	GFLG
182.	Ab-A1 Xmab^{2+1} heavy variable	QVQLVQSGAEVKKPGASVKVSCKASGYTFSTYWIEWVRQAPGQRLEWMGEILPGSGNTDFNEKFQGRVTFTADTS SDTAYMELSSLRSEDTAVYYCTRWGYYGTRGYFNVWGQGTLVTVSS
183.	Ab-A1/A2(N67Q) Xmab^{2+1} light variable	EIVLTQSPATLSLSPGERATLSCRASSSVSYMHWFQQKPGQAPRLLIYSTSNLASGIPARFSGSGSGTDYTLTISSLEPE DFAVYYCQQRRSFPYTFGQGTKLEIK
184.	Ab-A2 (N67Q) Xmab^{2+1} heavy variable	QVQLVQSGAEVKKPGASVKVSCKASGYTFSTYWIEWVRQAPGQRLEWMGEILPGSGQTDFNEKFQGRVTFTADTS SDTAYMELSSLRSEDTAVYYCTRWGYYGTRGYFNVWGQGTLVTVSS
185.	Ab-B1 Xmab^{2+1} heavy variable	EIQLVQSGAEVKKPGATVKISCKASGYTFTNYGMNWVQQAPGQGLEWMGWMNTYTGEPTYADKFQGRVTFTLD TSARTVYMELSSLRSEDTAVYFCARAGGQLRPGAMDYWGQGTMVTVSS
186.	Ab-B1 Xmab^{2+1} light variable	DIVLTQTPLSLSVTPGQPASISCKASQSVDYDGDSFMNWYLQKPGQPPQLLIYVASNLESGVPDRFSGSGSGTDFTLK ISRVEAEDVGVYYCQQSNEEPPTFGQGTKLEIK
187.	human PD-1	PGWFLDSPDRPWNPPTFSPALLVVTEGDNATFTCSFSNTSESFVLNWYRMSPSNQTDKLAAFPEDRSQPGQDCRF RVTQLPNGRDFHMSVVRARRNDSGTYLCGAISLAPKAQIKESLRAELRVTERRAEVPTAHPSPSPRPAGQFQTLVVG VVGGLLGSLVLLVWVLAVICSRAARGTIGARRTGQPLKEDPSAVPVFSVDYGELDFQWREKTPEPPVPCVPEQTEYA TIVFPSGMGTSSPARRGSADGPRSAQPLRPEDGHCSWPL
188.	cynomologous PD-1	MQIPQAPWPVVWAVLQLGWRPGWFLESPDRPWNAPTFSPALLLVTEGDNATFTCSFSNASESFVLNWYRMSPS NQTDKLAAFPEDRSQPGQDCRFRVTRLPNGRDFHMSVVRARRNDSGTYLCGAISLAPKAQIKESLRAELRVTERRAE VPTAHPSPSPRPAGQFQALVVGVVGGLLGSLVLLVWVLAVICSRAAQGTIEARRTGQPLKEDPSAVPVFSVDYGELD FQWREKTPEPPAPCVPEQTEYATIVFPSGLGTSSPARRGSADGPRSPRPLRPEDGHCSWPL
189.	Anti-PD-1 antibody HC	SYDMS

FIGURE 19 Cont.

	CDR1	
190.	Anti-PD-1 antibody HC CDR2	LISGGGSQTYYAESVK
191.	Anti-PD-1 antibody HC CDR3	PSGHYFYAMDV
192.	Anti-PD-1 antibody LC CDR1	RASQGISNWLA
193.	Anti-PD-1 antibody LC CDR2	AASSLQS
194.	Anti-PD-1 antibody LC CDR3	QQAESFPHT
195.	Anti-PD-1 antibody HC VARIABLE	EVQLLESGGGLVQPGGSLRLSCAASGFTFSSYDMSWVRQAPGKGLEWVSLISGGGSQTYYAESVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYFCASPSGHYFYAMDVWGQGTTVTVSS
196.	Anti-PD-1 antibody LC VARIABLE	DIQMTQSPSSVSASVGDRVTITCRASQGISNWLAWYQQKPGKAPKLLIFAASSLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQAESFPHTFGGGTKVEIK
197.	Anti-PD-1 antibody HC FULL LENGTH	MDMRVPAQLLGLLLLWLRGARCEVQLLESGGGLVQPGGSLRLSCAASGFTFSSYDMSWVRQAPGKGLEWVSLISG GGSQTYYAESVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYFCASPSGHYFYAMDVWGQGTTVTVSSASTKGPSVF PLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHK PSNTKVDKKVEPKSCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVKFNWYVDGV EVHNAKTKPCEEQYGSTYRCVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREEMT KNQVSLTCLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHN HYTQKSLSLSPGK
198.	Anti-PD-1 antibody LC	MDMRVPAQLLGLLLLWLRGARCDIQMTQSPSSVSASVGDRVTITCRASQGISNWLAWYQQKPGKAPKLLIFAASSL QSGVPSRFSGSGSGTDFTLTISSLQPEDFATYYCQQAESFPHTFGGGTKVEIKRTVAAPSVFIFPPSDEQLKSGTASVV

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FIGURE 19 Cont.

	FULL LENGTH	CLLNNFYPREAKVQWKVDNALQSGNSQESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFN RGEC
199.	Ab-A2 (N67Q) Xmab 2+1 heavy chain	MDMRVPAQLLGLLLLWLRGARCQVQLVQSGAEVKKPGASVKVSCKASGYTFSTYWIEWVRQAPGQRLEWMGEIL PGSGQTDFNEKFQGRVTFTADTSSDTAYMELSSLRSEDTAVYYCTRWGYYGTRGYFNVWGQGTLVTVSSASTKGPS VFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVN HKPSDTKVDKKVEPKSCDKTHTCPPCPAPPVAGPSVFLFPPKPKDTLMISRTPEVTCVVVDVKHEDPEVKFNWYVDG VEVHNAKTKPCEEEYGSTYRCVSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREEMT KNQVSLTCDVSGFYPSDIAVEWESDGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWEQGDVFSCSVMHEALHNH YTQKSLSLSPGK
200.	Ab-A1/A2 (N67Q) Xmab^{2+1} light chain minus signal sequence	EIVLTQSPATLSLSPGERATLSCRASSSVSYMHWFQQKPGQAPRLLIYSTSNLASGIPARFSGSGSGTDYTLTISSLEPE DFAVYYCQQRRSFPYTFGQGTKLEIKRTVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGN SQESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRGEC
201.	Ab-A1 Xmab^{2+1} heavy chain minus the signal sequence	QVQLVQSGAEVKKPGASVKVSCKASGYTFSTYWIEWVRQAPGQRLEWMGEILPGSGNTDFNEKFQGRVTFTADTS SDTAYMELSSLRSEDTAVYYCTRWGYYGTRGYFNVWGQGTLVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKD YFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSDTKVDKKVEPKSCDKTHTC PPCPAPPVAGPSVFLFPPKPKDTLMISRTPEVTCVVVDVKHEDPEVKFNWYVDGVEVHNAKTKPREEEYNSTYRVVS VLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREEMTKNQVSLTCDVSGFYPSDIAVEW ESDGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWEQGDVFSCSVMHEALHNHYTQKSLSLSPGK
202.	Ab-A1 Xmab^{2+1} XVHMx minus the signal sequence	QVQLVQSGAEVKKPGASVKVSCKASGYTFSTYWIEWVRQAPGQRLEWMGEILPGSGNTDFNEKFQGRVTFTADTS SDTAYMELSSLRSEDTAVYYCTRWGYYGTRGYFNVWGQGTLVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKD YFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKKVEPKSCGGGGS GGGGSEVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGR FTISRDDSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPG SQAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAAL TISGAQPEDEADYYCALWYSNHWVFGGGTKLTVLGGGGSGGGGSKTHTCPPCPAPPVAGPSVFLFPPKPKDTLMIS

FIGURE 19 Cont.

		RTPEVTCVVVDVKHEDPEVKFNWYVDGVEVHNAKTKPREEQYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNKALP APIEKTISKAKGQPREPQVYTLPPSREQMTKNQVKLTCLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLY SKLTVDKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK
203.	Ab-A2 (N67Q) Xmab 2+1 heavy chain minus signal sequence	QVQLVQSGAEVKKPGASVKVSCKASGYTFSTYWIEWVRQAPGQRLEWMGEILPGSGQTDFNEKFQGRVTFTADTS SDTAYMELSSLRSEDTAVYYCTRWGYYGTRGYFNVWGQGTLVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKD YFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSDTKVDKKVEPKSCDKTHTC PPCPAPPVAGPSVFLFPPKPKDTLMISRTPEVTCVVVDVKHEDPEVKFNWYVDGVEVHNAKTKPCEEEYGSTYRCVS VLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREEMTKNQVSLTCDVSGFYPSDIAVEW ESDGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWEQGDVFSCSVMHEALHNHYTQKSLSLSPGK
204.	Ab-B1 Xmab^{2+1} light chain minus signal sequence	DIVLTQTPLSLSVTPGQPASISCKASQSVDYDGDSFMNWYLQKPGQPPQLLIYVASNLESGVPDRFSGSGSGTDFTLK ISRVEAEDVGVYYCQQSNEEPPTFGQGTKLEIKRTVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDN ALQSGNSQESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRGEC
205.	Ab-B1 Xmab^{2+1} heavy chain minus signal sequence	QLVQSGAEVKKPGATVKISCKASGYTFTNYGMNWVQQAPGQGLEWMGWMNTYTGEPTYADKFQGRVTFTLDT SARTVYMELSSLRSEDTAVYFCARAGGQLRPGAMDYWGQGTMVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLV KDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSDTKVDKKVEPKSCDKTH TCPPCPAPPVAGPSVFLFPPKPKDTLMISRTPEVTCVVVDVKHEDPEVKFNWYVDGVEVHNAKTKPREEEYNSTYRV VSVLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREEMTKNQVSLTCDVSGFYPSDIAVE WESDGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWEQGDVFSCSVMHEALHNHYTQKSLSLSPGK
206.	Ab-B1 Xmab^{2+1} XMVHx minus signal sequence	QLVQSGAEVKKPGATVKISCKASGYTFTNYGMNWVQQAPGQGLEWMGWMNTYTGEPTYADKFQGRVTFTLDT SARTVYMELSSLRSEDTAVYFCARAGGQLRPGAMDYWGQGTMVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLV KDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKKVEPKSCGGG GSGGGGSEVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVK GRFTISRDDSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGK PGSQAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKA ALTISGAQPEDEADYYCALWYSNHWVFGGGTKLTVLGGGGSGGGGSKTHTCPPCPAPPVAGPSVFLFPPKPKDTL MISRTPEVTCVVVDVKHEDPEVKFNWYVDGVEVHNAKTKPREEQYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNK ALPAPIEKTISKAKGQPREPQVYTLPPSREQMTKNQVKLTCLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSF FLYSKLTVDKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK
207.	Ab-A2 (N67Q) Xmab^{2+1} XVHMx	QVQLVQSGAEVKKPGASVKVSCKASGYTFSTYWIEWVRQAPGQRLEWMGEILPGSGQTDFNEKFQGRVTFTADTS SDTAYMELSSLRSEDTAVYYCTRWGYYGTRGYFNVWGQGTLVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKD

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FIGURE 19 Cont.

	minus signal sequence	YFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKKVEPKSCGGGGS GGGGSEVQLVESGGGLVQPGGSLRLSCAASGFTFSTYAMNWVRQAPGKGLEWVGRIRSKYNNYATYYADSVKGR FTISRDDSKNTLYLQMNSLRAEDTAVYYCVRHGNFGDSYVSWFAYWGQGTLVTVSSGKPGSGKPGSGKPGSGKPG SQAVVTQEPSLTVSPGGTVTLTCGSSTGAVTTSNYANWVQQKPGKSPRGLIGGTNKRAPGVPARFSGSLLGGKAAL TISGAQPEDEADYYCALWYSNHWVFGGGTKLTVLGGGGSGGGGSKTHTCPPCPAPPVAGPSVFLFPPKPKDTLMIS RTPEVTCVVVDVKHEDPEVKFNWYVDGVEVHNAKTKPCEEQYGSTYRCVSVLTVLHQDWLNGKEYKCKVSNKALP APIEKTISKAKGQPREPQVYTLPPSREQMTKNQVKLTCLVKGFYPSDIAVEWESNGQPENNYKTTPPVLDSDGSFFLY SKLTVDKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK
208.	Anti-PD-1 antibody HC FULL LENGTH minus signal sequence	EVQLLESGGGLVQPGGSLRLSCAASGFTFSSYDMSWVRQAPGKGLEWVSLISGGGSQTYYAESVKGRFTISRDNSK NTLYLQMNSLRAEDTAVYFCASPSGHYFYAMDVWGQGTTVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDY FPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKKVEPKSCDKTHTCP PCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVKFNWYVDGVEVHNAKTKPCEEQYGSTYRCVS VLTVLHQDWLNGKEYKCKVSNKALPAPIEKTISKAKGQPREPQVYTLPPSREEMTKNQVSLTCLVKGFYPSDIAVEW ESNGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHNHYTQKSLSLSPGK
209.	Anti-PD-1 antibody LC FULL LENGTH minus signal sequence	DIQMTQSPSSVSASVGDRVTITCRASQGISNWLAWYQQKPGKAPKLLIFAASSLQSGVPSRFSGSGSGTDFTLTISSL QPEDFATYYCQQAESFPHTFGGGTKVEIKRTVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQ SGNSQESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRGEC

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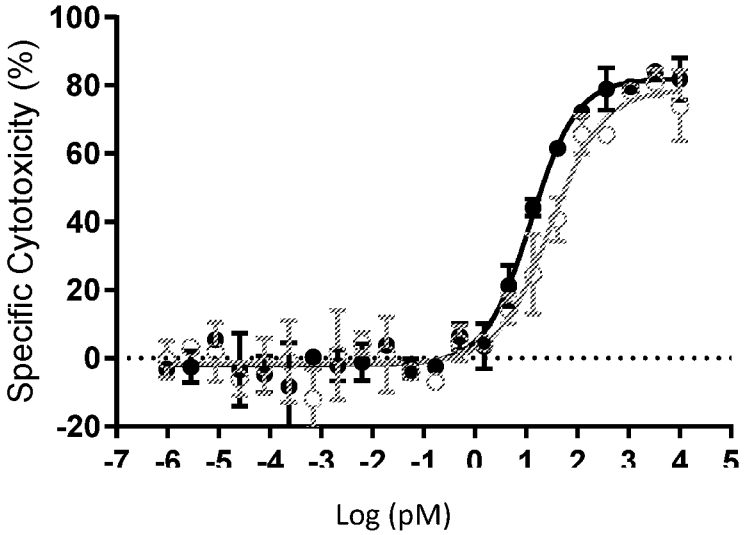

FIGURE 20A

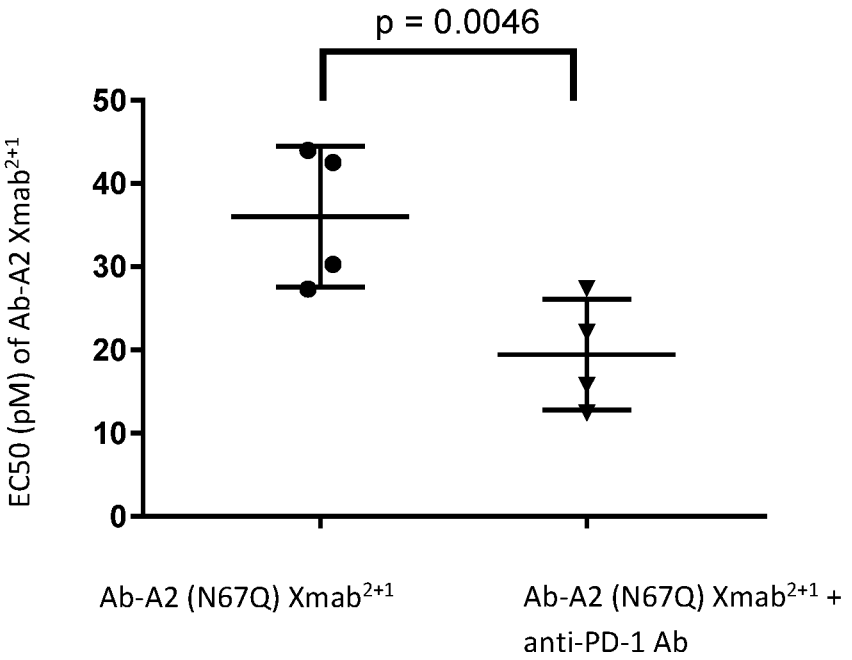

FIGURE 20B

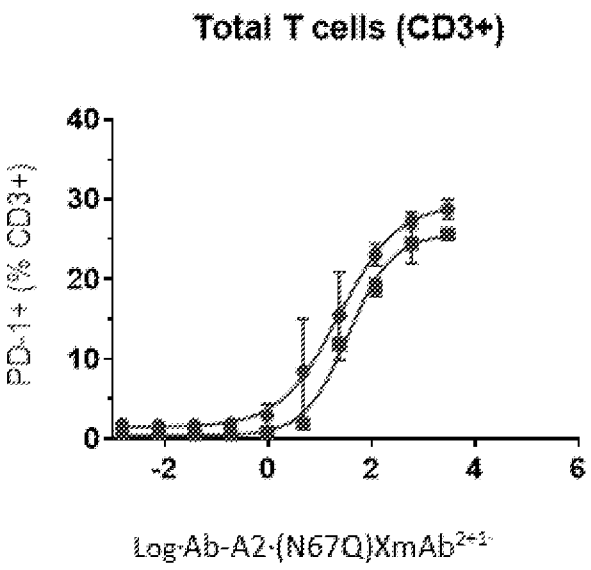

FIGURE 21A

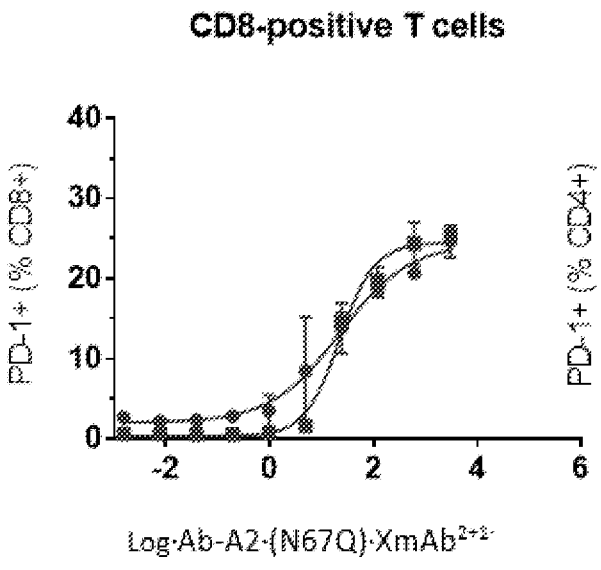

FIGURE 21B

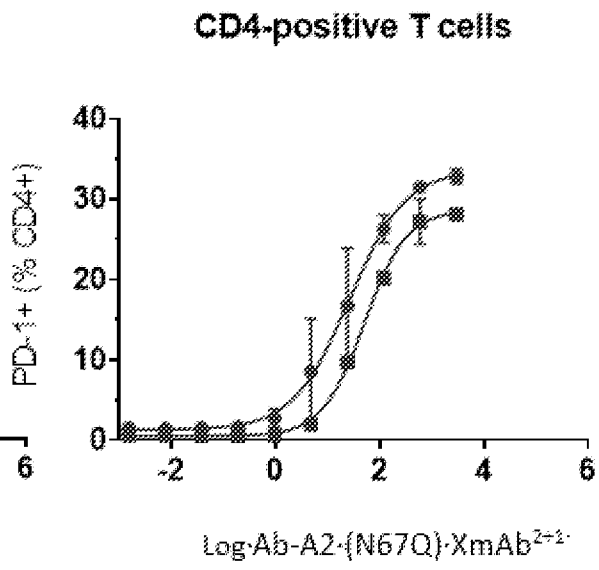

FIGURE 21C

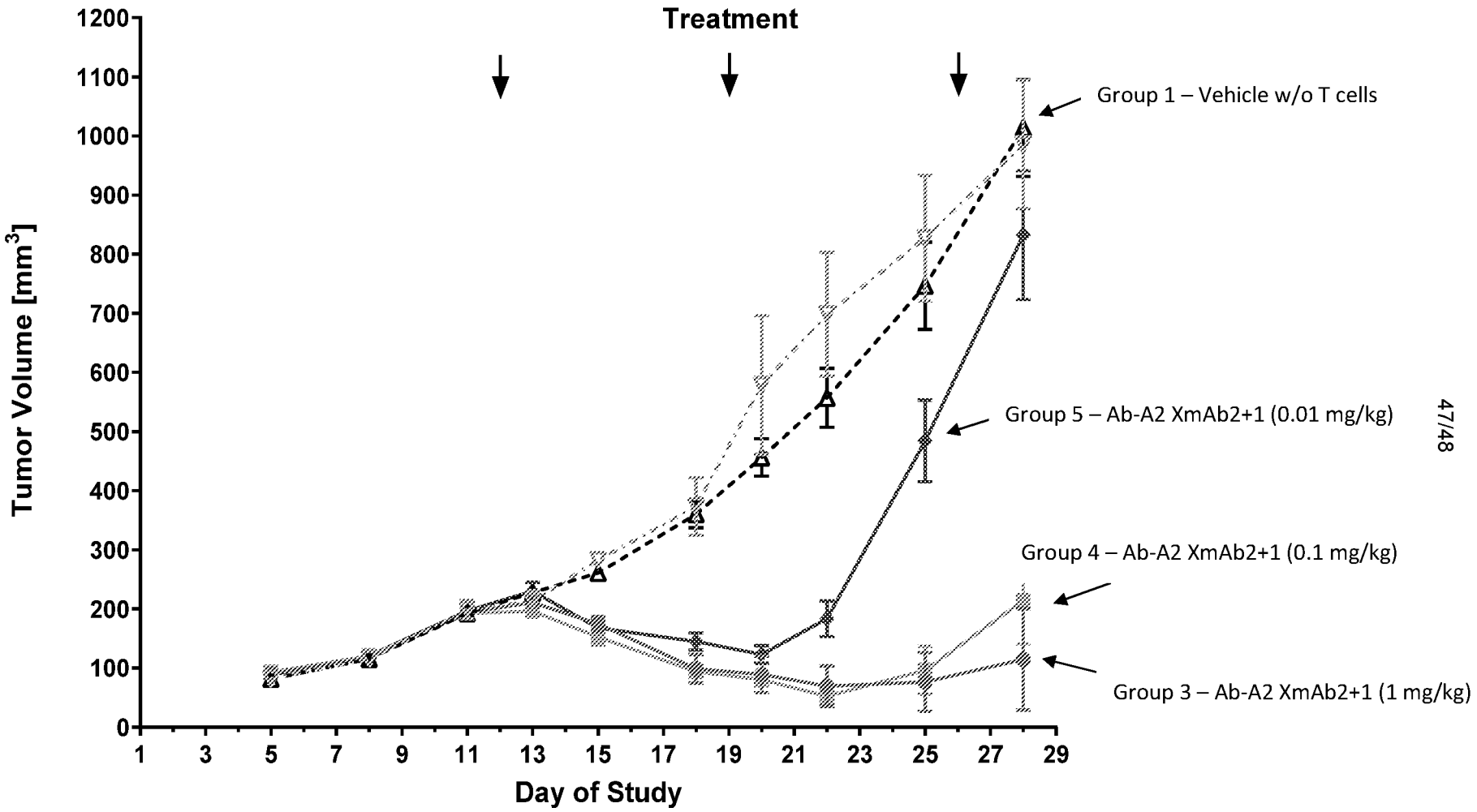
Treatment
Tumor Volume [mm3]
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
Day of Study
Group 1 – Vehicle w/o T cells
Group 5 – Ab-A2 XmAb2+1 (0.01 mg/kg)
Group 4 – Ab-A2 XmAb2+1 (0.1 mg/kg)
Group 3 – Ab-A2 XmAb2+1 (1 mg/kg)

FIGURE 22

FIGURE 23. Mean and Median SK-N-MC Human Neuroblastoma Tumor Volumes in Female NOD/SCID Mice

Dose Group	Parameter	Tumor Volume [mm³]									
		Day 5	Day 8	Day 11	Day 13	Day 15	Day 18	Day 20	Day 22	Day 25	Day 28
1 Vehicle w/o T cells	Mean	81.42	115.24	198.79	212.62	282.70	373.05	578.73	698.38	827.31	985.94
	Median	90.28	122.85	203.63	229.86	286.81	323.09	563.09	598.48	673.42	885.10
	SEM	9.84	10.43	15.69	18.48	12.75	48.70	117.46	104.52	106.45	108.87
	Animals [N]	5	5	5	5	5	5	5	5	5	5
	Significance	n.p.	n.p.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
2 Vehicle	Mean	81.70	115.59	192.91	227.63	260.98	360.22	456.04	557.15	746.68	1013.67
	Median	80.44	118.24	196.61	225.01	253.27	348.93	468.93	590.08	837.07	955.14
	SEM	3.26	5.84	5.65	8.43	8.27	22.88	31.99	49.93	73.79	82.53
	Animals [N]	10	10	10	10	10	10	10	10	10	10
3 Ab-A2 XmAb2+1 (1.0 mg/kg)	Mean	90.20	116.48	194.16	210.85	174.59	98.67	89.06	69.26	76.53	114.65
	Median	87.90	115.14	197.87	206.94	166.09	78.41	59.90	33.53	27.07	29.77
	SEM	6.06	6.83	5.86	10.05	12.61	24.54	30.99	34.20	49.48	85.58
	Animals [N]	10	10	10	10	10	10	10	10	10	10
	Significance	n.p.	n.p.	n.s.	n.s.	***	***	***	***	***	***
4 Ab-A2 XmAb2+1 (0.1 mg/kg)	Mean	92.85	120.80	192.45	196.10	152.32	94.10	80.21	52.33	96.21	214.04
	Median	92.42	117.60	197.59	198.67	144.59	88.07	76.73	41.56	55.86	106.87
	SEM	4.26	7.36	5.14	12.56	14.21	9.02	10.31	12.89	40.62	73.43
	Animals [N]	10	10	10	10	10	10	10	10	10	10
	Significance	n.p.	n.p.	n.s.	n.s.	***	***	***	***	***	***
5 Ab-A2 XmAb2+1 (0.01 mg/kg)	Mean	88.12	120.82	196.68	230.31	168.00	145.00	122.92	183.51	484.07	832.45
	Median	90.29	119.04	200.97	217.31	150.74	121.75	115.60	202.07	431.89	867.08
	SEM	5.07	7.38	5.23	15.01	13.55	14.25	14.81	29.98	69.24	109.11
	Animals [N]	10	10	10	10	10	10	10	10	10	10
	Significance	n.p.	n.p.	n.s.	n.s.	***	***	***	***	*	n.s.

One-way ANOVA and assessment of experimental results for tumor growth by Dunnett's post-test in comparison to group 2; significant: * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$. Statistical analysis from day 11 (one day before treatment start) until day 28.
N = number of animals; n.p. = not performed; n.s. = not significant; SEM = standard error of the mean; w/o = without.