

mAb	FW1	CDRH1	FW2	CDRH2
81-05	DVQLQESGPGMVKPSQSLSLTCTVTGYSIT	GGYDWH	WIRHFPGNKLEWMA	YISYSGSTDYNPSLKS
81-08	QVQLQQSGAELVRPGASVTLSCKASGYTFT	DYEVY	WVKQTPVHGLEWIG	AIDPETGRTAYNQKFKG
81-18	EVQLQQSGPELVKPGDSVKMSCKASGYTFT	DYYMD	WVKQSHGRSLEWIG	YIYPKNVGISYNQKFKG
81-22	QVQLQQSGPQLVRPGASVKLSCKASGYTFT	SYDIN	WVKQRPGQGLEWIG	WIYPGDTTDYNGKFKG
81-26	SDVQLQESGPGLVKPSQSLSVTCTVTGYSIT	SGYHWN	WIRQFPGNRLEWMG	YIHNSGSTNYSNPSLKS
81-35	EVQLQQSGTFLARPGSSVKMSCKASGYTFT	TYWMH	WVKQRPGQGLEWIG	AIYPGSDTNYNQKFRG
81-37	QVQLQQPGAELVRPGASVKLSCKAPGYTFT	SYWMN	WVKQRPEQGLEWIG	KIDPYDSETHYNQKFKD
81-39	QVQLQQPGADLVRPGTSVKLSCKASGYTFT	SYWMH	WVKQRPGQGLEWIG	VIDPSDSYTNYNQKFKG
81-113	EVKLEESGGGLVQPGGSMKLSAASGFTFS	DAWMD	WVRQSPEKGLEWVA	EIRAEANNHATYYAESVKG
81-143	QVQLQQPGAELVRPGASVKLSCKASGYAFT	DYWMN	WVKQRPGQGLEWIG	TIDPSDSYASYNQKFKG
81-149	QVQLQQSGAELVRPGASVKLSCKASDYKFT	DSEMY	WVKQTPVHGLEWIG	AIDPETGITAYNQKFKG
81-155	EVQLQQSGAELGRPGASVKLSCTTSGFNIK	DDYMH	WVKQRPEQGLEWIG	WIDPENGDTAYASKFQG
81-182	QVQLQQSGAELVRPGASVTLSCKASGYKFI	DYEMH	WVKQTPVHGLEWVG	DLDPGTGVTAYNQKFKG
81-183	EVQLQMSGAELVRPGASVKLSCTASGFNIK	DDYMY	WVKQRPEQGLEWIG	WIDPENGDTYASKFQG
81-191	EVQLQQSGAELVRPGASVKLSCTASDFNIK	DDYMH	WVKQRPEQGLEWIG	WIDPENGETEYASKFQG
81-192	QIQVLQSGPELKKPGETVKISKVSGDTFT	TYGMS	WVKQAPGKGLKWMG	WINTYSGVPTTYADDFKG
81-195	EVKFEESGGGLVQPGGSMKLSAASGFTFS	DAWMD	WVRQSPEKGLEWVA	EIRAEANNHATYYAESVKG
81-197	QVQLQQSGAELVRPGASVTLSCKASGYTFV	DYEMH	WVKQTPVHGLEWIG	AIDPETGITAYNQKFKG
81-199	EVQLQQSGAELVRPGASVKLSCTASGFNIK	DDYMS	WVKQRPEQGLEWIG	WIDPENGDTYASKFQG
81-201	QVQLQQSGADLVRPGASVTLSCKASGYTFT	DYEMH	WVKQTPVHGLEWIG	AIDPETGITAYNQKFKG
81-203	SDVQLQESGPGLVKPSQSLSLTCSVTGYSIT	SGYYWN	WIRQFPGNNLEWMG	YISHDGSNNYNPALKN
81-239	QVQLQQSGAELVRPGASVKLSCKASDYKFT	DSEMY	WVKQTPVHGLEWIG	AIDPETGITAYNQKFKG
81-253	EVQLQQSGPELVKPGASVKMSCKASGYTFT	DYYMN	WVKQSHGKSLEWIG	HINPYNGGTSYNQKFKG
81-257	QVQLQQSGAELVRPGASVTLSCKASGYRFP	DYEMH	WVKQTPVHGLEWIG	AIDPETGRTAYNQKFRG
81-278	SDVQLQESGPGLVKPSQSLSLTCSVTGYSIT	SDYYWN	WIRQFPGNKLEWMG	YITYDGSNNYNPSLKN
81-282	EVKLVESGGGLVQPGGSLKLSCATSGFTFS	DSYMY	WVRQTPEKRLEWVA	YISYGGVNTYYPDTVRG
81-285	EVQLVESGGGLVKPGGSLKLSAASGFTFS	DYGMH	WVRQAPEKGLEWVA	YISSGSRITYYADTVKG

FIG. 1

SUBSTITUTE SHEET (RULE 26)

2/48

FW3	CDRH3	FW4
RISVTHDTSKNLFFLNLTSTTTEDTATYYCAR	EGGRGFAY	WGQGT LVT VSA
KAILTTDKSSSTAYMALRSLTSEDSAVYYCAR	LKSGRYYGDLFAY	WGQGT LVT VSA
KATLTVDKSSSTAYMELHSLTSEDSAVYYCAR	SLLDALDY	WGQGT SVT VSS
KATLTVDTSSTAYMELHSLTSEDSAVYFCAR	MDDYDDGGAMDY	WGQGT SVT VSS
RISITRDTSKNQFFLQLNSVTTEDTATYYCVA	YYSNSREFWYAY	WGQGT LVT VSA
KAKLTAVTSASTAYMELSSLTNEDSAVYYCTY	GYVDYYAMDY	WGQGT SVT VSS
KAILTVDKSSSTAYMQLSSTSEDSAVYYCAR	GGDNYDPFAY	WGQGT LVT VSA
KATLTVDTSSTAYMQLSSTSEDSAVYYCAR	SDDYDEGYFFDQ	WGQGT TLT VSA
RFTISRDDSKSRVFLQMNSLRAEDTGIIYCTG	LDYGSIGFAY	WGQGT LVT VSA
KATLTVDTSSTAYMHLSSLTSEDSAVYFCAR	ESNDVCWYFDV	WGAGT TLT VSS
KATLTSDKSSSTAYMELRSLTSEDSAVYYCTR	AVPPWFAY	WGQGT LVT VSA
KATITADTSSTAYLQLSSTSEDTAVYYCNY	YGFYD	WGQGT TLT VSS
KAILTADKSSSTAYMELRSLTSEDSAVYYCTV	WSADF	WGQGT SVT VSS
KATITADTSSTAYLQLSSTSEDTAVYYCTY	YAMDY	WGQGT SVT VSS
KATLTADTSSTAYLQLSSTSEDTAVYYCTE	LGFDY	WGQGT TLT VSS
RFAFSLTSASTAYLQINNKNEDTATYFCAR	SSYDYDDAMDY	WGQGT SVT VSS
RFTISRDDSKSRVFLQMNSLRAEDTGIIYCTG	LDYGSVGFAY	WGQGT LVT VSA
KATLTADKSSSTAYMELSSLTSEDSAVYYCIR	PRGGSHFDY	WGQGT TLT VSS
KATITADTSSTAYLRLSSTSEDTAVYYCTE	LGFDY	WGQGT TLT VSS
KATLTADKSSSTAYMELSSLTSEDSAVYYCTR	PRGGSHFDH	WGQGT PLT VSS
RISITRDTSKNQFFLKLNSVTTEDTGTYCAS	VYGDYEVWYTY	WGQGT LVT VSA
KATLTSDKSSSTAYMELRSLTSEDSAVYYCTR	AVPPWFAY	WGQGT LVT VSA
KATLTVDKSSSTAYMQLNSLTSEDSAVYYCAR	NHIYYDGGYFYAMDY	WGQGT SVT VSS
KAKLTADKSSSTAYMELRSLTSEDSAVYYCTR	GYGIQFPY	WGQGT LVT VSA
RISITRDTSKNQFFLKLNSVTTEDTATYYCAR	DDGYFDY	WGQGT TLT VSS
RFTISRDNASTLYLQMSRLKSEDTAMYYCAS	RGY	WGQGT SVT VSS
RFTISRDNAKNTLFLQMTSLRSEDTAMYYCAR	EGAYSSFDY	WGQGT TLT VSS

FIG. 1 (Cont.)

SUBSTITUTE SHEET (RULE 26)

mAb	FW1	CDRL1	FW2
81-05	NIVLTQSPASLAVSLGQRATISC	RASESVDGYGNSEFMH	WYQQKPGQSPKLLIY
81-08	QIVLTQSPALMSASPGEKVTMTC	SASSSVSYMY	WYQQKPRSSPKPWIY
81-18	DIQMTQSPASLSVSVGETVTITC	RASENIYSNLA	WYQQKQKSPQLLVY
81-22	DVVTQTPTLTSLVTVGQPASISC	KSSQSLLSHNGKTYLN	WLLQRPGQSPKLLIY
81-26	DIVMSQSPSSLAVSVGEKVTMSC	KSSQSLLYSSNQKNSLA	WYQQKPGQSPKLLIY
81-35	DIVMTQSHKFMSTSVGDRVSITC	KASQDVSIDVA	WYQQKPGQSPKLLIY
81-37	DIQMTQSPASLSVSVGETVTITC	RASENIYSNLA	WYQQKQKSPQLLVY
81-39	DVVTQTPTLTSLVTVGQPASISC	KSSQSLLSHNGKTYLN	WLLQRPGQSPKLLIY
81-113	DVLTQTPTLSLPVSLGDQASISC	RSSQSVVHRNGNTFLE	WYLQKPGQSPKLLIY
81-143	DIQMTQTTSLSASLGDRVTISC	RASQDISNYLN	WYQQKPDGTVKLLIY
81-149	QIVLTQSPALMSASPGEKVTMTC	SASSSVSYMY	WYQQKPRSSPKPWIY
81-155	DVLTQTPTLSLPVSLGDQASISC	RSSQSIHVSDGNTFLQ	WYLQKPGQSPKLLIY
81-182	SDVVRPTPLSLPVSLGDQASISC	RSSQSLVHSDGNTYLH	WYLQKPGQSPKLLIY
81-183	DVVTQIPVSLPVTSLGDQASISC	RSSQSLVHSDGNTYLH	WYLQKPGQSPKLLIY
81-191	AVVTQTPTLSLPVSLGDQASISC	RSSQSLVHSDGNTYLH	WYLQKPGQSPKLLIY
81-192	DVQITQSPSYLAASPGETITINC	RTSKSISKYLA	WYQEKPGTKNKKLLIY
81-195	DVLTQTPTLSLPVSLGDQASISC	RSSQSVVHRNGNTFLE	WYLQKPGQSPKLLIY
81-197	QIVLSQSPAILASAPGEKVTMTC	RASSSVNYMH	WYQQKPGSSPKPWIY
81-199	AVVTQTPTLSLPVSLGDQASISC	RSSQSLVHSDGNTYLH	WYLQKPGQSPKLLIY
81-201	QIVLSQSPAILASAPGEKVTMTC	RASSSVRYIH	WYQQKPGSSPKPWIY
81-203	DIVMSQSPSSLAVSVGEKVALNC	KSSQSLLYSINQKNYLA	WYQRNPGQSPKLLIY
81-239	QIVLTQSPALMSASPGEKVTMTC	SASSSVSYMY	WYQQKPRSSPKPWIY
81-253	NIVLTQSPASLAVSLGQRATISC	RPSESVDSYGNSEFMH	WYQQKPGQSPKLLIY
81-257	QIVLSQSPAILASAPGEKVTMTC	RASSSVSYIH	WYQQKPGSSPKPWIY
81-278	QIVLSQSPAILASAPGEKVTMTC	RASSSVNYMH	WYQQKPGSSPKPRIY
81-282	DIVLTQSPSSLAVSLGQRATISC	KASQSDYDGD SYMN	WYQQKPGQSPKLLIY
81-285	DIVLTQSPASLAVSLGQRATISC	KASQSDYDGD SYMN	WYQQKPGQSPKLLIY

FIG. 2

SUBSTITUTE SHEET (RULE 26)

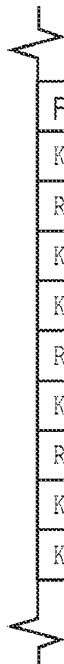
CDRL2	FW3	CDRL3	FW4
LASNLES	GVPARFSGSGSRTDFTLTIDPVEDDAATYYC	QQNNEDPFT	FGSGTKLEIK
FTSNLAS	GVPARFSGSGSGTSYSLTISSMEAEDAATYYC	QQWSSNPLT	FGAGTKLELK
AATYLAD	GVPSRFSGSGSGTQYSLKINSLSQSEDFGSYYC	QHFWGIPYT	FGGGTKLEIK
LVSKLES	GVPDRFSGSGSGTDFKLISRVEAEDLGYYC	LQATHFPLT	CGAGTKLELK
WASTRES	GVPDRFTGSGSGTDFTLTISSVKAEDLAVYYC	QQDYSYPL	TFGGGTKLELK
SASYRYT	GVPDRFTGSGSGTDFFTTISNVQAEDLAVYYC	QQHYSIPCT	FGSGTKLEIK
GARNLAD	GVPSRFSGSGSGTQYSLKINSLSQSEDFGSYFC	QHFWDTTFT	FGSGTKVEIK
LVSKVES	GVPDRFSGSGSGTDFTLKISRVEAEDLGLYYC	LQVTHFPLT	FGAGTKLELK
KVSNRFS	GVPDRFSGSGSGTDFTLKISRVEAEDLGLYYC	FQGSHPVYT	FGGGTKLEIKR
YTSRLHS	GVPSRFSGSGSGTDYSLTISNLEQEDIATYFC	QQGNTLRT	FGGGTKLEIK
LTSNLAA	GVPARFSGSGSGTSYSLTISSMEAEDAATYYC	QQWSGDPPT	FGGGTKLEIKR
KVSNRFS	GVPDRFSGSGSGTDFTLKISRVEAEDLGYYC	FQGSHPVYT	FGGGTKLEIKR
KVSNRFS	GVPDRFSGSGSGTDFTLKISRVEAEDLGYYFC	SQSTHVPPWT	FGGGTKLEIK
KVSNRFS	GVPDRFSGSGSGTDFTLKISRVEAEDLGYYFC	SQFTHVPPWT	FGGGTKLEIK
KVSNRFS	GVPDRFSGSGSGTDFTLKISRVEAEDLGYYFC	SHSTHVPPYT	FGGGTKLEIKR
SGSTLQS	GIPSRFSGSGSGTDFTLTISSLEPEDFAMYC	QHHNEYPPYT	FGGGTRLEIKR
KVSNRFS	GVPDRFSGSGSGTDFTLKISRVEAEDLGYYC	FQGSHPVYT	FGGGTKLEIKR
ATSNLAS	GVPARFSGSGSGTSYSLTISRVEAEDAATYYC	QQWSSHQPT	FGAGTKLELK
KVSNRFS	GVPDRFSGSGSGTDFTLKISRVEAEDLGYYFC	SHSTHVPPYT	FGGGTKLEIKR
ATSNLAS	GVPARFSGSGSGTSYSLTISRVEAEDAATYHC	QQWYSDTPT	FGAGTKLELK
WASTRES	GVPDRFTGSGSGTDFTLTISSVKTEDLAVYYC	QQYYSYPPWT	FGGGTKLEIK
LTSNLAA	GVPARFSGSGSGTSYSLTISSMEAEDAATYYC	QQWSGDPPT	FGGGTKLEIKR
LASNLES	GVPARFSGSGSRTDLTLTIDPVEADDAATYYC	QQNNEDPWT	FGGGTK
GTSNLAS	GVPARFTGSGSGTSYSLTISRVEAEDAATYYC	QQWSSDSPT	FGGGTKLEIK
GTSNLAS	GVPARFSGSGSGTSYSLTISRVEAEDAATYYC	QQWSSNPPT	FGAGTKLELK
GASNLES	GIPARFSGSGSGTDFTLNIHPMEEEDAATYYC	QQSNEDPWT	FGGGTKLEIK
AASNLES	GIPARFSGSGSGTDFTLNIHPVEEEDAATYYC	QQSNEDPWT	FGGGTKLEIK

FIG. 2 (Cont.)

SUBSTITUTE SHEET (RULE 26)

mAb	FW1	CDRH1	FW2	CDRH2
82-14	EVQLQQSGPELVKPGASVKISCKASGYSFT	GYMN	WVKQSPEKSLEWIG	EINPSTGGTTYNQKFQA
82-17	SDVQLQESGPGCLVTPSQSLSVTCTVTGYSIT	SGSYWN	WIRQFPGNKLEWMG	YIHNSGSTTYNPSLKS
82-30	QVQLQQSGAELVKPGASVKLSCKTSGYTFT	SYWIQ	WVKQRPQGGLGWIG	EIFPGTGTTYNEKFKG
82-31	QVQLLPFGAELVKPGASVKLSCKASGYSFT	NFWIN	WVKLRPGQGLEWIG	NIFPGSSSPNYNEKFKS
82-32	EVKLVESGGGLVQPGGSLSLSCAASGFTFT	DYYMS	WVRQPPGKALEWLG	FIRNKANGYTTESASVKG
82-33	EVQLQQSGPELVKPGASVKISCKASGYSFT	GYMN	WVKQSPEKSLEWIG	EINPSTGGTTYNQKFQA
82-35	DVKLVESGGGLVQPGGSLKLSKAASGFTFS	SYMS	WVRQTPEKRLEWVA	TISNSGGSTYYPDSVKG
82-36	QVQLLPFGAELVKPGASVKLSCKASGYTFT	NFWIN	WVKQRPQGGLGWIG	NIYPGSSSPNYNEKFKF
82-37	QVQLQQPGAELVKPGASVKLSCKASGYTFT	NHWIS	WVKQRPQGGLGWIG	NIFPGSSSPNYNEKFKS

FIG. 3



FW3	CDRH3	FW4
KATLTVDKSSSTAYMQLKSLTSEDSAVYYCSR	GEDDGYFPYSMDF	WGQGASVTVSS
RISITRDTSKNQFFLQLNSVTTEDTATYYCAR	STGPPFTY	WGQGTLLTVSA
KATLTRDTSSSTAYMQLSSLTSEDSAVYFCAR	RGVFGNYAMOY	WGQGTSTTVSS
KATLTVDISSSTAYMQLSSLTSDGSAVYYCAR	YGSYGNWYFOV	WGAGTTTVSS
RFTISRDNQSILYLQMNVLRAEDSATYYCAS	SKPGWPMOY	WGQGTSTTVSS
KATLTVDKSSSTAYMQLKSLTSEDSAVYYCSR	GEDDGYFPYSMDF	WGQGASVTVSS
RFTISRDNKNTLYLQISSLNSEDATVYYCSR	EYDFDGEFFOY	WGQGTTLTVSS
KATLTVDISSSTAYIQLSSLPSOOSAVYYCAR	YGTFGNWYFOV	WGAGTTTVSS
KATLTVDTSSTAYMQLSSLTSAASAVYYCTR	WGNYGYYAMDY	WGQGTSTTVSS

FIG. 3 (Cont.)

7/48

mAb	FW1	CDRL1	FW2	CDRL2
82-14	DIVLIQSPATLSVTPGDSVSLSC	RASQSINNNLH	WYQQKSHESPRLLIK	YVSQSIIS
82-17	NIIVLTQSPGSLAVSLGQRATISC	RASESVDNYGNSFMH	WYQQKPGQFPKLLIY	LASNLES
82-22	DIQMTQSPASLSVSVGETVTITC	RASENIYSNLA	WYQQKQKSPQLLVY	AATNLAG
82-30	DIQMTQSPASLSVSVGETVTITC	RASENIYSNLA	WYQQKQKSPQLLVY	AATNLAD
82-31	DLKMTQSPSSMYASLGERVTITC	KASQDINSFLS	WFQQIPGKSPKTLIY	RANRLVD
82-32	DIQMTQTSSSFVSLGDRVTITC	KASEDIYNRLA	WYQQKPGNAPRLLIS	GATSLEA
82-33	DIVLIQSPATLSVTPGDSVSLSC	RASQSINNNLH	WYQQKSHESPRLLIK	YVSQSIIS
82-35	DVVMQTPLSLPVSLGDAQASISC	RSSQSLVHSNGNTYLH	WYLQKPGQSPKLLIY	KVSNRFS
82-36	DIKMTQSPSSMYASLGERVTITC	KASQDINNFLS	WFQQIPGKSPKTLIY	RANRLWD
82-37	QIVLTQSPAISASLGEEITLTC	SASSRVNYMH	WYQQKSGTSPKLLIY	STSNLAS

FIG. 4

FW3	CDRL3	FW4
GIPSRFSGSGSGTDFTLINSVETEDFGMYFC	QQSNSWPLT	FGACTKLELK
GVPARFSGSGSRTDFTLIDPVEADDAATYYC	QQNNEDPT	FGSGTKLEMK
GVPSRFSGSGSGTQYSLKINSLQSEDFGSYYC	QHFWGTPRT	FGGGTKLEIK
GVPSRFSGSGSGTQYSLKINSLQSEDFGSYYC	QHFGDTPYT	FGGGTKLEIKR
GVPSRFSGSGSGQDYSLTISSEYEDMGIYYC	LQSDEFPTY	IGGGTKLEIKR
GVPSRFSGSGSGNDYTLSTSLQTEDVATYYC	QQYWYTPWT	FGGGTKLEIK
GIPSRFSGSGSGTDFTLINSVETEDFGMYFC	QQSNSWPLT	FGACTKLELK
GVPDFSGSGSGTDFTLKISRVEAEDLGVIYC	SQSRHVPYT	FGGGTKLEIKR
GVPSRFSGSGSGQDYSLTISSEYEDMGIYYC	LQSDEFPTY	IGGGTKLEIKR
GVPSRFSGSGSGTFYSLTISVEAEDAADYYC	HQWSSYPT	FGGGTKLEIK

FIG. 4 (Cont.)

mAb	FW1	CDRH1	FW2	CDRH2
83-08	EEKLEESGGGLVQPGGSMKLSCLVASGFIFS	IYWMN	WVRQSPKGLWVG	QIRLKSDNYATHYAESVK
83-20	QVQLQQSGAELVRPGTSVKMSCKATGYTFS	NYWTG	WVKQRPBGHLERIG	DIYPGGGYTNYNEEFKG
83-23	EVQLQQSGAELVKPGASVKLSCTASGFNIRD	TYMH	WVKQRPQGLEWIG	RIDPANGNTKYDPKFRG
83-31	SDVQLQESGPDLVKPSQSLSLTCTVTGYSIT	SGYWH	WIRQFPGNKLEWMG	YISFSGSNKYNPSLKS
83-42	SDVQLQESGPDLVKPSQSLSLTCTVTGYSIT	SGYNWH	WIRQFPGNKLEWMG	YIHYSNGTNDYNPSLRS
83-47	EVQLQQSGAELVRPGASVKLSCTASGFNIK	DDYMN	WVKQRPQGLDWIG	GIDPANGNTKYAPKFFQD
83-58	EVKLVESGGGLVQPGGSLKLSCAASGFIFS	SYAMS	WVRQTPKKRLEWVA	YIRDGGGGTYYPDTVEG

mAb	FW1	CDRL1	FW2	CDRL2
83-08	DIQMIQSPASLSVSVGETVTITC	RASENIYSNLA	WYQQKQKSPQLLVYV	ATKLAD
83-20	QIVLTQSPAIMSASPGEKVTMTCT	SASSSVSSRYLH	WYQQKSGASPKFWIYG	TSNLAS
83-23	DILLTQSPAILLSVSPGERVVSFSC	PASQNIQITIIH	WYQQRANGSPRLLIKY	ASESIS
83-31	DIQMTQRTSSLSASLGDRVTISCT	SASQDITNYLH	WFQQKPDGTVKLLIY	YTSTLHS
83-42	QIVLSQSPAILLSASPGEKVTMTCT	RASSSVNVMH	WYQQKPGSSPKPWIY	ATSNLAS
83-47	DIRMTQSPSSMYASLGERTVITCT	KASQDINTYLR	WCQQKPGKSPKTLIY	GANRLVD
83-58	DIQMTQSPASLSVSVGETVTITCT	RASENIYSHLA	WYQQKQKSPQLLVY	AATNLAD

FIG. 5

FW3	CDRH3	FW4
GRFTISRDDSKSSVYLQMNNLRAEDTGIYYCMY	YGSSYERFAY	WGQGTLLVTVSA
KATLTADTSSSTVYMLLSSLTFFEDSAIYYCAR	WGSDYAMDY	WGQGTSTVTVSS
KATITADTSSNTAYLQLSSLTSEGTAVYYCSE	GIYFDY	WGQGTTLTVSS
RISITRDTSKNQFFLQLNSVTTEDTATYYCAN	LDY	WGQGTTLTVSS
RISITRDTSKNQFFLHLNSVFTEDTATYYCAR	SGITTDWYFDV	WGAGTTVTVSS
KATITADTSSNTAYLQLSSLTSEDTAVFYCAR	YRDYAVDYWGQG	WGQGTSTVTVSS
RFTISRDNAKNTLYLQMSSLKSEDTAMYICAR	HPFMNDWFLY	WGQGTLLVTVSA

FW3	CDRL3	FW4
GVPSRFSGSGGTQYSLKINSLQSEDFGSYYC	QHFWGTFPWT	EGGGTKLEIK
GVPARFSGSGGTSYSLTISSVEAEDAATYYC	QQYHSDPPT	EGGGTKLEIK
GIPSRFSGSGGTDFTLINSVESEDIADYYC	QQSNSWPYT	EGGGTKLEIKR
GVPSRFSGSGGTDYSLTISNLEPEDIAATYYC	QQYSKLPYT	EGGGTKLEITR
GVPARFSGSGGTSYSLTISKVEAEDAATYYC	QQWSSHQPT	EGAGTKLELK
GVPSRFSGSGGQDYSLTISSLEYEDMGIYYC	LQYDEFPLT	EGAGTKLELK
GVPSRFSGSGGTQYSLKINSLQSEDFGSYYC	QHFWGTPYT	EGGGTKLEIKR

FIG. 5 (Cont.)

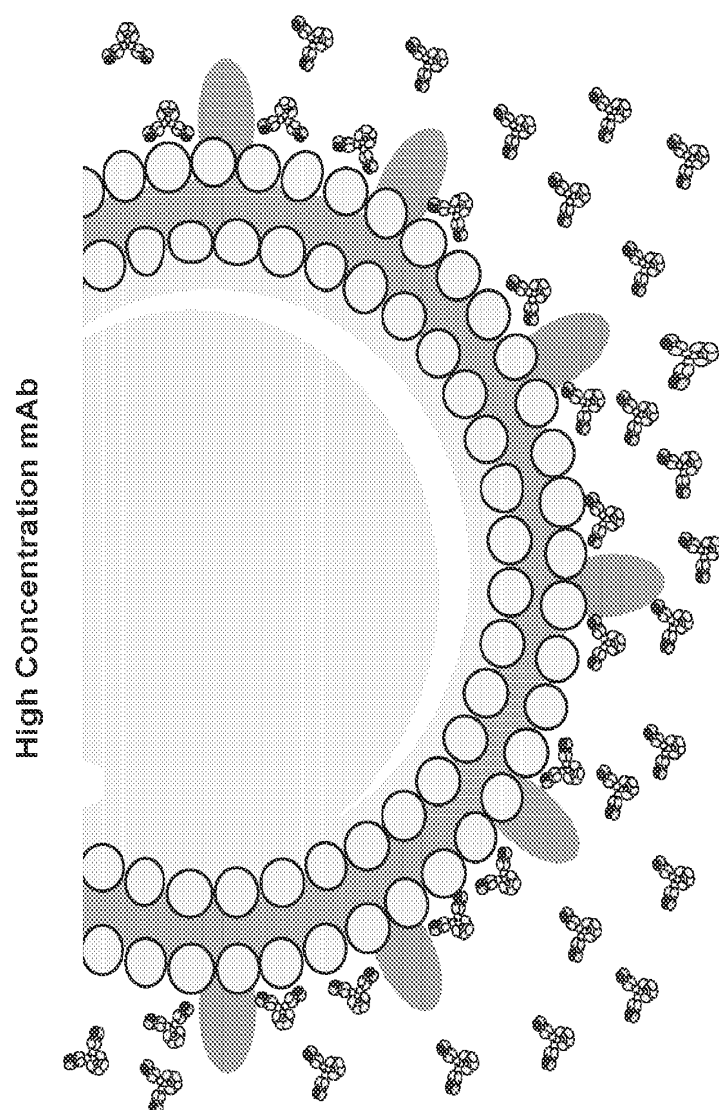


FIG. 6A

12/48

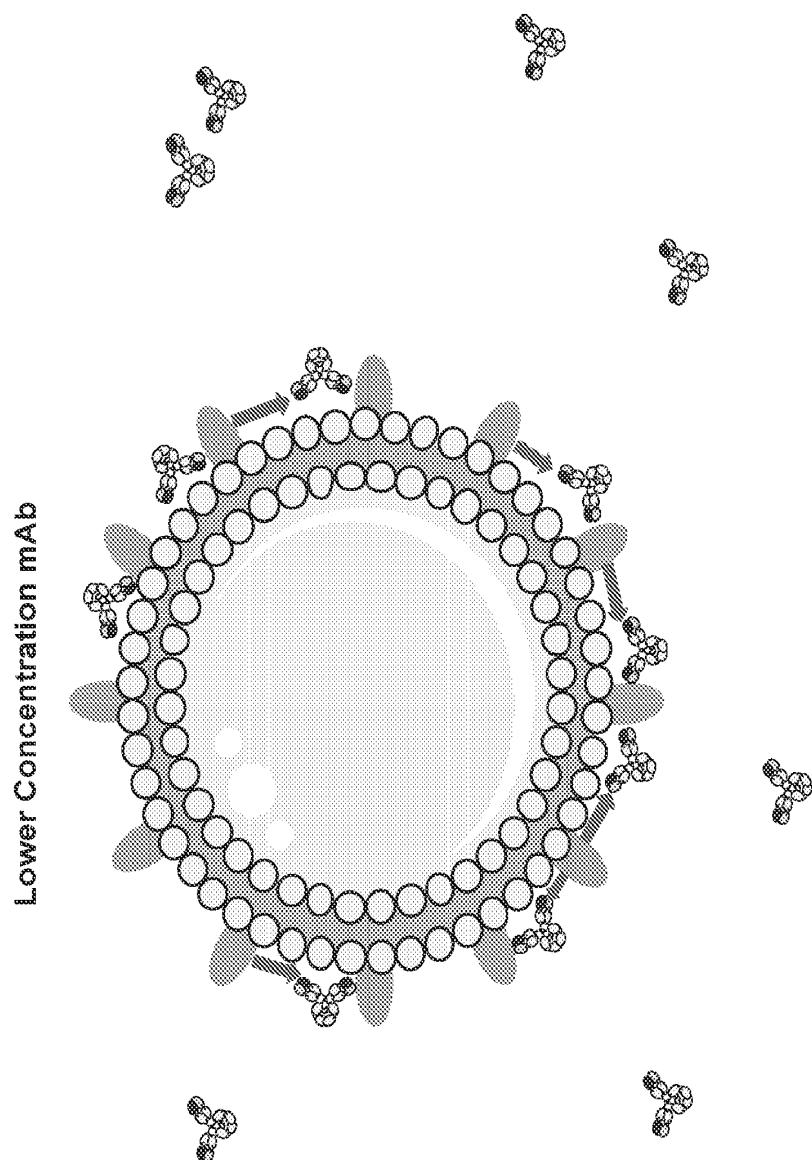


FIG. 6B

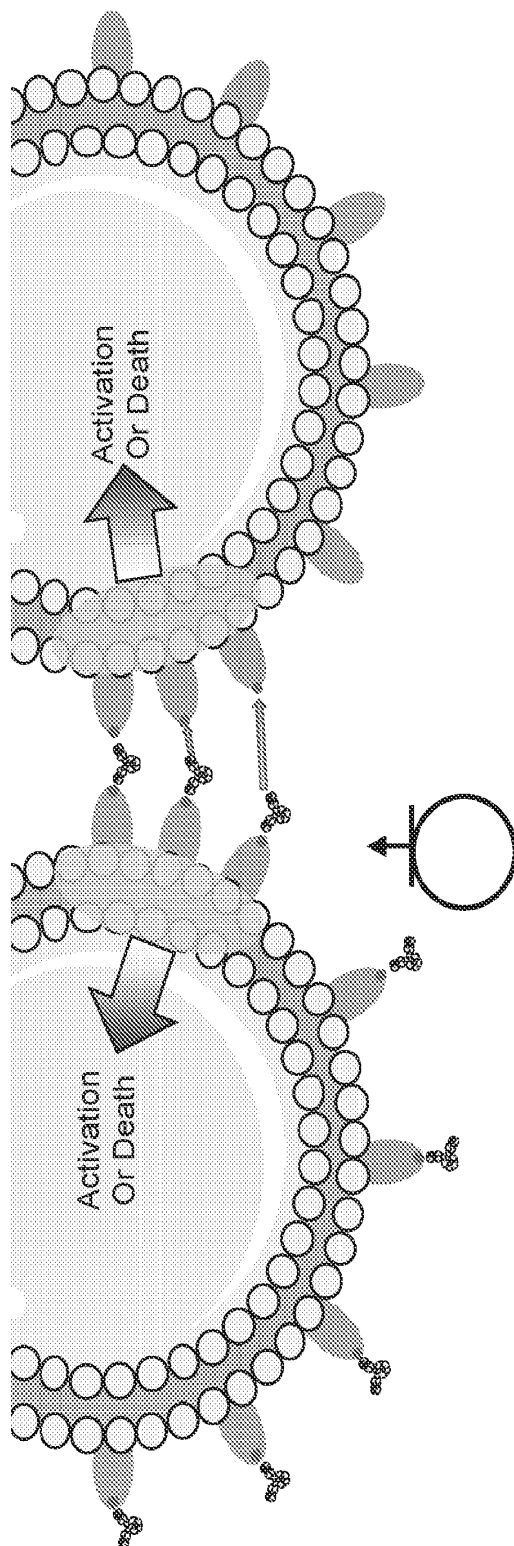


FIG. 7

14/48

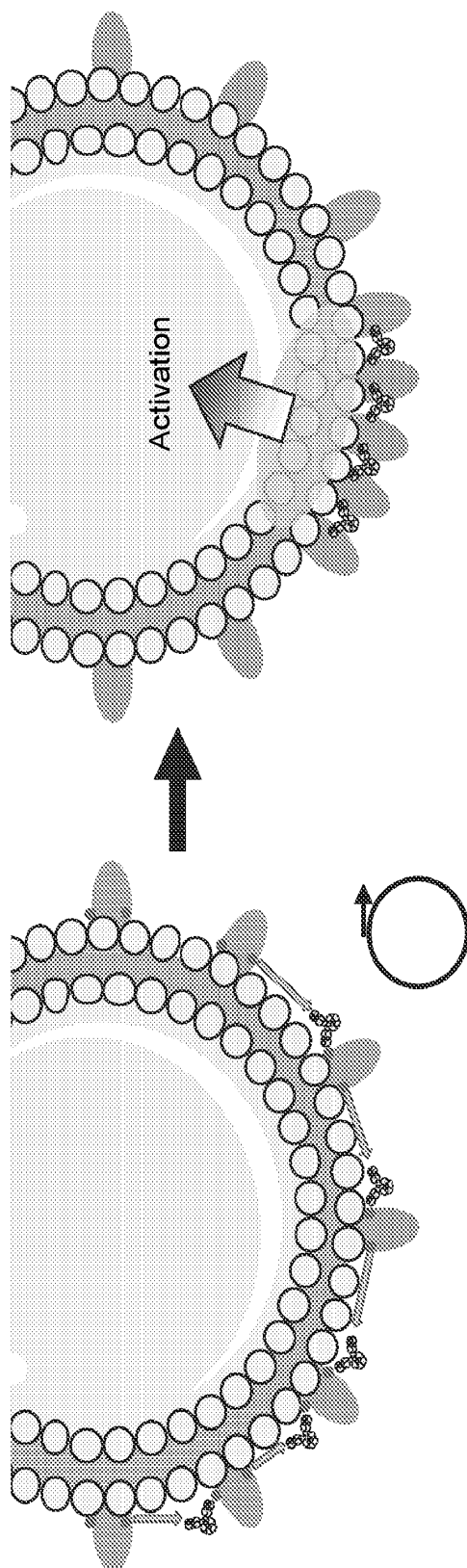


FIG. 8

15/48

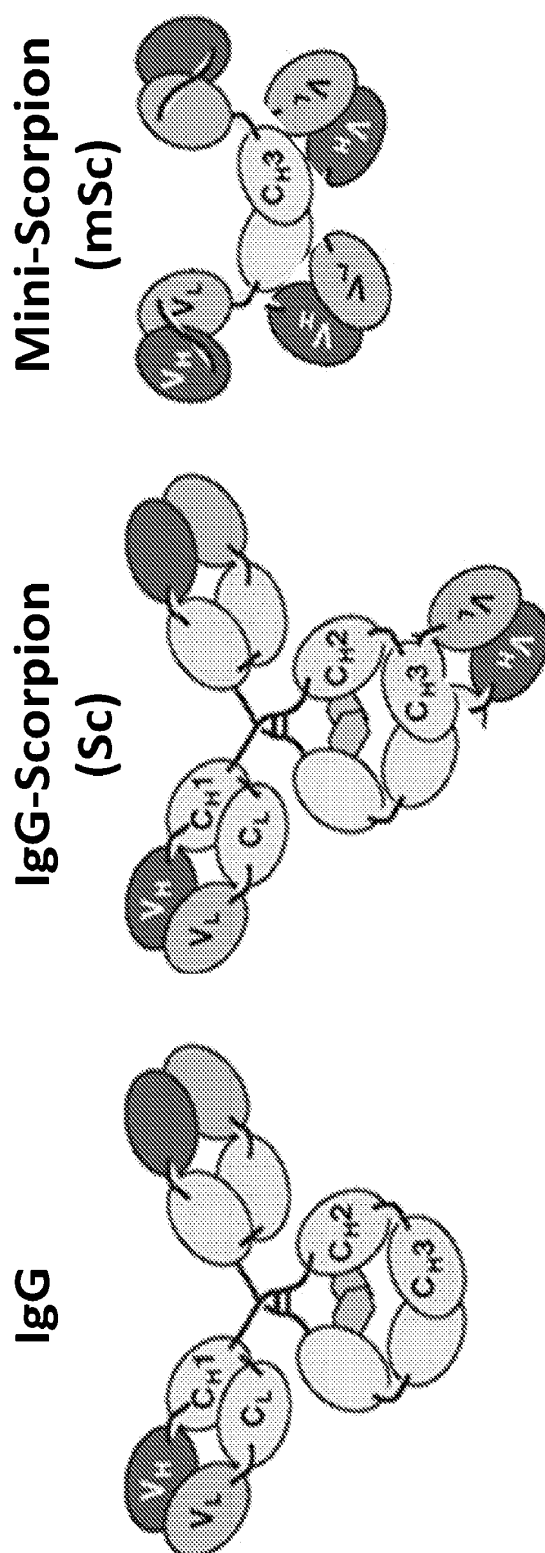


FIG. 9

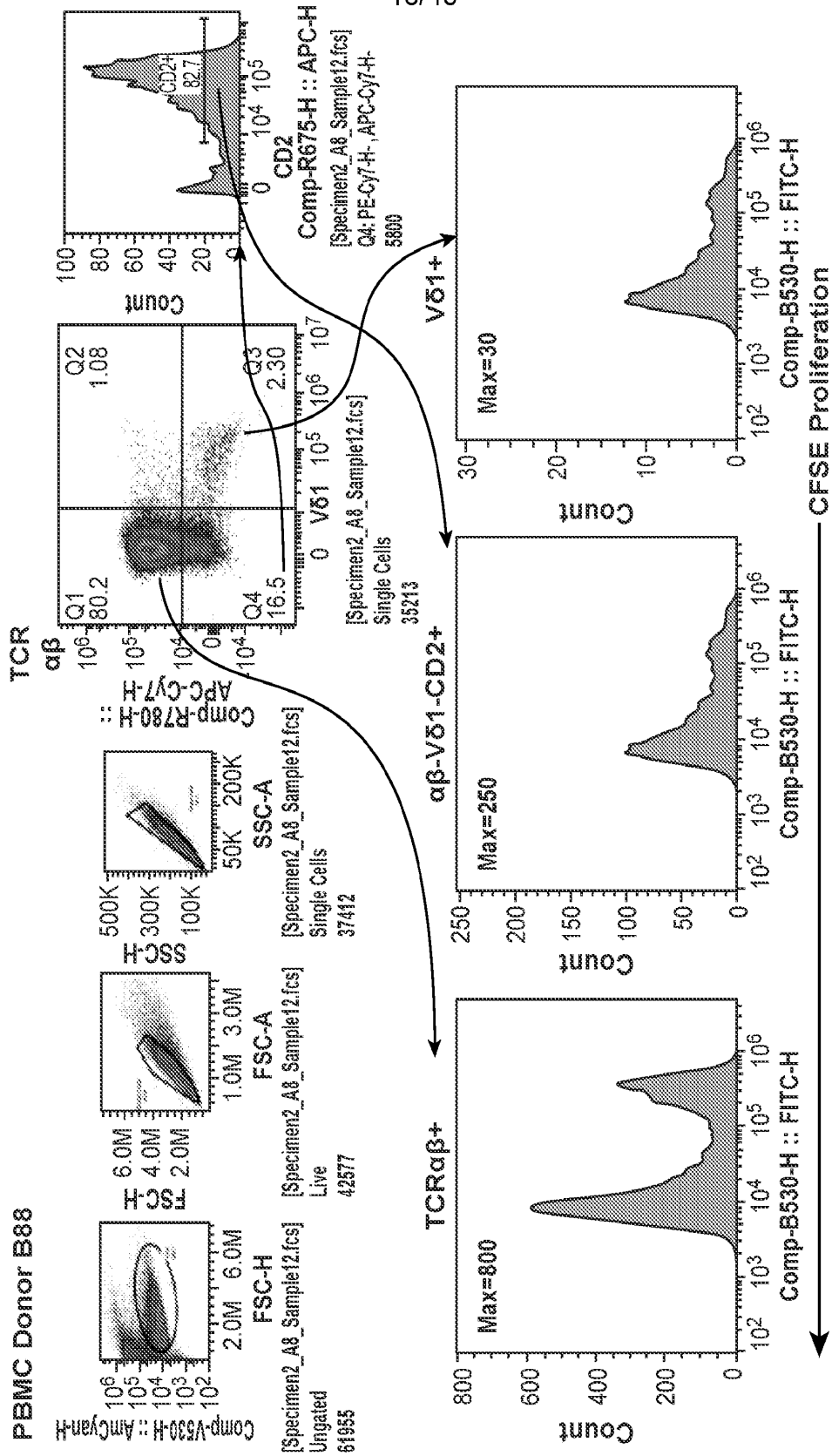


FIG. 10A

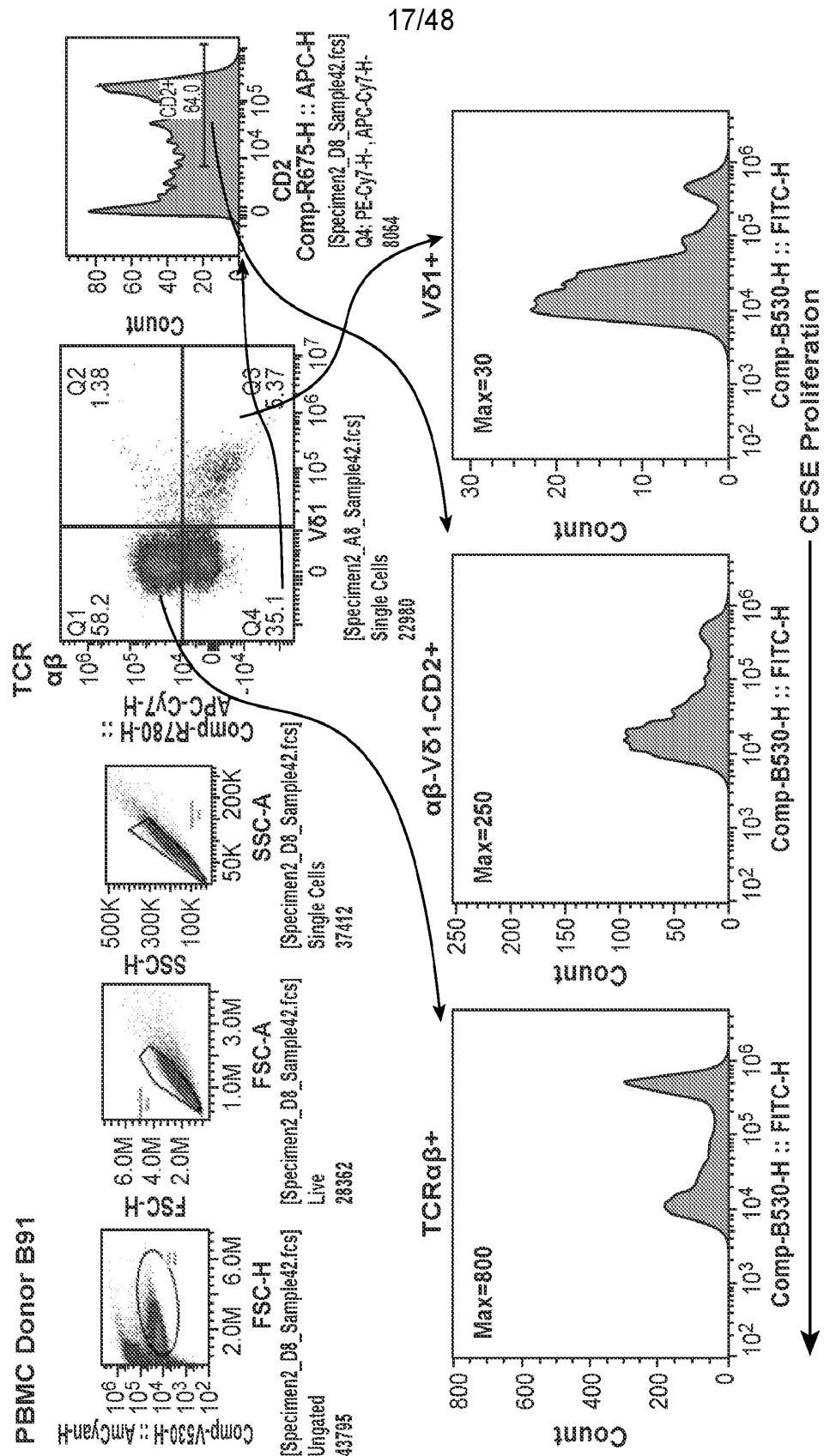


FIG. 10B

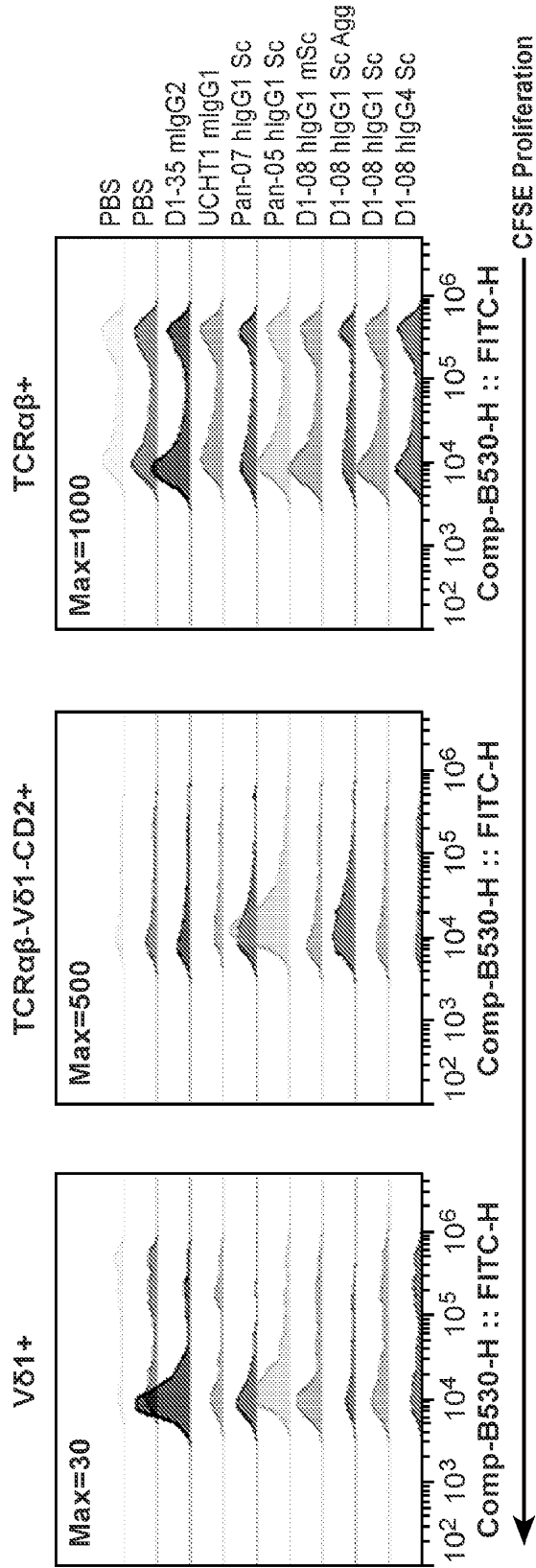


FIG. 11

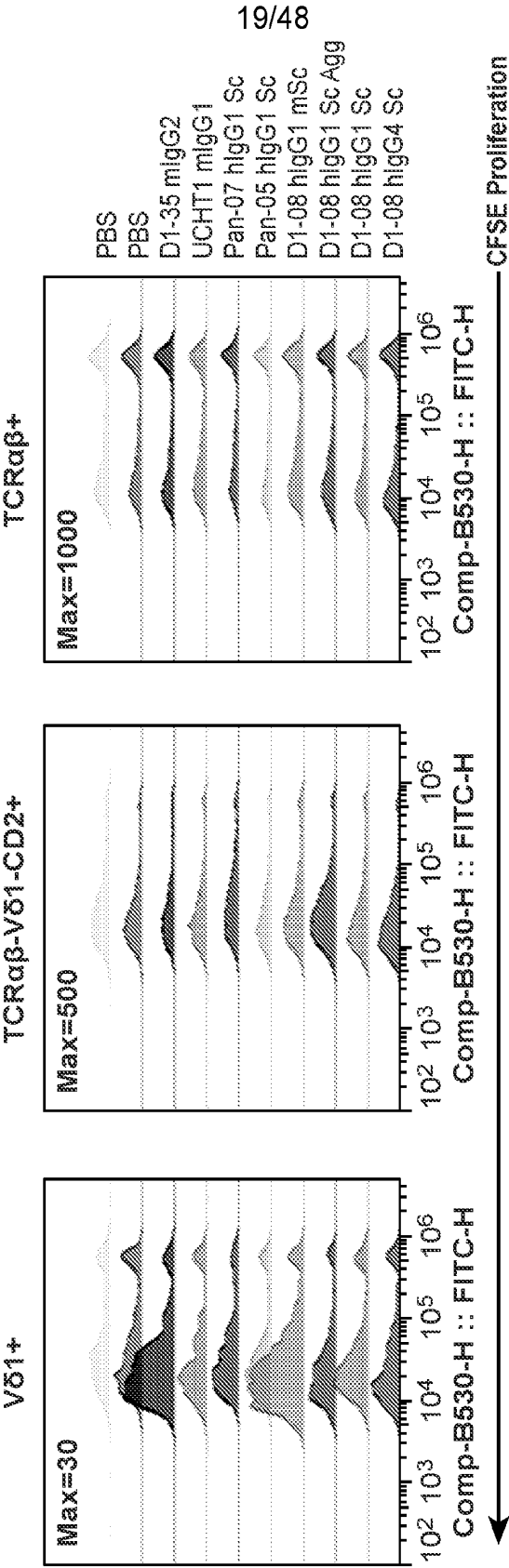


FIG. 12

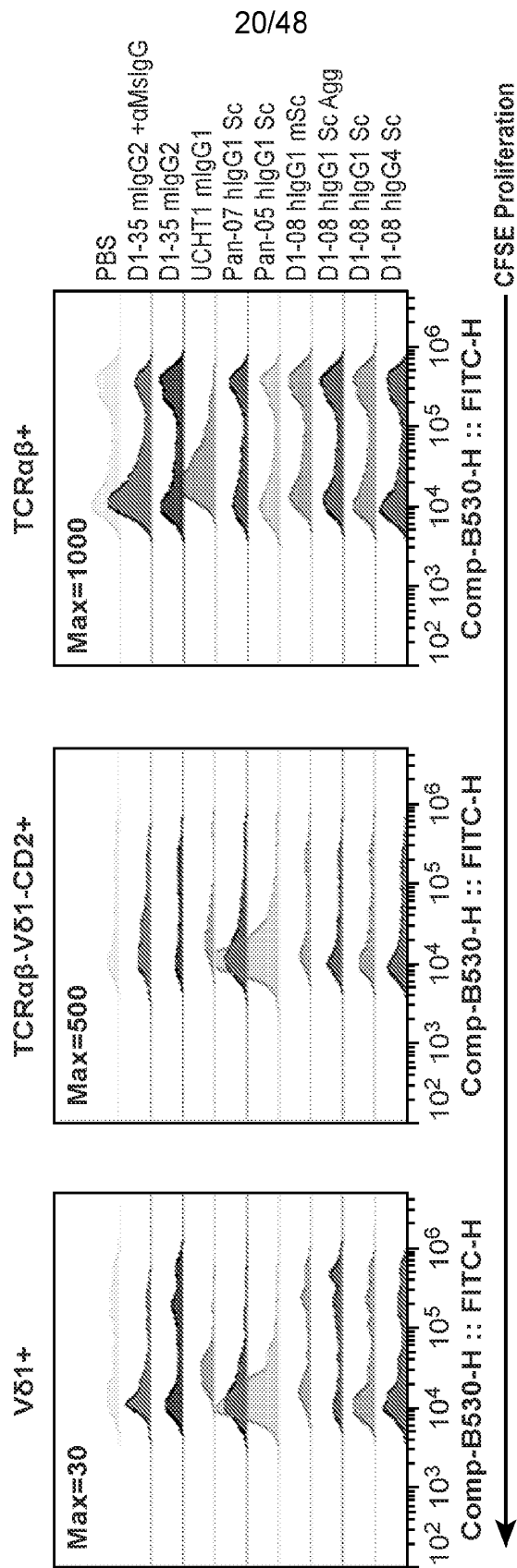


FIG. 13

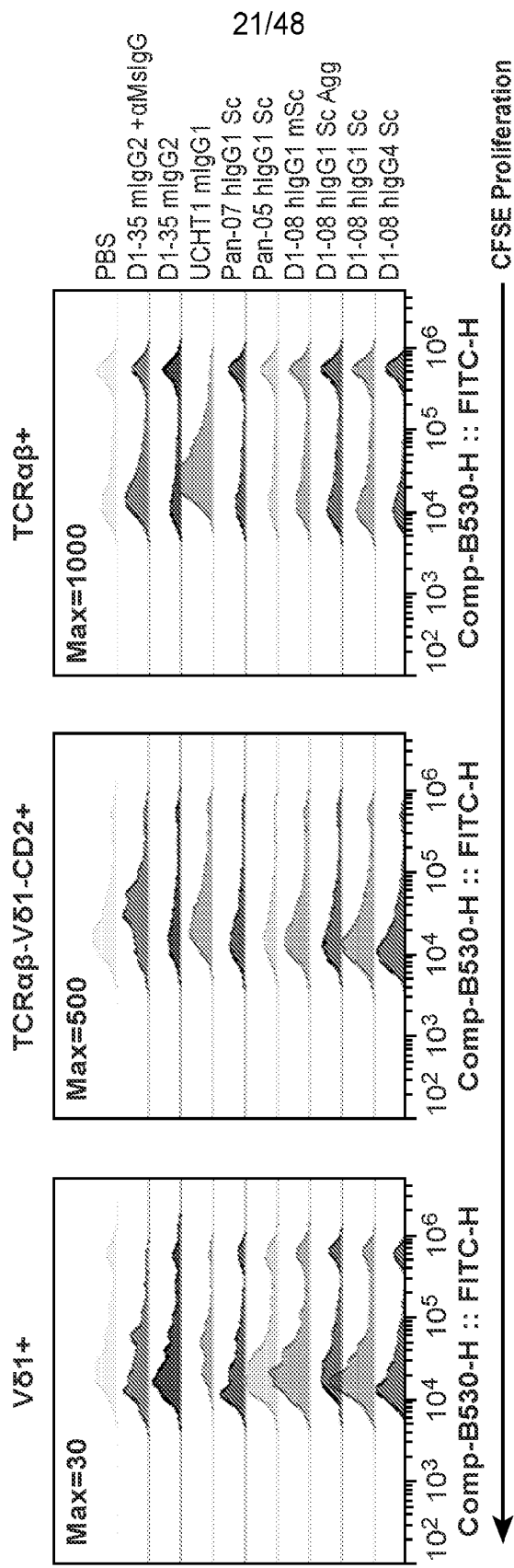


FIG. 14

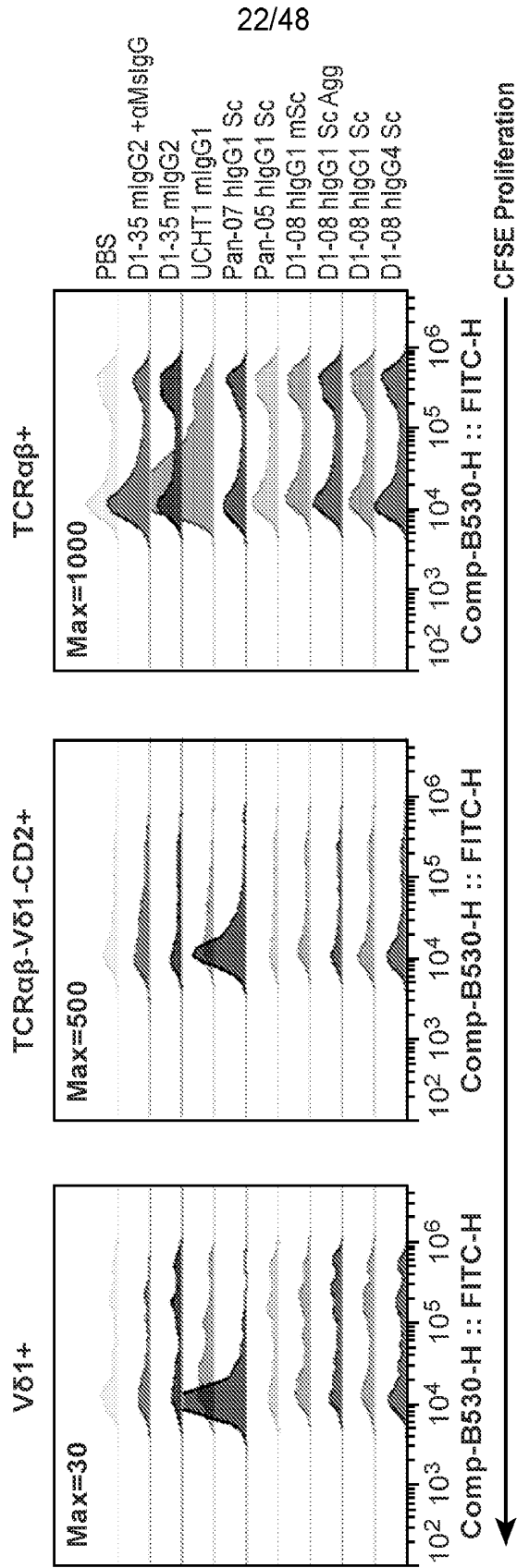


FIG. 15

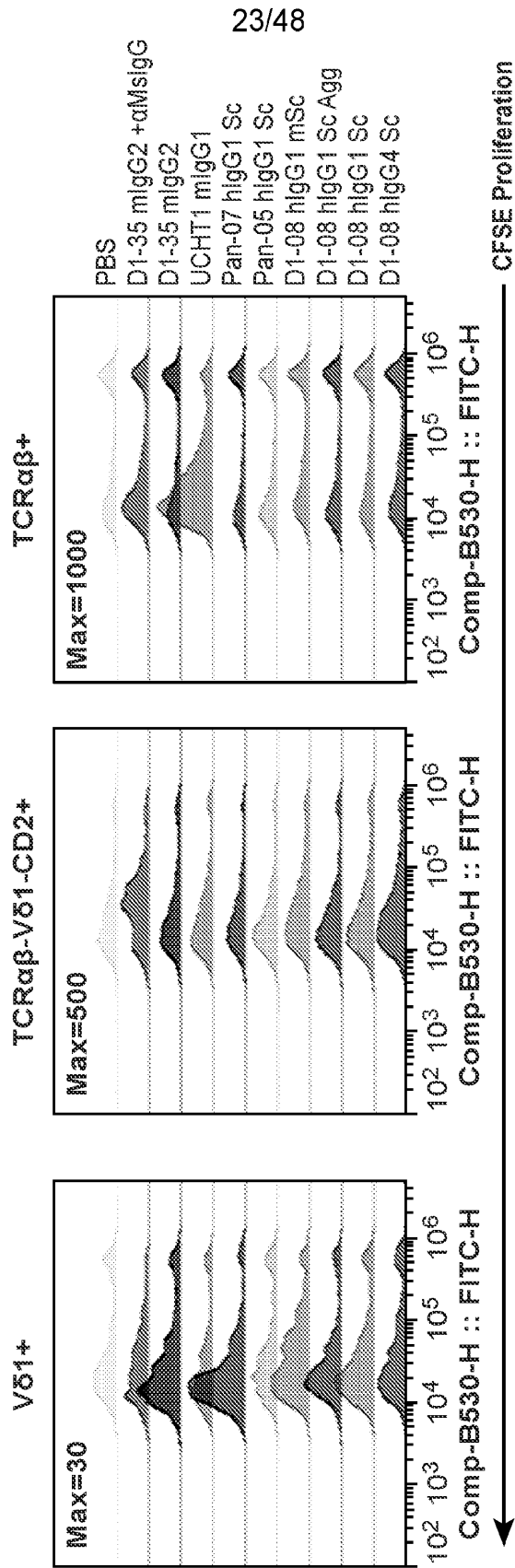


FIG. 16

FIG. 17

24/48

PL426: pCI-D1-08-Chimeric-Scorpion

1	atgtccgtgcctacccaggtgctgggcctgctgctgctgtggctgaccgacgccagatgc	60
	M S V P T Q V L G L L L L W L T D A R C	
61	caagtgcagctgcagcagagcggcgctgagctggtagacccggcgcttccgtgacactg	120
	Q V Q L Q Q S G A E L V R P G A S V T L	
121	agctgcaaggccagcggctacaccttcaccgactacgaggtgtactgggtgaagcagacc	180
	S C K A S G Y T F T D Y E V Y W V K Q T	
181	cccgtgcacggactggagtgatcgcgccatcgaccccgagaccggaagaaccgcctac	240
	P V H G L E W I G A I D P E T G R T A Y	
241	aaccagaagttcaagggaaggccattctgaccacagacaagtccagctccaccgcctac	300
	N Q K F K G K A I L T T D K S S S T A Y	
301	atggctctgagatctctgaccagcgaagacagcgccgtgtattactgtgccagactgaag	360
	M A L R S L T S E D S A V Y Y C A R L K	
361	tccggaagatactacggagatctgtttgcctactggggccaaggcacactgggtgaccgtg	420
	S G R Y Y G D L F A Y W G Q G T L V T V	
421	agctccgctagcaccaagggcccatcggtcttccccctggcaccctcctccaagagcacc	480
	S S A S T K G P S S V F P L A P S S K S T	
481	tctgggggcacagcggccctgggctgcttggtcaaggactacttccccgaaccggtgacg	540
	S G G T A A L G C L V K D Y F P E P V T	
541	gtgtcggtgaactcaggcgccctgaccagcggcggtgcacaccttcccggtgtcctacag	600
	V S W N S G A L T S G V H T F P A V L Q	
601	tcctcaggactctactccctcagcagcgtggtgaccgtgccctccagcagcttgggcacc	660
	S S G L Y S L S S V V T V P S S S L G T	
661	cagacctacatctgcaacgtgaatcacaagcccagcaacaccaaggtggacaagaagtt	720
	Q T Y I C N V N H K P S N T K V D K K V	
721	gagcccaaatcttgtgacaaaactcacatgcccaccgtgcccagcacctgaactcctg	780
	E P K S C D K T H T C P P C P A P E L L	
781	gggggaccgtcagtccttcttccccccaaaacccaaggacacctcatgatctcccg	840
	G G P S V F L F P P K P K D T L M I S R	
841	accctgaggtcacatgctgggtggtggagtgagccagcaagaccctgaggtcaagttc	900
	T P E V T C V V V D V S H E D P E V K F	
901	aactggtacgtggacggcggtggaggtgcataatgccaagacaaagccgcgaggagcag	960
	N W Y V D G V E V H N A K T K P R E E Q	
961	tacaacagcacgtaccgtgtggtcagcgtcctcaccgtcctgcaccaggactgggtgaat	1020
	Y N S T Y R V V S V L T V L H Q D W L N	
1021	ggcaaggagtacaagtgcaaggtctccaacaagccctcccagccccatcgagaaaacc	1080
	G K E Y K C K V S N K A L P A P I E K T	
1081	atctccaaagccaaaggcgagccccgagaaccacaggtgtacacctgccccatcccg	1140
	I S K A K G Q P R E P Q V Y T L P P S R	
1141	gaggagatgaccaagaaccaggtcagcctgacctgctgggtcaaaggcttctatccagc	1200
	E E M T K N Q V S L T C L V K G F Y P S	
1201	gacatcgccgtggagtgaggagcaatgggcagccggagagaactacaagaccgcct	1260
	D I A V E W E S N G Q P E N N Y K T T P	
1261	cccgtgctggactccgacggctccttcttctctacagcaagctcaccgtggacaagagc	1320
	P V L D S D G S F F L Y S K L T V D K S	
1321	aggtggcagcaggggaacgtcttctcatgctccgtgatgcatgaggctctgcacaaccac	1380
	R W Q Q G N V F S C S V M H E A L H N H	
1381	tacacgcagaagagcctctccctgtctccgggtaaaggcggagcgatccggaggcgga	1440
	Y T Q K S L S L S P G K G G G G S G G G	
1441	ggctccggaggcgcggcagcgcgcgcggaagccaggttcaactgcagcagtcctggg	1500
	G S G G G G S G G G G S Q V Q L Q Q S G	

SUBSTITUTE SHEET (RULE 26)

FIG. 17 (cont.)

25/48

1501	gctgagttggtgaggcctggggcttcagtga	1560
	A E L V R P G A S V T L S C K A S G Y T	
1561	tttactgactatgaagtgtactgggtgaaacagacac	1620
	F T D Y E V Y W V K Q T P V H G L E W I	
1621	ggagctattgatcctgaaactggtcgtactgcctaca	1680
	G A I D P E T G R T A Y N Q K F K G K A	
1681	atactgactacagacaaatcctccagcacagcctac	1740
	I L T T D K S S S T A Y M A L R S L T S	
1741	gaggactctgccgtctattactgtgcaagattgaa	1800
	E D S A V Y Y C A R L K S G R Y Y G D L	
1801	tttgcttactggggccaagggaactctggtcactgt	1860
	F A Y W G Q G T L V T V S S G G G G S G	
1861	ggaggaggaagcggcggcggaagccagatcgtgct	1920
	G G G S G G G G S Q I V L T Q S P A L M	
1921	agcgcttctcctggagaaaaaggtagccatgacct	1980
	S A S P G E K V T M T C S A S S S V S Y	
1981	atgtactggtaccagcagaaacctagaagcagcccc	2040
	M Y W Y Q Q K P R S S P K P W I Y F T S	
2041	aacctggccagcgcggtgcccgcagattcagcggc	2100
	N L A S G V P A R F S G S G S G T S Y S	
2101	ctgaccatcagcagcatggaagctgaagatgccgct	2160
	L T I S S M E A E D A A T Y Y C Q Q W S	
2161	tctaatacctctgaccttcggcgccggcacaaagct	2208
	S N P L T F G A G T K L E L K -	

FIG. 17 (cont.)

26/48

<u>Annotation</u>	<u>Numbering</u>
Signal Peptide	1-60
D108 V _H FW1	61-150
D108 V _H CDR1	151-165
D108 V _H FW2	166-207
D108 V _H CDR2	208-258
D108 V _H FW3	259-354
D108 V _H CDR3	355-393
D108 V _H FW4	394-426
Invivogen hIgG1 Constant Region	427-1416
GS Linker (20aa)	1417-1476
D108 V _H FW1	1477-1566
D108 V _H CDR1	1567-1581
D108 V _H FW2	1582-1623
D108 V _H CDR2	1624-1674
D108 V _H FW3	1675-1770
D108 V _H CDR3	1771-1809
D108 V _H FW4	1810-1842
GS Linker (15aa)	1843-1887
D108 V _L FW1	1888-1956
D108 V _L CDR1	1957-1986
D108 V _L FW2	1987-2031
D108 V _L CDR2	2032-2052
D108 V _L FW3	2053-2148
D108 V _L CDR3	2149-2175
D108 V _L FW4	2176-2205
STOP	2206-2208

SUBSTITUTE SHEET (RULE 26)

FIG. 18

27/48

PL428: pCI-D1-08 MiniScorpion

1	atgtccgtgcctacccaggtgctgggcctgctgctgctggtgacctgacgccagatgc	60
	M S V P T Q V L G L L L L W L T D A R C	
61	caggttcaactgcagcagctctggggctgagttggtgaggcctggggcttcagtgcgctg	120
	Q V Q L Q Q S G A E L V R P G A S V T L	
121	tcctgcaaggcttcgggctacacatttactgactatgaagtgtactgggtgaaacagaca	180
	S C K A S G Y T F T D Y E V Y W V K Q T	
181	cctgtgcatggcctggaatggattggagctattgatcctgaaactggctgactgcctac	240
	P V H G L E W I G A I D P E T G R T A Y	
241	aatcagaagttcaagggcaaggccatactgactacagacaaatcctccagcacagcctac	300
	N Q K F K G K A I L T T D K S S S T A Y	
301	atggcgctccgcagctctgacatctgaggactctgccgtctattactgtgcaagattgaaa	360
	M A L R S L T S E D S A V Y Y C A R L K	
361	tccggtcgctattatggtgacctctttgcttactggggccaagggactctggctcactgtc	420
	S G R Y Y G D L F A Y W G Q G T L V T V	
421	tcgagcggaggagaggctccggcggaggaggaagcggcgggcggaagccaaattggt	480
	S S G G G S G G G S G G G S G G S Q I V	
481	ctcaccagctctccagcactcatgtctgcatctccaggggagaaggtcaccatgacctgc	540
	L T Q S P A L M S A S P G E K V T M T C	
541	agtgcagctcaagtgtgagttacatgtactgggtaccagcagaagccaagatcctcccc	600
	S A S S S V S Y M Y W Y Q Q K P R S S P	
601	aaaccctggattttatttcacatccaacctggcttctggagtccctgctcgcttcagtggc	660
	K P W I Y F T S N L A S G V P A R F S G	
661	agtgggtctgggacctcttactctctcacaatcagcagcatggaggctgaagatgctgcc	720
	S G S G T S Y S L T I S S M E A E D A A	
721	acttattactgccagcagtgaggtagtaaccgcgtcactgttcggtgctgggaccaagctg	780
	T Y Y C Q Q W S S N P L T F G A G T K L	
781	gagctgaaagaacctaaatcttcagataaaacgcatacttggccaccatgtccacctgt	840
	E L K E P K S S D K T H T C P P C P P C	
841	gcacctgaactcctgggggaccgtcagttcttctctccccccaaaaccaaggacacc	900
	A P E L L G G P S V F L F P P K P K D T	
901	ctcatgatctcccgaccctgaggtcacatgcgtggtggtggacgtgagccacgaagac	960
	L M I S R T P E V T C V V V D V S H E D	
961	cctgaggtcaagttcaactggtacgtggacggcgtggaggtgcataatgccaagacaaag	1020
	P E V K F N W Y V D G V E V H N A K T K	
1021	ccgcgaggagcagtagacaacagcagctacgtgtggtcagcgtcctcaccgtcctgcac	1080
	P R E E Q Y N S T Y R V V S V L T V L H	
1081	caggactggctgaatggcaaggagtacaagtgaaggctctcaacaaagccctcccagcc	1140
	Q D W L N G K E Y K C K V S N K A L P A	
1141	cccacgcagaaaaccatctccaaagccaaggcagccccgagaaccacaggtgtacacc	1200
	P I E K T I S K A K G Q P R E P Q V Y T	
1201	ctgcccccatcccgaggagatgaccaagaaccaggtcagcctgacctgcctggtcaaa	1260
	L P P S R E E M T K N Q V S L T C L V K	
1261	ggcttctatcccagcgacatcgccgtggagtgaggagcaatgggcagccggagaaacac	1320
	G F Y P S D I A V E W E S N G Q P E N N	
1321	tacaagaccacgcctcccgctggtgactccgacggctccttcttctctacagcaagctc	1380
	Y K T T P P V L D S D G S F F L Y S K L	
1381	accgtggacaagagcaggtggcagcaggggaacgtcttctcatgctccgtgatgcatgag	1440
	T V D K S R W Q Q G N V F S C S V M H E	
1441	gctctgcacaaccactacacgcagaagagcctctcctgtctccgggtaaggaggagga	1500
	A L H N H Y T Q K S L S L S P G K G G G	

SUBSTITUTE SHEET (RULE 26)

FIG. 18 (cont.)

28/48

1501	ggctccggcggaggaggaagcggcggcggcgggaagccagggttcaactgcagcagtcctggg	1560
	G S G G G G S G G G G S Q V Q L Q Q S G	
1561	gctgagttggtgaggcctggggcttcagtgacgctgtcctgcaaggcttcgggctacaca	1620
	A E L V R P G A S V T L S C K A S G Y T	
1621	tttactgactatgaagtgtactgggtgaaacagacacctgtgcatggcctggaatggatt	1680
	F T D Y E V Y W V K Q T P V H G L E W I	
1681	ggagctattgatcctgaaactggctgtactgcctacaatcagaagttcaagggcaaggcc	1740
	G A I D P E T G R T A Y N Q K F K G K A	
1741	atactgactacagacaaatcctccagcacagcctacatggcgctccgcagtcctgacatct	1800
	I L T T D K S S S T A Y M A L R S L T S	
1801	gaggactctgccgtctattactgtgcaagattgaaatccggctgctattatggtgacctc	1860
	E D S A V Y Y C A R L K S G R Y Y G D L	
1861	tttgcttactggggccaagggactctggctactgtctcgagcggaggaggaggtccggc	1920
	F A Y W G Q G T L V T V S S G G G G S G	
1921	ggaggaggaagcggcggcggcgggaagccaaattgttctcaccagtcctccagcactcatg	1980
	G G G S G G G G S Q I V L T Q S P A L M	
1981	tctgcatctccaggggagaaggtcaccatgacctgcagtgccagctcaagtgtgagttac	2040
	S A S P G E K V T M T C S A S S S V S Y	
2041	atgtactgggtaccagcagaagccaagatcctcccccaccctggatttatttcacatcc	2100
	M Y W Y Q Q K P R S S P K P W I Y F T S	
2101	aacctggcttctggagtcctctgctcgttcagtggtggcagtggtctgggacctcttactct	2160
	N L A S G V P A R F S G S G S G T S Y S	
2161	ctcacaatcagcagcatggaggctgaagatgctgccacttattactgccagcagtgaggat	2220
	L T I S S M E A E D A A T Y Y C Q Q W S	
2221	agtaaccgcgtcacgttcggtgctgggaccaagctggagctgaaatga	2268
	S N P L T F G A G T K L E L K -	

FIG. 18 (cont.)

29/48

Annotation	Numbering
Signal Peptide	1-60
D108 V _H FW1	61-150
D108 V _H CDR1	151-165
D108 V _H FW2	166-207
D108 V _H CDR2	208-258
D108 V _H FW3	259-354
D108 V _H CDR3	355-393
D108 V _H FW4	394-426
GS Linker (15aa)	427-471
D108 V _L FW1	472-540
D108 V _L CDR1	541-570
D108 V _L FW2	571-615
D108 V _L CDR2	616-636
D108 V _L FW3	637-732
D108 V _L CDR3	733-759
D108 V _L FW4	760-840
Hinge	790-840
Invivogen CH2-CH3 human IgG1 Constant Region	841-1491
GS Linker (15aa)	1492-1536
D108 V _H FW1	1537-1626
D108 V _H CDR1	1627-1641
D108 V _H FW2	1642-1683
D108 V _H CDR2	1684-1734
D108 V _H FW3	1735-1830
D108 V _H CDR3	1831-1869
D108 V _H FW4	1870-1902
GS Linker (15aa)	1903-1947
D108 V _L FW1	1948-2016
D108 V _L CDR1	2017-2046
D108 V _L FW2	2047-2091
D108 V _L CDR2	2092-2112
D108 V _L FW3	2113-2208
D108 V _L CDR3	2209-2235
D108 V _L FW4	2236-2265
STOP	2266-2268

FIG. 19

30/48

PL478: pCI-D1-08-Chimeric-Scorpion-hIgG4

1	atgtccgtgcctaccaggtgctggcctgctgctgctggtgacctgacgccagatgc	60
	M S V P T Q V L G L L L L W L T D A R C	
61	caagtgcagctgcagcagagcggcgtgagctggtgagacccggcgcttccgtgacactg	120
	Q V Q L Q Q S G A E L V R P G A S V T L	
121	agctgcaaggccagcggctacaccttcaccgactacgaggtgtactgggtgaagcagacc	180
	S C K A S G Y T F T D Y E V Y W V K Q T	
181	cccgtgcacggactggagtgatcggcgccatcgaccccgagaccggaagaaccgcctac	240
	P V H G L E W I G A I D P E T G R T A Y	
241	aaccagaagtccaagggcaaggccattctgaccacagacaagtccagctccaccgcctac	300
	N Q K F K G K A I L T T D K S S S T A Y	
301	atggctctgagatctctgaccagcgaagacagcgccgtgtattactgtgccagactgaag	360
	M A L R S L T S E D S A V Y Y C A R L K	
361	tccggaagatactacggagatctgtttgcctactggggccaaggcacactggtgacctg	420
	S G R Y Y G D L F A Y W G Q G T L V T V	
421	agctccgctagcaccaagggcccatcggtcttccccctggcgccctgctccaggagcacc	480
	S S A S T K G P S V F P L A P C S R S T	
481	tccgagagcacagccgcccctgggctgcttggtcaaggactacttccccgaaccggtgacg	540
	S E S T A A L G C L V K D Y F P E P V T	
541	gtgtcgtggaactcaggcgccctgaccagcggcgtgcacaccttcccggtgtcctacag	600
	V S W N S G A L T S G V H T F P A V L Q	
601	tcctcaggactctactccctcagcagcgtggtgacctgacctccagcagcttgggcacg	660
	S S G L Y S L S S V V T V P S S S L G T	
661	aagacctacacctgcaacgtagatcacagccagcaacaccaaggtggacaagagagtt	720
	K T Y T C N V D H K P S N T K V D K R V	
721	gagtccaaatatggtcccccatgcccacatgcccagcacctgagttcctggggggacca	780
	E S K Y G P P C P S C P A P E F L G G P	
781	tcagtcttctgttccccccaaaaccaagagacactctcatgatctcccggaaccctgag	840
	S V F L F P P K P K D T L M I S R T P E	
841	gtcacgtgctggtggtgagccaggaagaccccgaggtccagttcaactgggtac	900
	V T C V V V D V S Q E D P E V Q F N W Y	
901	gtggatggcgtggaggtgcataatgccaagacaaagccggggaggagcagttcaacagc	960
	V D G V E V H N A K T K P R E E Q F N S	
961	acgtaccgtgtggtcagcgtcctcaccgtcctgcaccaggactggctgaacggcaaggag	1020
	T Y R V V S V L T V L H Q D W L N G K E	
1021	tacaagtgcagggtctccaacaaagcctcccgtcctccatcgagaaaaccatctccaaa	1080
	Y K C K V S N K G L P S S I E K T I S K	
1081	gccaaagggcagccccgagagccacaggtgtacacctgcccccatcccaggaggagatg	1140
	A K G Q P R E P Q V Y T L P P S Q E E M	
1141	accaagaaccaggtcagcctgacctgcctgggtcaaaggcttctaccccagcgcacatcgcc	1200
	T K N Q V S L T C L V K G F Y P S D I A	
1201	gtggagtgaggagagcaatgggcagccggagaaactacaagaccacgcctcccgtgctg	1260
	V E W E S N G Q P E N N Y K T T P P V L	
1261	gactccgacggctccttcttctctacagcaggctaaccgtggacaagagcaggtggcag	1320
	D S D G S F F L Y S R L T V D K S R W Q	
1321	gaggggaatgtcttctcatgctccgtgatgcatgaggctctgcacaaccactacacacag	1380
	E G N V F S C S V M H E A L H N H Y T Q	
1381	aagagcctctccctgtctctgggtaaggcggaggcgatccggaggcgaggctccgga	1440
	K S L S L S L G K G G G S G G G S G	
1441	ggcggcggcagcggcggcggcggaagccaggttcaactgcagcagtcctggggctgagttg	1500
	G G G S G G G S Q V Q L Q Q S G A E L	

SUBSTITUTE SHEET (RULE 26)

FIG. 19 (cont.)

31/48

1501	gtgaggcctggggcttcagtgacgctgtcctgcaaggcttcgggctacacatttactgac	1560
	V R P G A S V T L S C K A S G Y T F T D	
1561	tatgaagtgtactgggtgaaacagacacctgtgcatggcctggaatggattggagctatt	1620
	Y E V Y W V K Q T P V H G L E W I G A I	
1621	gacacctgaaactggtcgtactgcctacaatcagaagttcaagggaaggccatactgact	1680
	D P E T G R T A Y N Q K F K G K A I L T	
1681	acagacaaatcctccagcacagcctacatggcgctccgcagctctgacatctgaggactct	1740
	T D K S S S T A Y M A L R S L T S E D S	
1741	gccgtctattactgtgcaagattgaaatccggctcgctattatggtgacctctttgcttac	1800
	A V Y Y C A R L K S G R Y Y G D L F A Y	
1801	tggggccaagggaactctggtcactgtctcgagcggaggaggaggctccggcggaggagga	1860
	W G Q G T L V T V S S G G G G S G G G G	
1861	agcggcggcggcggaagccagatcgtgctgacctcctcctgcctgatgagcgcttct	1920
	S G G G G S Q I V L T Q S P A L M S A S	
1921	cctggagaaaagggtgacctgacctgcagcgctctagctctgtgtcctacatgtactgg	1980
	P G E K V T M T C S A S S S V S Y M Y W	
1981	taccagcagaaacctagaagcagccccaagccttgatctacttcaccagcaacctggcc	2040
	Y Q Q K P R S S P K P W I Y F T S N L A	
2041	agcggcgtgcccgcagattcagcggcagcgatctggaacaagctacagcctgaccatc	2100
	S G V P A R F S G S G S G T S Y S L T I	
2101	agcagcatggaagctgaagatgccgctacatactactgccagcagtggtcctctaactct	2160
	S S M E A E D A A T Y Y C Q Q W S S N P	
2161	ctgaccttcggcgccggcacaaagctggaactgaagtga	2199
	L T F G A G T K L E L K -	

FIG. 19 (cont.)

32/48

<u>Annotation</u>	<u>Numbering</u>
Signal Peptide	1-60
D108 V _H FW1	61-150
D108 V _H CDR1	151-165
D108 V _H FW2	166-207
D108 V _H CDR2	208-258
D108 V _H FW3	259-354
D108 V _H CDR3	355-393
D108 V _H FW4	394-426
Invivogen hIgG1 Constant Region	427-1407
GS Linker (20aa)	1408-1467
D108 V _L FW1	1468-1557
D108 V _L CDR1	1558-1572
D108 V _L FW2	1573-1614
D108 V _L CDR2	1615-1665
D108 V _L FW3	1666-1761
D108 V _L CDR3	1762-1800
D108 V _L FW4	1801-1833
GS Linker (15aa)	1834-1878
D108 V _L FW1	1879-1947
D108 V _L CDR1	1948-1977
D108 V _L FW2	1978-2022
D108 V _L CDR2	2023-2043
D108 V _L FW3	2044-2139
D108 V _L CDR3	2140-2166
D108 V _L FW4	2167-2196
STOP	2197-2199

SUBSTITUTE SHEET (RULE 26)

FIG. 20

33/48

PL502: pCI-Pan05-Chimeric-Scorpion-hIgG1

1	atgtccgtgcctaccaggtgctggcctgctgctgctggtgacctgacgacccagatgc	60
	M S V P T Q V L G L L L L W L T D A R C	
61	caggtccaactgcagcagcctgggctgagctggtgagcctggagcttcagtgaagctg	120
	Q V Q L Q Q P G A E L V R P G A S V K L	
121	tcctgcaaggcttctggctacaccttcaccagctactggatgaactgggttaaacagagg	180
	S C K A S G Y T F T S Y W M N W L K Q R	
181	cctggacaaggccttgagtggattggcatgattcatccttccgatagtgaacttgggtta	240
	P G Q G L E W I G M I H P S D S E T W L	
241	aatcagaagtccaaggacaaggccacattgactatagacaaatcctccagcacagcctac	300
	N Q K F K D K A T L T I D K S S S T A Y	
301	atgcaagtgcagcagcccagacatctgaggactctgcggtctattactgtgccaggagtgg	360
	M Q V S S P T S E D S A V Y Y C A R S G	
361	gactacgaaggggcttactggggccaagggactctggtcactgtctctgcagctagcacc	420
	D Y E G A Y W G Q G T L V T V S A A S T	
421	aagggcccatcggtcttccccctggcacccctcctccaagagcacctctgggggcacagcg	480
	K G P S V F P L A P S S K S T S G G T A	
481	gcctgggctgcctgggtcaaggactacttccccgaaccgggtgacgggtgctggtggaactca	540
	A L G C L V K D Y F P E P V T V S W N S	
541	ggcgccctgaccagcggtgcacaccttccccggtgtcctacagtcctcaggactctac	600
	G A L T S G V H T F P A V L Q S S G L Y	
601	tccctcagcagcgtggtgaccgtgccctccagcagcttgggcacccagacctacatctgc	660
	S L S S V V T V P S S S L G T Q T Y I C	
661	aacgtgaatcacaagcccagcaacaccaaggtggacaagaaagttgagcccaaatcttgt	720
	N V N H K P S N T K V D K K V E P K S C	
721	gacaaaactcacacatgcccacgtgcccagcacctgaactcctgggggacgcgtcagtc	780
	D K T H T C P P C P A P E L L G G P S V	
781	ttcctcttcccccaaaacccaaggacacctcatgatctcccgacccctgaggtcaca	840
	F L F P P K P K D T L M I S R T P E V T	
841	tgcgtggtgggtgagcgtgagccacgagacctgaggtcaagttcaactggtacgtggac	900
	C V V V D V S H E D P E V K F N W Y V D	
901	ggcgtggaggtgcataatgccaagacaaagccgaggaggagcagtacaacagcacgtac	960
	G V E V H N A K T K P R E E Q Y N S T Y	
961	cgtgtggtcagcgtcctcaccgtcctgcaccaggactggctgaatggcaaggagtacaag	1020
	R V V S V L T V L H Q D W L N G K E Y K	
1021	tgcaaggtctccaacaaagccctcccagccccatcgagaaaacctctccaaagccaaa	1080
	C K V S N K A L P A P I E K T I S K A K	
1081	gggcagccccgagaaccacaggtgtacacctgcccccatcccgggaggagatgaccaag	1140
	G Q P R E P Q V Y T L P P S R E E M T K	
1141	aaccaggtcagcctgacctgcctgggtcaaaggcttctatcccagcgacatcgccgtggag	1200
	N Q V S L T C L V K G F Y P S D I A V E	
1201	tgggagagcaatgggcagccggagagaactacaagaccacgcctcccgtgctggactcc	1260
	W E S N G Q P E N N Y K T T P P V L D S	
1261	gacggctccttcttctctacagcaagctcaccgtggacaagagcaggtggcagcagggg	1320
	D G S F F L Y S K L T V D K S R W Q Q G	
1321	aacgtcttctcatgctccgtgatgcatgaggctctgcacaaccactacacgcagaagagc	1380
	N V F S C S V M H E A L H N H Y T Q K S	
1381	ctctccctgtctccgggtaaaggcggaggcgatccggaggcgaggctccggaggcggc	1440
	L S L S P G K G G G G S G G G G S G G G	
1441	ggcagcggcgggcggaagccaggttcagctgcaacagcctggcgccgaacttgtaga	1500
	G S G G G G S Q V Q L Q Q P G A E L V R	

SUBSTITUTE SHEET (RULE 26)

FIG. 20 (cont.)

34/48

1501	cctggcgccctctgtgaagctgagctgtaaagccagcggctacaccttcaccagctactgg	1560
	P G A S V K L S C K A S G Y T F T S Y W	
1561	atgaactggctgaagcagaggcctggacagggcctcgagtggatcggaatgattcacc	1620
	M N W L K Q R P G Q G L E W I G M I H P	
1621	agcgacagcgagacatggctgaaccagaagttcaaggacaagggcactgaccatcgac	1680
	S D S E T W L N Q K F K D K A T L T I D	
1681	aagagcagcagcaccgcctacatgcaagtgtctagccccaccagcgaggacagcgccgtg	1740
	K S S S T A Y M Q V S S P T S E D S A V	
1741	tactattgtgccagaagcggcgattacgagggcgccctattggggacagggaaacctgggtt	1800
	Y Y C A R S G D Y E G A Y W G Q G T L V	
1801	acagtgtccgctggaggaggaggtccggcgaggaggaagcggcgggcggaagcgac	1860
	T V S A G G G G S G G G G S G G G G S D	
1861	gtgggtcatgacacagaccctctgacactgagcgtgaccattggacagcctgccagcatc	1920
	V V M T Q T P L T L S V T I G Q P A S I	
1921	agctgcaagagcagtcagagcctgctggactccgacggcaagacctacctaattggctg	1980
	S C K S S Q S L L D S D G K T Y L N W L	
1981	ctgcagaggccccggacagagccccaaagactgatctacctggtgtccaagctggacagc	2040
	L Q R P G Q S P K R L I Y L V S K L D S	
2041	ggcgtgcccgatagattcacaggctctggcagcggcaccgacttcaccctgaagatctct	2100
	G V P D R F T G S G S G T D F T L K I S	
2101	agagtggaaagccgaggacctgggcgtgtactactgttggcagggcgcccactttccttgg	2160
	R V E A E D L G V Y Y C W Q G A H F P W	
2161	acatttggcggcggaacaaagctcgagatcaagtga	2196
	T F G G G T K L E I K -	

FIG. 20 (cont.)

35/48

Annotation	Numbering
Signal Peptide	1-60
Pan05 mouse V _H FW1	61-150
Pan05 mouse V _H CDR1	151-165
Pan05 mouse V _H FW2	166-207
Pan05 mouse V _H CDR2	208-258
Pan05 mouse V _H FW3	259-354
Pan05 mouse V _H CDR3	355-378
Pan05 mouse V _H FW4	379-411
Invivogen hIgG1 Constant Region	412-1401
GS Linker (20aa)	1402-1461
Pan05 V _H FW1 (codon optimized for human)	1462-1551
Pan05 V _H CDR1 (codon optimized for human)	1552-1566
Pan05 V _H FW2 (codon optimized for human)	1567-1608
Pan05 V _H CDR2 (codon optimized for human)	1609-1659
Pan05 V _H FW3 (codon optimized for human)	1660-1755
Pan05 V _H CDR3 (codon optimized for human)	1756-1779
Pan05 V _H FW4 (codon optimized for human)	1780-1812
GS Linker (15aa)	1813-1857
Pan05 V _L FW1 (codon optimized for human)	1858-1926
Pan05 V _L CDR1 (codon optimized for human)	1927-1974
Pan05 V _L FW2 (codon optimized for human)	1975-2019
Pan05 V _L CDR2 (codon optimized for human)	2020-2040
Pan05 V _L FW3 (codon optimized for human)	2041-2136
Pan05 V _L CDR3 (codon optimized for human)	2137-2163
Pan05 V _L FW4 (codon optimized for human)	2164-2193
STOP	2194-2196

FIG. 21

36/48

PL503: pCI-Pan05-LC

1	atggaaaccgacaccctgctgctgtgggtgctgctcctgtgggtccccggctctacaggc	60
	M E T D T L L L W V L L L W V P G S T G	
61	gatgttgatgaccagactccactcactttgtcggttaccattggacaaccagcctcc	120
	D V V M T Q T P L T L S V T I G Q P A S	
121	atctcttgcaagtcaagtcagagtcctcttagatagtgatggaaagacatatttgattgg	180
	I S C K S S Q S L L D S D G K T Y L N W	
181	ttattacagaggccaggccagtcctcaaagcgcctaatactatctggtgtctaaactggac	240
	L L Q R P G Q S P K R L I Y L V S K L D	
241	tctggagtccttgacaggttcactggcagtgatcaggacagatttcacactgaaaatc	300
	S G V P D R F T G S G S G T D F T L K I	
301	agcagagtgaggctgaggatttgggagtttattattgctggcaaggtgcacattttcct	360
	S R V E A E D L G V Y Y C W Q G A H F P	
361	tggacgttcggtggaggcaccaagctggaaatcaaacggaccgtggccgcccccttctgtc	420
	W T F G G G T K L E I K R T V A A P S V	
421	tttatcttcccacctagcgacgagcagctgaaaagcggcaccgccagcgtggtgtgcctg	480
	F I F P P S D E Q L K S G T A S V V C L	
481	ctgaacaacttctaccccagagaggccaaggtgcagtggaaggtcgacaacgccctgcag	540
	L N N F Y P R E A K V Q W K V D N A L Q	
541	agcggcaacagccaggagagcgtgaccgagcaggatagcaaggacagcacatatagcctg	600
	S G N S Q E S V T E Q D S K D S T Y S L	
601	agcagcaccctgacactgtctaaaggccgactacgagaagcacaaggtgtacgcctgtgaa	660
	S S T L T L S K A D Y E K H K V Y A C E	
661	gtgaccaccaggcctgagcagccctgtgacaaagagcttcaaccggggcgagtgctga	720
	V T H Q G L S S P V T K S F N R G E C -	

FIG. 21 (cont.)

37/48

<u>Annotation</u>	<u>Numbering</u>
Signal Peptide	1-60
Pan05 mouse V _L FW1	61-129
Pan05 mouse V _L CDR1	130-177
Pan05 mouse V _L FW2	178-222
Pan05 mouse V _L CDR2	223-243
Pan05 mouse V _L FW3	244-339
Pan05 mouse V _L CDR3	340-366
Pan05 mouse V _L FW4	367-396
Light Chain Constant Region	397-718
STOP	718-720

FIG. 22

38/48

PL504: pCI-Pan05-MiniScorpion-hIgG1

1	atgtccgtgcctacccaggtgctgggcctgctgctgctggtgacctgacgacccagatgc	60
	M S V P T Q V L G L L L L W L T D A R C	
61	caggtccaactgcagcagcctggggctgagctggtgaggcctggagcttcagtgaagctg	120
	Q V Q L Q Q P G A E L V R P G A S V K L	
121	tcctgcaaggcttctggctacaccttcaccagctactggatgaactgggttaaacagagg	180
	S C K A S G Y T F T S Y W M N W L K Q R	
181	cctggacaaggccttgagtggattggcatgattcatccttccgatagtgaacttgggtta	240
	P G Q G L E W I G M I H P S D S E T W L	
241	aatcagaagttcaaggacaaggccacattgactatagacaaatcctccagcacagcctac	300
	N Q K F K D K A T L T I D K S S S T A Y	
301	atgcaagtgcagcagcccgcacatctgaggactctgcggtctattactgtgccaggagtgg	360
	M Q V S S P T S E D S A V Y Y C A R S G	
361	gactacgaaggggcttactggggccaagggactctggtcactgtctctgcaggaggagga	420
	D Y E G A Y W G Q G T L V T V S A G G G	
421	ggctccggcggagaggaagcggcgccggcgaagcgatgttgatgacctgactcca	480
	G S G G G S G G G S D V V M T Q T P	
481	ctcactttgtcggttaccattggacaaccagcctccatctcttgcaagtcaagtcagagt	540
	L T L S V T I G Q P A S I S C K S S Q S	
541	ctcttagatagtgatggaagacataatttgaattgggtattacagaggccaggccagtct	600
	L L D S D G K T Y L N W L L Q R P G Q S	
601	ccaaagcgcctaatactatctggtgtctaaactggactctggagtccttgacaggttact	660
	P K R L I Y L V S K L D S G V P D R F T	
661	ggcagtggtatcaggacagatttcacactgaaatcagcagagtggaggtgaggtattg	720
	G S G S G T D F T L K I S R V E A E D L	
721	ggagtttattattgctggcaaggtgcacattttccttgagcttcggtggaggcaccaag	780
	G V Y Y C W Q G A H F P W T F G G G T K	
781	ctggaaatcaaagaacctaaatcttcagataaaacgcatacttgcccaccatgtccaccc	840
	L E I K E P K S S D K T H T C P P C P P	
841	tgtgcactgaactcctggggggaccgtcagtccttcttccccccaaacccaggac	900
	C A P E L L G G P S V F L F P P K P K D	
901	accctcatgatctcccgaccctgaggtcacatgcgtggtggtggacgtgagccagaa	960
	T L M I S R T P E V T C V V V D V S H E	
961	gacctgaggtcaagttcaactggtacgtggcggcgtggaggtgcataatgccaagaca	1020
	D P E V K F N W Y V D G V E V H N A K T	
1021	aagccgctggaggagcagtcacaacagcacgtaccgtgtggtcagcgtcctcaccgtcctg	1080
	K P R E E Q Y N S T Y R V V S V L T V L	
1081	caccaggactggctgaatggcaaggagtacaagtgcaaggtctccaacaagccctccca	1140
	H Q D W L N G K E Y K C K V S N K A L P	
1141	gccccatcgagaaaacctctccaagccaaaggcagccccgagaaccacaggtgtac	1200
	A P I E K T I S K A K G Q P R E P Q V Y	
1201	accctgcccccatcccgaggagatgaccaagaaccaggtcagcctgacctgcctggtc	1260
	T L P P S R E E M T K N Q V S L T C L V	
1261	aaaggcttctatccagcgacatcgccgtggagtgggagagcaatgggcagccggagAAC	1320
	K G F Y P S D I A V E W E S N G Q P E N	
1321	aactacaagaccagcctcccgctgctggactccgacggctccttcttctctacagcaag	1380
	N Y K T T P P V L D S D G S F F L Y S K	
1381	ctcaccgtggacaagagcaggtggcagcaggggaacgtcttctcatgctccgtgatgc	1440
	L T V D K S R W Q Q G N V F S C S V M H	
1441	gaggtctctgcacaaccactacacgcagaagagcctctccctgtctccgggtaaaggagga	1500
	E A L H N H Y T Q K S L S L S P G K G G	

SUBSTITUTE SHEET (RULE 26)

FIG. 22 (cont.)

39/48

1501	ggaggctccggcgaggaggaagcggcgggcggaagccaggttcagctgcaacagcct	1560
	G G S G G G G S G G G S Q V Q L Q Q P	
1561	ggcgccgaacttgtagacctggcgccctctgtgaagctgagctgtaaagccagcggtac	1620
	G A E L V R P G A S V K L S C K A S G Y	
1621	accttcaccagctactggatgaactggctgaagcagaggcctggacagggcctcgagtgg	1680
	T F T S Y W M N W L K Q R P G Q G L E W	
1681	atcggaatgattcaccagcgacagcgagacatggctgaaccagaagttcaaggacaag	1740
	I G M I H P S D S E T W L N Q K F K D K	
1741	gccacactgaccatcgacaagagcagcagcaccgcctacatgcaagtgtctagccccacc	1800
	A T L T I D K S S S T A Y M Q V S S P T	
1801	agcgaggacagcgccgtgtactattgtgccagaagcggcgattacgagggcgccctattgg	1860
	S E D S A V Y Y C A R S G D Y E G A Y W	
1861	ggacagggaaaccctggttacagtgtccgctggaggaggaggtccggcgaggaggaagc	1920
	G Q G T L V T V S A G G G G S G G G G S	
1921	ggcgggcgcggaagcgacgtgggtcatgacacagaccctctgacactgagcgtgaccatt	1980
	G G G G S D V V M T Q T P L T L S V T I	
1981	ggacagcctgccagcatcagctgcaagagcagtcagagcctgctggactccgacggcaag	2040
	G Q P A S I S C K S S Q S L L D S D G K	
2041	acctacctgaattggctgctgcagaggcccgacagagcccaagagactgatctacctg	2100
	T Y L N W L L Q R P G Q S P K R L I Y L	
2101	gtgtccaagctggacagcgcggtgccgatagattcacaggctctggcagcggcaccgac	2160
	V S K L D S G V P D R F T G S G S G T D	
2161	ttcacctgaagatctctagagtgaagccgaggacctgggcgtgtactactgttggcag	2220
	F T L K I S R V E A E D L G V Y Y C W Q	
2221	ggcgcccactttccttgacatttggcgggcggaacaaagctcgagatcaagtga	2274
	G A H F P W T F G G G T K L E I K -	

FIG. 22 (cont.)

40/48

Annotation	Numbering
Signal Peptide	1-60
Pan05 mouse V _H FW1	61-150
Pan05 mouse V _H CDR1	151-165
Pan05 mouse V _H FW2	166-207
Pan05 mouse V _H CDR2	208-258
Pan05 mouse V _H FW3	259-354
Pan05 mouse V _H CDR3	355-378
Pan05 mouse V _H FW4	379-411
GS Linker (15aa)	412-456
Pan05 mouse V _L FW1	457-525
Pan05 mouse V _L CDR1	526-573
Pan05 mouse V _L FW2	574-618
Pan05 mouse V _L CDR2	619-639
Pan05 mouse V _L FW3	640-735
Pan05 mouse V _L CDR3	736-762
Pan05 mouse V _L FW4	763-792
Hinge	793-843
Invivogen CH2-CH3 human IgG1 Constant Region	844-1494
GS Linker (15aa)	1495-1539
Pan05 V _H FW1 (codon optimized for human)	1540-1629
Pan05 V _H CDR1 (codon optimized for human)	1630-1644
Pan05 V _H FW2 (codon optimized for human)	1645-1686
Pan05 V _H CDR2 (codon optimized for human)	1687-1737
Pan05 V _H FW3 (codon optimized for human)	1738-1833
Pan05 V _H CDR3 (codon optimized for human)	1834-1857
Pan05 V _H FW4 (codon optimized for human)	1858-1890
GS Linker (15aa)	1891-1935
Pan05 V _L FW1 (codon optimized for human)	1936-2004
Pan05 V _L CDR1 (codon optimized for human)	2005-2052
Pan05 V _L FW2 (codon optimized for human)	2053-2097
Pan05 V _L CDR2 (codon optimized for human)	2098-2118
Pan05 V _L FW3 (codon optimized for human)	2119-2214
Pan05 V _L CDR3 (codon optimized for human)	2215-2241
Pan05 V _L FW4 (codon optimized for human)	2242-2271
STOP	2272-2274

FIG. 23

41/48

PL505: pCI-Pan07-Chimeric-Scorpion-hIgG1

1	atgtccgtgcctaccaggtgctgggcctgctgctgctggtgacctgacgacccagatgc	60
	M S V P T Q V L G L L L L W L T D A R C	
61	gaggtccagctgcaacaatctggacctgagctggtgaagcctggggcttcagtgaagatg	120
	E V Q L Q Q S G P E L V K P G A S V K M	
121	tcctgtaaggcttctggatacacattcactgactactacatgaactgggtgaagcagagc	180
	S C K A S G Y T F T D Y Y M N W V K Q S	
181	catggaagagccttgagtggattggagattttaatccttacaacggtggtactacctac	240
	H G K S L E W I G D F N P Y N G G T T Y	
241	aaccagaagttcaagggcaaggccacattgactgtagacaaatcctccagcacagcctac	300
	N Q K F K G K A T L T V D K S S S T A Y	
301	atgcagctcaacagcctgacatctgaggactctgcagtctattactgtgcaagatcgga	360
	M Q L N S L T S E D S A V Y Y C A R S G	
361	aggtacgactactttgactactggggccaaggcatcactctcacagtctcctcagctagc	420
	R Y D Y F D Y W G Q G I T L T V S S A S	
421	accaagggcccatcggtcttccccctggcaccctcctccaagagcacctctgggggcaca	480
	T K G P S V F P L A P S S K S T S G G T	
481	gcggccctgggctgcctgggtcaaggactacttccccgaaccggtgacggtgctcgtggaac	540
	A A L G C L V K D Y F P E P V T V S W N	
541	tcaggcgccctgaccagcggtgcacaccttccccggtgtcctacagtctcaggactc	600
	S G A L T S G V H T F P A V L Q S S G L	
601	tactcctcagcagcgtggtgacctgacctccagcagcttgggacccagacctacatc	660
	Y S L S S V V T V P S S S L G T Q T Y I	
661	tgcaacgtgaatcacaagcccagcaacaccaaggtggacaagaagttgagcccaaatct	720
	C N V N H K P S N T K V D K K V E P K S	
721	tgtgacaaaactcacacatgccaccggtgccagcacctgaactcctggggggaccgtca	780
	C D K T H T C P P C P A P E L L G G P S	
781	gtcttctcttccccccaaaacccaaggacacctcatgatctcccggaaccttgaggtc	840
	V F L F P P K P K D T L M I S R T P E V	
841	acatgcgtgggtgggtgacgtgagccgaagacctgagggtcaagttcaactggtacgtg	900
	T C V V V D V S H E D P E V K F N W Y V	
901	gacggcggtggaggtgcataatgccaaagacaaagccgaggaggagcagtacaacagcacg	960
	D G V E V H N A K T K P R E E Q Y N S T	
961	taccgtgtggtcagcgtcctcaccgtcctgcaccaggactgggtgaatggcaaggagtac	1020
	Y R V V S V L T V L H Q D W L N G K E Y	
1021	aagtgcagggtctccaacaaagccctcccagccccatcgagaaaacctctccaagcc	1080
	K C K V S N K A L P A P I E K T I S K A	
1081	aaagggcagccccgagaaccacaggtgtacacctgccccatccccggaggagatgacc	1140
	K G Q P R E P Q V Y T L P P S R E E M T	
1141	aagaaccaggtcagcctgacctgcctgggtcaaaggcttctatcccagcgacatcgccgtg	1200
	K N Q V S L T C L V K G F Y P S D I A V	
1201	gagtgggagagcaatgggcagccggagagaactacaagaccacgcctcccggtgctggac	1260
	E W E S N G Q P E N N Y K T T P P V L D	
1261	tccgacgggtccttcttctctacagcaagctcacctgggacaagagcaggtggcagcag	1320
	S D G S F F L Y S K L T V D K S R W Q Q	
1321	gggaacgtcttctcatgctccgtgatgcatgaggctctgcacaaccactacacgcagaag	1380
	G N V F S C S V M H E A L H N H Y T Q K	
1381	agcctctcctgtctccgggtaaaggcggaggcggtatccggaggcgaggctccggaggc	1440
	S L S L S P G K G G G G S G G G G S G G	
1441	ggcggcagcggcgggcggaagcaggttcagctgcagcagcttgacctgagctggtt	1500
	G G S G G G G S E V Q L Q Q S G P E L V	

SUBSTITUTE SHEET (RULE 26)

FIG. 23 (cont.)

42/48

1501	aagcctggcgcctccgtgaagatgagctgtaaagccagcggctacaccttcaccgactac	1560
	K P G A S V K M S C K A S G Y T F T D Y	
1561	tacatgaactgggtcaagcagagccacggcaagagcctggaatggatcggcgacttcaac	1620
	Y M N W V K Q S H G K S L E W I G D F N	
1621	ccctacaatggcggcaccacctaaccagaagttcaagggcaaagccacactgaccgtg	1680
	P Y N G G T T Y N Q K F K G K A T L T V	
1681	gacaagagcagcagcacagcctacatgcagctcaacagcctgaccagcgaggacagcgcc	1740
	D K S S S T A Y M Q L N S L T S E D S A	
1741	gtgtactactgtgccagaagcggcagatacgactacttcgactattggggccagggcatc	1800
	V Y Y C A R S G R Y D Y F D Y W G Q G I	
1801	accctgaccgttagctctggaggaggaggctccggcggaggaggaagcggcggcgcgga	1860
	T L T V S S G G G G S G G G G S G G G G	
1861	agcgacgtgcagatgaatcagagccctagcagcctgtctgccagcctgggcgataccatc	1920
	S D V Q M N Q S P S S L S A S L G D T I	
1921	accatcacatgtcacgccagccagaacatcaacgtgtggctgagctggtatcagcagaag	1980
	T I T C H A S Q N I N V W L S W Y Q Q K	
1981	cccggaacatccccaagctgctgatctacaagatcagcaacctgcacaccggcgtgccc	2040
	P G N I P K L L I Y K I S N L H T G V P	
2041	agcagatcttctggtctctggaagcggcaccggcttcaccctgaccatcaattctctgcag	2100
	S R F S G S G S G T G F T L T I N S L Q	
2101	cccgaggatatcgccacctaactactgtcagcagggccagatctacccctggacatttggc	2160
	P E D I A T Y Y C Q Q G Q I Y P W T F G	
2161	ggcggaacaaagctggaaatcaagtga	2187
	G G T K L E I K -	

FIG. 23 (cont.)

43/48

Annotation	Numbering
Signal Peptide	1-60
Pan05 mouse V _H FW1	61-150
Pan05 mouse V _H CDR1	151-165
Pan05 mouse V _H FW2	166-207
Pan05 mouse V _H CDR2	208-258
Pan05 mouse V _H FW3	259-354
Pan05 mouse V _H CDR3	355-381
Pan05 mouse V _H FW4	382-414
Invivogen hIgG1 Constant Region	415-1404
GS Linker (20aa)	1405-1464
Pan05 V _H FW1 (codon optimized for human)	1465-1554
Pan05 V _H CDR1 (codon optimized for human)	1555-1569
Pan05 V _H FW2 (codon optimized for human)	1570-1611
Pan05 V _H CDR2 (codon optimized for human)	1612-1662
Pan05 V _H FW3 (codon optimized for human)	1663-1758
Pan05 V _H CDR3 (codon optimized for human)	1759-1785
Pan05 V _H FW4 (codon optimized for human)	1786-1818
GS Linker (15aa)	1819-1863
Pan05 V _L FW1 (codon optimized for human)	1864-1932
Pan05 V _L CDR1 (codon optimized for human)	1933-1965
Pan05 V _L FW2 (codon optimized for human)	1966-2010
Pan05 V _L CDR2 (codon optimized for human)	2011-2031
Pan05 V _L FW3 (codon optimized for human)	2032-2127
Pan05 V _L CDR3 (codon optimized for human)	2128-2154
Pan05 V _L FW4 (codon optimized for human)	2155-2184
STOP	2185-2187

FIG. 24

44/48

PL506: pCI-Pan07-LC

1	atggaaaccgacaccctgctgctgtgggtgctgctcctgtgggtccccggtcttacaggc	60
	M E T D T L L L W V L L L W V P G S T G	
61	gacgtccagatgaaccagtcctccatccagtcctgtctgcatcccttgagacacaattacc	120
	D V Q M N Q S P S S L S A S L G D T I T	
121	atcacttgccatgccagtcagaacattaatgtttgggttaagctggtaccagcagaaacca	180
	I T C H A S Q N I N V W L S W Y Q Q K P	
181	ggaaatattcctaaactattgatctataagatttccaacttgccacacaggcgtcccatca	240
	G N I P K L L I Y K I S N L H T G V P S	
241	aggttttagtggcagtggtctggaacaggtttcacattaaccatcaacagcctgcagcct	300
	R F S G S G S G T G F T L T I N S L Q P	
301	gaagacattgccacttactactgtcaacaggggtcaaatccgtggacgttcggtgga	360
	E D I A T Y Y C Q Q G Q I Y P W T F G G	
361	ggcaccaagctggaaatcaaacggaccgtggccgccccttctgtctttatcttccacct	420
	G T K L E I K R T V A A P S V F I F P P	
421	agcgacgagcagctgaaaagcggcaccgccagcgtggtgtgcctgctgaacaacttctac	480
	S D E Q L K S G T A S V V C L L N N F Y	
481	cccagagaggccaaggtagcagtggaagggtcgacaacgccctgcagagcggcaacagccag	540
	P R E A K V Q W K V D N A L Q S G N S Q	
541	gagagcgtgaccgagcaggatagcaaggacagcacatatagcctgagcagcaccctgaca	600
	E S V T E Q D S K D S T Y S L S S T L T	
601	ctgtctaaggccgactacgagaagcacaaggtgtacgcctgtgaagtgaccaccagggc	660
	L S K A D Y E K H K V Y A C E V T H Q G	
661	ctgagcagccctgtgacaaaagagcttcaaccggggcgagtgctga	705
	L S S P V T K S F N R G E C -	

FIG. 24 (cont.)

45/48

<u>Annotation</u>	<u>Numbering</u>
Signal Peptide	1-60
Pan05 mouse V _L FW1	61-129
Pan05 mouse V _L CDR1	130-162
Pan05 mouse V _L FW2	163-207
Pan05 mouse V _L CDR2	208-228
Pan05 mouse V _L FW3	229-324
Pan05 mouse V _L CDR3	325-351
Pan05 mouse V _L FW4	352-381
Light Chain Constant Region	382-702
STOP	703-705

FIG. 25

46/48

PL507: pCI-Pan07-MiniScorpion-hIgG1

1	atgtccgtgcctaccaggtgctgggcctgctgctgctggtgacctgacgcccagatgc	60
	M S V P T Q V L G L L L L W L T D A R C	
61	gaggtccagctgcaacaatctggacctgagctggtgaagcctggggcttcagtgaagatg	120
	E V Q L Q Q S G P E L V K P G A S V K M	
121	tcctgtaaggcttctggatacacattcactgactactacatgaactgggtgaagcagagc	180
	S C K A S G Y T F T D Y Y M N W V K Q S	
181	catggaaagagccttgagtggattggagattttaatccttacaacggtggtactacctac	240
	H G K S L E W I G D F N P Y N G G T T Y	
241	aaccagaagttcaagggcaaggccacattgactgtagacaaatcctccagcacagcctac	300
	N Q K F K G K A T L T V D K S S S T A Y	
301	atgcagctcaacagcctgacatctgaggactctgcagtctattactgtgcaagatcgga	360
	M Q L N S L T S E D S A V Y Y C A R S G	
361	aggtacgactactttgactactggggccaaggcatcactctcacagtctcctcaggagga	420
	R Y D Y F D Y W G Q G I T L T V S S G G	
421	ggaggctccggcgaggaggaagcggcgggcggaagcgacgtccagatgaaccagtcct	480
	G G G G G G G G S D V Q M N Q S	
481	ccatccagtcctgtctgcatcccttgagacacaattaccatcacttgccatgccagtcag	540
	P S S L S A S L G D T I T I T C H A S Q	
541	aacattaatgttttggttaagctggtaccagcagaaaccaggaaatattcctaaactattg	600
	N I N V W L S W Y Q Q K P G N I P K L L	
601	atctataagatttccaacttgacacagggcgctcccatcaaggtttagtggcagtggtatct	660
	I Y K I S N L H T G V P S R F S G S G S	
661	ggaacaggtttcacattaaccatcaacagcctgcagcctgaagacattgccacttactac	720
	G T G F T L T I N S L Q P E D I A T Y Y	
721	tgtcaacaggggtcaaatttatccgtggagcttcgggtggaggcaccaagctggaaatcaaa	780
	C Q Q G Q I Y P W T F G G G T K L E I K	
781	gaacctaaatcttcagataaaacgcatacttgcccaccatgtccaccctgtgcacctgaa	840
	E P K S S D K T H T C P P C P P C A P E	
841	ctcctggggggacgtcagtccttcttccccccaaacccaaggacacctcatgatc	900
	L L G G P S V F L F P P K P K D T L M I	
901	tccccggacccctgaggtcacatgcgtggtggtggacgtgagccaggaagacctgaggtc	960
	S R T P E V T C V V V D V S H E D P E V	
961	aagttcaactggtacgtggacggcggtggaggtgcataatgccaagacaaagccgcgagg	1020
	K F N W Y V D G V E V H N A K T K P R E	
1021	gagcagtacaacagcacgtaccgtgtggtcagcgctcctcaccgtcctgcaccaggactgg	1080
	E Q Y N S T Y R V V S V L T V L H Q D W	
1081	ctgaatggcaaggagtacaagtgaaggtctccaacaaagccctcccagccccatcgag	1140
	L N G K E Y K C K V S N K A L P A P I E	
1141	aaaaccatctccaaagccaaagggcagccccgagaaccacaggtgtacacctgccccca	1200
	K T I S K A K G Q P R E P Q V Y T L P P	
1201	tccccgggaggagatgaccaagaaccaggtcagcctgacctgcctggtcaaaggcttctat	1260
	S R E E M T K N Q V S L T C L V K G F Y	
1261	cccagcgacatcgccgtggagtgaggagcaatgggcagccggagaacaactacaagacc	1320
	P S D I A V E W E S N G Q P E N N Y K T	
1321	acgcctcccgctgctggactccgacggctccttcttctctacagcaagctcaccgtggac	1380
	T P P V L D S D G S F F L Y S K L T V D	
1381	aagagcaggtggcagcaggggaacgtcttctcatgctccgtgatgcatgaggctctgcac	1440
	K S R W Q Q G N V F S C S V M H E A L H	
1441	aaccactacacgcagaagagcctctccctgtctccgggtaaaggaggaggaggtccggc	1500
	N H Y T Q K S L S L S P G K G G G G S G	

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FIG. 25 (cont.)

47/48

1501	ggaggaggaagcggcggcggcggaagcgaggttcagctgcagcagctctggacctgagctg	1560
	G G G S G G G G S E V Q L Q Q S G P E L	
1561	gttaagcctggcgccctccgtgaagatgagctgtaaagccagcggtacaccttcaccgac	1620
	V K P G A S V K M S C K A S G Y T F T D	
1621	tactacatgaactgggtcaagcagagccacggcaagagcctggaatggatcggcgacttc	1680
	Y Y M N W V K Q S H G K S L E W I G D F	
1681	aaccctacaatggcggcaccacctaaccagaagttcaagggaagccacactgacc	1740
	N P Y N G G T T Y N Q K F K G K A T L T	
1741	gtggacaagagcagcagcacagcctacatgcagctcaacagcctgaccagcgaggacagc	1800
	V D K S S S T A Y M Q L N S L T S E D S	
1801	gccgtgtactactgtgccagaagcggcagatacgactacttcgactattggggccagggc	1860
	A V Y Y C A R S G R Y D Y F D Y W G Q G	
1861	atcacctgaccgttagctctgtgaggaggaggtccggcggaggaggaagcggcggcggc	1920
	I T L T V S S G G G G S G G G G S G G G	
1921	ggaagcgagctgcagatgaatcagagccctagcagcctgtctgccagcctgggcgatacc	1980
	G S D V Q M N Q S P S S L S A S L G D T	
1981	atcaccatcacatgtcacgccagccagaacatcaacgtgtggctgagctggtatcagcag	2040
	I T I T C H A S Q N I N V W L S W Y Q Q	
2041	aagcccggaacatccccaagctgctgatctacaagatcagcaacctgcacaccggcggtg	2100
	K P G N I P K L L I Y K I S N L H T G V	
2101	cccagcagatcttctggctctggaagcggcaccggcttcaccctgaccatcaattctctg	2160
	P S R F S G S G S G T G F T L T I N S L	
2161	cagcccgaggatatcgccacctaactactgtcagcagggccagatctacccctggacattt	2220
	Q P E D I A T Y Y C Q Q G Q I Y P W T F	
2221	ggcggcggaacaaagctggaatcaagtga	2250
	G G G T K L E I K -	

FIG. 25 (cont.)

48/48

Annotation	Numbering
Signal Peptide	1-60
Pan05 mouse V _H FW1	61-150
Pan05 mouse V _H CDR1	151-165
Pan05 mouse V _H FW2	166-207
Pan05 mouse V _H CDR2	208-258
Pan05 mouse V _H FW3	259-354
Pan05 mouse V _H CDR3	355-381
Pan05 mouse V _H FW4	382-414
GS Linker (15aa)	415-459
Pan05 mouse V _L FW1	460-528
Pan05 mouse V _L CDR1	529-561
Pan05 mouse V _L FW2	562-606
Pan05 mouse V _L CDR2	607-627
Pan05 mouse V _L FW3	628-723
Pan05 mouse V _L CDR3	724-750
Pan05 mouse V _L FW4	751-780
Hinge	781-831
Invivogen CH2-CH3 human IgG1 Constant Region	832-1482
GS Linker (15aa)	1483-1527
Pan05 V _H FW1 (codon optimized for human)	1528-1617
Pan05 V _H CDR1 (codon optimized for human)	1618-1632
Pan05 V _H FW2 (codon optimized for human)	1633-1674
Pan05 V _H CDR2 (codon optimized for human)	1675-1725
Pan05 V _H FW3 (codon optimized for human)	1726-1821
Pan05 V _H CDR3 (codon optimized for human)	1822-1848
Pan05 V _H FW4 (codon optimized for human)	1849-1881
GS Linker (15aa)	1882-1926
Pan05 V _L FW1 (codon optimized for human)	1927-1995
Pan05 V _L CDR1 (codon optimized for human)	1996-2028
Pan05 V _L FW2 (codon optimized for human)	2029-2073
Pan05 V _L CDR2 (codon optimized for human)	2074-2094
Pan05 V _L FW3 (codon optimized for human)	2095-2190
Pan05 V _L CDR3 (codon optimized for human)	2191-2217
Pan05 V _L FW4 (codon optimized for human)	2218-2247
STOP	2248-2250