

1 / 20

CD40 Receptor (SEQ ID NO:40) (from EMBO J, 8(5), 1403-1410 (1989))

10	20	30	40	50
MVRLPLQCVL	WGCLLTAVHP	EPPTACREKQ	YLINSQCCSL	CQPGQKLVSD
60	70	80	90	100
CTEFTETECL	PCGESEFLDT	WNRETHCHQH	KYCDPNLGLR	VQQKGTSETD
110	120	130	140	150
TICTCEEGBWH	CTSEACESCV	LHRSCSPGFG	VKQIATGVSD	TICEPCPVGF
160	170	180	190	200
FSNVSSAFEK	CHPWTSCETK	DLVVQQAGTN	KTDVVCGPOD	RLRALVVIPI
210	220	230	240	250
IFGILFAILL	VLVFIKKVAK	KPTNKAPHPK	QEPQEINFPD	DLPGSNTAAP
260	270			
VQETLHGCQP	VTQEDGKESR	ISVQERQ		

CD40 Ligand (SEQ ID NO:41) (from FEBS Letters, 315 (3), 259-266 (1993))

10	20	30	40	50
MIETYNQTSP	RSAATGLPIS	MKIFMYLLTV	FLITQMIGSA	LFAVYLHRRRL
60	70	80	90	100
DKIEDERNLH	EDFVFMKTIQ	RCNTGERSLS	LLNCEEIKSQ	FEGFVKDIML
110	120	130	140	150
NKEETKKENS	FEMQKGDQNP	QIAAHVISEA	SSKTTSVLQW	AEKGYTMSN
160	170	180	190	200
NLVTLENGKQ	LTVKRQGLYY	IYAQVTFCNS	REASSQAPFI	ASLCLKSPGR
210	220	230	240	250
FERILLRAAN	THSSAKPCGQ	QSIHLGGVFE	LQPGASVFN	VTDPSSQVSHG
260				
TGFTSFGLLK	L			

FIG. 1

Mouse anti-human CD40 Antibody Domains
Variable domains (CDRs in **bold**)

muAb1 V_H (SEQ ID NO: 101)
QVQLQQPGAELVKPGASVKMSCKASGYTFTSYWITVWVKQRPQGQGLEWIGEINPGSGS
TNYNEKFKSKATLTVDTSSSTAYMQLSSLTSEDSAVYYCARNRGTGDYWGQGTTLTVSS

muAb1 V_L (SEQ ID NO: 151)
DVVMTQTPLSLPVSLGDAQSISCRSSQSLVHSYGNLYLHWYLOKPGQSPKFLIYKVSNR
ISGVPDRLSGSGGTDFTLKISRVEPEDLGVYFCSSQSTHVPYTFGGGKLEIK

muAb2 V_H (SEQ ID NO: 102)
QVQLQQSGAELMKPGASAKLSCKATGYTFTGYWQVWVKQRPQGHGLEWIGEILPGGD
HTKYNEKFRGKATFTSDTSNTVYMQSLSLTTEDSAIYYCARVGGDYWGQGTTLTVSS

muAb2 V_L (SEQ ID NO: 152)
DVVMTQTPLSLPVSLGDAQSISCRSSQSLVNSNENTYLYLHWYLOKPGQSPKLLIYKVFN
YSGVPDRFRSGSGGTDFTLKISRVEAEDLGVYFCFQSTHVPWTFGGGKLEIK

muAb3 V_H (SEQ ID NO: 103)
EVQLQQSGPELVKPGASVKISKCKASGYTFTDYIMNWWVKQSHGKSLEWIGDINPNNGG
TSYNQKFKGKATLTVDKSSSTAYMELRSLTSEDSAVYYCARRGGLGRGTALDYWGQGTSTVTVSS

muAb3 V_L (SEQ ID NO: 153)
DIQMTQTSSLSASLGDRVITISCRASQDISNYLNWYQKPDGTVKPLIYTSRLHLGVP
SRFSGSGGTSLTISNLEQEDIAITYFCQQGNTLPLTFGAGTKLELK

FIG. 2A

Mouse anti-human CD40 Antibody Domains
Variable domains (CDRs in **bold**)

muAb4 V_H (SEQ ID NO: 104)
LVQPGGSLSLSCAAS**CGFTFSDY**MSWVRQPPGKALEWL**GFIRNKANGY**TFESASVK
GRFTISRDN**SQ**SILYLQMNALRAEDSATY**CARYGGLRQG**WYFDVWGTGTTVTVSS

muAb4 V_L (SEQ ID NO: 154)
DIQMTQTSSLSASLGDRVTISCRAS**QDIR**NLYNWYQQKPDGTVKLLIY**YTSRLH**SGVP
SRFSGSGSGTDYSLTISNLEQEDIA**TYFCQQGK**TL**PWTF**GGGSKLEMK

muAb5 V_H (SEQ ID NO: 105)
DVQLQESGPGLEPSQSLFLTCSVT**GYSITT**NYNWNWIRQFPGNKLEWMGYIRHDGTN
NYNPSLKNRISIRDTPKNQFFLKLNSVT**TD**TA**YFCTRLD**YWGGQGSVTVSS

muAb5 V_L (SEQ ID NO: 155)
DAVMTQTPLSLPVSLGDAQISCR**SSQ**SL**EN**SYGN**TFL**NWFLQRPQGSPQLLIY**RV**SNR
FCGVPDRFRSGSGSGTDFTLKISRVEAEDLGIY**FCLQVTHV**PY**TF**GGG**TK**LEIK

muAb6 V_H (SEQ ID NO: 106)
QVQLQQPGAELVRPGSSVKLSCKASGY**TF**TSY**WM**HWVKQRPIQGLEWIG**NI**DP**SNGE**
THYNQKFKDKATLTVDKSSSTAYMQLSSLTSEDSAVY**YCARERIY**SGSTYDGYFDVWGTGTTVTVSS

muAb6 V_L (SEQ ID NO: 156)
QIVLTQSPAIMSASPGEKVTMTCS**ASS**LSYMHWYQQKSGTSPKRWIY**DT**SKLASGVPA
RFSGSGSGTSYSLTISIMEAEDAATY**CQQWSSNP**WTFGGG**TK**LEIK

muAb7 V_L (SEQ ID NO: 157)
QIVLTQSPAIMSASPGEKVTMTCS**ASS**LSYMHWYQQKSGTSPKRWIY**DT**SKLASGVPA
RFSGSGSGTSYSLTISMEGEDGATY**CQQWSSNP**WTFGGG**TK**LEIK

FIG. 2B

Mouse anti-human CD40 Antibody Domains
Variable domains (CDRs in **bold**)

muAb8 V_H (SEQ ID NO: 107)
QVQLQQSGPELVKSGASVKISKASG**YTFDYYIN**WVKQRPQGQLEWIG**WIFPGSGSV**
YCNEQFKGQATLTVDRSSSTAYMILLSSLTSEDSAVYFCASS**GLGFAY**WGQGLTVTSA

muAb8 V_L (SEQ ID NO: 158)
DIVMTQSQKFMSTTVGDRVSI**TKASQSV**TA**VAWY**QKPGQSPKLLIY**SASNRY**TGV
PDRFTGSGSGTDFALTIRTMQSEDLADYFC**QQYSSYPY**TFGGG**TKLEIK**

muAb9 V_H (SEQ ID NO: 108)
DVQLQESGPGGLVKPSQSLSTCSVT**GY**S**ITSN**YYWNWIRQFPGNKLEWMGYIRYDGSN
NYNPSLKNRISITRDTSKNQFFLKLNSVT**TDATYYCARLDY**WGQGTTLTVSS

muAb9 V_L (SEQ ID NO: 159)
DAVMTQTPLSLPVSLGDAQISCR**SSQ**SL**ENTNG**N**TFL**NWFLQKPGQSPQLLIY**RV**SNR
FSGV**PDR**FRFSGSGTDFTLKISRVEAEDLG**VFCLQVTHV**P**FTFG**SG**TKLEIK**

muAb10 V_H (SEQ ID NO: 109)
DVQLQESGPGGLVKPSQSLSTCSVT**GY**S**ITSN**YYWNWIRQFPGNKLEWMGYIRYDGSN
NYNPSLKNRISITRDTSKNQFFLRLNSVT**TDATYYCTRLDY**WGQGTTLTVSS

muAb10 V_L (SEQ ID NO: 160)
DAVMTQTPLSLPVSLGDAQISCR**SSQ**SL**EN**SGN**TFL**NWFLQKPGQSPQLLIY**RIS**NR**F**
SGV**PDR**FRFSGSGTDFTLKISRVEAEDLG**VFCLQVTHV**P**FTFG**SG**TKLEIK**

FIG. 2C

Humanized anti-human CD40 Antibody Domains
Variable domains (CDRs in **bold**)

huAb6-1 V_H (SEQ ID NO: 110)
EVQLVQSGAEVKKPGSSVKV**SC**KAS**GYTFTSYWMH**WVRQAPGQGLEWIG**NIDPSN**GETH**Y**NQ
KFKDRATLTVDKSTSTAYMELSSLRSEDTAVY**CARER**IY**SGSTYDGYFDV**WGQGT**TV**TVSS

huAb6-1 V_L (SEQ ID NO: 161)
DIQLTQSPFSLASVGDRTIT**CSASSLSY**MHWYQQKPK**SPKR**WIVDT**SKLASG**VPSRFS**SGSGS**
GTEYTLTISSLPEDFATY**YCCQWSSNPWT**FGG**G**TK**VEIK**

huAb6-2 V_H (SEQ ID NO: 111)
EVQLVQSGAEVKKPGSSVKV**SC**KAS**GYTFTSYWMH**WVRQAPGQGLEWIG**NIDPSN**GETH**Y**NQ
KFKDRVTITVDKSTSTAYMELSSLRSEDTAVY**CARER**IY**SGSTYDGYFDV**WGQGT**TV**TVSS

huAb6-3 V_H (SEQ ID NO: 112)
EVQLVQSGAEVKKPGSSVKV**SC**KAS**GYTFTSYWMH**WVRQAPGQGLEWIG**NIDPSN**GETH**Y**AAQ
KFQGRVTITVDKSTSTAYMELSSLRSEDTAVY**CARER**IY**SGSTYDGYFDV**WGQGT**TV**TVSS

huAb8-1 V_H (SEQ ID NO: 113)
EVQLVQSGAEVKKPGSSVKV**SC**KAS**GYTFTDY**INWVRQAPGQGLEWIG**WIFPGSGSV**YCNEQ**F**
KGRATLTVDKSTSTAYMELSSLRSEDTAVY**FCASSL**G**KFAY**WGQGT**TV**TVSS

huAb8-1 V_L (SEQ ID NO: 162)
DIQMTQSPSSLSASVGDRTIT**CKASQSV**TA**VA**WYQQKPK**SPKLLI**Y**SASN**RYTGVPSRFS**SGSGS**
GTDFTLTISLPEDFATY**FCQQYSSYP**TFGG**G**TK**VEIK**

huAb8-2 V_H (SEQ ID NO: 114)
EVQLVQSGAEVKKPGSSVKV**SC**KAS**GYTFTDY**INWVRQAPGQGLEWIG**WIFPGSGSV**YSNEQ**F**
KGRATLTVDKSTSTAYMELSSLRSEDTAVY**FCASSL**G**KFAY**WGQGT**TV**TVSS

FIG. 2D

Humanized anti-human CD40 Antibody Domains
Variable domains (CDRs in **bold**)

huAb8-3 V_H (SEQ ID NO: 115)
EVQLVQSGAEVKKPGSSVKVCKASK**GYTFTDY**INWVROAPGGQGLEWIG**WIFPGSGSVYCNEQF**
KGRVTITVDKSTSTAYMELSSLRSEDTAVYYCASS**LGKFAY**WGQGTLLTVSS

huAb9-1 V_H (SEQ ID NO: 116)
EVQLQESGPGGLVKPSETLSLTCTVSGYS**ITSNYYWN**WIRQPPGKGLEW**MGYIRYDGSNNYNPSL**
KNRITISRDTSKNQFSLKLSSVTAADTAVYYCARLDYWGQGTLLTVSS

huAb9-1 V_L (SEQ ID NO: 163)
DAVMTQTPLSLSVTPGQPASISCR**SSQSL**ENTNGNTFLNWFLQKPGQSPQLLIYRVSNRFSGVDP
RFGSGSGTDFTLKISRVEAEDVGVYFC**LQVTHVPFTFGQGT**KLK

huAb9-2 V_H (SEQ ID NO: 117)
EVQLQESGPGGLVKPSETLSLTCTVSGYS**ITSNYYWN**WIRQPPGKGLEW**MGYIRYDGSNNYNPSL**
KNRVTISRDTSKNQFSLKLSSVTAADTAVYYCARLDYWGQGTLLTVSS

huAb9-3 V_H (SEQ ID NO: 118)
EVQLQESGPGGLVKPSETLSLTCTVSGYS**ISSNYYWN**WIRQPPGKGLEW**MGYIRYDGSNNYNPSL**
KSRVTISRDTSKNQFSLKLSSVTAADTAVYYCARLDYWGQGTLLTVSS

huAb9-4 V_L (SEQ ID NO: 164)
DAVMTQTPLSLSVTPGQPASISCR**SSQSL**ENTNGNTFLNWYLQKPGQSPQLLIYRVSNRFSGVDP
RFGSGSGTDFTLKISRVEAEDVGVYFC**LQVTHVPFTFGQGT**KLK

FIG. 2E

Humanized anti-human CD40 Antibody Domains
Variable domains (CDRs in **bold**)

huAb9-7 V_H (SEQ ID NO: 119)
EVQLVESGGGLVQPGGSLRLTCTVSGY**SITSNYYWNWIRQPPGKGLEWMGYIRYDGSNNYNPSL**
KGRVTISRDTSKNQFYLKLSVTAADTAVYYCARLDYWGGGTLTVSS

huAb9-8 V_H (SEQ ID NO: 120)
EVQLVESGGGLVQPGGSLRLTCTVSGY**SITSNYYWNWIRQPPGKGLEWMGYIRYDGSNNYNPS**
LKGRVTISRDTSKNQFYLKLSVTAADTAVYYCARLDYWGGGTLTVSS

huAb9-9 V_H (SEQ ID NO: 121)
EVQLVESGGGLVQPGGSLRLTCTVSGY**DITSNYYWNWIRQPPGKGLEWMGYIRYDGSNNYNPSL**
KGRVTISRDTSKNQFYLKLSVTAADTAVYYCARLDYWGGGTLTVSS

huAb9 rehu V_{H4} V_H (SEQ ID NO: 122)
QVQLQESGPGLVKPSETLSLTCTVSGY**SITSNYYWNWIRQPPGKGLEWMGYIRYDGSNNYNPSL**
KNRITISRDTSKNQFSLKLSVTAADTAVYYCARLDYWGGGTLTVSS

huAb9 rehu V_{H3} V_H (SEQ ID NO: 123)
EVQLVESGGGLVQPGGSLRLTCTVSGY**SITSNYYWNWIRQPPGKGLEWMGYIRYDGSNNYNPS**
LKNRITISRDTSKNTFYLMNSLRAEDTAVYYCARLDYWGGGTLTVSS

FIG. 2F

Humanized anti-human CD40 Antibody Domains
Variable domains (CDRs in **bold**)

huAb9-7 V_L (SEQ ID NO: 165)
DAVMTQTPLSLSVTEGQPASISCR**SSQ**SLNTNGNTFLNWYLQKPGQSPQLLIYRVSNRFSGVDP
RFGSGSGTDFTLKISRVEAEDVGVYCLQVTHVPFTFGQGTKLEIK

huAb9-9 V_L (SEQ ID NO: 166)
DAVMTQTPLSLAVLPGQPASISCR**SSQ**SLNTNGNTFLNWYLQKPGQSPQLLIYRVSNRFSGVDP
RFGSGSGTDFTLKISRVEAEDVGVYCLQVTHVPFTFGQGTKLEIK

huAb9 VK1 V_L (SEQ ID NO: 167)
DIQMTQSPSSLSASVGDRTVITCR**SSQ**SLNTNGNTFLNWYQQKPGKAPKLLIYRVSNRFSGVPS
RFGSGSGTDFTLTISSLQPEDFATYICLVTHVPFTFGQGTKLEIK

huAb9 rehu VK2 V_L (SEQ ID NO: 168)
DAVMTQSPSLPLPVTLGEPAISCR**SSQ**SLNTNGNTFLNWYQQKPGQSPRLIYRVSNRFSGVDP
RFGSGSGTDFTLKISRVEAEDVGVYCLQVTHVPFTFGQGTKLEIK

huAb9 rehu VK1 V_L (SEQ ID NO: 169)
DAQMTQSPSSLSASVGDRTVITCR**SSQ**SLNTNGNTFLNWYQQKPGKAPKLLIYRVSNRFSGVPS
RFGSGSGTDFTLTISSLQPEDFATYICLVTHVPFTFGQGTKLEIK

huAb9 A2I V_L (SEQ ID NO: 170)
DIVMTQTPLSLSVTPGQPASISCR**SSQ**SLNTNGNTFLNWYLQKPGQSPQLLIYRVSNRFSGVDPDR
FSGSGSGTDFTLKISRVEAEDVGVYCLQVTHVPFTFGQGTKLEIK

huAb9 A2V V_L (SEQ ID NO: 171)
DVVMTQTPLSLSVTPGQPASISCR**SSQ**SLNTNGNTFLNWYLQKPGQSPQLLIYRVSNRFSGVDP
RFGSGSGTDFTLKISRVEAEDVGVYCLQVTHVPFTFGQGTKLEIK

FIG. 2G

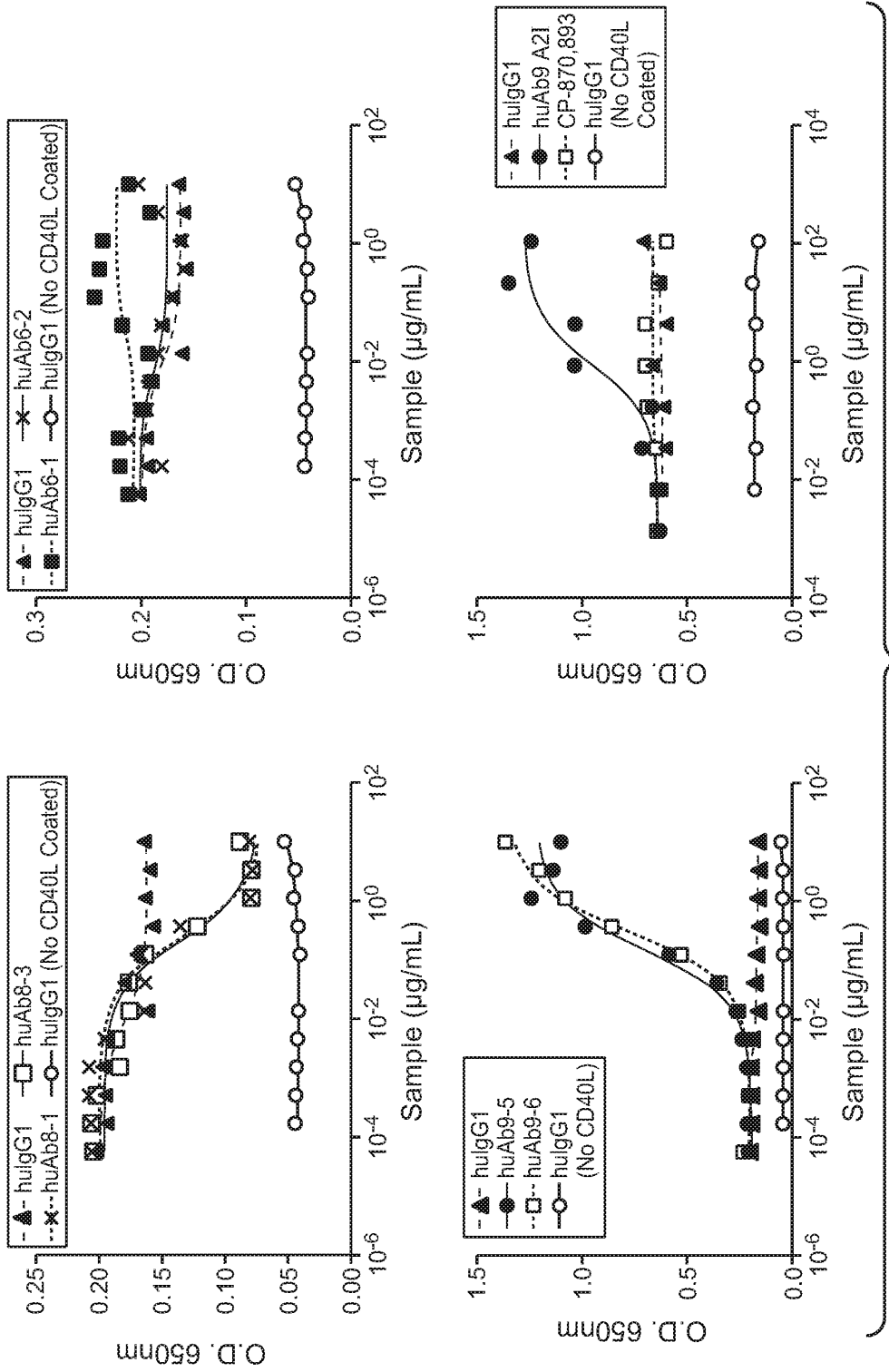
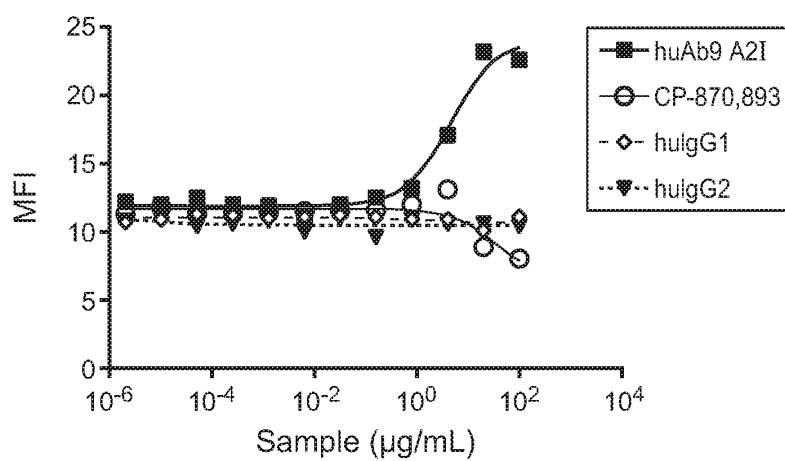


FIG. 3

10 / 20

**FIG. 4**

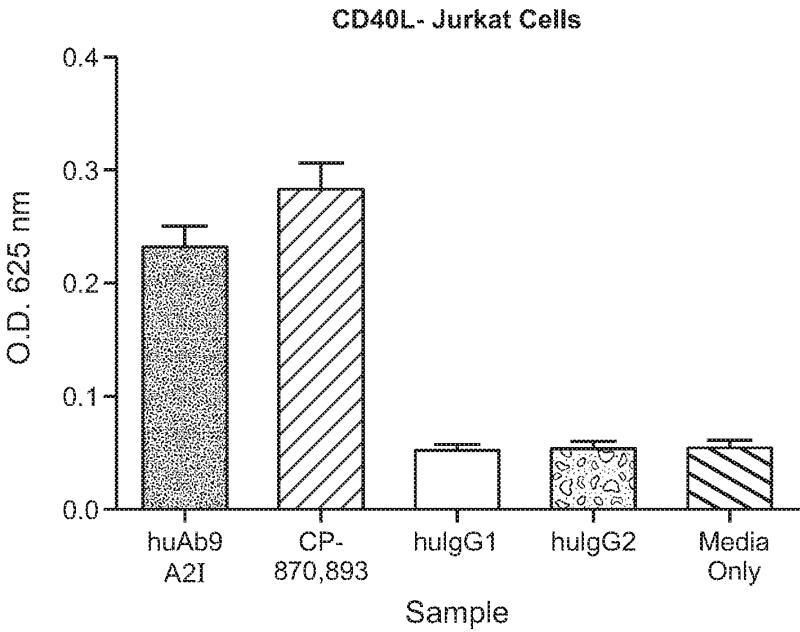


FIG. 5A

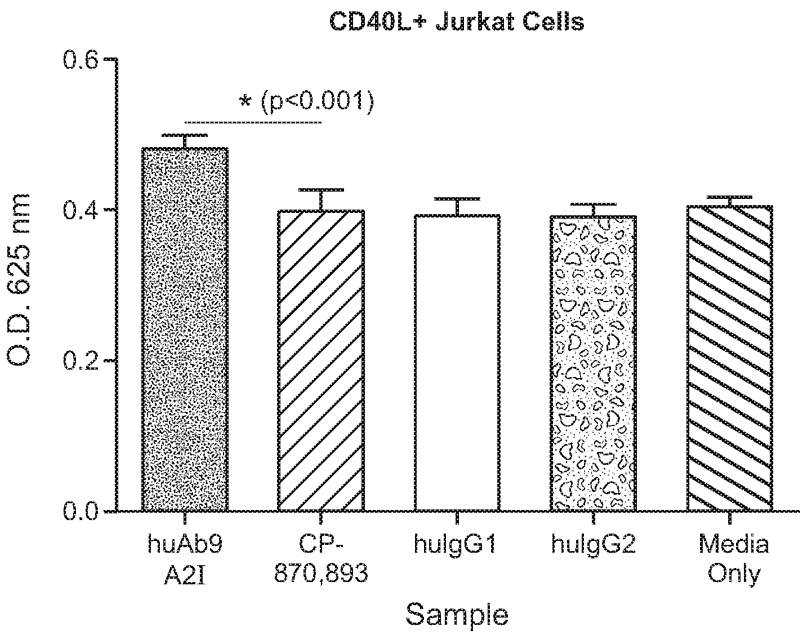


FIG. 5B

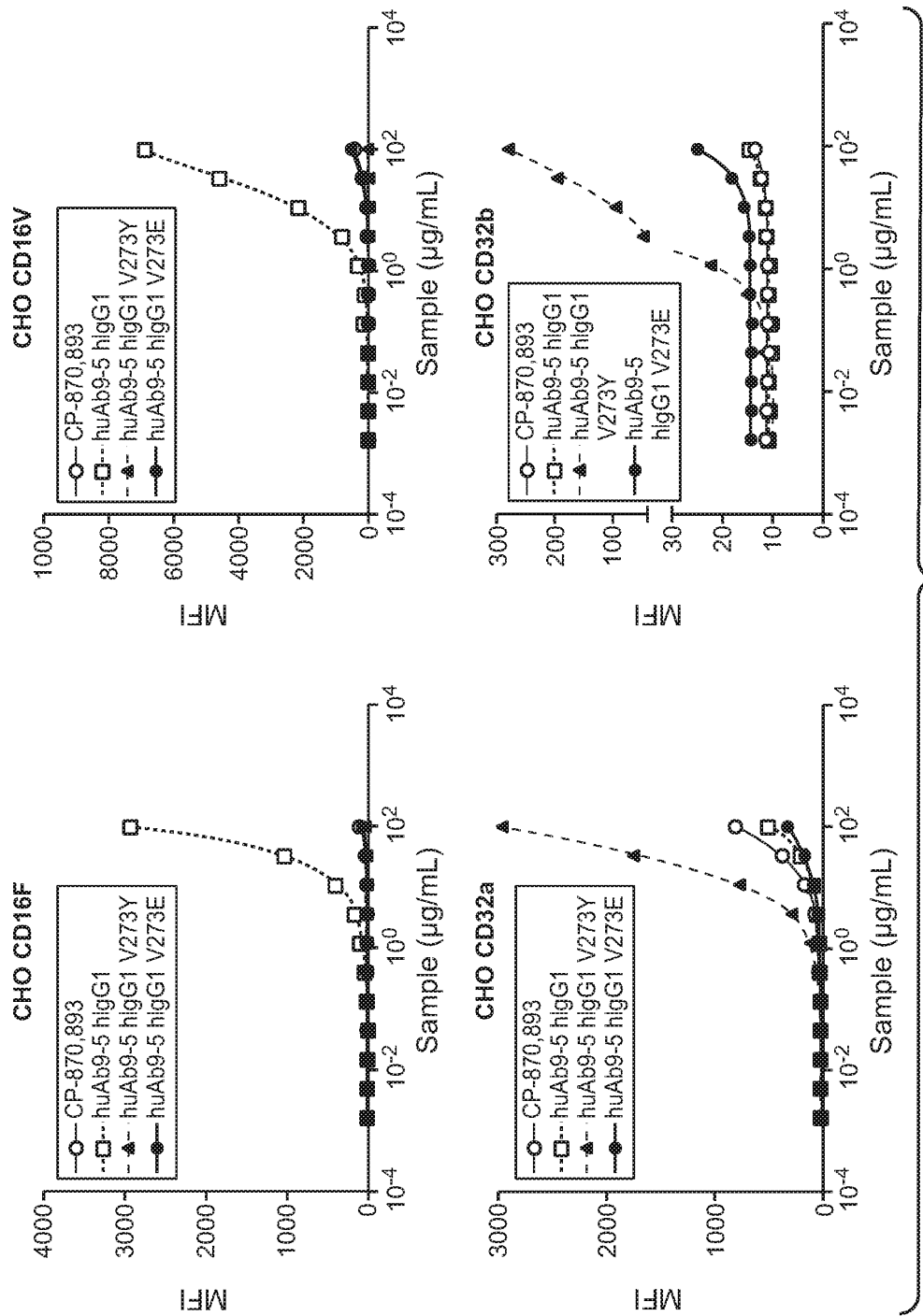


FIG. 6A

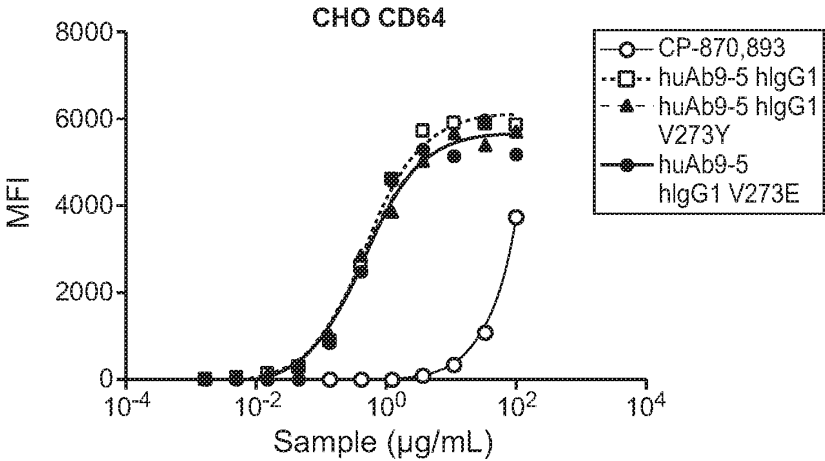


FIG. 6B

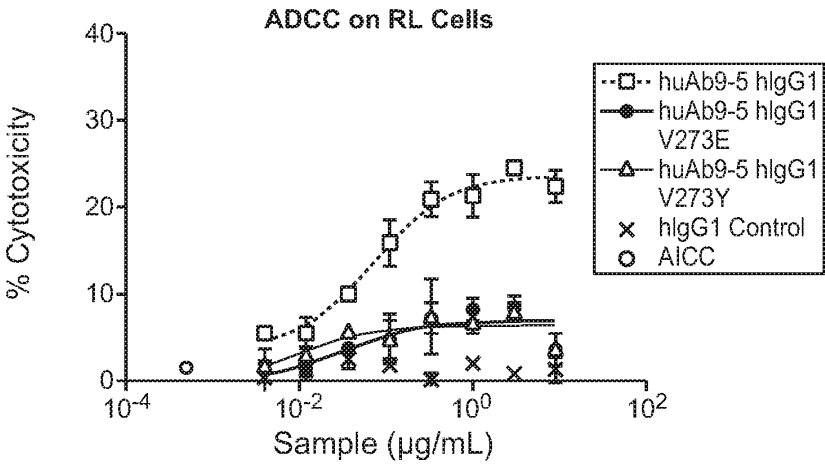


FIG. 7

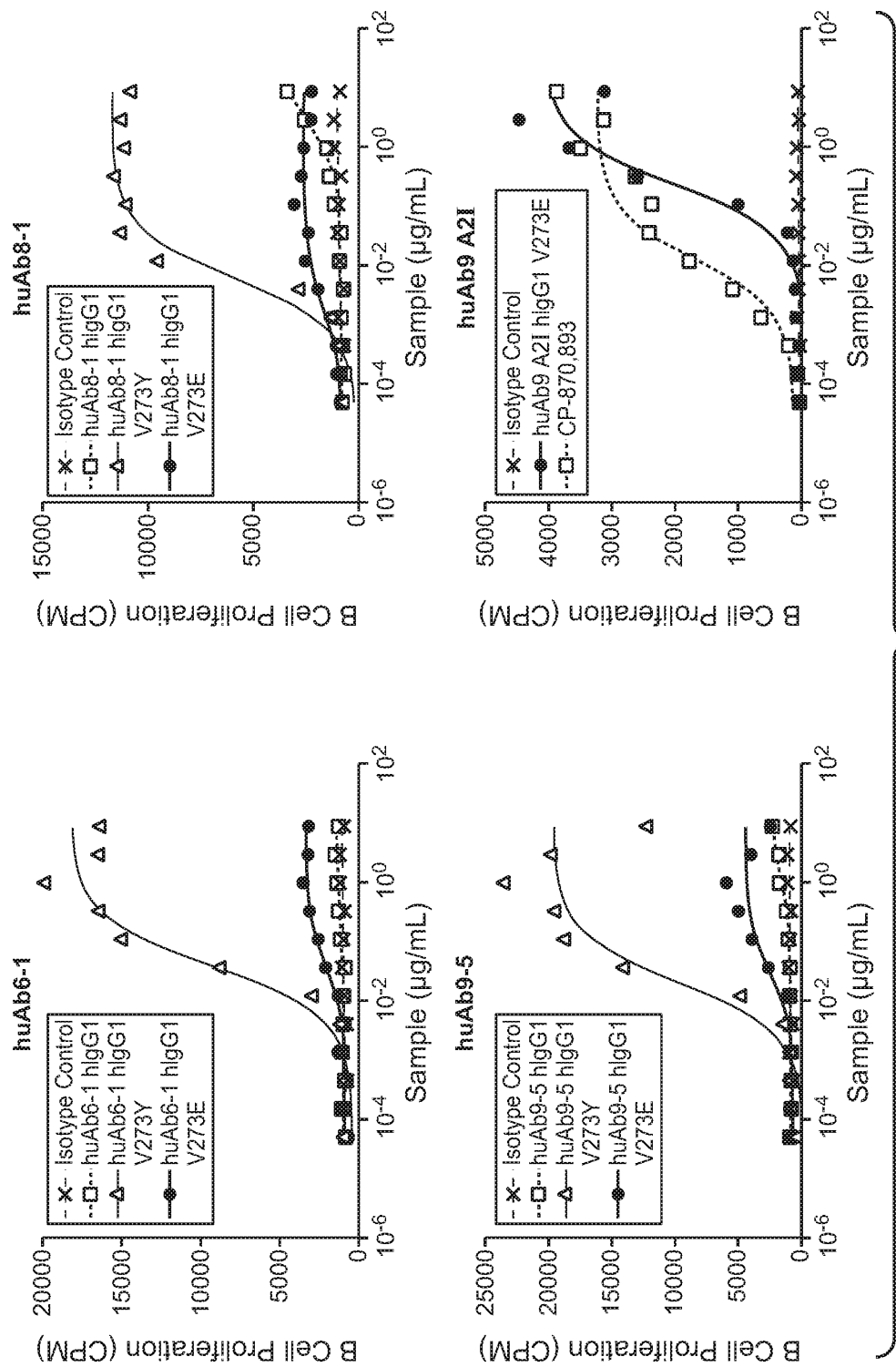


FIG. 8

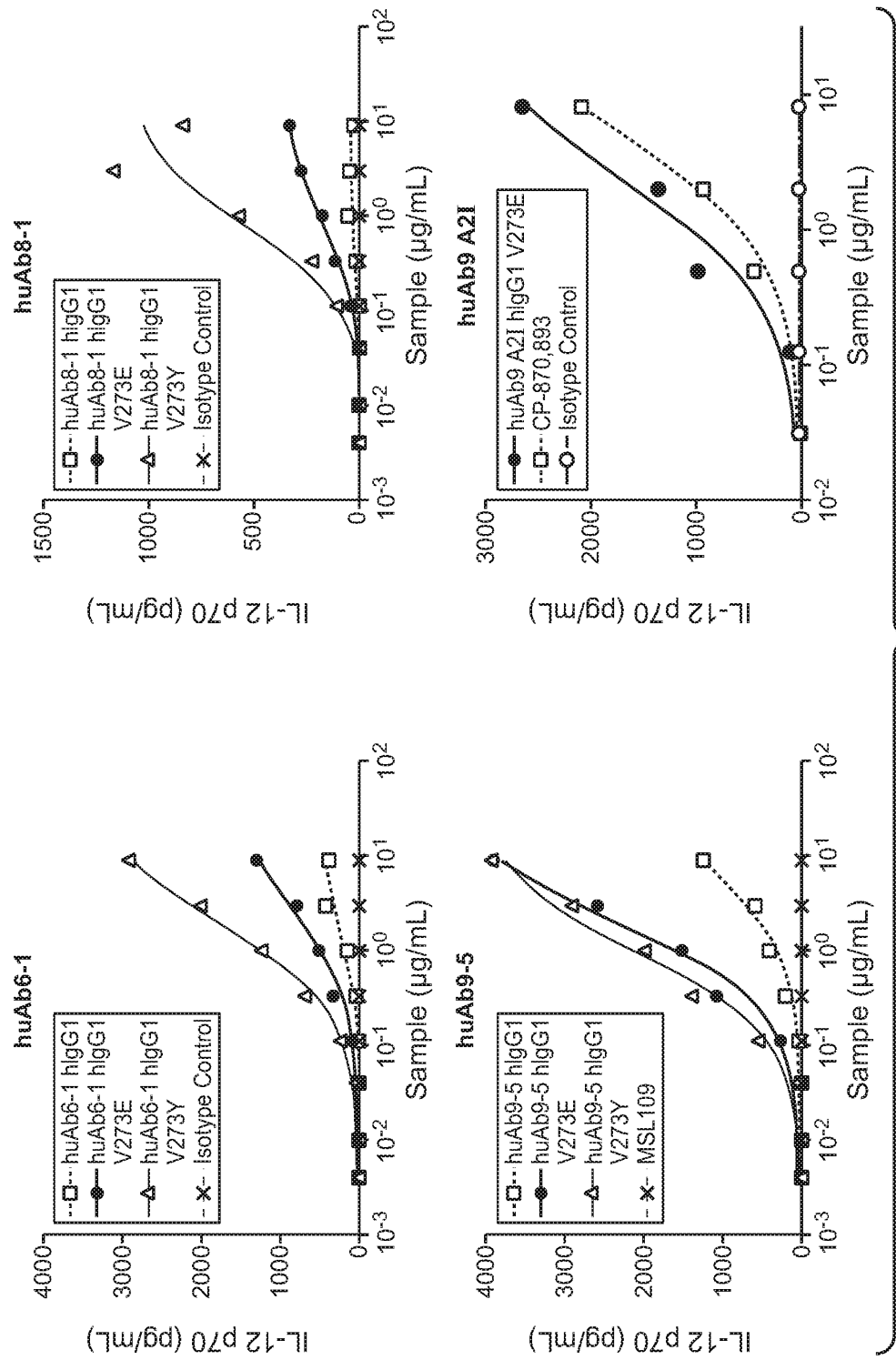


FIG. 9

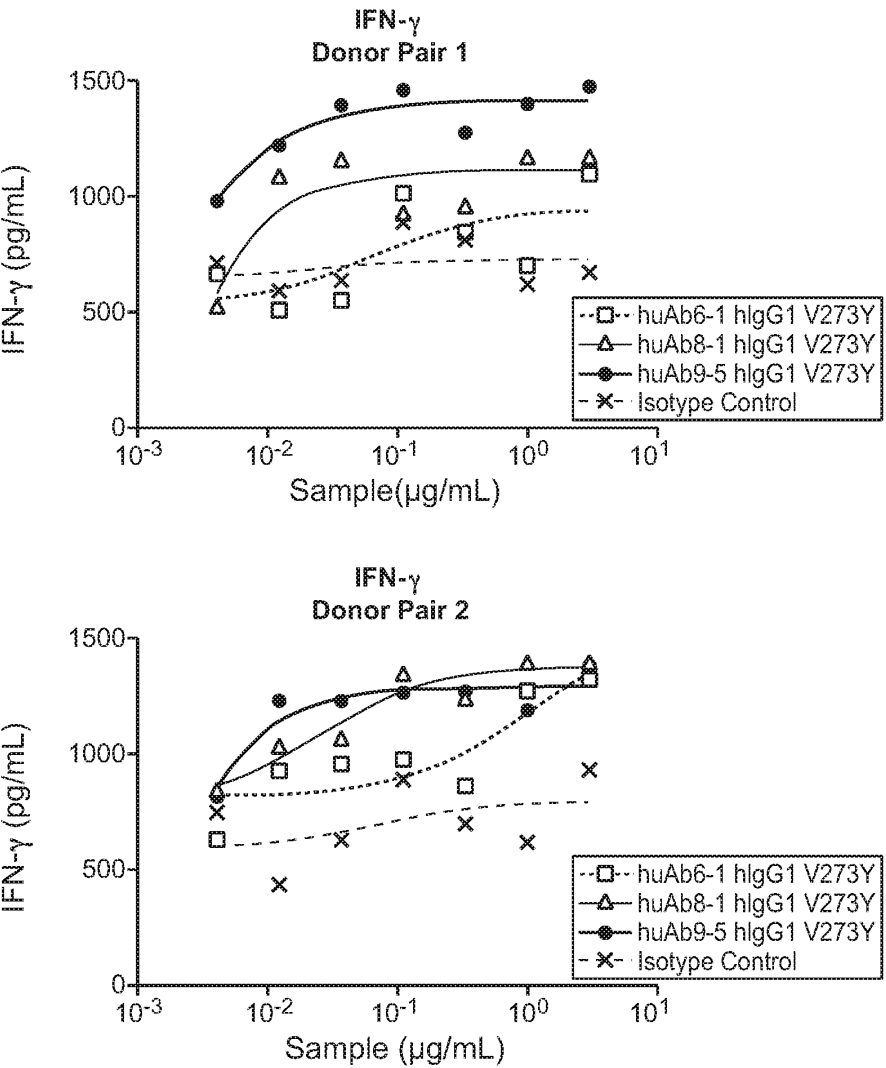


FIG. 10

17 / 20

FIG. 11

