Figure 1

A) anti-CD3 VHVL stL x 3-1 VHVL (SEQ ID NO: 11)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTGCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGGTGGTGGTGGTT
CTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGACATTCAGCTGACCCAGTCTCCAGCAATCATGTCTGCATCT
CCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCAGCAGAAGTC
AGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCTTCAGTGGCA
GTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTATTACTGCCAA
CAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGGTGGATCCGA
GGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGTGAAACCTGGGGCCTCAGTGAAGATATCCTGCAAGGCTT
CTGGATACGCCTTCACTAACTACTGGCTAGGTTGGGTAAAGCAGAGGCCTGGACATGGACTTGAGTGGATTGGA
GATCTTTTCCCTGGAAGTGGTAATACTCACTACAATGAGAGGTTCAGGGGCAAAGCCACACTGACTGCAGACAA
ATCCTCGAGCACAGCCTTTATGCAGCTCAGTAGCCTGACATCTGAGGACTCTGCTGTCTATTTCTGTGCAAGAT
TGAGGAACTGGGACGAGGCTATGGACTACTGGGGCCAAGGGACCACGGTCACCGTCTCCTCAGGTGGTGGTGGT
TCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTCATGACCCAGTCTCCATCTTATCTTGCTGCATC
TCCTGGAGAAACCATTACTATTAATTGCAGGGCAAGTAAGAGCATTAGCAAATATTTAGCCTGGTATCAAGAGA
AACCTGGGAAAACTAATAAGCTTCTTATCTACTCTGGATCCACTTTGCAATCTGGAATTCCATCAAGGTTCAGT
GGCAGTGGATCTGGTACAGATTTCACTCTCACCATCAGTAGCCTGGAGCCTGAAG

Figure 1 A) continued

ATTTTGCAATGTATTACTGTCAACAGCATAATGAATATCCGTACACGTTCGGAGGGGGGACCAAGCTTGAGATC
AAACATCATCACCATCATCATTAG

(SEQ ID NO: 12)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYCLDYWGQGTTLTVSSGGGGSGGGGSGGGGSDIQLTQSPAIMSAS
PGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATYYCQ
QWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELVKPGASVKISCKASGYAFTNYWLGWVKQRPGHGLEWIG
DLFPGSGNTHYNERFRGKATLTADKSSSTAFMQLSSLTSEDSAVYFCARLRNWDEAMDYWGQGTTVTVSSGGGG
SGGGGSGGGGSELVMTQSPSYLAASPGETITINCRASKSISKYLAWYQEKPGKTNKLLIYSGSTLQSGIPSRFS
GSGSGTDFTLTISSLEPEDFAMYYCQQHNEYPYTFGGGTKLEIKHHHHHH

Figure 1

B) anti-CD3 VHVL aL x 4-7 VHVL (SEQ ID NO:1)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTGCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGTCGAAGGTGGAA
GTGGAGGTTCTGGTGGAAGTGGAGGTTCAGGTGGAGTCGACGACATTCAGCTGACCCAGTCTCCAGCAATCATG
TCTGCATCTCCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCA
GCAGAAGTCAGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCT
TCAGTGGCAGTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTAT
TACTGCCAACAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGG
TGGATCCGAGGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGCGAGGCCTGGGGCTTCAGTGAAGCTGTCCT
GCAAGGCTTCTGGCTACACCTTCACAAACTATGGTTTAAGCTGGGTGAAGCAGAGGCCTGGACAGGTCCTTGAG
TGGATTGGAGAGGTTTATCCTAGAATTGGTAATGCTTACTACAATGAGAAGTTCAAGGGCAAGGCCACACTGAC
TGCAGACAAATCCTCCAGCACAGCGTCCATGGAGCTCCGCAGCCTGACCTCTGAGGACTCTGCGGTCTATTTCT
GTGCAAGACGGGGATCCTACGATACTAACTACGACTGGTACTTCGATGTCTGGGGCCAAGGGACCACGGTCACC
GTCTCCTCAGGTGGTGGTGGTTCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTGATGACCCAGAC
TCCACTCTCCCTGCCTGTCAGTCTTGGAGATCAAGCCTCCATCTCTTGCAGATCTAGTCAGAGCCTTGTACACA
GTAATGGAAACACCTATTTACATTGGTACCTGCAGAAGCCAGGCCAGTCTCCAAAG

Figure 1 B) continued

CTCCTGATCTACAAAGTTTCCAACCGATTTTCTGGGGTCCCAGACAGGTTCAGTGGCAGTGGATCAGGGACAGA
TTTCACACTCAAGATCAGCAGAGTGGAGGCTGAGGATCTGGGAGTTTATTTCTGCTCTCAAAGTACACATGTTC
CGTACACGTTCGGAGGGGGGACCAAGCTTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 2)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYCLDYWGQGTTLTVSSVEGGSGGSGGSGGSGGVDDIQLTQSPAIM
SASPGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATY
YCQQWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELARPGASVKLSCKASGYTFTNYGLSWVKQRPGQVLE
WIGEVYPRIGNAYYNEKFKGKATLTADKSSSTASMELRSLTSEDSAVYFCARRGSYDTNYDWYFDVWGQGTTVT
VSSGGGGSGGGGSGGGGSELVMTQTPLSLPVSLGDQASISCRSSQSLVHSNGNTYLHWYLQKPGQSPKLLIYKV
SNRFSGVPDRFSGSGSGTDFTLKISRVEAEDLGVYFCSQSTHVPYTFGGGTKLEIKHHHHHH

Figure 1

C) anti-CD3 VHVL aL Ser x 4-7 VHVL (SEQ ID NO: 7)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTCCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGTCGAAGGTGGAA
GTGGAGGTTCTGGTGGAAGTGGAGGTTCAGGTGGAGTCGACGACATTCAGCTGACCCAGTCTCCAGCAATCATG
TCTGCATCTCCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCA
GCAGAAGTCAGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCT
TCAGTGGCAGTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTAT
TACTGCCAACAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGG
TGGATCCGAGGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGCGAGGCCTGGGGCTTCAGTGAAGCTGTCCT
GCAAGGCTTCTGGCTACACCTTCACAAACTATGGTTTAAGCTGGGTGAAGCAGAGGCCTGGACAGGTCCTTGAG
TGGATTGGAGAGGTTTATCCTAGAATTGGTAATGCTTACTACAATGAGAAGTTCAAGGGCAAGGCCACACTGAC
TGCAGACAAATCCTCCAGCACAGCGTCCATGGAGCTCCGCAGCCTGACCTCTGAGGACTCTGCGGTCTATTTCT
GTGCAAGACGGGGATCCTACGATACTAACTACGACTGGTACTTCGATGTCTGGGGCCAAGGGACCACGGTCACC
GTCTCCTCAGGTGGTGGTGGTTCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTGATGACCCAGAC
TCCACTCTCCCTGCCTGTCAGTCTTGGAGATCAAGCCTCCATCTCTTGCAGATCTAGTCAGAGCCTTGTACACA
GTAATGGAAACACCTATTTACATTGGTACCTGCAGAAGCCAGGCCAGTCTCCAAAGCTCCTGATCTACAAAGTT
TCCAACCGATTTTCTGGGGTCCCAGACAGGTTCAGTGGCAGTGGATCAGGGACAG

Figure 1 C) continued

ATTTCACACTCAAGATCAGCAGAGTGGAGGCTGAGGATCTGGGAGTTTATTTCTGCTCTCAAAGTACACATGTT
CCGTACACGTTCGGAGGGGGGACCAAGCTTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 8)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYSLDYWGQGTTLTVSSVEGGSGGSGGSGGSGGVDDIQLTQSPAIM
SASPGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATY
YCQQWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELARPGASVKLSCKASGYTFTNYGLSWVKQRPGQVLE
WIGEVYPRIGNAYYNEKFKGKATLTADKSSSTASMELRSLTSEDSAVYFCARRGSYDTNYDWYFDVWGQGTTVT
VSSGGGGSGGGGSGGGGSELVMTQTPLSLPVSLGDQASISCRSSQSLVHSNGNTYLHWYLQKPGQSPKLLIYKV
SNRFSGVPDRFSGSGSGTDFTLKISRVEAEDLGVYFCSQSTHVPYTFGGGTKLEIKHHHHHH

Figure 1

D) anti-CD3 VHVL stL x 4-7 VHVL (SEQ ID NO: 13)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTGCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGGTGGTGGTGGTT
CTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGACATTCAGCTGACCCAGTCTCCAGCAATCATGTCTGCATCT
CCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCAGCAGAAGTC
AGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCTTCAGTGGCA
GTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTATTACTGCCAA
CAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGGTGGATCCGA
GGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGCGAGGCCTGGGGCTTCAGTGAAGCTGTCCTGCAAGGCTT
CTGGCTACACCTTCACAAACTATGGTTTAAGCTGGGTGAAGCAGAGGCCTGGACAGGTCCTTGAGTGGATTGGA
GAGGTTTATCCTAGAATTGGTAATGCTTACTACAATGAGAAGTTCAAGGGCAAGGCCACACTGACTGCAGACAA
ATCCTCCAGCACAGCGTCCATGGAGCTCCGCAGCCTGACCTCTGAGGACTCTGCGGTCTATTTCTGTGCAAGAC
GGGGATCCTACGATACTAACTACGACTGGTACTTCGATGTCTGGGGCCAAGGGACCACGGTCACCGTCTCCTCA
GGTGGTGGTGGTTCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTGATGACCCAGACTCCACTCTC
CCTGCCTGTCAGTCTTGGAGATCAAGCCTCCATCTCTTGCAGATCTAGTCAGAGCCTTGTACACAGTAATGGAA
ACACCTATTTACATTGGTACCTGCAGAAGCCAGGCCAGTCTCCAAAGCTCCTGATCTACAAAGTTTCCAACCGA
TTTTCTGGGGTCCCAGACAGGTTCAGTGGCAGTGGATCAGGGACAGATTTCACAC

Figure 1 D) continued

TCAAGATCAGCAGAGTGGAGGCTGAGGATCTGGGAGTTTATTTCTGCTCTCAAAGTACACATGTTCCGTACACG
TTCGGAGGGGGGACCAAGCTTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 14)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYCLDYWGQGTTLTVSSGGGGSGGGGSGGGGSDIQLTQSPAIMSAS
PGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATYYCQ
QWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELARPGASVKLSCKASGYTFTNYGLSWVKQRPGQVLEWIG
EVYPRIGNAYYNEKFKGKATLTADKSSSTASMELRSLTSEDSAVYFCARRGSYDTNYDWYFDVWGQGTTVTVSS
GGGGSGGGGSGGGGSELVMTQTPLSLPVSLGDQASISCRSSQSLVHSNGNTYLHWYLQKPGQSPKLLIYKVSNR
FSGVPDRFSGSGSGTDFTLKISRVEAEDLGVYFCSQSTHVPYTFGGGTKLEIKHHHHHH

Figure 1

E) anti-CD3 VHVL stL x 4-7 VLVH (SEQ ID NO: 15)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTGCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGGTGGTGGTTT
CTGGCGGCGGCGGCTCCGGTGGTGGTTCTGACATTCAGCTGACCCAGTCTCCAGCAATCATGTCTGCATCT
CCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCAGCAGAAGTC
AGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCTTCAGTGGCA
GTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTATTACTGCCAA
CAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGATCCGA
GCTCGTGATGACCCAGACTCCACTCTCCCTGCCTGTCAGTCTTGGAGATCAAGCCTCCATCTCTTGCAGATCTA
GTCAGAGCCTTGTACACAGTAATGGAAACACCTATTTACATTGGTACCTGCAGAAGCCAGGCCAGTCTCCAAAG
CTCCTGATCTACAAAGTTTCCAACCGATTTTCTGGGGTCCCAGACAGGTTCAGTGGCAGTGGATCAGGGACAGA
TTTCACACTCAAGATCAGCAGAGTGGAGGCTGAGGATCTGGGAGTTTATTTCTGCTCTCAAAGTACACATGTTC
CGTACACGTTCGGAGGGGGGACCAAGCTTGAGATCAAAGGTGGTTCTGGCGGCGGCGGCTCCGGTGGT
GGTGGTTCTGAGGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGGCCTGGGGCTTCAGTGAAGCTGTC
CTGCAAGGCTTCTGGCTACACCTTTACACAACTATGGTTTAAGCTGGGTGAAGCAGAGGCCTGGACAGGGTCCTTG
AGTGGATTGGAGAGGTTTATCCTAGAAATTGGTAATGCTTACTACAATGAGAAGTTCAAGGGCAAGGCCACACTG
ACTGCAGACAAATCCTCCAGCACAGCGTCCATGGAGCTCCGCAGCCTGACCTCTG

Figure 1 E) continued

AGGACTCTGCGGTCTATTTCTGTGCAAGACGGGGATCCTACGATACTAACTACGACTGGTACTTCGATGTCTGG
GGCCAAGGGACCACGGTCACCGTCTCCTCACATCATCACCATCATCATTAG

(SEQ ID NO: 16)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYCLDYWGQGTTLTVSSGGGGSGGGGSGGGGSDIQLTQSPAIMSAS
PGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATYYCQ
QWSSNPLTFGAGTKLELKSGGGGSELVMTQTPLSLPVSLGDQASISCRSSQSLVHSNGNTYLHWYLQKPGQSPK
LLIYKVSNRFSGVPDRFSGSGSGTDFTLKISRVEAEDLGVYFCSQSTHVPYTFGGGTKLEIKGGGGSGGGGSGG
GGSEVQLLEQSGAELARPGASVKLSCKASGYTFTNYGLSWVKQRPGQVLEWIGEVYPRIGNAYYNEKFKGKATL
TADKSSSTASMELRSLTSEDSAVYFCARRGSYDTNYDWYFDVWGQGTTVTVSSHHHHHH

Figure 1

F) anti-CD3 VHVL aL x 5-10 VHVL (SEQ ID NO: 3)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTGCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGTCGAAGGTGGAA
GTGGAGGTTCTGGTGGAAGTGGAGGTTCAGGTGGAGTCGACGACATTCAGCTGACCCAGTCTCCAGCAATCATG
TCTGCATCTCCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCA
GCAGAAGTCAGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCT
TCAGTGGCAGTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTAT
TACTGCCAACAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGG
TGGATCCGAGGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGTAAGGCCTGGGACTTCAGTGAAGATATCCT
GCAAGGCTTCTGGATACGCCTTCACTAACTACTGGCTAGGTTGGGTAAAGCAGAGGCCTGGACATGGACTTGAG
TGGATTGGAGATATTTTCCCTGGAAGTGGTAATATCCACTACAATGAGAAGTTCAAGGGCAAAGCCACACTGAC
TGCAGACAAATCTTCGAGCACAGCCTATATGCAGCTCAGTAGCCTGACATTTGAGGACTCTGCTGTCTATTTCT
GTGCAAGACTGAGGAACTGGGACGAGCCTATGGACTACTGGGGCCAAGGGACCACGGTCACCGTCTCCTCAGGT
GGTGGTGGTTCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTGATGACACAGTCTCCATCCTCCCT
GACTGTGACAGCAGGAGAGAAGGTCACTATGAGCTGCAAGTCCAGTCAGAGTCTGTTAAACAGTGGAAATCAAA
AGAACTACTTGACCTGGTACCAGCAGAAACCAGGGCAGCCTCCTAAACTGTTGATCTACTGGGCATCCACTAGG
GAATCTGGGGTCCCTGATCGCTTCACAGGCAGTGGATCTGGAACAGATTTCACTC

Figure 1 F) continued

TCACCATCAGCAGTGTGCAGGCTGAAGACCTGGCAGTTTATTACTGTCAGAATGATTATAGTTATCCGCTCACG
TTCGGTGCTGGGACCAAGCTTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 4)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYCLDYWGQGTTLTVSSVEGGSGGSGGSGGSGGVDDIQLTQSPAIM
SASPGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATY
YCQQWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELVRPGTSVKISCKASGYAFTNYWLGWVKQRPGHGLE
WIGDIFPGSGNIHYNEKFKGKATLTADKSSSTAYMQLSSLTFEDSAVYFCARLRNWDEPMDYWGQGTTVTVSSG
GGGSGGGGSGGGGSELVMTQSPSSLTVTAGEKVTMSCKSSQSLLNSGNQKNYLTWYQQKPGQPPKLLIYWASTR
ESGVPDRFTGSGSGTDFTLTISSVQAEDLAVYYCQNDYSYPLTFGAGTKLEIKHHHHHH

Figure 1

G) anti-CD3 VHVL aL Ser x 5-10 VHVL (SEQ ID NO: 9)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTCCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGTCGAAGGTGGAA
GTGGAGGTTCTGGTGGAAGTGGAGGTTCAGGTGGAGTCGACGACATTCAGCTGACCCAGTCTCCAGCAATCATG
TCTGCATCTCCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCA
GCAGAAGTCAGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCT
TCAGTGGCAGTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTAT
TACTGCCAACAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGG
TGGATCCGAGGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGTAAGGCCTGGGACTTCAGTGAAGATATCCT
GCAAGGCTTCTGGATACGCCTTCACTAACTACTGGCTAGGTTGGGTAAAGCAGAGGCCTGGACATGGACTTGAG
TGGATTGGAGATATTTTCCCTGGAAGTGGTAATATCCACTACAATGAGAAGTTCAAGGGCAAAGCCACACTGAC
TGCAGACAAATCTTCGAGCACAGCCTATATGCAGCTCAGTAGCCTGACATTTGAGGACTCTGCTGTCTATTTCT
GTGCAAGACTGAGGAACTGGGACGAGCCTATGGACTACTGGGGCCAAGGGACCACGGTCACCGTCTCCTCAGGT
GGTGGTGGTTCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTGATGACACAGTCTCCATCCTCCCT
GACTGTGACAGCAGGAGAGAAGGTCACTATGAGCTGCAAGTCCAGTCAGAGTCTGTTAAACAGTGGAAATCAAA
AGAACTACTTGACCTGGTACCAGCAGAAACCAGGGCAGCCTCCTAAACTGTTGATC

Figure 1 G) continued

TACTGGGCATCCACTAGGGAATCTGGGGTCCCTGATCGCTTCACAGGCAGTGGATCTGGAACAGATTTCACTCT
CACCATCAGCAGTGTGCAGGCTGAAGACCTGGCAGTTTATTACTGTCAGAATGATTATAGTTATCCGCTCACGT
TCGGTGCTGGGACCAAGCTTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 10)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYSLDYWGQGTTLTVSSVEGGSGGSGGSGGSGGVDDIQLTQSPAIM
SASPGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATY
YCQQWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELVRPGTSVKISCKASGYAFTNYWLGWVKQRPGHGLE
WIGDIFPGSGNIHYNEKFKGKATLTADKSSSTAYMQLSSLTFEDSAVYFCARLRNWDEPMDYWGQGTTVTVSSG
GGGSGGGGSGGGGSELVMTQSPSSLTVTAGEKVTMSCKSSQSLLNSGNQKNYLTWYQQKPGQPPKLLIYWASTR
ESGVPDRFTGSGSGTDFTLTISSVQAEDLAVYYCQNDYSYPLTFGAGTKLEIKHHHHHH

Figure 1

H) anti-CD3 VHVL stL x 5-10 VHVL (SEQ ID NO: 17)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTGCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGGTGGTGGTGGTT
CTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGACATTCAGCTGACCCAGTCTCCAGCAATCATGTCTGCATCT
CCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCAGCAGAAGTC
AGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCTTCAGTGGCA
GTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTATTACTGCCAA
CAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGGTGGATCCGA
GGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGTAAGGCCTGGGACTTCAGTGAAGATATCCTGCAAGGCTT
CTGGATACGCCTTCACTAACTACTGGCTAGGTTGGGTAAAGCAGAGGCCTGGACATGGACTTGAGTGGATTGGA
GATATTTTCCCTGGAAGTGGTAATATCCACTACAATGAGAAGTTCAAGGGCAAAGCCACACTGACTGCAGACAA
ATCTTCGAGCACAGCCTATATGCAGCTCAGTAGCCTGACATTTGAGGACTCTGCTGTCTATTTCTGTGCAAGAC
TGAGGAACTGGGACGAGCCTATGGACTACTGGGGCCAAGGGACCACGGTCACCGTCTCCTCAGGTGGTGGTGGT
TCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTGATGACACAGTCTCCATCCTCCCTGACTGTGAC
AGCAGGAGAGAAGGTCACTATGAGCTGCAAGTCCAGTCAGAGTCTGTTAAACAGTGGAAATCAAAAGAACTACT
TGACCTGGTACCAGCAGAAACCAGGGCAGCCTCCTAAACTGTTGATCTACTGGGCATCCACTAGGGAATCTGGG
GTCCCTGATCGCTTCACAGGCAGTGGATCTGGAACAGATTTCACTCTCACCATCA

Figure 1 H) continued

GCAGTGTGCAGGCTGAAGACCTGGCAGTTTATTACTGTCAGAATGATTATAGTTATCCGCTCACGTTCGGTGCT
GGGACCAAGCTTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 18)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYCLDYWGQGTTLTVSSGGGGSGGGGSGGGGSDIQLTQSPAIMSAS
PGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATYYCQ
QWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELVRPGTSVKISCKASGYAFTNYWLGWVKQRPGHGLEWIG
DIFPGSGNIHYNEKFKGKATLTADKSSSTAYMQLSSLTFEDSAVYFCARLRNWDEPMDYWGQGTTVTVSSGGGG
SGGGGSGGGGSELVMTQSPSSLTVTAGEKVTMSCKSSQSLLNSGNQKNYLTWYQQKPGQPPKLLIYWASTRESG
VPDRFTGSGSGTDFTLTISSVQAEDLAVYYCQNDYSYPLTFGAGTKLEIKHHHHHH

Figure 1

I) anti-CD3 VHVL stL x 5-10 VLVH (SEQ ID NO: 19)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTGCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGGTGGTGGTGGTT
CTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGACATTCAGCTGACCCAGTCTCCAGCAATCATGTCTGCATCT
CCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCAGCAGAAGTC
AGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCTTCAGTGGCA
GTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTATTACTGCCAA
CAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGGTGGATCCGA
GCTCGTGATGACACAGTCTCCATCCTCCCTGACTGTGACAGCAGGAGAGAAGGTCACTATGAGCTGCAAGTCCA
GTCAGAGTCTGTTAAACAGTGGAAATCAAAAGAACTACTTGACCTGGTACCAGCAGAAACCAGGGCAGCCTCCT
AAACTGTTGATCTACTGGGCATCCACTAGGGAATCTGGGGTCCCTGATCGCTTCACAGGCAGTGGATCTGGAAC
AGATTTCACTCTCACCATCAGCAGTGTGCAGGCTGAAGACCTGGCAGTTTATTACTGTCAGAATGATTATAGTT
ATCCGCTCACGTTCGGTGCTGGGACCAAGCTTGAGATCAAAGGTGGTGGTGGTTCTGGCGGCGGCGGCTCCGGT
GGTGGTGGTTCTGAGGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGTAAGGCCTGGGACTTCAGTGAAGAT
ATCCTGCAAGGCTTCTGGATACGCCTTCACTAACTACTGGCTAGGTTGGGTAAAGCAGAGGCCTGGACATGGAC
TTGAGTGGATTGGAGATATTTTCCCTGGAAGTGGTAATATCCACTACAATGAGAAGTTCAAGGGCAAAGCCACA
CTGACTGCAGACAAATCTTCGAGCACAGCCTATATGCAGCTCAGTAGCCTGACAT

Figure 1 I) continued

TTGAGGACTCTGCTGTCTATTTCTGTGCAAGACTGAGGAACTGGGACGAGCCTATGGACTACTGGGGCCAAGGG
ACCACGGTCACCGTCTCCTCACATCATCACCATCATCATTAG

(SEQ ID NO: 20)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYCLDYWGQGTTLTVSSGGGGSGGGGSGGGGSDIQLTQSPAIMSAS
PGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATYYCQ
QWSSNPLTFGAGTKLELKSGGGGSELVMTQSPSSLTVTAGEKVTMSCKSSQSLLNSGNQKNYLTWYQQKPGQPP
KLLIYWASTRESGVPDRFTGSGSGTDFTLTISSVQAEDLAVYYCQNDYSYPLTFGAGTKLEIKGGGGSGGGGSG
GGGSEVQLLEQSGAELVRPGTSVKISCKASGYAFTNYWLGWVKQRPGHGLEWIGDIFPGSGNIHYNEKFKGKAT
LTADKSSSTAYMQLSSLTFEDSAVYFCARLRNWDEPMDYWGQGTTVTVSSHHHHHH

Figure 1

J) anti-CD3 VHVL aL x 3-1 VHVL (SEQ ID NO: 45)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTGCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGTCGAAGGTGGAA
GTGGAGGTTCTGGTGGAAGTGGAGGTTCAGGTGGAGTCGACGACATTCAGCTGACCCAGTCTCCAGCAATCATG
TCTGCATCTCCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCA
GCAGAAGTCAGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCT
TCAGTGGCAGTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTAT
TACTGCCAACAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGG
TGGATCCGAGGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGTGAAACCTGGGGCCTCAGTGAAGATATCCT
GCAAGGCTTCTGGATACGCCTTCACTAACTACTGGCTAGGTTGGGTAAAGCAGAGGCCTGGACATGGACTTGAG
TGGATTGGAGATCTTTTCCCTGGAAGTGGTAATACTCACTACAATGAGAGGTTCAGGGGCAAAGCCACACTGAC
TGCAGACAAATCCTCGAGCACAGCCTTTATGCAGCTCAGTAGCCTGACATCTGAGGACTCTGCTGTCTATTTCT
GTGCAAGATTGAGGAACTGGGACGAGGCTATGGACTACTGGGGCCAAGGGACCACGGTCACCGTCTCCTCAGGT
GGTGGTGGTTCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTCATGACCCAGTCTCCATCTTATCT
TGCTGCATCTCCTGGAGAAACCATTACTATTAATTGCAGGGCAAGTAAGAGCATTAGCAAATATTTAGCCTGGT
ATCAAGAGAAACCTGGGAAAACTAATAAGCTTCTTATCTACTCTGGATCCACTTTGCAATCTGGAATTCCATCA
AGGTTCAGTGGCAGTGGATCTGGTACAGATTTCACTCTCACCATCAGTAGCCTGG

Figure 1 J) continued

AGCCTGAAGATTTTGCAATGTATTACTGTCAACAGCATAATGAATATCCGTACACGTTCGGAGGGGGGACCAAG
CTTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 46)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYCLDYWGQGTTLTVSSVEGGSGGSGGSGGSGGVDDIQLTQSPAIM
SASPGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATY
YCQQWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELVKPGASVKISCKASGYAFTNYWLGWVKQRPGHGLE
WIGDLFPGSGNTHYNERFRGKATLTADKSSSTAFMQLSSLTSEDSAVYFCARLRNWDEAMDYWGQGTTVTVSSG
GGGSGGGGSGGGGSELVMTQSPSYLAASPGETITINCRASKSISKYLAWYQEKPGKTNKLLIYSGSTLQSGIPS
RFSGSGSGTDFTLTISSLEPEDFAMYYCQQHNEYPYTFGGGTKLEIKHHHHHH

Figure 1

K) anti-CD3 VHVL aL Ser x 3-1 VHVL (SEQ ID NO: 47)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTCCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGTCGAAGGTGGAA
GTGGAGGTTCTGGTGGAAGTGGAGGTTCAGGTGGAGTCGACGACATTCAGCTGACCCAGTCTCCAGCAATCATG
TCTGCATCTCCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCA
GCAGAAGTCAGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCT
TCAGTGGCAGTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTAT
TACTGCCAACAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGG
TGGATCCGAGGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGTGAAACCTGGGGCCTCAGTGAAGATATCCT
GCAAGGCTTCTGGATACGCCTTCACTAACTACTGGCTAGGTTGGGTAAAGCAGAGGCCTGGACATGGACTTGAG
TGGATTGGAGATCTTTTCCCTGGAAGTGGTAATACTCACTACAATGAGAGGTTCAGGGGCAAAGCCACACTGAC
TGCAGACAAATCCTCGAGCACAGCCTTTATGCAGCTCAGTAGCCTGACATCTGAGGACTCTGCTGTCTATTTCT
GTGCAAGATTGAGGAACTGGGACGAGGCTATGGACTACTGGGGCCAAGGGACCACGGTCACCGTCTCCTCAGGT
GGTGGTGGTTCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTCATGACCCAGTCTCCATCTTATCT
TGCTGCATCTCCTGGAGAAACCATTACTATTAATTGCAGGGCAAGTAAGAGCATTAGCAAATATTTAGCCTGGT
ATCAAGAGAAACCTGGGAAAACTAATAAGCTTCTTATCTACTCTGGATCCACTTTG

Figure 1 K) continued

CAATCTGGAATTCCATCAAGGTTCAGTGGCAGTGGATCTGGTACAGATTTCACTCTCACCATCAGTAGCCTGGA
GCCTGAAGATTTTGCAATGTATTACTGTCAACAGCATAATGAATATCCGTACACGTTCGGAGGGGGGACCAAGC
TTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 48)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYSLDYWGQGTTLTVSSVEGGSGGSGGSGGSGGVDDIQLTQSPAIM
SASPGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATY
YCQQWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELVKPGASVKISCKASGYAFTNYWLGWVKQRPGHGLE
WIGDLFPGSGNTHYNERFRGKATLTADKSSSTAFMQLSSLTSEDSAVYFCARLRNWDEAMDYWGQGTTVTVSSG
GGGSGGGGSGGGGSELVMTQSPSYLAASPGETITINCRASKSISKYLAWYQEKPGKTNKLLIYSGSTLQSGIPS
RFSGSGSGTDFTLTISSLEPEDFAMYYCQQHNEYPYTFGGGTKLEIKHHHHHH

Figure 1

L) anti-CD3 VHVL aL x 3-5 VHVL (SEQ ID NO: 49)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTGCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGTCGAAGGTGGAA
GTGGAGGTTCTGGTGGAAGTGGAGGTTCAGGTGGAGTCGACGACATTCAGCTGACCCAGTCTCCAGCAATCATG
TCTGCATCTCCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCA
GCAGAAGTCAGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCT
TCAGTGGCAGTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTAT
TACTGCCAACAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGG
TGGATCCGAGGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGTAAGGCCTGGGACTTCAGTGAAGCTGTCCT
GCAAGGCTTCTGGCTACACCTTCACAAGCTATGGTTTAAGCTGGGTGAAGCAGAGAACTGGACAGGGCCTTGAG
TGGATTGGAGAGGTTTATCCTAGAATTGGTAATGCTTACTACAATGAGAAGTTCAAGGGCAAGGCCACACTGAC
TGCAGACAAATCCTCCAGCACAGCGTCCATGGAGCTCCGCAGCCTGACATCTGAGGACTCTGCGGTCTATTTCT
GTGCAAGACGGGGATCCTACGGTAGTAACTACGACTGGTACTTCGATGTCTGGGGCCAAGGGACCACGGTCACC
GTCTCCTCAGGTGGTGGTGGTTCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTGATGACCCAGAC
TCCACTCTCCCTGCCTGTCAGTCTTGGAGATCAAGCCTCCATCTCTTGCAGATCTAGTCAGAGCCTTGTACACA
GTAATGGAAACACCTATTTACATTGGTACCTGCAGAAGCCAGGCCAGTCTCCAAAGCTCCTGATCTACAAAGTT
TCCAACCGATTTTCTGGGGTCCCAGACAGGTTCAGTGGCAGTGGATCAGGGACAG

Figure 1 L) continued

ATTTCACACTCAAGATCAGCAGAGTGGAGGCTGAGGATCTGGGAGTTTATTTCTGCTCTCAAAGTACACATGTT
CCGTACACGTTCGGAGGGGGGACCAAGCTTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 50)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYCLDYWGQGTTLTVSSVEGGSGGSGGSGGSGGVDDIQLTQSPAIM
SASPGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATY
YCQQWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELVRPGTSVKLSCKASGYTFTSYGLSWVKQRTGQGLE
WIGEVYPRIGNAYYNEKFKGKATLTADKSSSTASMELRSLTSEDSAVYFCARRGSYGSNYDWYFDVWGQGTTVT
VSSGGGGSGGGGSGGGGSELVMTQTPLSLPVSLGDQASISCRSSQSLVHSNGNTYLHWYLQKPGQSPKLLIYKV
SNRFSGVPDRFSGSGSGTDFTLKISRVEAEDLGVYFCSQSTHVPYTFGGGTKLEIKHHHHHH

Figure 1

M) anti-CD3 VHVL aL Ser x 3-5 VHVL (SEQ ID NO: 51)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTCCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGTCGAAGGTGGAA
GTGGAGGTTCTGGTGGAAGTGGAGGTTCAGGTGGAGTCGACGACATTCAGCTGACCCAGTCTCCAGCAATCATG
TCTGCATCTCCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCA
GCAGAAGTCAGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCT
TCAGTGGCAGTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTAT
TACTGCCAACAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGG
TGGATCCGAGGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGTAAGGCCTGGGACTTCAGTGAAGCTGTCCT
GCAAGGCTTCTGGCTACACCTTCACAAGCTATGGTTTAAGCTGGGTGAAGCAGAGAACTGGACAGGGCCTTGAG
TGGATTGGAGAGGTTTATCCTAGAATTGGTAATGCTTACTACAATGAGAAGTTCAAGGGCAAGGCCACACTGAC
TGCAGACAAATCCTCCAGCACAGCGTCCATGGAGCTCCGCAGCCTGACATCTGAGGACTCTGCGGTCTATTTCT
GTGCAAGACGGGGATCCTACGGTAGTAACTACGACTGGTACTTCGATGTCTGGGGCCAAGGGACCACGGTCACC
GTCTCCTCAGGTGGTGGTGGTTCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTGATGACCCAGAC
TCCACTCTCCCTGCCTGTCAGTCTTGGAGATCAAGCCTCCATCTCTTGCAGATCTAGTCAGAGCCTTGTACACA
GTAATGGAAACACCTATTTACATTGGTACCTGCAGAAGCCAGGCCAGTCTCCAAAGCTCCTGATCTACAAAGTT
TCCAACCGATTTTCTGGGGTCCCAGACAGGTTCAGTGGCAGTGGATCAGGGACAG

Figure 1 M) continued

ATTTCACACTCAAGATCAGCAGAGTGGAGGCTGAGGATCTGGGAGTTTATTTCTGCTCTCAAAGTACACATGTT
CCGTACACGTTCGGAGGGGGGACCAAGCTTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 52)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYSLDYWGQGTTLTVSSVEGGSGGSGGSGGSGGVDDIQLTQSPAIM
SASPGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATY
YCQQWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELVRPGTSVKLSCKASGYTFTSYGLSWVKQRTGQGLE
WIGEVYPRIGNAYYNEKFKGKATLTADKSSSTASMELRSLTSEDSAVYFCARRGSYGSNYDWYFDVWGQGTTVT
VSSGGGGSGGGGSGGGGSELVMTQTPLSLPVSLGDQASISCRSSQSLVHSNGNTYLHWYLQKPGQSPKLLIYKV
SNRFSGVPDRFSGSGSGTDFTLKISRVEAEDLGVYFCSQSTHVPYTFGGGTKLEIKHHHHHH

Figure 1

N) anti-CD3 VHVL stL x 3-5 VHVL (SEQ ID NO: 53)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTGCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGGTGGTGGTGGTT
CTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGACATTCAGCTGACCCAGTCTCCAGCAATCATGTCTGCATCT
CCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCAGCAGAAGTC
AGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCTTCAGTGGCA
GTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTATTACTGCCAA
CAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGGTGGATCCGA
GGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGTAAGGCCTGGGACTTCAGTGAAGCTGTCCTGCAAGGCTT
CTGGCTACACCTTCACAAGCTATGGTTTAAGCTGGGTGAAGCAGAGAACTGGACAGGGCCTTGAGTGGATTGGA
GAGGTTTATCCTAGAATTGGTAATGCTTACTACAATGAGAAGTTCAAGGGCAAGGCCACACTGACTGCAGACAA
ATCCTCCAGCACAGCGTCCATGGAGCTCCGCAGCCTGACATCTGAGGACTCTGCGGTCTATTTCTGTGCAAGAC
GGGGATCCTACGGTAGTAACTACGACTGGTACTTCGATGTCTGGGGCCAAGGGACCACGGTCACCGTCTCCTCA
GGTGGTGGTGGTTCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTGATGACCCAGACTCCACTCTC
CCTGCCTGTCAGTCTTGGAGATCAAGCCTCCATCTCTTGCAGATCTAGTCAGAGCCTTGTACACAGTAATGGAA
ACACCTATTTACATTGGTACCTGCAGAAGCCAGGCCAGTCTCCAAAGCTCCTGATCTACAAAGTTTCCAACCGA
TTTTCTGGGGTCCCAGACAGGTTCAGTGGCAGTGGATCAGGGACAGATTTCACAC

Figure 1 N) continued

TCAAGATCAGCAGAGTGGAGGCTGAGGATCTGGGAGTTTATTTCTGCTCTCAAAGTACACATGTTCCGTACACG
TTCGGAGGGGGGACCAAGCTTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 54)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYCLDYWGQGTTLTVSSGGGGSGGGGSGGGGSDIQLTQSPAIMSAS
PGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATYYCQ
QWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELVRPGTSVKLSCKASGYTFTSYGLSWVKQRTGQGLEWIG
EVYPRIGNAYYNEKFKGKATLTADKSSSTASMELRSLTSEDSAVYFCARRGSYGSNYDWYFDVWGQGTTVTVSS
GGGGSGGGGSGGGGSELVMTQTPLSLPVSLGDQASISCRSSQSLVHSNGNTYLHWYLQKPGQSPKLLIYKVSNR
FSGVPDRFSGSGSGTDFTLKISRVEAEDLGVYFCSQSTHVPYTFGGGTKLEIKHHHHHH

Figure 1

O) anti-CD3 VHVL aL x 4-1 VHVL (SEQ ID NO: 55)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTGCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGTCGAAGGTGGAA
GTGGAGGTTCTGGTGGAAGTGGAGGTTCAGGTGGAGTCGACGACATTCAGCTGACCCAGTCTCCAGCAATCATG
TCTGCATCTCCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCA
GCAGAAGTCAGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCT
TCAGTGGCAGTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTAT
TACTGCCAACAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGG
TGGATCCGAGGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGTAAGGCCTGGGACTTCAGTGAAGATATCCT
GCAAGGCTTCTGGATACGCCTTCACTAACTACTGGCTAGGTTGGGTTAAGCAGAGGCCTGGACATGGACTTGAA
TGGGTTGGAGATATTTTCCCTGGAAGTGGTAATGCTCACTACAATGAGAAGTTCAAGGGCAAAGCCACACTGAC
TGCAGACAAGTCCTCGTACACAGCCTATATGCAGCTCAGTAGCCTGACATCTGAGGACTCTGCTGTCTATTTCT
GTGCAAGATTGCGGAACTGGGACGAGGCTATGGACTACTGGGGCCAAGGGACCACGGTCACCGTCTCCTCAGGT
GGTGGTGGTTCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTGATGACACAGTCTCCATCCTCCCT
GAGTGTGTCAGCAGGAGAGAAGGTCACTATGAGCTGCAAGTCCAGTCAGAGTCTGTTAAACAGTGGAAATCAAA
AGAACTACTTGGCCTGGTACCAGCAGAAACCAGGGCAGCCTCCTAAACTGTTGATCTACGGGGCATCCACTAGG
GAATCTGGGGTCCCTGATCGCTTCACAGGCAGTGGATCTGGAACAGATTTCACTC

Figure 1 O) continued

TCACCATCAGCAGTGTGCAGGCTGAAGACCTGGCAGTTTATTACTGTCAGAATGATTATAGTTATCCGTACACG
TTCGGAGGGGGGGACCAAGCTTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 56)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYCLDYWGQGTTLTVSSVEGGSGGSGGSGGSGGVDDIQLTQSPAIM
SASPGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATY
YCQQWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELVRPGTSVKISCKASGYAFTNYWLGWVKQRPGHGLE
WVGDIFPGSGNAHYNEKFKGKATLTADKSSYTAYMQLSSLTSEDSAVYFCARLRNWDEAMDYWGQGTTVTVSSG
GGGSGGGGSGGGGSELVMTQSPSSLSVSAGEKVTMSCKSSQSLLNSGNQKNYLAWYQQKPGQPPKLLIYGASTR
ESGVPDRFTGSGSGTDFTLTISSVQAEDLAVYYCQNDYSYPYTFGGGTKLEIKHHHHHH

Figure 1

P) anti-CD3 VHVL aL Ser x 4-1 VHVL (SEQ ID NO: 57)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTCCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGTCGAAGGTGGAA
GTGGAGGTTCTGGTGGAAGTGGAGGTTCAGGTGGAGTCGACGACATTCAGCTGACCCAGTCTCCAGCAATCATG
TCTGCATCTCCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCA
GCAGAAGTCAGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCT
TCAGTGGCAGTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTAT
TACTGCCAACAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGG
TGGATCCGAGGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGTAAGGCCTGGGACTTCAGTGAAGATATCCT
GCAAGGCTTCTGGATACGCCTTCACTAACTACTGGCTAGGTTGGGTTAAGCAGAGGCCTGGACATGGACTTGAA
TGGGTTGGAGATATTTTCCCTGGAAGTGGTAATGCTCACTACAATGAGAAGTTCAAGGGCAAAGCCACACTGAC
TGCAGACAAGTCCTCGTACACAGCCTATATGCAGCTCAGTAGCCTGACATCTGAGGACTCTGCTGTCTATTTCT
GTGCAAGATTGCGGAACTGGGACGAGGCTATGGACTACTGGGGCCAAGGGACCACGGTCACCGTCTCCTCAGGT
GGTGGTGGTTCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTGATGACACAGTCTCCATCCTCCCT
GAGTGTGTCAGCAGGAGAGAAGGTCACTATGAGCTGCAAGTCCAGTCAGAGTCTGTTAAACAGTGGAAATCAAA
AGAACTACTTGGCCTGGTACCAGCAGAAACCAGGGCAGCCTCCTAAACTGTTGATCTACGGGGCATCCACTAGG
GAATCTGGGGTCCCTGATCGCTTCACAGGCAGTGGATCTGGAACAGATTTCACTC

Figure 1 P) continued

TCACCATCAGCAGTGTGCAGGCTGAAGACCTGGCAGTTTATTACTGTCAGAATGATTATAGTTATCCGTACACG
TTCGGAGGGGGGACCAAGCTTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 58)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYSLDYWGQGTTLTVSSVEGGSGGSGGSGGSGGVDDIQLTQSPAIM
SASPGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATY
YCQQWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELVRPGTSVKISCKASGYAFTNYWLGWVKQRPGHGLE
WVGDIFPGSGNAHYNEKFKGKATLTADKSSYTAYMQLSSLTSEDSAVYFCARLRNWDEAMDYWGQGTTVTVSSG
GGGSGGGGSGGGGSELVMTQSPSSLSVSAGEKVTMSCKSSQSLLNSGNQKNYLAWYQQKPGQPPKLLIYGASTR
ESGVPDRFTGSGSGTDFTLTISSVQAEDLAVYYCQNDYSYPYTFGGGTKLEIKHHHHHH

Figure 1

Q) anti-CD3 VHVL stL x 4-1 VHVL (SEQ ID NO: 59)

GATATCAAACTGCAGCAGTCAGGGGCTGAACTGGCAAGACCTGGGGCCTCAGTGAAGATGTCCTGCAAGACTTC
TGGCTACACCTTTACTAGGTACACGATGCACTGGGTAAAACAGAGGCCTGGACAGGGTCTGGAATGGATTGGAT
ACATTAATCCTAGCCGTGGTTATACTAATTACAATCAGAAGTTCAAGGACAAGGCCACATTGACTACAGACAAA
TCCTCCAGCACAGCCTACATGCAACTGAGCAGCCTGACATCTGAGGACTCTGCAGTCTATTACTGTGCAAGATA
TTATGATGATCATTACTGCCTTGACTACTGGGGCCAAGGCACCACTCTCACAGTCTCCTCAGGTGGTGGTGGTT
CTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGACATTCAGCTGACCCAGTCTCCAGCAATCATGTCTGCATCT
CCAGGGGAGAAGGTCACCATGACCTGCAGAGCCAGTTCAAGTGTAAGTTACATGAACTGGTACCAGCAGAAGTC
AGGCACCTCCCCCAAAAGATGGATTTATGACACATCCAAAGTGGCTTCTGGAGTCCCTTATCGCTTCAGTGGCA
GTGGGTCTGGGACCTCATACTCTCTCACAATCAGCAGCATGGAGGCTGAAGATGCTGCCACTTATTACTGCCAA
CAGTGGAGTAGTAACCCGCTCACGTTCGGTGCTGGGACCAAGCTGGAGCTGAAATCCGGAGGTGGTGGATCCGA
GGTGCAGCTGCTCGAGCAGTCTGGAGCTGAGCTGGTAAGGCCTGGGACTTCAGTGAAGATATCCTGCAAGGCTT
CTGGATACGCCTTCACTAACTACTGGCTAGGTTGGGTTAAGCAGAGGCCTGGACATGGACTTGAATGGGTTGGA
GATATTTTCCCTGGAAGTGGTAATGCTCACTACAATGAGAAGTTCAAGGGCAAAGCCACACTGACTGCAGACAA
GTCCTCGTACACAGCCTATATGCAGCTCAGTAGCCTGACATCTGAGGACTCTGCTGTCTATTTCTGTGCAAGAT
TGCGGAACTGGGACGAGGCTATGGACTACTGGGGCCAAGGGACCACGGTCACCGTCTCCTCAGGTGGTGGTGGT
TCTGGCGGCGGCGGCTCCGGTGGTGGTGGTTCTGAGCTCGTGATGACACAGTCTCCATCCTCCCTGAGTGTGTC
AGCAGGAGAGAAGGTCACTATGAGCTGCAAGTCCAGTCAGAGTCTGTTAAACAGTGGAAATCAAAAGAACTACT
TGGCCTGGTACCAGCAGAAACCAGGGCAGCCTCCTAAACTGTTGATCTACGGGGCATCCACTAGGGAATCTGGG
GTCCCTGATCGCTTCACAGGCAGTGGATCTGGAACAGATTTCACTCTCACCATCA

Figure 1 Q) continued

GCAGTGTGCAGGCTGAAGACCTGGCAGTTTATTACTGTCAGAATGATTATAGTTATCCGTACACGTTCGGAGGG
GGGACCAAGCTTGAGATCAAACATCATCACCATCATCATTAG

(SEQ ID NO: 60)

DIKLQQSGAELARPGASVKMSCKTSGYTFTRYTMHWVKQRPGQGLEWIGYINPSRGYTNYNQKFKDKATLTTDK
SSSTAYMQLSSLTSEDSAVYYCARYYDDHYCLDYWGQGTTLTVSSGGGGSGGGGSGGGGSDIQLTQSPAIMSAS
PGEKVTMTCRASSSVSYMNWYQQKSGTSPKRWIYDTSKVASGVPYRFSGSGSGTSYSLTISSMEAEDAATYYCQ
QWSSNPLTFGAGTKLELKSGGGGSEVQLLEQSGAELVRPGTSVKISCKASGYAFTNYWLGWVKQRPGHGLEWVG
DIFPGSGNAHYNEKFKGKATLTADKSSYTAYMQLSSLTSEDSAVYFCARLRNWDEAMDYWGQGTTVTVSSGGGG
SGGGGSGGGGSELVMTQSPSSLSVSAGEKVTMSCKSSQSLLNSGNQKNYLAWYQQKPGQPPKLLIYGASTRESG
VPDRFTGSGSGTDFTLTISSVQAEDLAVYYCQNDYSYPYTFGGGTKLEIKHHHHHH

Figure 2 A

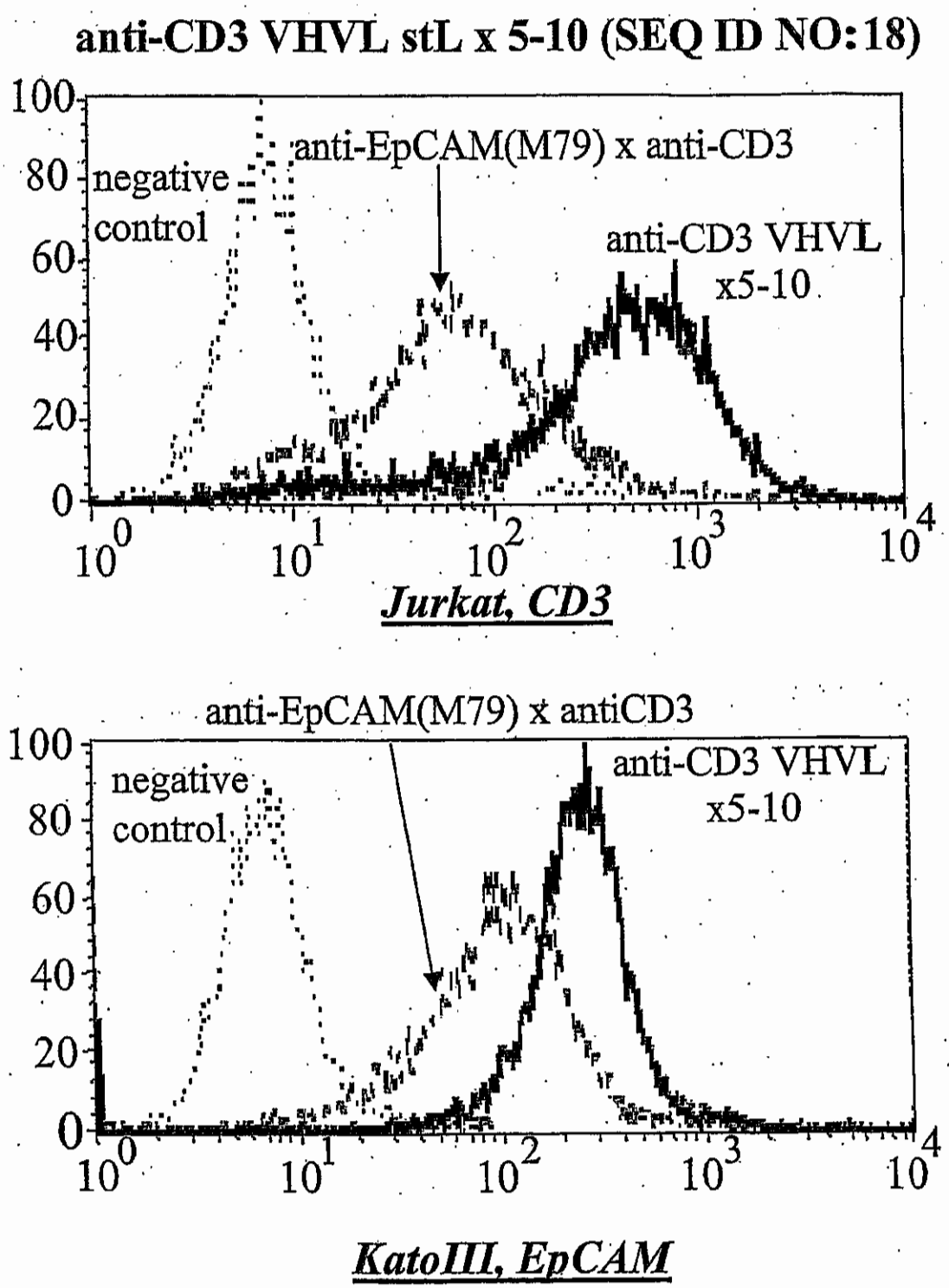

anti-CD3 VHVL stL x 5-10 (SEQ ID NO:18)
100
80
60
40
20
0
negative control
anti-EpCAM(M79) x anti-CD3
anti-CD3 VHVL x5-10
10^0
10^1
10^2
10^3
10^4
Jurkat, CD3
anti-EpCAM(M79) x antiCD3
100
80
60
40
20
0
negative control
anti-CD3 VHVL x5-10
10^0
10^1
10^2
10^3
10^4
KatoIII, EpCAM

Figure 2 B

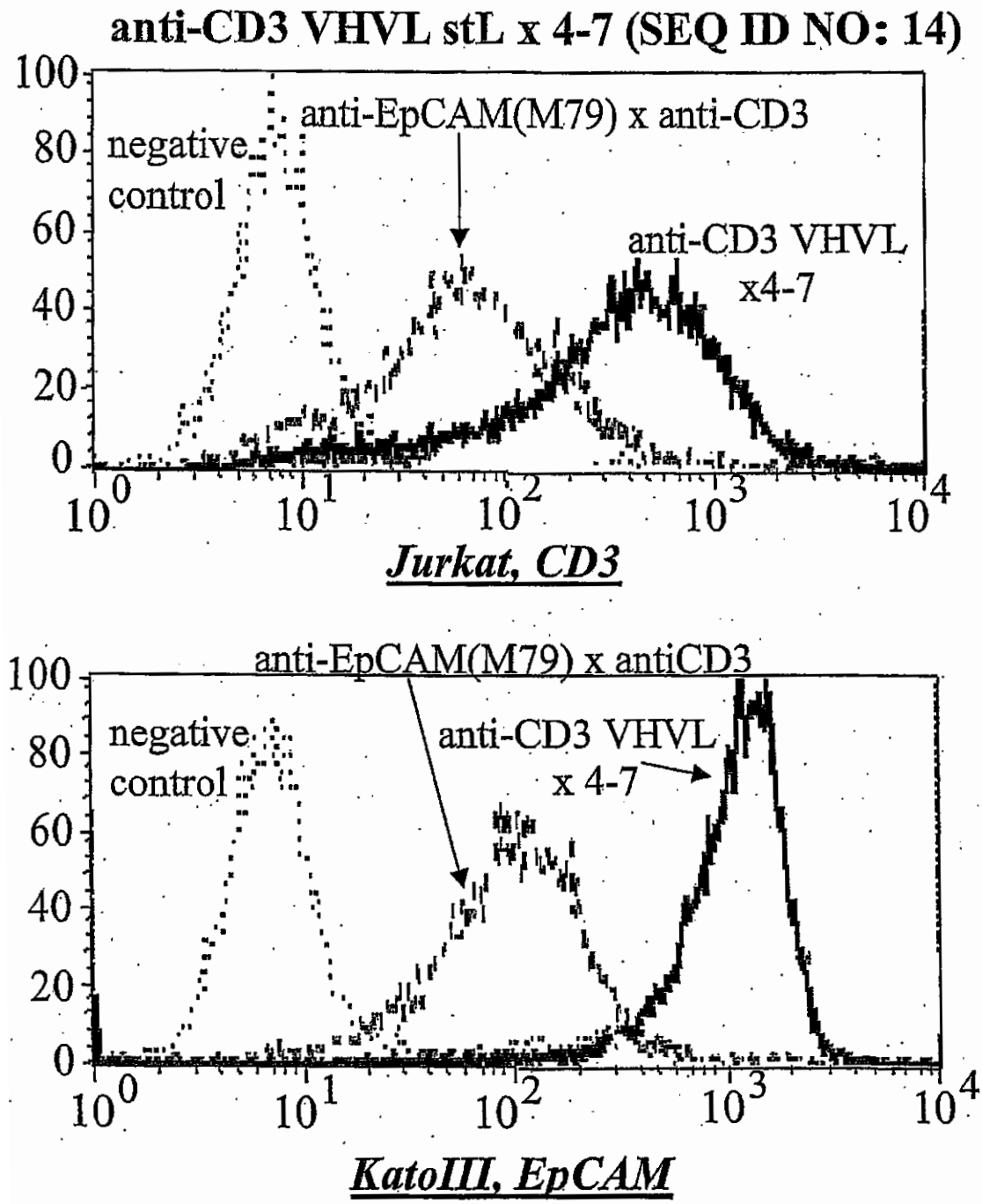

anti-CD3 VHVL stL x 4-7 (SEQ ID NO: 14)
100
80
60
40
20
0
negative control
anti-EpCAM(M79) x anti-CD3
anti-CD3 VHVL x4-7
10^0
10^1
10^2
10^3
10^4
Jurkat, CD3
anti-EpCAM(M79) x antiCD3
negative control
anti-CD3 VHVL x 4-7
KatoIII, EpCAM

Figure 2C

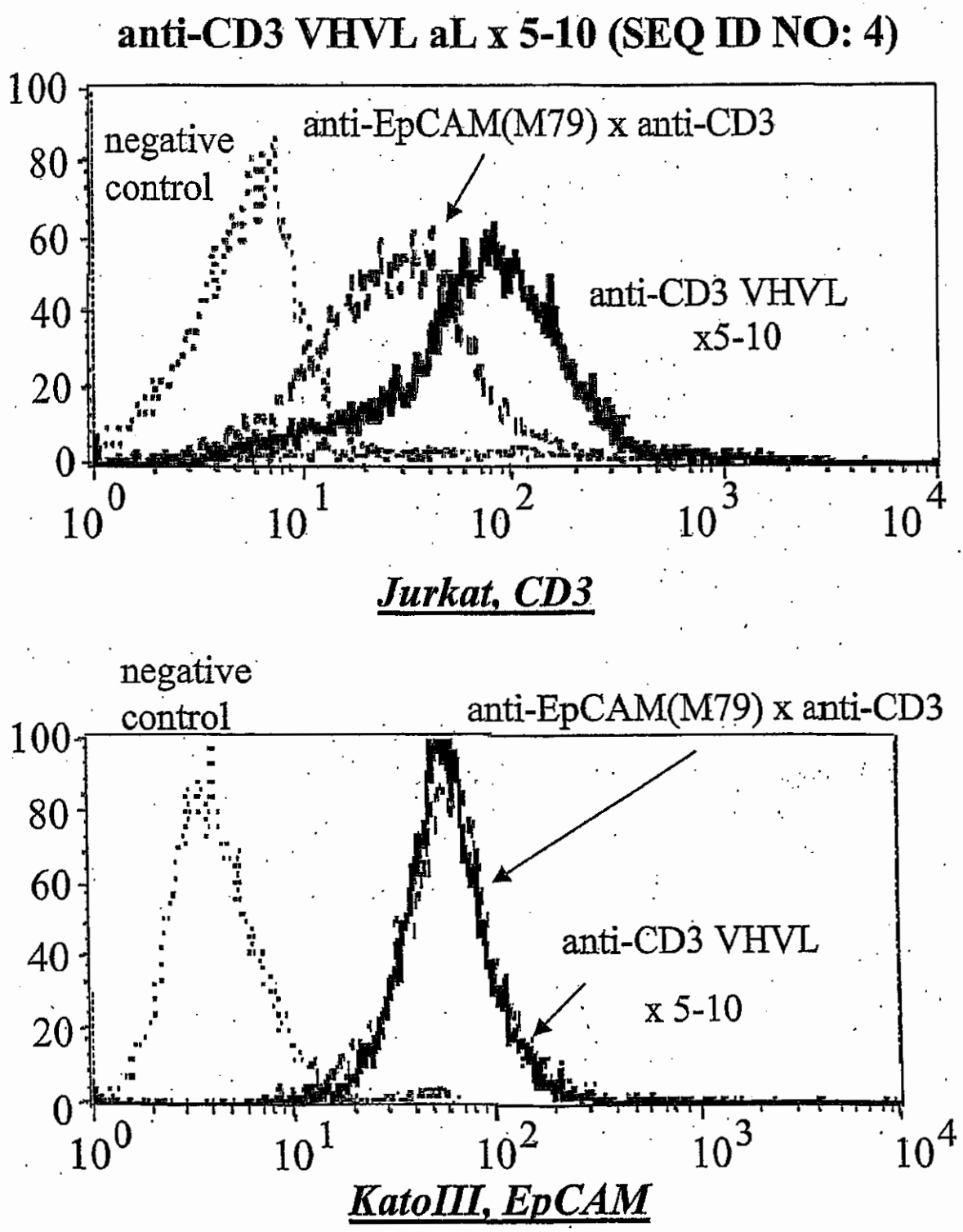
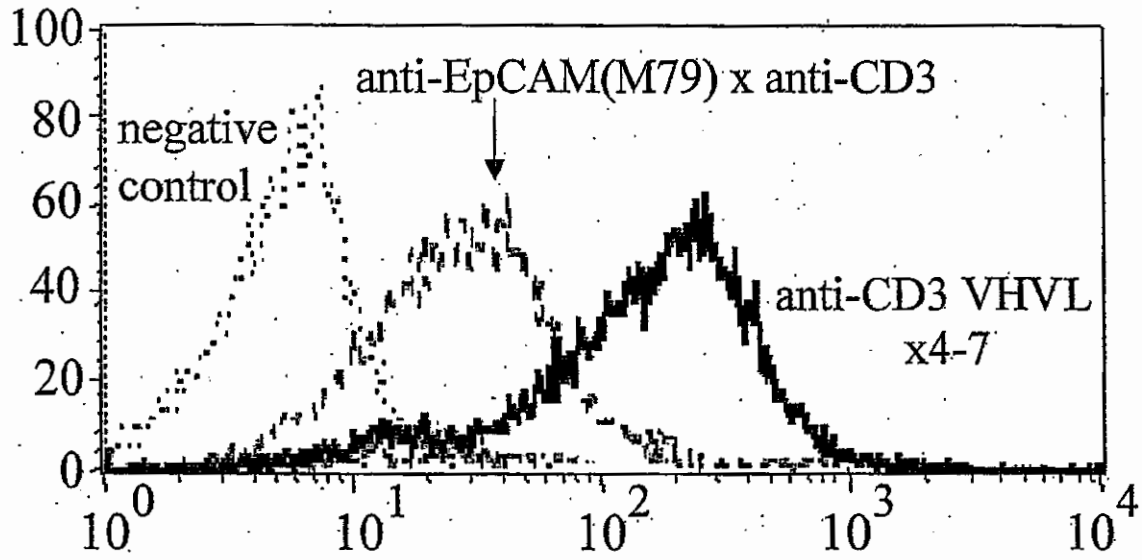
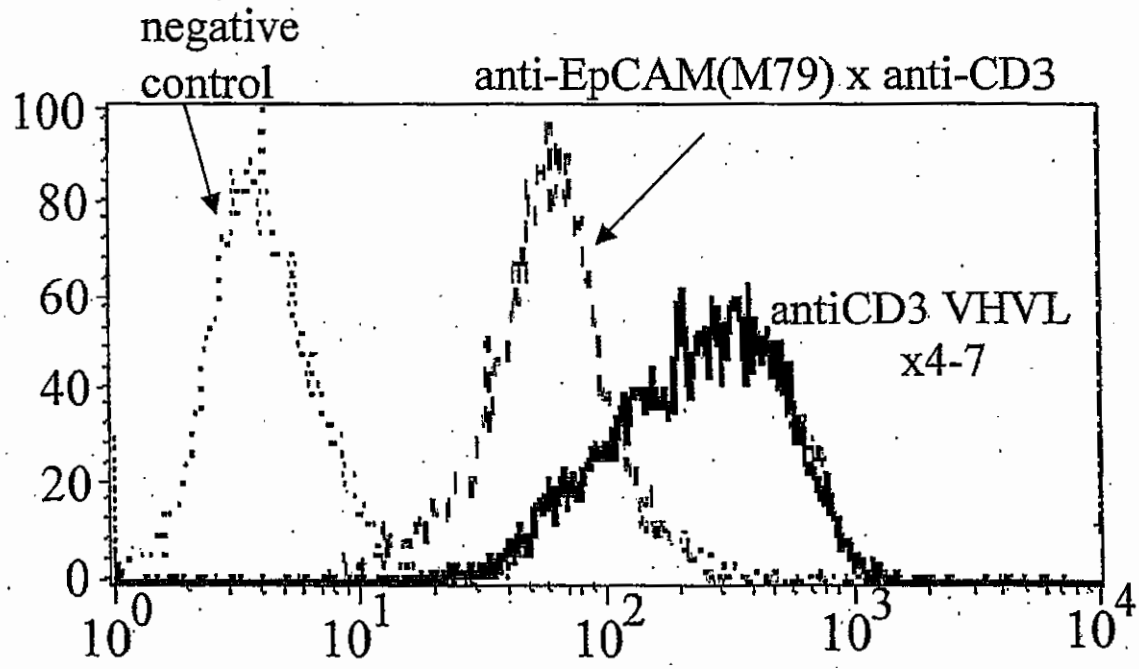

anti-CD3 VHVL aL x 5-10 (SEQ ID NO: 4)
100
80
60
40
20
0
negative control
anti-EpCAM(M79) x anti-CD3
anti-CD3 VHVL x5-10
10^0
10^1
10^2
10^3
10^4
Jurkat, CD3
negative control
anti-EpCAM(M79) x anti-CD3
anti-CD3 VHVL x 5-10
KatoIII, EpCAM

Figure 2D

anti-CD3 VHVL aL x 4-7 (SEQ ID NO: 2)



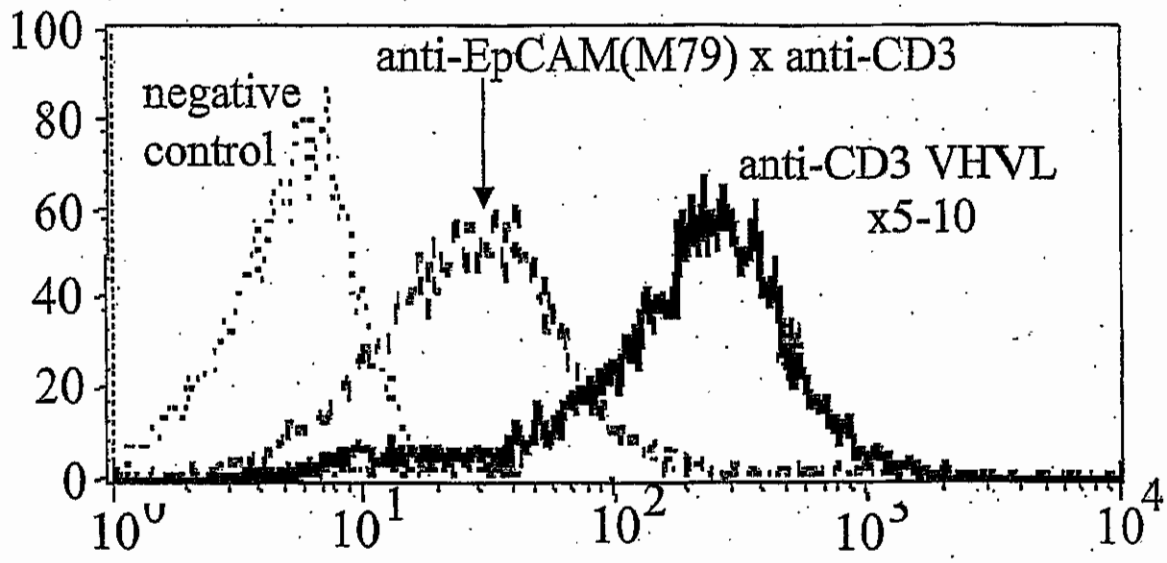
Jurkat, CD3



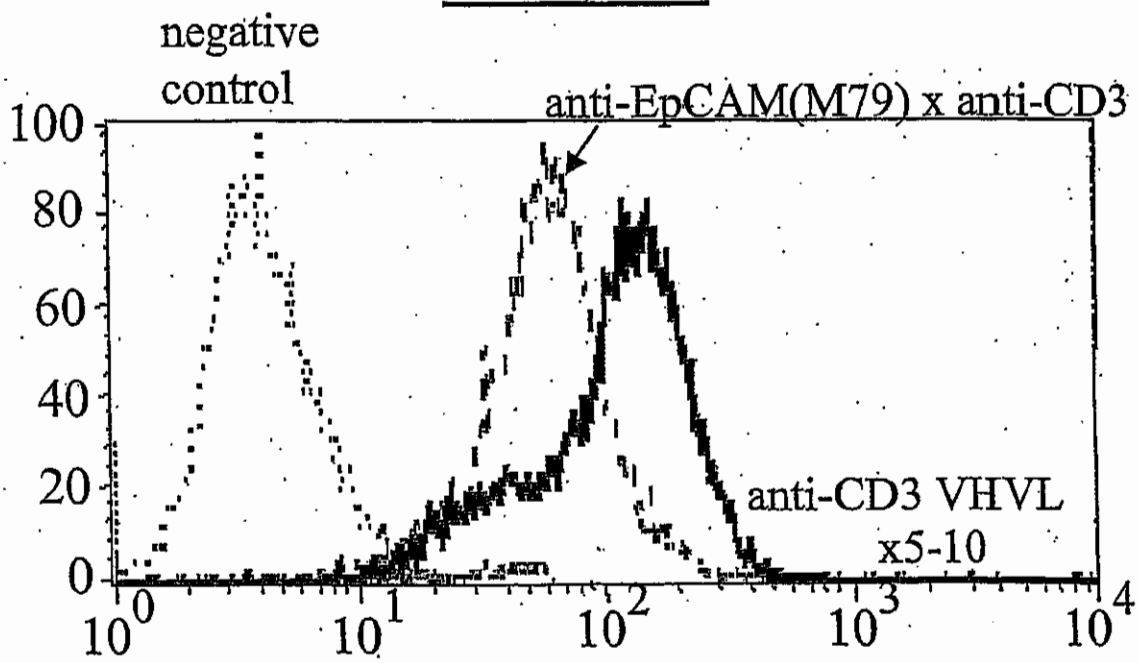
KatoIII, EpCAM

Figure 2E

anti-CD3VHVL aL Ser x 5-10 (SEQ ID NO: 10)



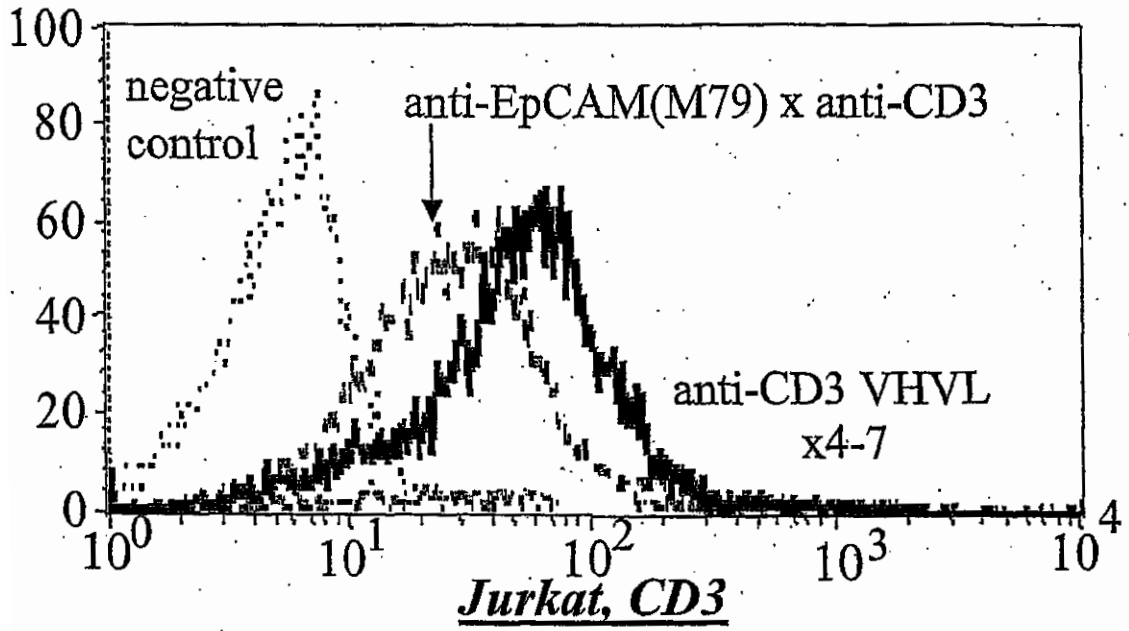
Jurkat, CD3



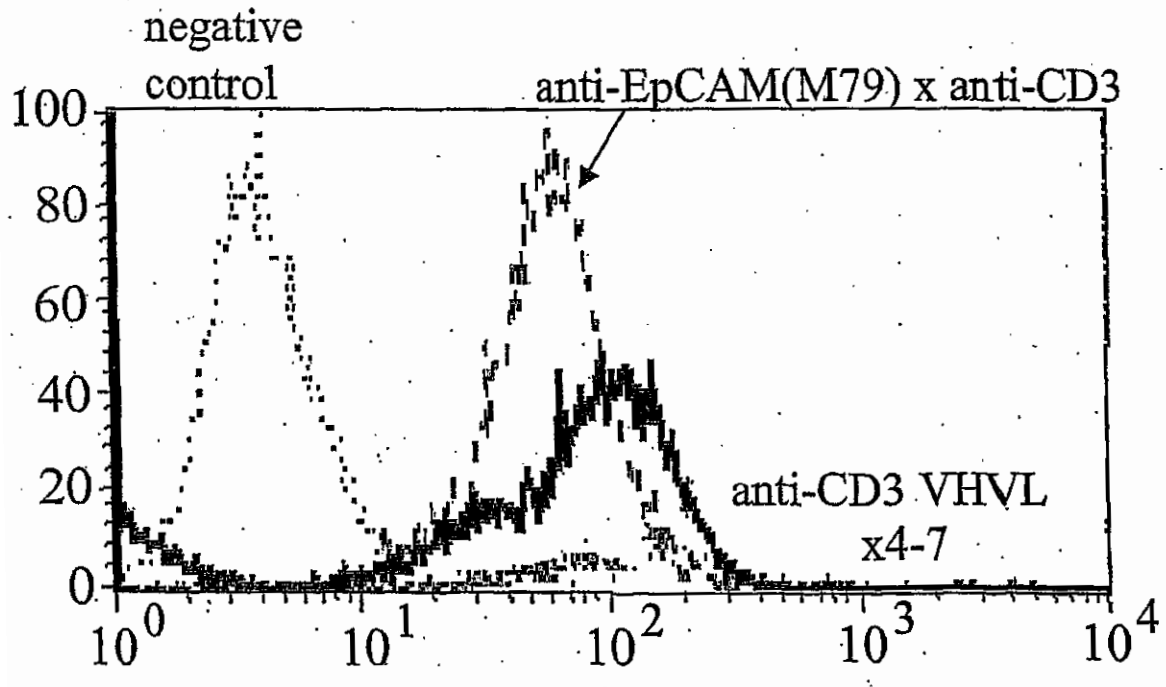
KatoIII, EpCAM

Figure 2F

anti-CD3 VHVL aL Ser x 4-7 (SEQ ID NO: 8)



Jurkat, CD3



KatoIII, EpCAM

Figure 2G

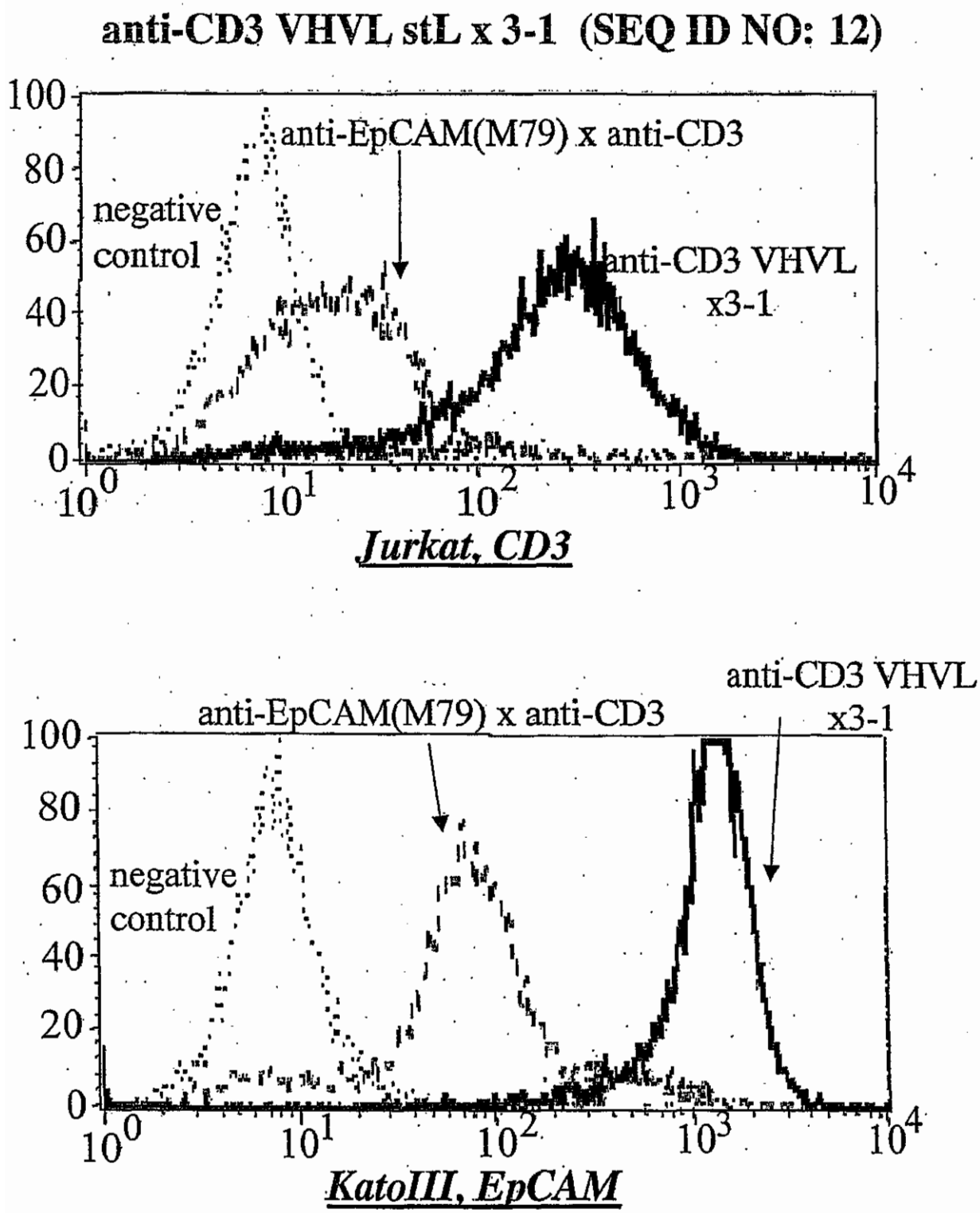
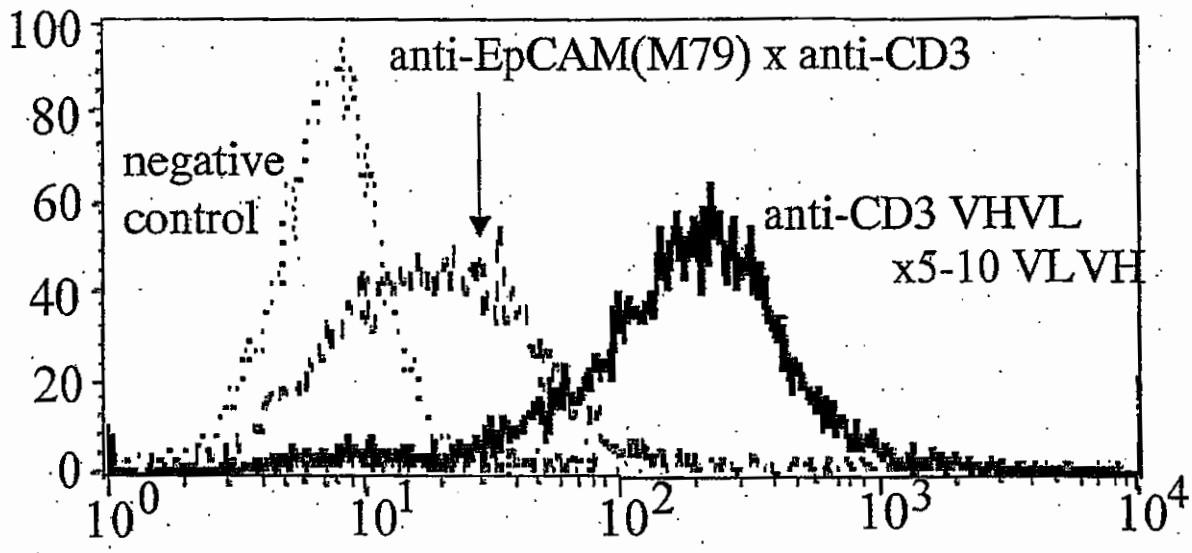
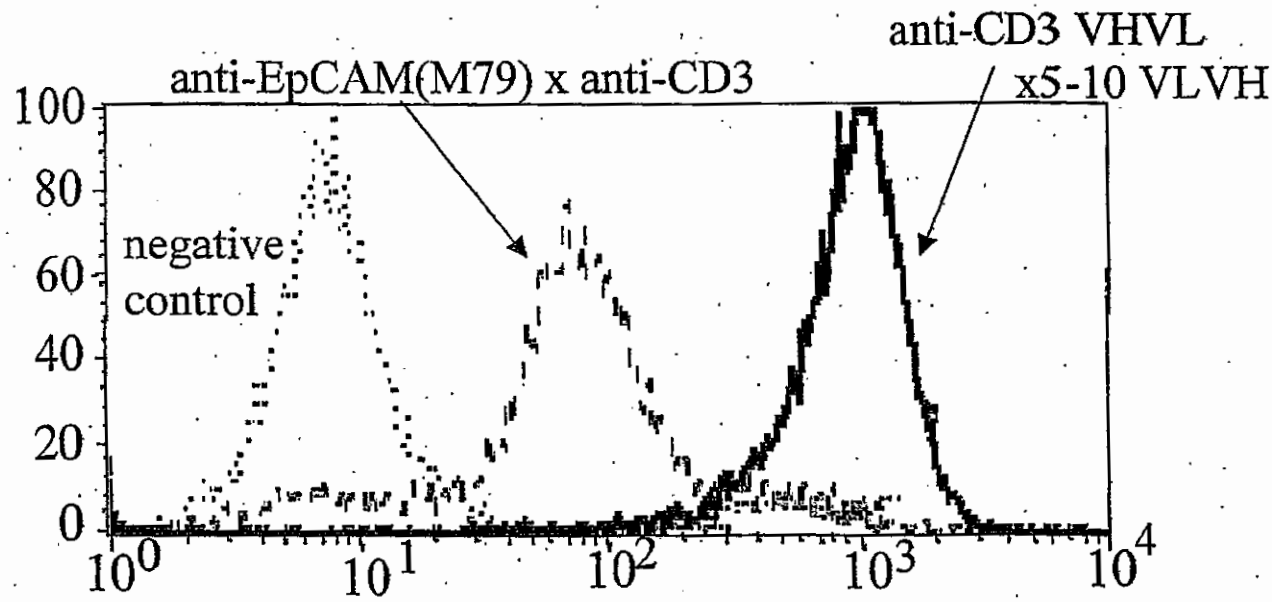

anti-CD3 VHVL stL x 3-1 (SEQ ID NO: 12)
100
80
60
40
20
0
anti-EpCAM(M79) x anti-CD3
negative control
anti-CD3 VHVL x3-1
10^0
10^1
10^2
10^3
10^4
Jurkat, CD3
anti-CD3 VHVL x3-1
anti-EpCAM(M79) x anti-CD3
100
80
60
40
20
0
negative control
10^0
10^1
10^2
10^3
10^4
KatoIII, EpCAM

Figure 2H

anti-CD3 VHVL stL x 5-10 VLVH (SEQ ID NO: 20)



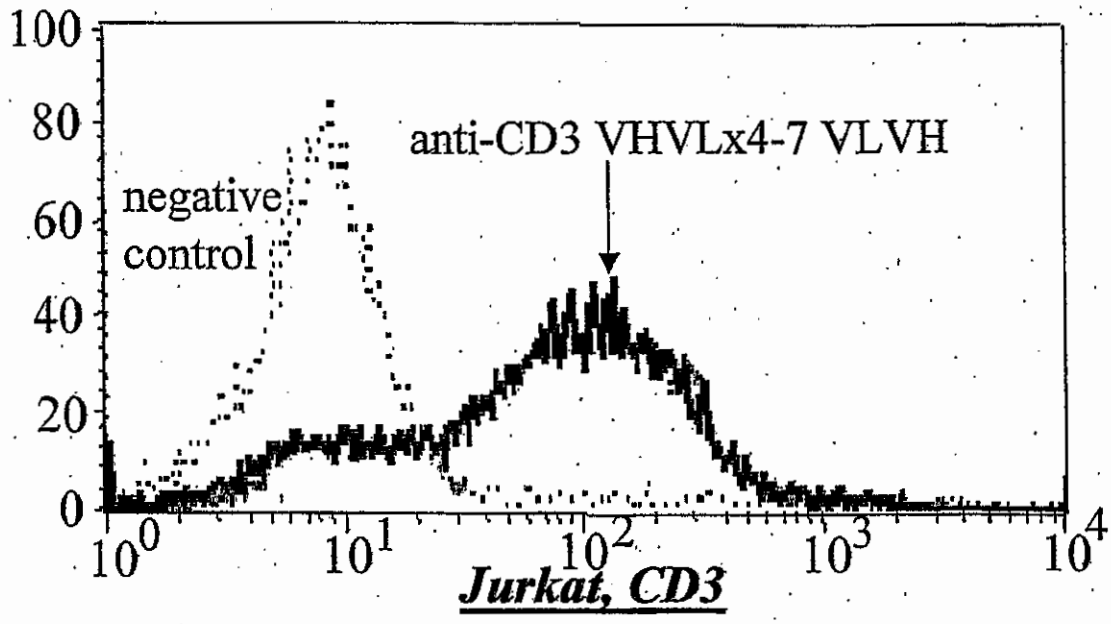
Jurkat, CD3



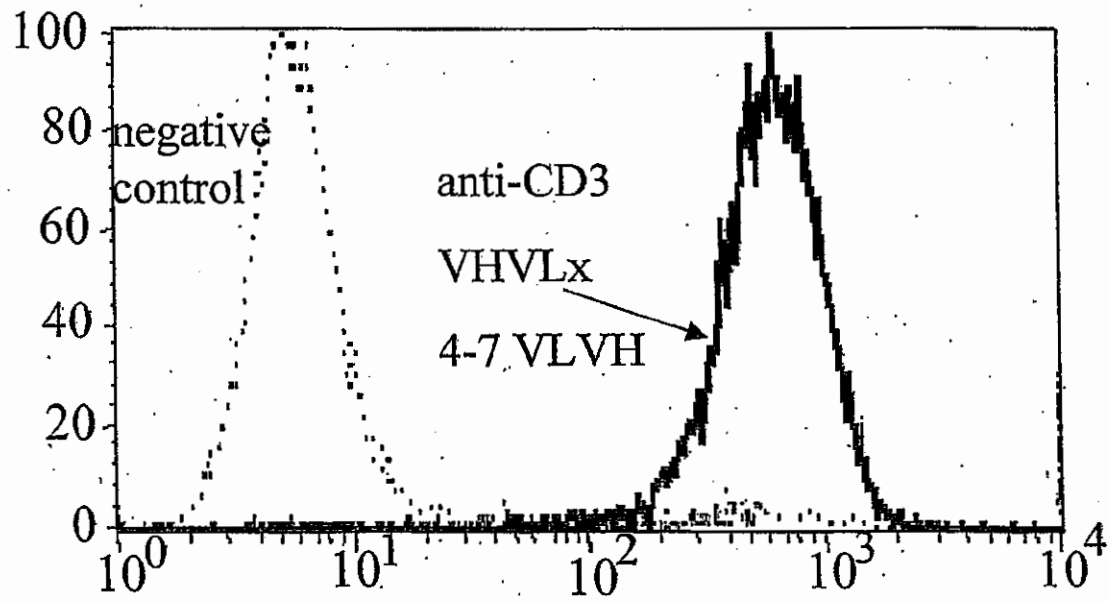
KatoIII, EpCAM

Figure 2I

anti-CD3 VHVL stL x 4-7 VLVH (SEQ ID NO: 16)



Jurkat, CD3



KatoIII, EpCAM

Figure 3A

4-7(vLvH) x anti-CD3 (SEQ ID NO: 42)

```
  1 MGWSCIILFL VATATGVHSA RELVMTQTPL SLPVSLGDQA SISCRSSQSL
 51 VHSNGNTYLH WYLQKPGQSP KLLIYKVSNR FSGVPDRFSG SGSGTDFTLK
101 ISRVEAEDLG VYFCSQSTHV PYTFGGGTKL EIKGGGGSGG GGSGGGGSEV
151 QLLEQSGAEL ARPGASVKLS CKASGYTFTN YGLSWVKQRP GQVLEWIGEV
201 YPRIGNAYYN EKFKGKATLT ADKSSSTASM ELRSLTSEDS AVYFCARRGS
251 YDTNYDWYFD VWGQGTTVTV SSGGGGSDIK LQQSGAELAR PGASVKMSCK
301 TSGYTFTRYT MHWVKQRPGQ GLEWIGYINP SRGYTNYNQK FKDKATLTTD
351 KSSSTAYMQL SSLTSEDSAV YYCARYYDDH YCLDYWGQGT TLTVSSVEGG
401 SGGSGGSGGS GGVDDIQLTQ SPAIMSASPG EKVTMTCRAS SSVSYMNWYQ
451 QKSGTSPKRW IYDTSKVASG VPYRFSGSGS GTSYSLTISS MEAEDAATYY
501 CQQWSSNPLT FGAGTKLELK HHHHHH*
```

Figure 3A (continued)

SEQ ID NO: 41

```
   1 ATGGGATGGA GCTGTATCAT CCTCTTCTTG GTAGCAACAG CTACAGGTGT
  51 ACACTCCGCG CGCGAGCTCG TGATGACCCA GACTCCACTC TCCCTGCCTG
 101 TCAGTCTTGG AGATCAAGCC TCCATCTCTT GCAGATCTAG TCAGAGCCTT
 151 GTACACAGTA ATGGAAACAC CTATTTACAT TGGTACCTGC AGAAGCCAGG
 201 CCAGTCTCCA AAGCTCCTGA TCTACAAAGT TTCCAACCGA TTTTCTGGGG
 251 TCCCAGACAG GTTCAGTGGC AGTGGATCAG GGACAGATTT CACACTCAAG
 301 ATCAGCAGAG TGGAGGCTGA GGATCTGGGA GTTTATTTCT GCTCTCAAAG
 351 TACACATGTT CCGTACACGT TCGGAGGGGG GACCAAGCTT GAGATCAAAG
 401 GTGGTGGTGG TTCTGGCGGC GGCGGCTCCG GTGGTGGTGG TTCTGAGGTG
 451 CAGCTGCTCG AGCAGTCTGG AGCTGAGCTG GCGAGGCCTG GGGCTTCAGT
 501 GAAGCTGTCC TGCAAGGCTT CTGGCTACAC CTTCACAAAC TATGGTTTAA
 551 GCTGGGTGAA GCAGAGGCCT GGACAGGTCC TTGAGTGGAT TGGAGAGGTT
 601 TATCCTAGAA TTGGTAATGC TTACTACAAT GAGAAGTTCA AGGGCAAGGC
 651 CACACTGACT GCAGACAAAT CCTCCAGCAC AGCGTCCATG GAGCTCCGCA
 701 GCCTGACCTC TGAGGACTCT GCGGTCTATT TCTGTGCAAG ACGGGGATCC
 751 TACGATACTA ACTACGACTG GTACTTCGAT GTCTGGGGCC AAGGGACCAC
 801 GGTCACCGTC TCCTCCGGAG GTGGTGGATC CGATATCAAA CTGCAGCAGT
 851 CAGGGGCTGA ACTGGCAAGA CCTGGGGCCT CAGTGAAGAT GTCCTGCAAG
```

Figure 3A (continued)

```
 901 ACTTCTGGCT ACACCTTTAC TAGGTACACG ATGCACTGGG TAAAACAGAG
 951 GCCTGGACAG GGTCTGGAAT GGATTGGATA CATTAATCCT AGCCGTGGTT
1001 ATACTAATTA CAATCAGAAG TTCAAGGACA AGGCCACATT GACTACAGAC
1051 AAATCCTCCA GCACAGCCTA CATGCAACTG AGCAGCCTGA CATCTGAGGA
1101 CTCTGCAGTC TATTACTGTG CAAGATATTA TGATGATCAT TACTGCCTTG
1151 ACTACTGGGG CCAAGGCACC ACTCTCACAG TCTCCTCAGT CGAAGGTGGA
1201 AGTGGAGGTT CTGGTGGAAG TGGAGGTTCA GGTGGAGTCG ACGACATTCA
1251 GCTGACCCAG TCTCCAGCAA TCATGTCTGC ATCTCCAGGG GAGAAGGTCA
1301 CCATGACCTG CAGAGCCAGT TCAAGTGTAA GTTACATGAA CTGGTACCAG
1351 CAGAAGTCAG GCACCTCCCC CAAAAGATGG ATTTATGACA CATCCAAAGT
1401 GGCTTCTGGA GTCCCTTATC GCTTCAGTGG CAGTGGGTCT GGGACCTCAT
1451 ACTCTCTCAC AATCAGCAGC ATGGAGGCTG AAGATGCTGC CACTTATTAC
1501 TGCCAACAGT GGAGTAGTAA CCCGCTCACG TTCGGTGCTG GGACCAAGCT
1551 GGAGCTGAAA CATCATCACC ATCATCATTA G
```

Figure 3B

3-5(vLvH) x anti-CD3 (SEQ ID NO: 30)

```
  1 MGWSCIILFL VATATGVHSA RELVMTQTPL SLPVSLGDQA SISCRSSQSL
 51 VHSNGNTYLH WYLQKPGQSP KLLIYKVSNR FSGVPDRFSG SGSGTDFTLK
101 ISRVEAEDLG VYFCSQSTHV PYTFGGGTKL EIKGGGGSGG GGSGGGGSEV
151 QLLEQSGAEL VRPGTSVKLS CKASGYTFTS YGLSWVKQRT GQGLEWIGEV
201 YPRIGNAYYN EKFKGKATLT ADKSSSTASM ELRSLTSEDS AVYFCARRGS
251 YGSNYDWYFD VWGQGTTVTV SSGGGGSDIK LQQSGAELAR PGASVKMSCK
301 TSGYTFTRYT MHWVKQRPGQ GLEWIGYINP SRGYTNYNQK FKDKATLTTD
351 KSSSTAYMQL SSLTSEDSAV YYCARYYDDH YCLDYWGQGT TLTVSSVEGG
401 SGGSGGSGGS GGVDDIQLTQ SPAIMSASPG EKVTMTCRAS SSVSYMNWYQ
451 QKSGTSPKRW IYDTSKVASG VPYRFSGSGS GTSYSLTISS MEAEDAATYY
501 CQQWSSNPLT FGAGTKLELK HHHHHH*
```

Figure 3B (continued)

SEQ ID NO:29:

```
  1 ATGGGATGGA GCTGTATCAT CCTCTTCTTG GTAGCAACAG CTACAGGTGT
 51 ACACTCCGCG CGCGAGCTCG TGATGACCCA GACTCCACTC TCCCTGCCTG
101 TCAGTCTTGG AGATCAAGCC TCCATCTCTT GCAGATCTAG TCAGAGCCTT
151 GTACACAGTA ATGGAAACAC CTATTTACAT TGGTACCTGC AGAAGCCAGG
201 CCAGTCTCCA AAGCTCCTGA TCTACAAAGT TTCCAACCGA TTTTCTGGGG
251 TCCCAGACAG GTTCAGTGGC AGTGGATCAG GGACAGATTT CACACTCAAG
301 ATCAGCAGAG TGGAGGCTGA GGATCTGGGA GTTTATTTCT GCTCTCAAAG
351 TACACATGTT CCGTACACGT TCGGAGGGGG GACCAAGCTT GAGATCAAAG
401 GTGGTGGTGG TTCTGGCGGC GGCGGCTCCG GTGGTGGTGG TTCTGAGGTG
451 CAGCTGCTCG AGCAGTCTGG AGCTGAGCTG GTAAGGCCTG GGACTTCAGT
501 GAAGCTGTCC TGCAAGGCTT CTGGCTACAC CTTCACAAGC TATGGTTTAA
551 GCTGGGTGAA GCAGAGAACT GGACAGGGCC TTGAGTGGAT TGGAGAGGTT
601 TATCCTAGAA TTGGTAATGC TTACTACAAT GAGAAGTTCA AGGGCAAGGC
651 CACACTGACT GCAGACAAAT CCTCCAGCAC AGCGTCCATG GAGCTCCGCA
701 GCCTGACATC TGAGGACTCT GCGGTCTATT TCTGTGCAAG ACGGGGATCC
751 TACGGTAGTA ACTACGACTG GTACTTCGAT GTCTGGGGCC AAGGGACCAC
801 GGTCACCGTC TCCTCCGGAG GTGGTGGATC CGATATCAAA CTGCAGCAGT
851 CAGGGGCTGA ACTGGCAAGA CCTGGGGCCT CAGTGAAGAT GTCCTGCAAG
901 ACTTCTGGCT ACACCTTTAC TAGGTACACG ATGCACTGGG TAAAACAGAG
```

Figure 3B (continued)

```
 951 GCCTGGACAG GGTCTGGAAT GGATTGGATA CATTAATCCT AGCCGTGGTT
1001 ATACTAATTA CAATCAGAAG TTCAAGGACA AGGCCACATT GACTACAGAC
1051 AAATCCTCCA GCACAGCCTA CATGCAACTG AGCAGCCTGA CATCTGAGGA
1101 CTCTGCAGTC TATTACTGTG CAAGATATTA TGATGATCAT TACTGCCTTG
1151 ACTACTGGGG CCAAGGCACC ACTCTCACAG TCTCCTCAGT CGAAGGTGGA
1201 AGTGGAGGTT CTGGTGGAAG TGGAGGTTCA GGTGGAGTCG ACGACATTCA
1251 GCTGACCCAG TCTCCAGCAA TCATGTCTGC ATCTCCAGGG GAGAAGGTCA
1301 CCATGACCTG CAGAGCCAGT TCAAGTGTAA GTTACATGAA CTGGTACCAG
1351 CAGAAGTCAG GCACCTCCCC CAAAAGATGG ATTTATGACA CATCCAAAGT
1401 GGCTTCTGGA GTCCCTTATC GCTTCAGTGG CAGTGGGTCT GGGACCTCAT
1451 ACTCTCTCAC AATCAGCAGC ATGGAGGCTG AAGATGCTGC CACTTATTAC
1501 TGCCAACAGT GGAGTAGTAA CCCGCTCACG TTCGGTGCTG GGACCAAGCT
1551 GGAGCTGAAA CATCATCACC ATCACATTA G
```

Figure 3C

3-1(vLvH) x anti-CD3 (SEQ ID NO: 36)

```
  1 MGWSCIILFL VATATGVHSE LVMTQSPSYL AASPGETITI NCRASKSISK
 51 YLAWYQEKPG KTNKLLIYSG STLQSGIPSR FSGSGSGTDF TLTISSLEPE
101 DFAMYYCQQH NEYPYTFGGG TKLEIKGGGG SGGGGSGGGG SEVQLLEQSG
151 AELVKPGASV KISCKASGYA FTNYWLGWVK QRPGHGLEWI GDLFPGSGNT
201 HYNERFRGKA TLTADKSSST AFMQLSSLTS EDSAVYFCAR LRNWDEAMDY
251 WGQGTTVTVS SGGGGSDIKL QQSGAELARP GASVKMSCKT SGYTFTRYTM
301 HWVKQRPGQG LEWIGYINPS RGYTNYNQKF KDKATLTTDK SSSTAYMQLS
351 SLTSEDSAVY YCARYYDDHY CLDYWGQGTT LTVSSVEGGS GGSGGSGGSG
401 GVDDIQLTQS PAIMSASPGE KVTMTCRASS SVSYMNWYQQ KSGTSPKRWI
451 YDTSKVASGV PYRFSGSGSG TSYSLTISSM EAEDAATYYC QQWSSNPLTF
501 GAGTKLELKH HHHHH*
```

Figure 3C (continued)

SEQ ID NO: 35

```
   1 ATGGGATGGA GCTGTATCAT CCTCTTCTTG GTAGCAACAG CTACAGGTGT
  51 ACACTCCGAG CTCGTCATGA CCCAGTCTCC ATCTTATCTT GCTGCATCTC
 101 CTGGAGAAAC CATTACTATT AATTGCAGGG CAAGTAAGAG CATTAGCAAA
 151 TATTTAGCCT GGTATCAAGA GAAACCTGGG AAAACTAATA AGCTTCTTAT
 201 CTACTCTGGA TCCACTTTGC AATCTGGAAT TCCATCAAGG TTCAGTGGCA
 251 GTGGATCTGG TACAGATTTC ACTCTCACCA TCAGTAGCCT GGAGCCTGAA
 301 GATTTTGCAA TGTATTACTG TCAACAGCAT AATGAATATC CGTACACGTT
 351 CGGAGGGGGG ACCAAGCTTG AGATCAAAGG TGGTGGTGGT TCTGGCGGCG
 401 GCGGCTCCGG TGGTGGTGGT TCTGAGGTGC AGCTGCTCGA GCAGTCTGGA
 451 GCTGAGCTGG TGAAACCTGG GGCCTCAGTG AAGATATCCT GCAAGGCTTC
 501 TGGATACGCC TTCACTAACT ACTGGCTAGG TTGGGTAAAG CAGAGGCCTG
 551 GACATGGACT TGAGTGGATT GGAGATCTTT TCCCTGGAAG TGGTAATACT
 601 CACTACAATG AGAGGTTCAG GGGCAAAGCC ACACTGACTG CAGACAAATC
 651 CTCGAGCACA GCCTTTATGC AGCTCAGTAG CCTGACATCT GAGGACTCTG
 701 CTGTCTATTT CTGTGCAAGA TTGAGGAACT GGGACGAGGC TATGGACTAC
 751 TGGGGCCAAG GGACCACGGT CACCGTCTCC TCCGGAGGTG GTGGATCCGA
 801 TATCAAACTG CAGCAGTCAG GGGCTGAACT GGCAAGACCT GGGGCCTCAG
 851 TGAAGATGTC CTGCAAGACT TCTGGCTACA CCTTTACTAG GTACACGATG
 901 CACTGGGTAA AACAGAGGCC TGGACAGGGT CTGGAATGGA TTGGATACAT
```

Figure 3C (continued)

```
 951 TAATCCTAGC CGTGGTTATA CTAATTACAA TCAGAAGTTC AAGGACAAGG
1001 CCACATTGAC TACAGACAAA TCCTCCAGCA CAGCCTACAT GCAACTGAGC
1051 AGCCTGACAT CTGAGGACTC TGCAGTCTAT TACTGTGCAA GATATTATGA
1101 TGATCATTAC TGCCTTGACT ACTGGGGCCA AGGCACCACT CTCACAGTCT
1151 CCTCAGTCGA AGGTGGAAGT GGAGGTTCTG GTGGAAGTGG AGGTTCAGGT
1201 GGAGTCGACG ACATTCAGCT GACCCAGTCT CCAGCAATCA TGTCTGCATC
1251 TCCAGGGGAG AAGGTCACCA TGACCTGCAG AGCCAGTTCA AGTGTAAGTT
1301 ACATGAACTG GTACCAGCAG AAGTCAGGCA CCTCCCCCAA AAGATGGATT
1351 TATGACACAT CCAAAGTGGC TTCTGGAGTC CCTTTATCGCT TCAGTGGCAG
1401 TGGGTCTGGG ACCTCATACT CTCTCACAAT CAGCAGCATG GAGGCTGAAG
1451 ATGCTGCCAC TTATTACTGC CAACAGTGGA GTAGTAACCC GCTCACGTTC
1501 GGTGCTGGGA CCAAGCTGGA GCTGAAACAT CATCACCATC ATCATTAG
```

Figure 3D

4-1(vLvH) x anti-CD3 (SEQ ID NO: 39)

```
  1 MGWSCIILFL VATATGVHSE LVMTQSPSSL SVSAGEKVTM SCKSSQSLLN
 51 SGNQKNYLAW YQQKPGQPPK LLIYGASTRE SGVPDRFTGS GSGTDFTLTI
101 SSVQAEDLAV YYCQNDYSYP YTFGGGTKLE IKGGGGSGGG GSGGGGSEVQ
151 LLEQSGAELV RPGTSVKISC KASGYAFTNY WLGWVKQRPG HGLEWVGDIF
201 PGSGNAHYNE KFKGKATLTA DKSSYTAYMQ LSSLTSEDSA VYFCARLRNW
251 DEAMDYWGQG TTVTVSSGGG GSDIKLQQSG AELARPGASV KMSCKTSGYT
301 FTRYTMHWVK QRPGQGLEWI GYINPSRGYT NYNQKFKDKA TLTTDKSSST
351 AYMQLSSLTS EDSAVYYCAR YYDDHYCLDY WGQGTTLTVS SVEGGSGGSG
401 GSGGSGGVDD IQLTQSPAIM SASPGEKVTM TCRASSSVSY MNWYQQKSGT
451 SPKRWIYDTS KVASGVPYRF SGSGSGTSYS LTISSMEAED AATYYCQQWS
501 SNPLTFGAGT KLELKHHHHH H*
```

Figure 3D (continued)

SEQ ID NO: 38:

```
   1 ATGGGATGGA GCTGTATCAT CCTCTTCTTG GTAGCAACAG CTACAGGTGT
  51 ACACTCCGAG CTCGTGATGA CACAGTCTCC ATCCTCCCTG AGTGTGTCAG
 101 CAGGAGAGAA GGTCACTATG AGCTGCAAGT CCAGTCAGAG TCTGTTAAAC
 151 AGTGGAAATC AAAAGAACTA CTTGGCCTGG TACCAGCAGA AACCAGGGCA
 201 GCCTCCTAAA CTGTTGATCT ACGGGGCATC CACTAGGGAA TCTGGGGTCC
 251 CTGATCGCTT CACAGGCAGT GGATCTGGAA CAGATTTCAC TCTCACCATC
 301 AGCAGTGTGC AGGCTGAAGA CCTGGCAGTT TATTACTGTC AGAATGATTA
 351 TAGTTATCCG TACACGTTCG GAGGGGGGAC CAAGCTTGAG ATCAAAGGTG
 401 GTGGTGGTTC TGGCGGCGGC GGCTCCGGTG GTGGTGGTTC TGAGGTGCAG
 451 CTGCTCGAGC AGTCTGGAGC TGAGCTGGTA AGGCCTGGGA CTTCAGTGAA
 501 GATATCCTGC AAGGCTTCTG GATACGCCTT CACTAACTAC TGGCTAGGTT
 551 GGGTTAAGCA GAGGCCTGGA CATGGACTTG AATGGGTTGG AGATATTTTC
 601 CCTGGAAGTG GTAATGCTCA CTACAATGAG AAGTTCAAGG GCAAAGCCAC
 651 ACTGACTGCA GACAAGTCCT CGTACACAGC CTATATGCAG CTCAGTAGCC
 701 TGACATCTGA GGACTCTGCT GTCTATTTCT GTGCAAGATT GCGGAACTGG
 751 GACGAGGCTA TGGACTACTG GGGCCAAGGG ACCACGGTCA CCGTCTCCTC
 801 CGGAGGTGGT GGATCCGATA TCAAACTGCA GCAGTCAGGG GCTGAACTGG
 851 CAAGACCTGG GGCCTCAGTG AAGATGTCCT GCAAGACTTC TGGCTACACC
 901 TTTACTAGGT ACACGATGCA CTGGGTAAAA CAGAGGCCTG GACAGGGTCT
```

Figure 3D (continued)

```
 951 GGAATGGATT GGATACATTA ATCCTAGCCG TGGTTATACT AATTACAATC
1001 AGAAGTTCAA GGACAAGGCC ACATTGACTA CAGACAAATC CTCCAGCACA
1051 GCCTACATGC AACTGAGCAG CCTGACATCT GAGGACTCTG CAGTCTATTA
1101 CTGTGCAAGA TATTATGATG ATCATTACTG CCTTGACTAC TGGGGCCAAG
1151 GCACCACTCT CACAGTCTCC TCAGTCGAAG GTGGAAGTGG AGGTTCTGGT
1201 GGAAGTGGAG GTTCAGGTGG AGTCGACGAC ATTCAGCTGA CCCAGTCTCC
1251 AGCAATCATG TCTGCATCTC CAGGGGAGAA GGTCACCATG ACCTGCAGAG
1301 CCAGTTCAAG TGTAAGTTAC ATGAACTGGT ACCAGCAGAA GTCAGGCACC
1351 TCCCCCAAAA GATGGATTTA TGACACATCC AAAGTGGCTT CTGGAGTCCC
1401 TTATCGCTTC AGTGGCAGTG GGTCTGGGAC CTCATACTCT CTCACAATCA
1451 GCAGCATGGA GGCTGAAGAT GCTGCCACTT ATTACTGCCA ACAGTGGAGT
1501 AGTAACCCGC TCACGTTCGG TGCTGGGACC AAGCTGGAGC TGAAACATCA
1551 TCACCATCAT CATTAG
```

Figure 3E

5-10(vLvH) x anti-CD3 (SEQ ID NO: 44)

```
  1 MGWSCIILFL VATATGVHSE LVMTQSPSSL TVTAGEKVTM SCKSSQSLLN
 51 SGNQKNYLTW YQQKPGQPPK LLIYWASTRE SGVPDRFTGS GSGTDFTLTI
101 SSVQAEDLAV YYCQNDYSYP LTFGAGTKLE IKGGGGSGGG GSGGGGSEVQ
151 LLEQSGAELV RPGTSVKISC KASGYAFTNY WLGWVKQRPG HGLEWIGDIF
201 PGSGNIHYNE KFKGKATLTA DKSSSTAYMQ LSSLTFEDSA VYFCARLRNW
251 DEPMDYWGQG TTVTVSSGGG GSDIKLQQSG AELARPGASV KMSCKTSGYT
301 FTRYTMHWVK QRPGQGLEWI GYINPSRGYT NYNQKFKDKA TLTTDKSSST
351 AYMQLSSLTS EDSAVYYCAR YYDDHYCLDY WGQGTTLTVS SVEGGSGGSG
401 GSGGSGGVDD IQLTQSPAIM SASPGEKVTM TCRASSSVSY MNWYQQKSGT
451 SPKRWIYDTS KVASGVPYRF SGSGSGTSYS LTISSMEAED AATYYCQQWS
501 SNPLTFGAGT KLELKHHHHH H*
```

Figure 3E (continued)

SEQ ID NO: 43

```
   1 ATGGGATGGA GCTGTATCAT CCTCTTCTTG GTAGCAACAG CTACAGGTGT
  51 ACACTCCGAG CTCGTGATGA CACAGTCTCC ATCCTCCCTG ACTGTGACAG
 101 CAGGAGAGAA GGTCACTATG AGCTGCAAGT CCAGTCAGAG TCTGTTAAAC
 151 AGTGGAAATC AAAAGAACTA CTTGACCTGG TACCAGCAGA AACCAGGGCA
 201 GCCTCCTAAA CTGTTGATCT ACTGGGCATC CACTAGGGAA TCTGGGGTCC
 251 CTGATCGCTT CACAGGCAGT GGATCTGGAA CAGATTTCAC TCTCACCATC
 301 AGCAGTGTGC AGGCTGAAGA CCTGGCAGTT TATTACTGTC AGAATGATTA
 351 TAGTTATCCG CTCACGTTCG GTGCTGGGAC CAAGCTTGAG ATCAAAGGTG
 401 GTGGTGGTTC TGGCGGCGGC GGCTCCGGTG GTGGTGGTTC TGAGGTGCAG
 451 CTGCTCGAGC AGTCTGGAGC TGAGCTGGTA AGGCCTGGGA CTTCAGTGAA
 501 GATATCCTGC AAGGCTTCTG GATACGCCTT CACTAACTAC TGGCTAGGTT
 551 GGGTAAAGCA GAGGCCTGGA CATGGACTTG AGTGGATTGG AGATATTTTC
 601 CCTGGAAGTG GTAATATCCA CTACAATGAG AAGTTCAAGG GCAAAGCCAC
 651 ACTGACTGCA GACAAATCTT CGAGCACAGC CTATATGCAG CTCAGTAGCC
 701 TGACATTTGA GGACTCTGCT GTCTATTTCT GTGCAAGACT GAGGAACTGG
 751 GACGAGCCTA TGGACTACTG GGGCCAAGGG ACCACGGTCA CCGTCTCCTC
 801 CGGAGGTGGT GGATCCGATA TCAAACTGCA GCAGTCAGGG GCTGAACTGG
 851 CAAGACCTGG GGCCTCAGTG AAGATGTCCT GCAAGACTTC TGGCTACACC
 901 TTTACTAGGT ACACGATGCA CTGGGTAAAA CAGAGGCCTG GACAGGGTCT
```

Figure 3E (continued)

```
 951 GGAATGGATT GGATACATTA ATCCTAGCCG TGGTTATACT AATTACAATC
1001 AGAAGTTCAA GGACAAGGCC ACATTGACTA CAGACAAATC CTCCAGCACA
1051 GCCTACATGC AACTGAGCAG CCTGACATCT GAGGACTCTG CAGTCTATTA
1101 CTGTGCAAGA TATTATGATG ATCATTACTG CCTTGACTAC TGGGGCCAAG
1151 GCACCACTCT CACAGTCTCC TCAGTCGAAG GTGGAAGTGG AGGTTCTGGT
1201 GGAAGTGGAG GTTCAGGTGG AGTCGACGAC ATTCAGCTGA CCCAGTCTCC
1251 AGCAATCATG TCTGCATCTC CAGGGGAGAA GGTCACCATG ACCTGCAGAG
1301 CCAGTTCAAG TGTAAGTTAC ATGAACTGGT ACCAGCAGAA GTCAGGCACC
1351 TCCCCCAAAA GATGGATTTA TGACACATCC AAAGTGGCTT CTGGAGTCCC
1401 TTATCGCTTC AGTGGCAGTG GGTCTGGGAC CTCATACTCT CTCACAATCA
1451 GCAGCATGGA GGCTGAAGAT GCTGCCACTT ATTACTGCCA ACAGTGGAGT
1501 AGTAACCCGC TCACGTTCGG TGCTGGGACC AAGCTGGAGC TGAAACATCA
1551 TCACCATCAT CATTAG
```

Figure 4A

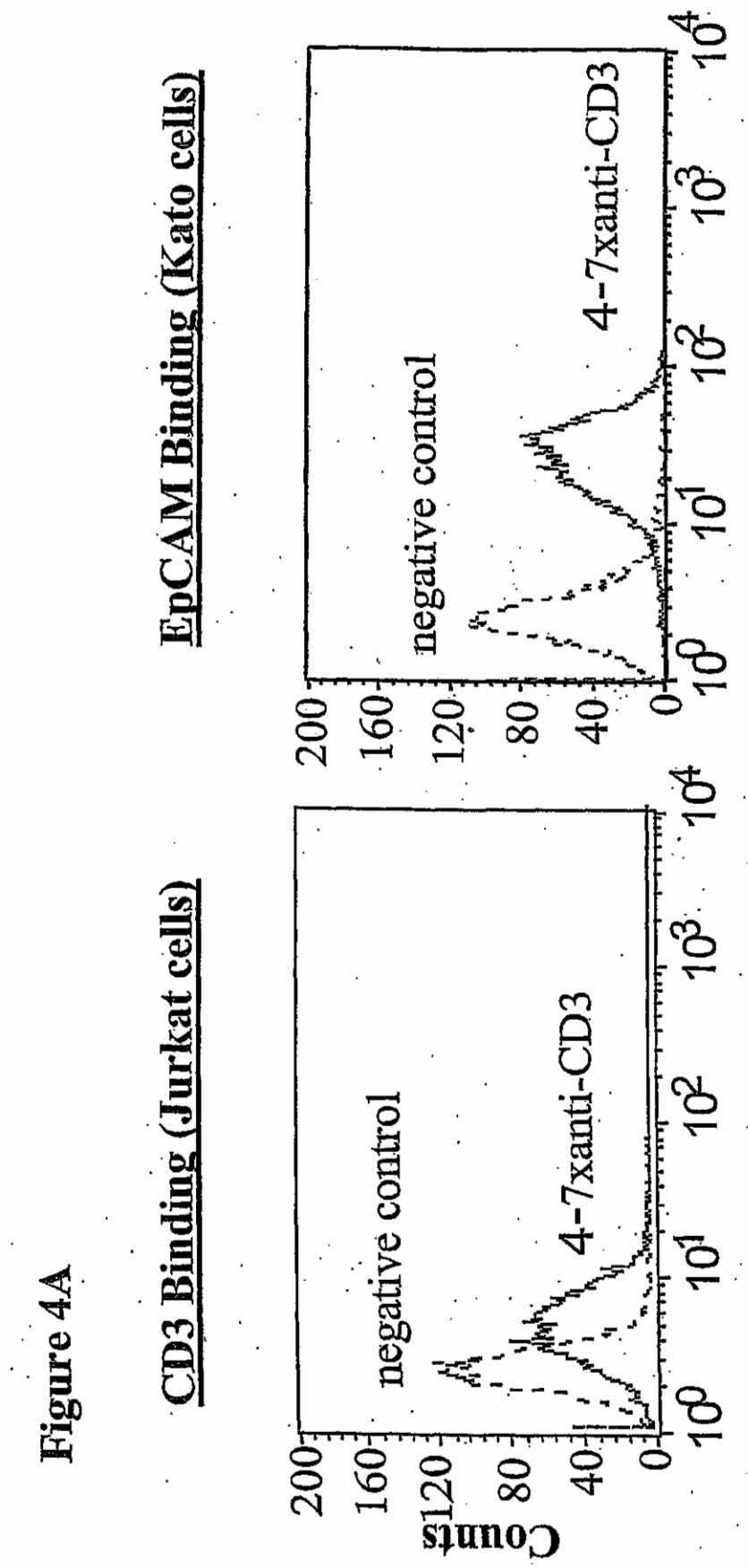
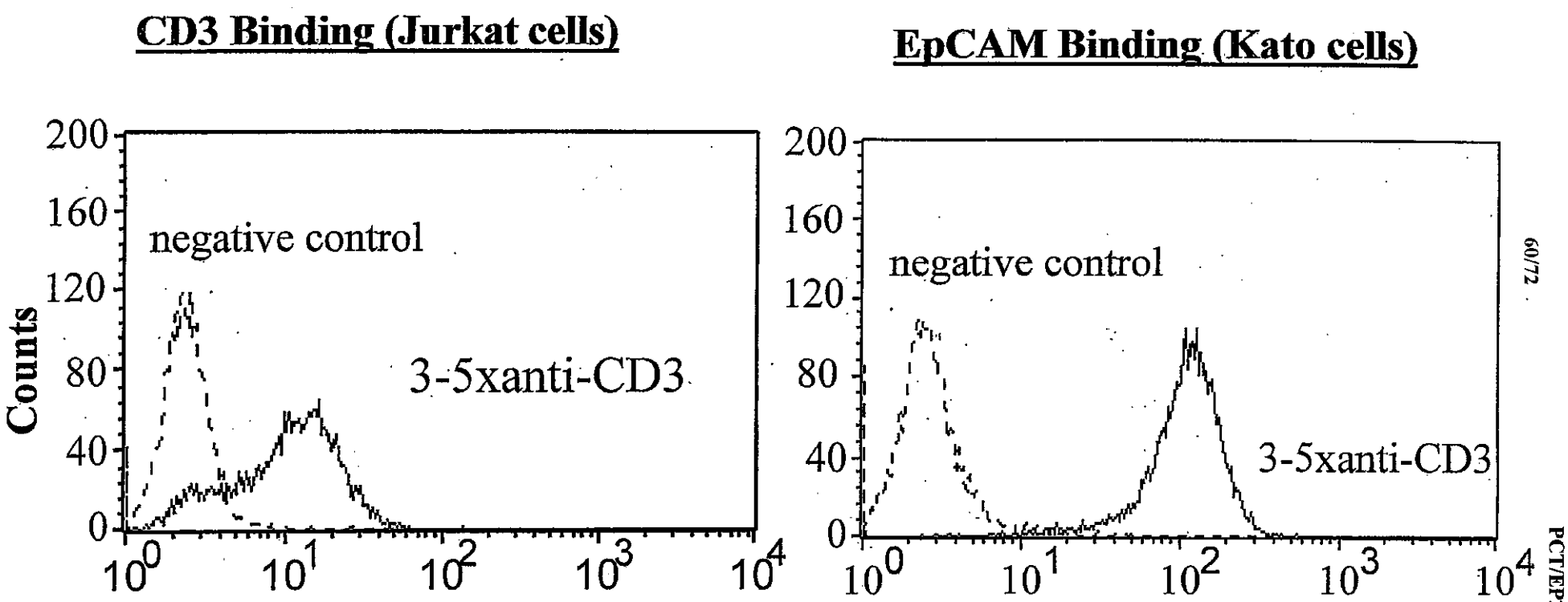

CD3 Binding (Jurkat cells)
EpCAM Binding (Kato cells)
Counts
negative control
4-7xanti-CD3
4-7xanti-CD3
(SEQ ID NO:42)

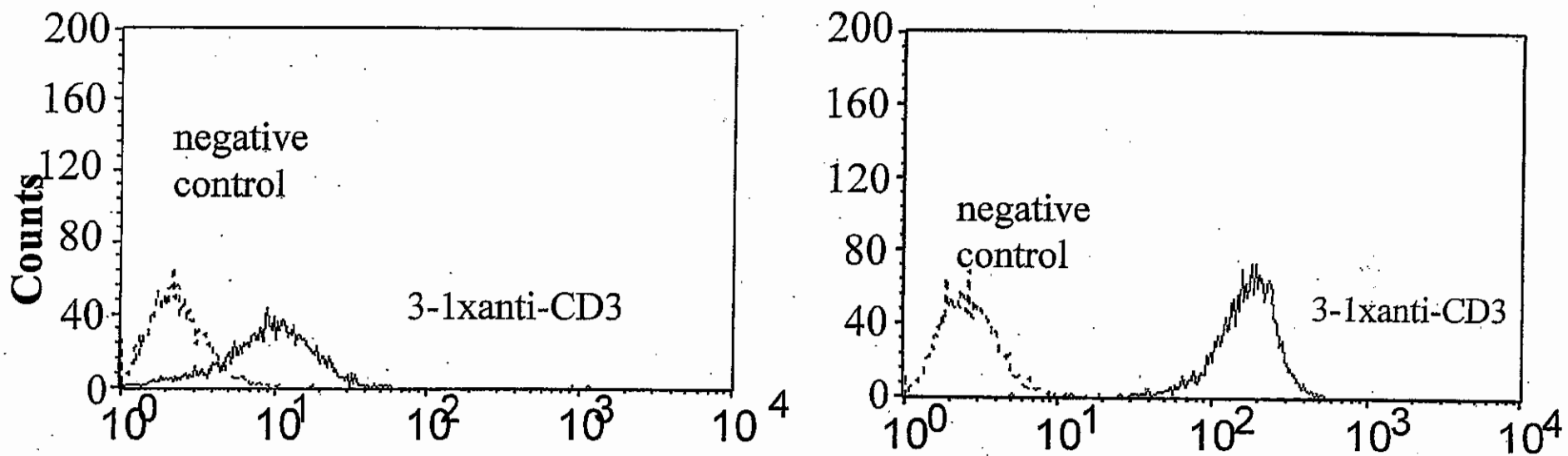
Figure 4B



3-5xanti-CD3

(SEQ ID NO: 30)

Figure 4C



3-1xanti-CD3

(SEQ ID NO:36)

Figure 4D

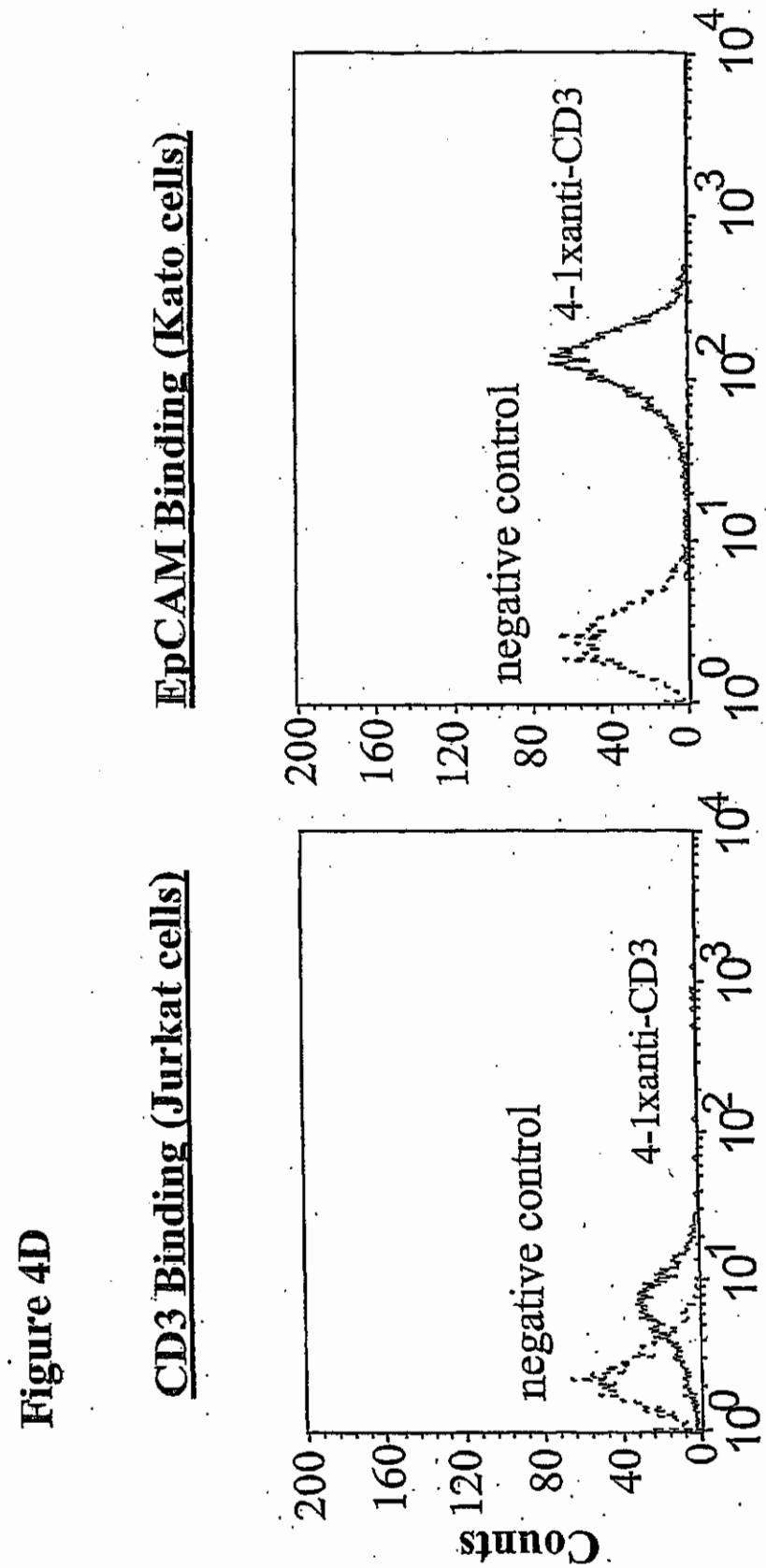
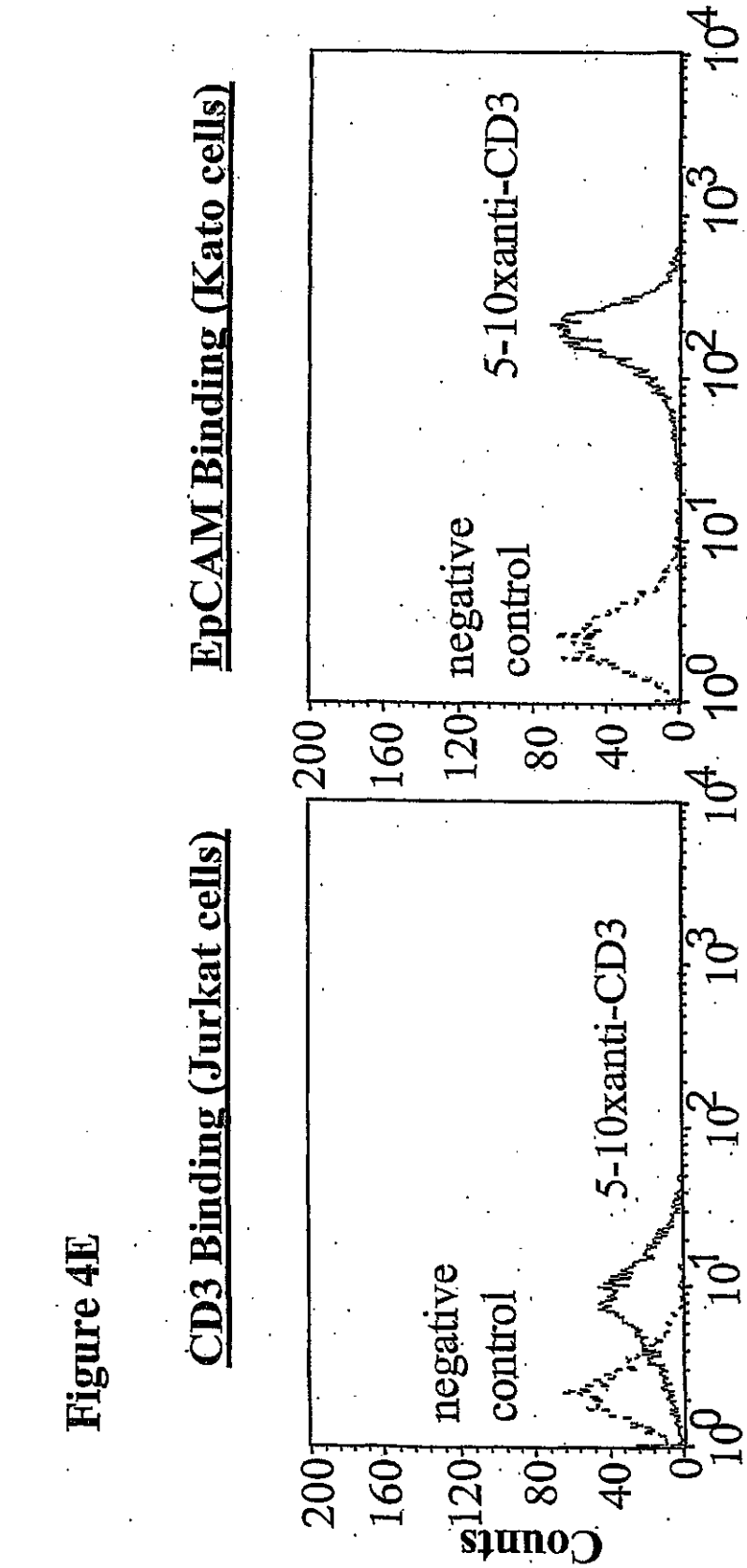

CD3 Binding (Jurkat cells)
EpCAM Binding (Kato cells)
Counts
negative control
4-1xanti-CD3
4-1xanti-CD3
(SEQ ID NO: 39)

Figure 4E



5-10xanti-CD3

(SEQ ID NO: 44)

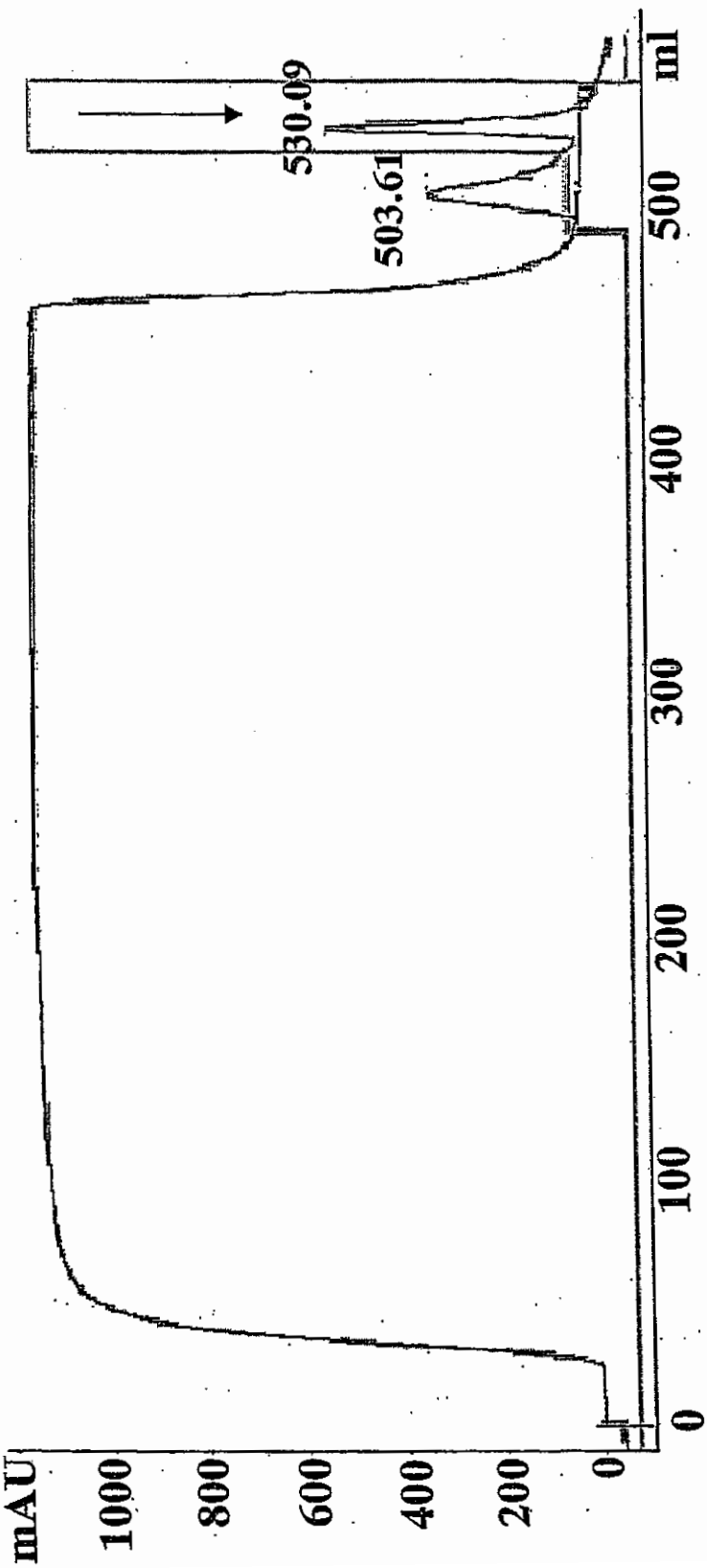


Figure 5

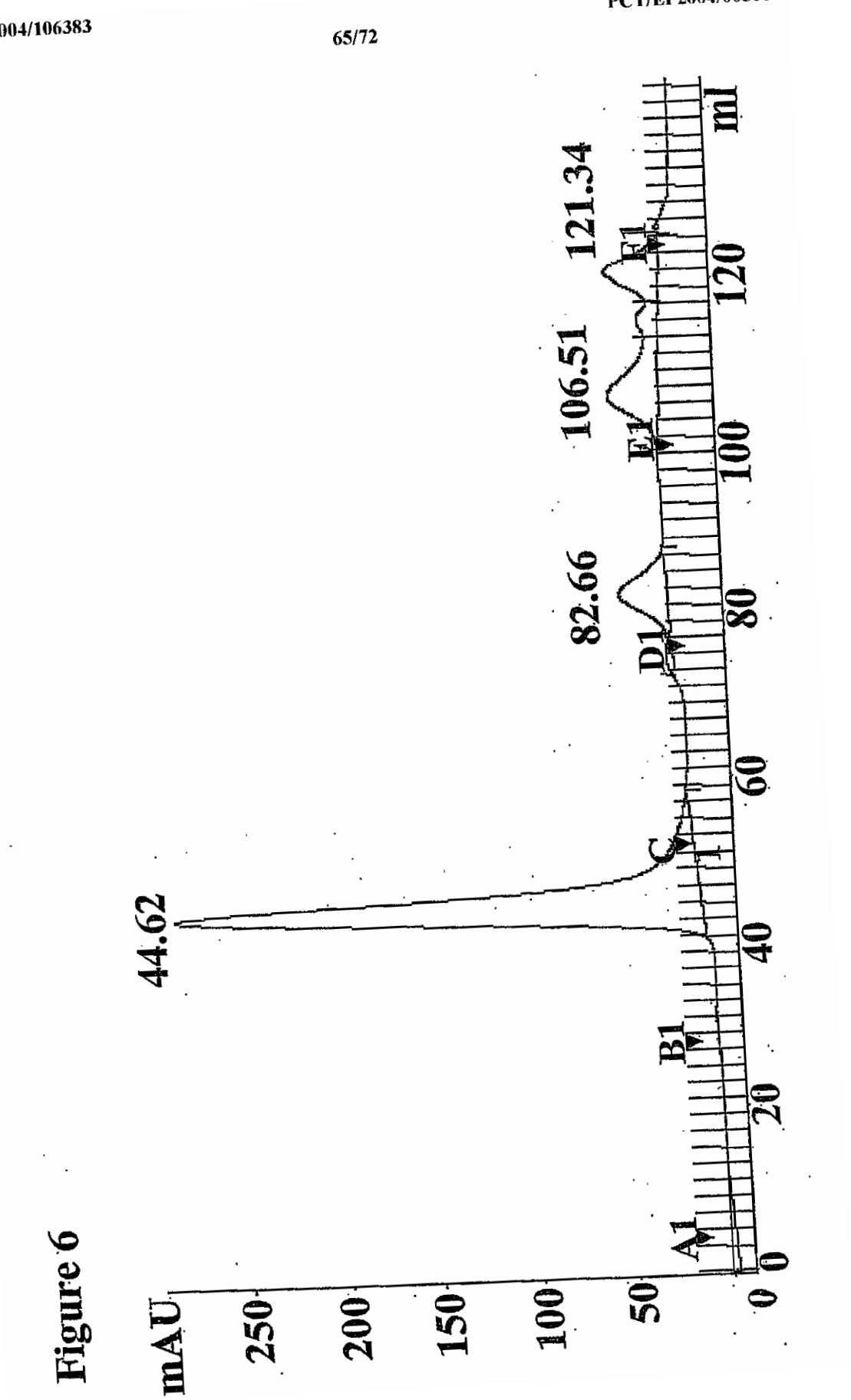

mAU
250
200
150
100
50
0
0
20
40
60
80
100
120
ml
A1
B1
C
D1
E1
E1
E1
44.62
82.66
106.51
121.34

Figure 6

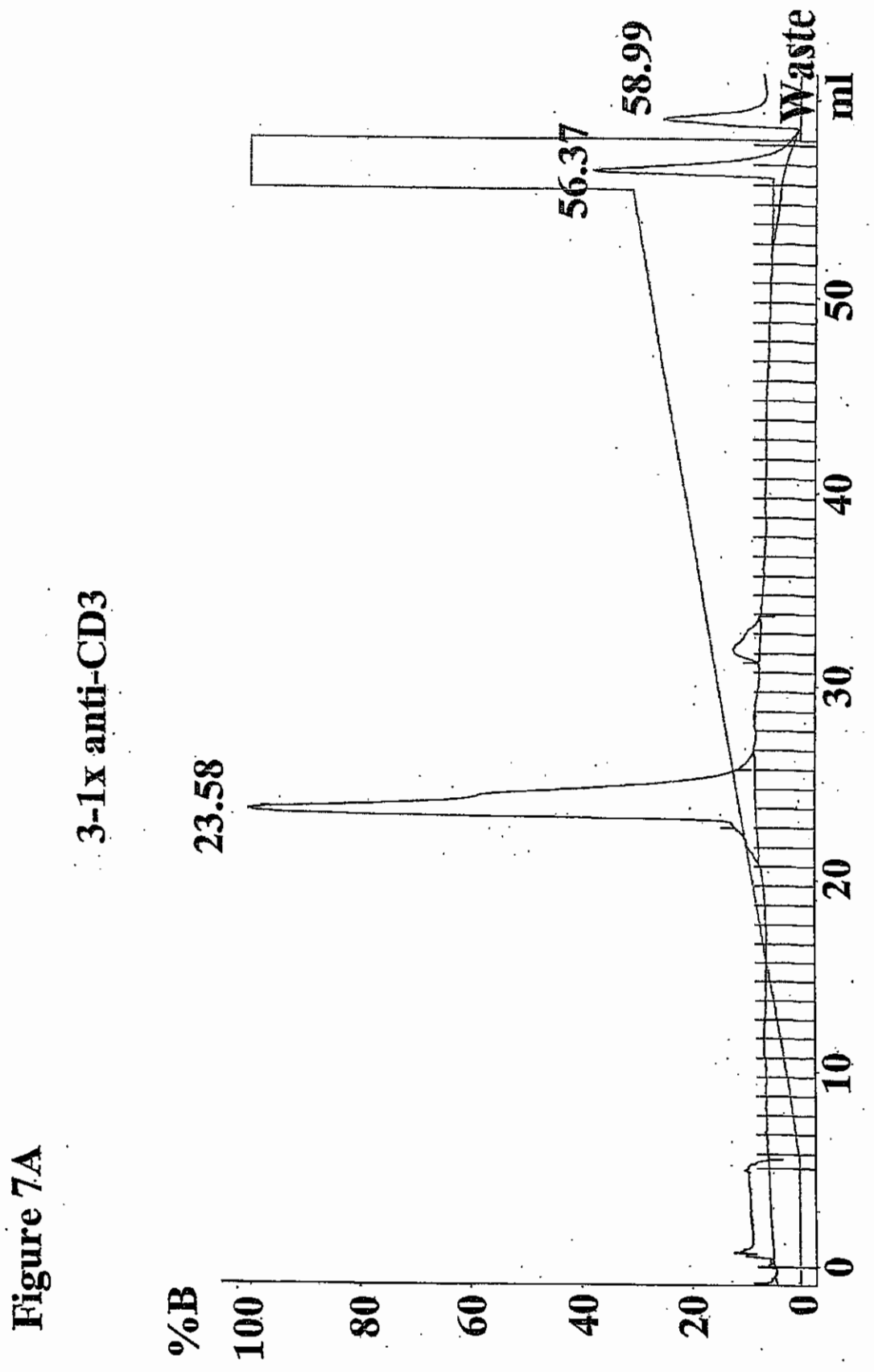

3-1x anti-CD3
%B
100
80
60
40
20
0
0
10
20
30
40
50
ml
23.58
56.37
58.99
Waste

Figure 7A

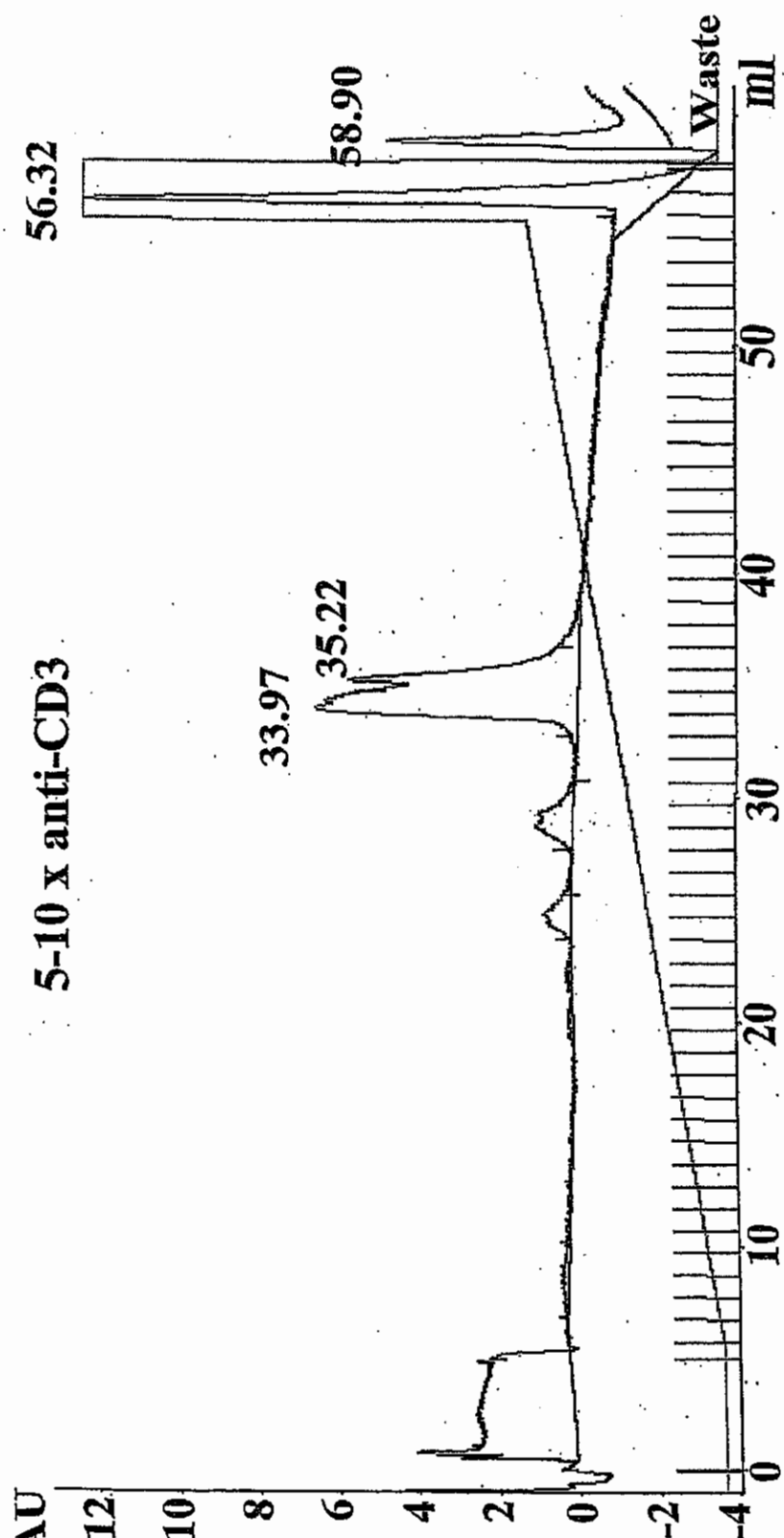
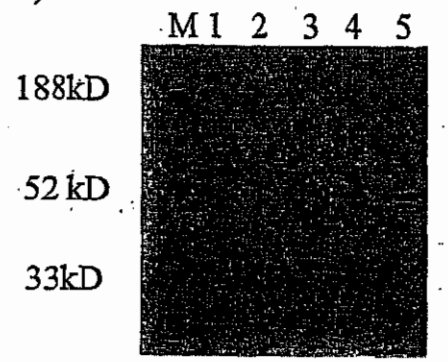

5-10 x anti-CD3
56.32
58.90
33.97
35.22
Waste
mAU
ml
12
10
8
6
4
2
0
-2
-4
0
10
20
30
40
50

Figure 7B

Figure 8

A)



B)

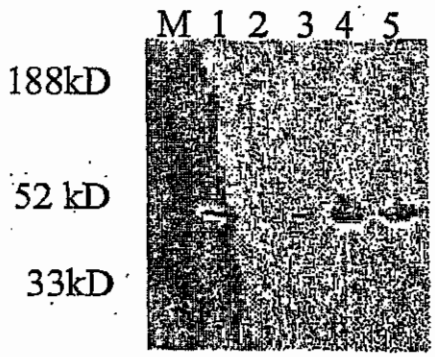


Figure 9

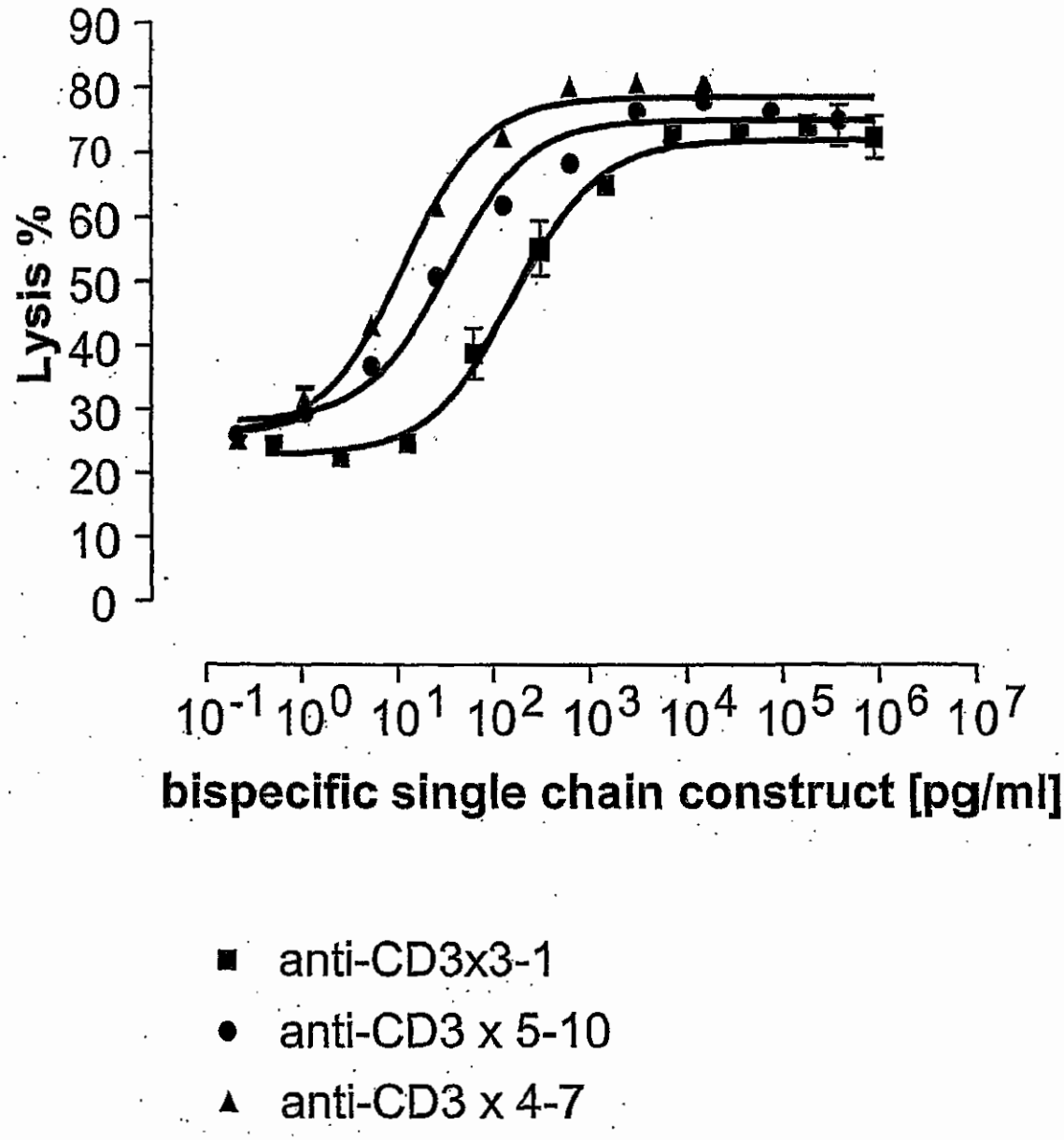

90
80
70
60
50
40
30
20
10
0
Lysis %
10-1 100 101 102 103 104 105 106 107
bispecific single chain construct [pg/ml]
anti-CD3x3-1
anti-CD3 x 5-10
anti-CD3 x 4-7

Figure 10

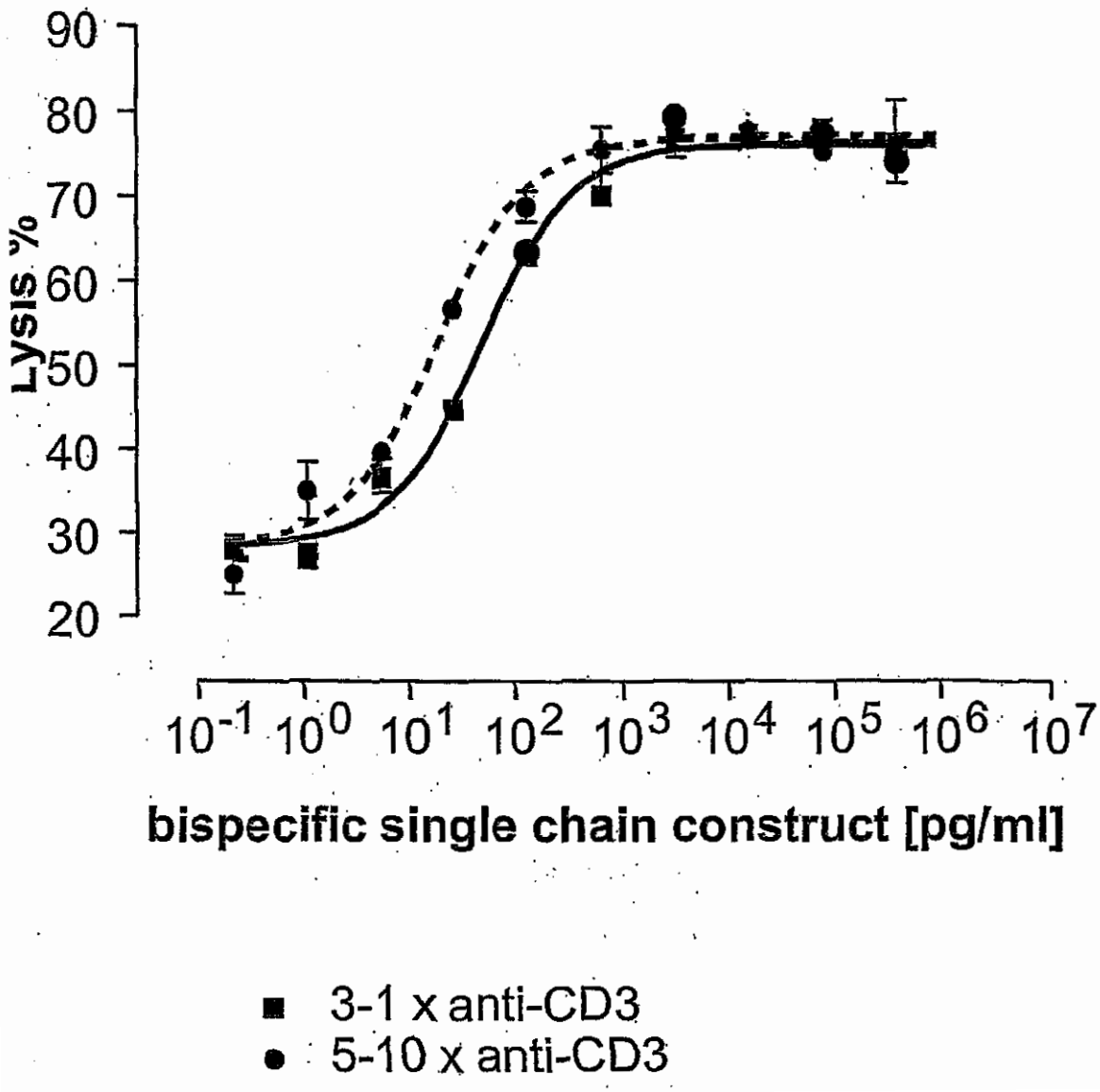
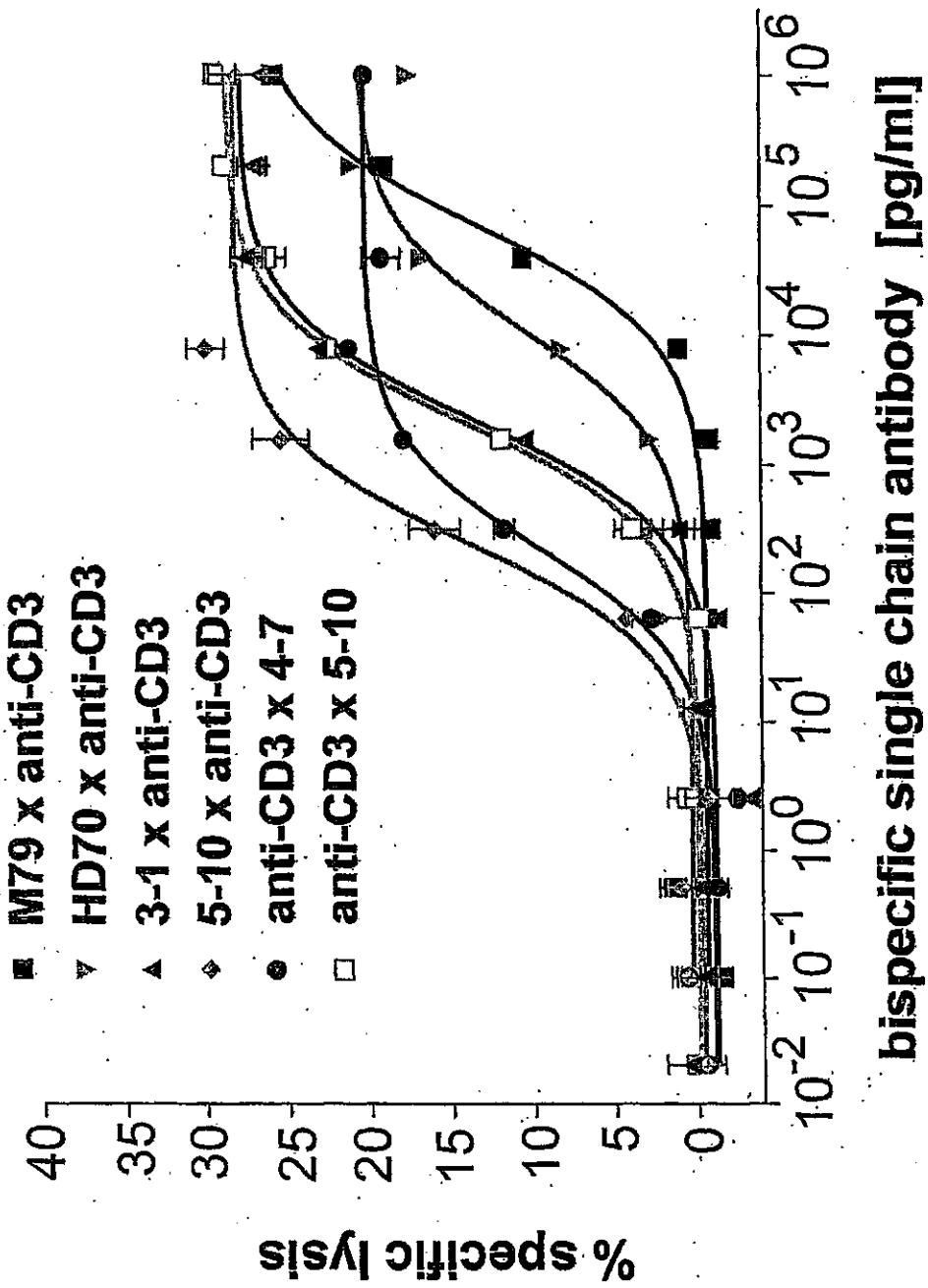

Lysis %
90
80
70
60
50
40
30
20
10^{-1} 10^{0} 10^{1} 10^{2} 10^{3} 10^{4} 10^{5} 10^{6} 10^{7}
bispecific single chain construct [pg/ml]
3-1 x anti-CD3
5-10 x anti-CD3

Figure 11A

3-1	LR**NWD**EAMDY
4-1	LR**NWD**EAMDY
5-10	LR**NWD**EPMDY
3-5	RGSYGS**NYD**WYFDV
4-7	RGSYDT**NYD**WYFDV
M79	MENWSFAY
HD70	DMGWGSGWRPYYYYGMDV
3B10	FTSPDY

Figure 11B


M79 x anti-CD3
HD70 x anti-CD3
3-1 x anti-CD3
5-10 x anti-CD3
anti-CD3 x 4-7
anti-CD3 x 5-10
% specific lysis
0
5
10
15
20
25
30
35
40
10^{-2}
10^{-1}
10^{0}
10^{1}
10^{2}
10^{3}
10^{4}
10^{5}
10^{6}
bispecific single chain antibody [pg/ml]