Figure 1A

>28F11 VH nucleotide sequence: (SEQ ID NO: 1)

CAGGTGCAGCTGGTGGAGTCCGGGGGAGGCGTGGTCCAGCCTGGGAGGTCCCTGAGACTCTC
CTGTGCAGCGTCTGGATTCAAGTTCAGTGGCTATGGCATGCACTGGGTCCGCCAGGCTCCAG
GCAAGGGGCTGGAGTGGGTGGCAGTTATATGGTATGATGGAAGTAAGAAATACTATGTAGAC
TCCGTGAAGGGCCGCTTCACCATCTCCAGAGACAATTCCAAGAACACGCTGTATCTGCAAAT
GAACAGCCTGAGAGCCGAGGACACGGCTGTGTATTACTGTGCGAGACAAATGGGCTACTGGC
ACTTCGATCTCTGGGGCCGTGGCACCCTGGTCACTGTCTCCTCA

Figure 1B

>28F11 VH amino acid sequence: (SEQ ID NO: 2)

QVQLVESGGGVVQPGRSLRLSCAASGFKFSGYGMHWVRQAPGKGLEWVAVIWYDGSKKYYVD
SVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYCARQMGYWHFDLWGRGTLVTVSS

Figure 1C

>28F11 VL nucleotide sequence: (SEQ ID NO: 3)

GAAATTGTGTTGACACAGTCTCCAGCCACCCTGTCTTTGTCTCCAGGGGAAAGAGCCACCCT
CTCCTGCAGGGCCAGTCAGAGTGTTAGCAGCTACTTAGCCTGGTACCAACAGAAACCTGGCC
AGGCTCCCAGGCTCCTCATCTATGATGCATCCAACAGGGCCACTGGCATCCCAGCCAGGTTC
AGTGGCAGTGGGTCTGGGACAGACTTCACTCTCACCATCAGCAGCCTAGAGCCTGAAGATTT
TGCAGTTTATTACTGTCAGCAGCGTAGCAACTGGCCTCCGCTCACTTTCGGCGGAGGGACCA
AGGTGGAGATCAAA

Figure 1D

>28F11 VL amino acid sequence: (SEQ ID NO: 4)

EIVLTQSPATLSLSPGERATLSCRASQSVSSYLAWYQQKPGQAPRLLIYDASNRATGIPARF
SGSGSGTDFTLTISSLEPEDFAVYYCQQRSNWPPLTFGGGTKVEIK

Figure 2A

>23F10 VH nucleotide sequence: (SEQ ID NO: 5)

CAGGTGCAGCTGGTGCAGTCCGGGGGAGGCGTGGTCCAGTCTGGGAGGTCCCTGAGACTCTC
CTGTGCAGCGTCTGGATTCAAGTTCAGTGGCTATGGCATGCACTGGGTCCGCCAGGCTCCAG
GCAAGGGGCTGGAGTGGGTGGCAGTTATATGGTATGATGGAAGTAAGAAATACTATGTAGAC
TCCGTGAAGGGCCGCTTCACCATCTCCAGAGACAATTCCAAGAACACGCTGTATCTGCAAAT
GAACAGCCTGAGAGGCGAGGACACGGCTGTGTATTACTGTGCGAGACAAATGGGCTACTGGC
ACTTCGATCTCTGGGGCCGTGGCACCCTGGTCACTGTCTCCTCA

Figure 2B

>23F10 VH amino acid sequence: (SEQ ID NO: 6)
QVQLVQSGGGVVQSGRSLRLSCAASGFKFSGYGMHWVRQAPGKGLEWVAVIWYDGSKKYYVD
SVKGRFTISRDNSKNTLYLQMNSLRGEDTAVYYCARQMGYWHFDLWGRGTLVTVSS

Figure 2C

>23F10 VL nucleotide sequence: (SEQ ID NO: 7)
GAAATTGTGTTGACACAGTCTCCAGCCACCCTGTCTTTGTCTCCAGGGGAAAGAGCCACCCT
CTCCTGCAGGGCCAGTCAGAGTGTTAGCAGCTACTTAGCCTGGTACCAACAGAAACCTGGCC
AGGCTCCCAGGCTCCTCATCTATGATGCATCCAACAGGGCCACTGGCATCCCAGCCAGGTTC
AGTGGCAGTGGGTCTGGGACAGACTTCACTCTCACCATCAGCAGCCTAGAGCCTGAAGATTT
TGCAGTTTATTACTGTCAGCAGCGTAGCAACTGGCCTCCGCTCACTTTCGGCGGAGGGACCA
AGGTGGAGATCAAA

Figure 2D

>23F10 VL amino acid sequence: (SEQ ID NO: 8)
EIVLTQSPATLSLSPGERATLSCRASQSVSSYLAWYQQKPGQAPRLLIYDASNRATGIPARF
SGSGSGTDFTLTISSLEPEDFAVYYCQQRSNWPPLTFGGGTKVEIK

Figure 3A

>27H5 VH nucleotide sequence: (SEQ ID NO: 9)
CAGGTGCAGCTGGTGGAGTCCGGGGGAGGCGTGGTCCAGCCTGGGAGGTCCCTGAGACTCTC
CTGTGCAGCGTCTGGATTCACCTTCAGAAGCTATGGCATGCACTGGGTCCGCCAGGCTCCAG
GCAAGGGGCTGGAGTGGGTGGCAATTATATGGTATGATGGAAGTAAAAAAAACTATGCAGAC
TCCGTGAAGGGCCGATTCACCATCTCCAGAGACAATTCCAAGAACACGCTGTATCTGCAAAT
GAACAGCCTGAGAGCCGAGGACACGGCTGTGTATTACTGTGCGAGAGGAACTGGGTACAACT
GGTTCGACCCCTGGGGCCAGGGAACCCTGGTCACCGTCTCCTCA

Figure 3B

>27H5 VH amino acid sequence: (SEQ ID NO: 10)
QVQLVESGGGVVQPGRSLRLSCAASGFTFRSYGMHWVRQAPGKGLEWVAIIWYDGSKKNYAD
SVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYCARGTGYNWFDPWGQGTLVTVSS

Figure 3C

>27H5 VL1 nucleotide sequence: (SEQ ID NO: 11)
GAAATTGTGTTGACACAGTCTCCACGCACCCTGTCTTTGTCTCCAGGGGAAAGAGCCACCCT
CTCCTGCAGGGCCAGTCAGAGTGTTAGCAGCAGCTACTTAGCCTGGTACCAGCAGAAACCTG
GCCAGGCTCCCAGGCTCCTCATCTATGGTGCATCCAGCAGGGCCACTGGCATCCCAGACAGG
TTCAGTGGCAGTGGGTCTGGGACAGACTTCACTCTCACCATCAGCAGACTGGACCCTGAAGA
TTTTGCAGTGTATTACTGTCAGCAGTATGGTAGCTCACCGATCACCTTCGGCCAAGGGACAC
GACTGGAGATTAAA

>27H5 VL2 nucleotide sequence: (SEQ ID NO: 12)
GACATCCTGATGACCCAGTCTCCATCCTCCCTGTCTGCATCTGTAGGAGACAGAGTCACCAT
CACTTGCCGGGCAAGTCAGGGCATTAGCAGTGCTTTAGCCTGGTATCAGCAGAAACCAGGGA
AAGCTCCTAAGCTCCTGATCTATTATGCATCCAGTTTGCAAAGTGGGGTCCCATCAAGGTTC
AGCGGCAGTGGATCTGGGACGGATTACACTCTCACCATCAGCAGCCTGCAGCCTGAAGATTT
TGCAACTTATTACTGTCAACAGTATTATAGTACCCTCACTTTCGGCGGAGGGACCAAGGTGG
AGATCAAA

>27H5 VL3 nucleotide sequence: (SEQ ID NO: 13)
GACATCGTGATGACCCAGTCTCCATCCTCCCTGTCTGCATCTGTAGGAGACAGAGTCACCAT
CACTTGCCGGGCAAGTCAGGGCATTAGCAGTGCTTTAGCCTGGTATCAGCAGAAACCAGGGA
AAGCTCCTAAGCTCCTGATCTATGATGCCTCCAGTTTGGGAAGTGGGGTCCCATCAAGGTTC
AGCGGCAGTGGATCTGGGACAGATTTCACTCTCACCATCAGCAGCCTGCAGCCTGAAGATTT
TGCAACTTATTACTGTCAACAGTATTATAGTACCCTCACTTTCGGCGGAGGGACCAAGGTGG
AGATCAAA

>27H5 VL4 nucleotide sequence: (SEQ ID NO: 14)
GACATCCAGATGACCCAGTCTCCATTCTCCCTGTCTGCATCTGTAGGAGACAGAGTCACCAT
CACTTGCTGGGCCAGTCAGGGCATTAGCAGTTATTTAGCCTGGTATCAGCAAAAACCAGCAA
AAGCCCCTAAGCTCTTCATCTATTATGCATCCAGTTTGCAAAGTGGGGTCCCATCAAGGTTC
AGCGGCAGTGGATCTGGGACGGATTACACTCTCACCATCAGCAGCCTGCAGCCTGAAGATTT
TGCAACTTATTACTGTCAACAGTATTATAGTACCCTCACTTTCGGCGGAGGGACCAAGGTGG
AGATCAAA

>27H5 VL5 nucleotide sequence: (SEQ ID NO: 15)
GACATCGAGATGACCCAGTCTCCATTCTCCCTGTCTGCATCTGTAGGAGACAGAGTCACCAT
CACTTGCTGGGCCAGTCAGGGCATTAGCAGTTATTTAGCCTGGTATCAGCAAAAACCAGCAA
AAGCCCCTAAGCTCTTCATCTATTATGCATCCAGTTTGCAAAGTGGGGTCCCATCAAGGTTC
AGCGGCAGTGGATCTGGGACGGATTACACTCTCACCATCAGCAGCCTGCAGCCTGAAGATTT
TGCAACTTATTACTGTCAACAGTATTATAGTACCCTCACTTTCGGCGGAGGGACCAAGGTGG
AGATCAAA

Figure 3D

>27H5 VL1 amino acid sequence: (SEQ ID NO: 16)
EIVLTQSPRTLSLSPGERATLSCRASQSVSSSYLAWYQQKPGQAPRLLIYGASSRATGIPDR
FSGSGSGTDFTLTISRLDPEDFAVYYCQQYGSSPITFGQGTRLEIK

>27H5 VL2 amino acid sequence: (SEQ ID NO: 17)
DILMTQSPSSLSASVGDRVTITCRASQGISSALAWYQQKPGKAPKLLIYYASSLQSGVPSRF
SGSGSGTDYTLTISSLQPEDFATYYCQQYYSTLTFGGGTKVEIK

>27H5 VL3 amino acid sequence: (SEQ ID NO: 18)
DIVMTQSPSSLSASVGDRVTITCRASQGISSALAWYQQKPGKAPKLLIYDASSLGSGVPSRF
SGSGSGTDFTLTISSLQPEDFATYYCQQYYSTLTFGGGTKVEIK

>27H5 VL4 amino acid sequence: (SEQ ID NO: 19)
DIQMTQSPFSLSASVGDRVTITCWASQGISSYLAWYQQKPAKAPKLFIYYASSLQSGVPSRF
SGSGSGTDYTLTISSLQPEDFATYYCQQYYSTLTFGGGTKVEIK

>27H5 VL5 amino acid sequence: (SEQ ID NO: 20)
DIEMTQSPFSLSASVGDRVTITCWASQGISSYLAWYQQKPAKAPKLFIYYASSLQSGVPSRF
SGSGSGTDYTLTISSLQPEDFATYYCQQYYSTLTFGGGTKVEIK

Figure 3E

```
27H5 VL4    DIQMTQSPFSLSASVGDRVTITCWASQGISS-YLAWYQQKPAKAPKLFIYYASSLQSGVP 59
27H5 VL5    DIEMTQSPFSLSASVGDRVTITCWASQGISS-YLAWYQQKPAKAPKLFIYYASSLQSGVP 59
27H5 VL2    DILMTQSPSSLSASVGDRVTITCRASQGISS-ALAWYQQKPGKAPKLLIYYASSLQSGVP 59
27H5 VL3    DIVMTQSPSSLSASVGDRVTITCRASQGISS-ALAWYQQKPGKAPKLLIYDASSLGSGVP 59
27H5 VL1    EIVLTQSPRTLSLSPGERATLSCRASQSVSSSYLAWYQQKPGQAPRLLIYGASSRATGIP 60
     KEY    :* :**** :** * *:*.*:.:* ***.:**  ********.:**:*:** ***  :*:*

27H5 VL4    SRFSGSGSGTDYTLTISSLQPEDFATYYCQQYYST-LTFGGGTKVEIK 106 (SEQ ID NO: 19)
27H5 VL5    SRFSGSGSGTDYTLTISSLQPEDFATYYCQQYYST-LTFGGGTKVEIK 106 (SEQ ID NO: 20)
27H5 VL2    SRFSGSGSGTDYTLTISSLQPEDFATYYCQQYYST-LTFGGGTKVEIK 106 (SEQ ID NO: 17)
27H5 VL3    SRFSGSGSGTDFTLTISSLQPEDFATYYCQQYYST-LTFGGGTKVEIK 106 (SEQ ID NO: 18)
27H5 VL1    DRFSGSGSGTDFTLTISRLDPEDFAVYYCQQYGSSPITFGQGTRLEIK 108 (SEQ ID NO:16)
     KEY    .**********:***** *:*****.****** *: :*** **::***
```

Figure 4A

>15C3 VH nucleotide sequence: (SEQ ID NO: 21)

CAGGTGCAGCTGGTGCAGTCTGGGGGAGGCGTGGTCCAGCCCGGGAGGTCCCTGAGACTCTC
CTGTGTAGCGTCTGGATTCACCTTCAGTAGCTATGGCATGCACTGGGTCCGCCAGGCTCCAG
GCAAGGGGCTGGAGTGGGTGGCAGCTATATGGTATAATGGAAGAAAACAAGACTATGCAGAC
TCCGTGAAGGGCCGATTCACCATCTCCAGAGACAATTCCAAGAACACGCTGTATCTGCAAAT
GAACAGCCTGAGAGCCGAGGACACGGCTGTGTATTACTGTACGAGGGGAACTGGGTACAATT
GGTTCGACCCCTGGGGCCAGGGAACCCTGGTCACCGTCTCCTCA

Figure 4B

>15C3 VH amino acid sequence: (SEQ ID NO: 22)

QVQLVQSGGGVVQPGRSLRLSCVASGFTFSSYGMHWVRQAPGKGLEWVAAIWYNGRKQDYAD
SVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYCTRGTGYNWFDPWGQGTLVTVSS

Figure 4C

>15C3 VL1 nucleotide sequence: (SEQ ID NO: 23)

GAAATTGTGTTGACACAGTCTCCAGCCACCCTGTCTTTGTCTCCAGGGGAAAGAGCCACCCT
CTCCTGCAGGGCCAGTCAGAGTGTTAGCAGCTACTTAGCCTGGTACCAACAGAAACCTGGCC
AGGCTCCCAGGCTCCTCATCTATGATGCATCCAACAGGGCCACTGGCATCCCAGCCAGGTTC
AGTGGCAGTGGGTCTGGGACAGACTTCACTCTCACCATCAGCAGCCTAGAGCCTGAAGATTT
TGCAGTTTATTACTGTCAGCAGCGTAGCAACTGGCCGTGGACGTTCGGCCAAGGGACCAAGG
TGGAAATCAAA

>15C3 VL2 nucleotide sequence: (SEQ ID NO: 24)

GCCATCCAGTTGACCCAGTCTCCATCCTCCCTGTCTGCATCTGTATGAGACAGAGTCACCAT
CACTTGCCGGGCAAGTCAGGGCATTAGCAGTGCTTTAGCCTGGTATCAGCAGAAACCAGGGA
AAGCTCCTAAGCTCCTGATCTATGATGCCTCCAGTTTGGAAAGTGGGGTCCCATCAAGGTTC
AGCGGCAGTGGATCTGGGACAGATTTCACTCTCACCATCAGCAGCCTGCAGCCTGAAGATTT
TGCAACTTATTACTGTCAACAGTTTAATAGTTACCCTATCACCTTCGGCCAAGGGACACGAC
TGGAGATTAAA

Figure 4D

>15C3 VL1 amino acid sequence: (SEQ ID NO: 25)

EIVLTQSPATLSLSPGERATLSCRASQSVSSYLAWYQQKPGQAPRLLIYDASNRATGIPARF
SGSGSGTDFTLTISSLEPEDFAVYYCQQRSNWPWTFGQGTKVEIK

>15C3 VL2 amino acid sequence: (SEQ ID NO: 26)

AIQLTQSPSSLSASVGDRVTITCRASQGISSALAWYQQKPGKAPKLLIYDASSLESGVPSRF
SGSGSGTDFTLTISSLQPEDFATYYCQQFNSYPITFGQGTRLEIK

Figure 5

V_H sequence alignments of CD3 binders

VH3

```
                                          CDR1                    CDR2
                                          -----                   -----------
15C3        QVQLVQSGGGVVQPGRSLRLSCVASGFTFSSYGMHWVRQAPGKGLEWVAAIWYNGRKQDY
27H5        QVQLVESGGGVVQPGRSLRLSCAASGFTFRSYGMHWVRQAPGKGLEWVAIIWYDGSKKNY
28F11       QVQLVESGGGVVQPGRSLRLSCAASGFKFSGYGMHWVRQAPGKGLEWVAVIWYDGSKKYY
DP-50       QVQLVESGGGVVQPGRSLRLSCAASGFTFSSYGMHWVRQAPGKGLEWVAVIWYDGSNKYY
            *****.*******.********.****.*.******************.***.*....*

             CDR2                                    CDR3
             ------                                  ---------
                                                      D         J
                                                     -------------------
15C3        ADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYCTRGTGYNWFDPWGQGTLVTVSS (SEQ ID NO:22)
27H5        ADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYCARGTGYNWFDPWGQGTLVTVSS (SEQ ID NO:10)
                                                      D         J
                                                     -------------------
28F11       VDSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYCARQMGYWHFDLWGRGTLVTVSS (SEQ ID NO:2)
DP-50       ADSVKGRFTISRDNSKNTLYLQMNSLRAEDTAVYYCAR                      (SEQ ID NO:48)
            .**************************.********.*

Human heavy joining 5-02                          NWFDPWGQGTLVTVSS (SEQ ID NO:49)
Human heavy joining 2                             YWYFDLWGRGTLVTVSS (SEQ ID NO:50)
```

Figure 6

V_L sequence alignments of CD3 binders

VκIII

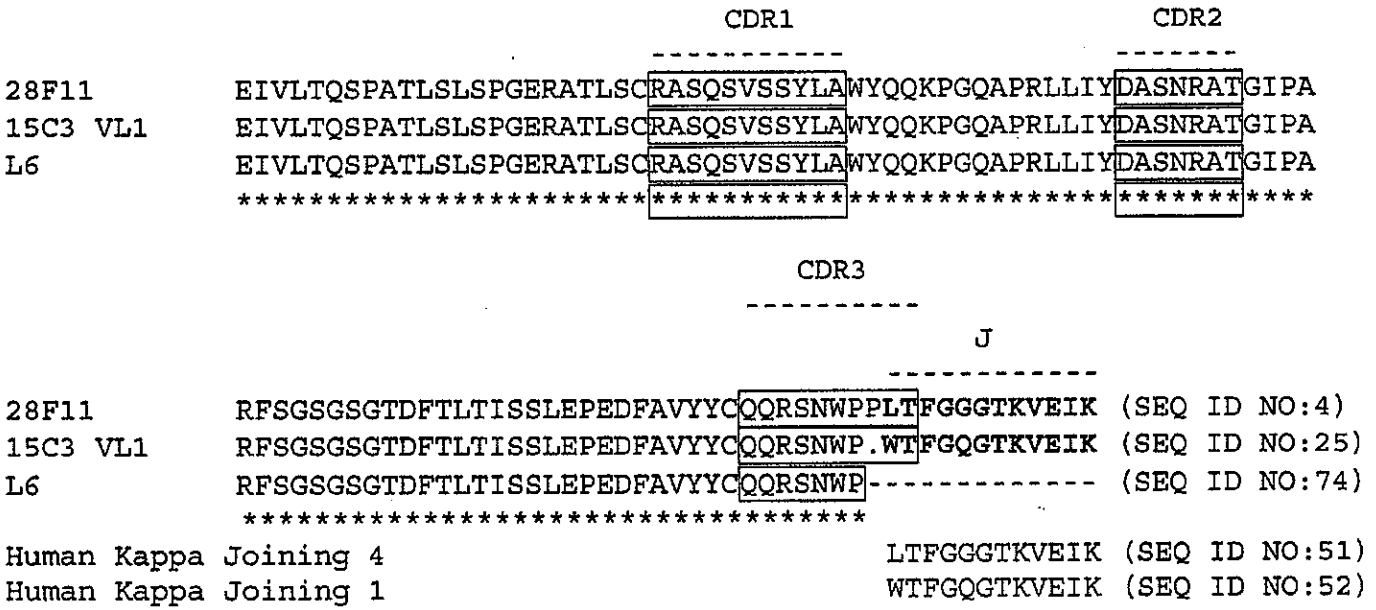


Figure 7

V_L sequence alignments of CD3 binders

VκI

```
                                          CDR1                          CDR2
                                  ------------                  -------
27H5(19)      DILMTQSPSSLSASVGDRVTITCRASQGISSALAWYQQKPGKAPKLLIYYASSLQSGVPS
15C3 VL2      AIQLTQSPSSLSASVGDRVTITCRASQGISSALAWYQQKPGKAPKLLIYDASSLESGVPS
L4/18a        AIQLTQSPSSLSASVGDRVTITCRASQGISSALAWYQQKPGKAPKLLIYDASSLESGVPS
              .*..********************************************.****.*****

                                          CDR3
                                  ---------
                                                    J
                                                  ------------
27H5(19)      RFSGSGSGTDYTLTISSLQPEDFATYYCQQYYST.LTFGGGTKVEIK (SEQ ID NO:17)
15C3 VL2      RFSGSGSGTDFTLTISSLQPEDFATYYCQQFNSYPITFGQGTRLEIK (SEQ ID NO:26)
L4/18a        RFSGSGSGTDFTLTISSLQPEDFATYYCQQFNSYP------------ (SEQ ID NO:53)
              **********.******************..*..
Human Kappa Joining 4                          LTFGGGTKVEIK (SEQ ID NO:54)
Human Kappa Joining 5                          ITFGQGTRLEIK (SEQ ID NO:55)
```

Figure 8

V_L sequence alignments of CD3 binders

VκII

```
                                          CDR1                        CDR2
                                    ------------                ------- 
27H5(13.17)  EIVLTQSPRTLSLSPGERATLSCRASQSVSSSYLAWYQQKPGQAPRLLIYGASSRATGIP
DPK22        EIVLTQSPGTLSLSPGERATLSCRASQSVSSSYLAWYQQKPGQAPRLLIYGASSRATGIP
             ********.**************************************************
                                              CDR3
                                          ---------
                                                    J
                                                ------------
27H5             DRFSGSGSGTDFTLTISRLDPEDFAVYYCQQYGSSPITFGQGTRLEIK (SEQ ID NO:16)
DPK22            DRFSGSGSGTDFTLTISRLEPEDFAVYYCQQYGSSP------------ (SEQ ID NO:56)
                 ******************.****************
Human Kappa Joining 5                                ITFGQGTRLEIK (SEQ ID NO:57)
```

Figure 9A

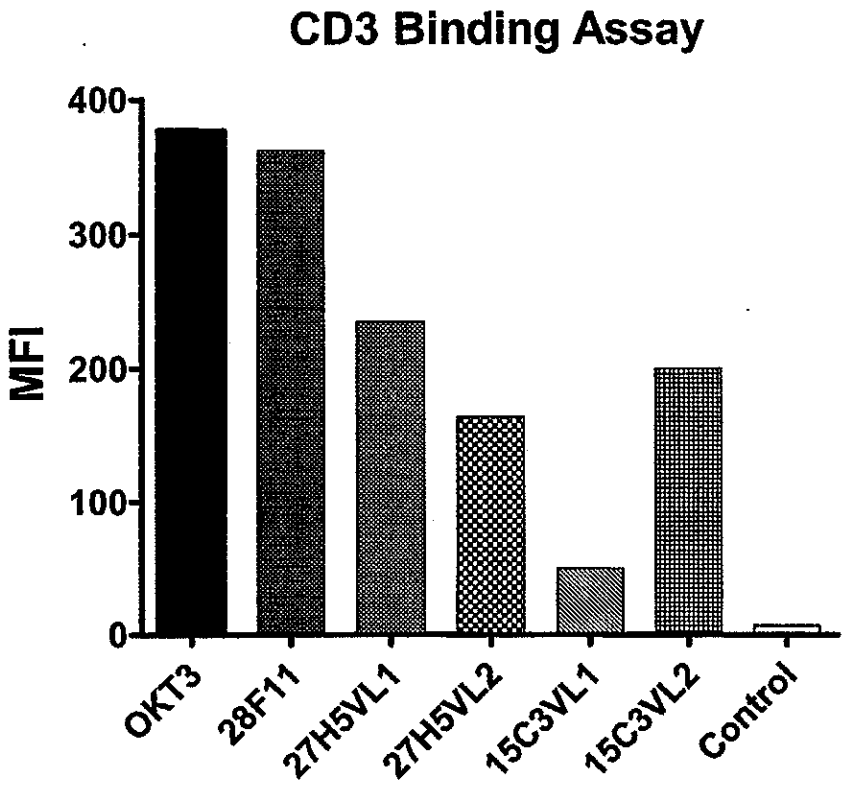

CD3 Binding Assay
MFI
400
300
200
100
0
OKT3
28F11
27H5VL1
27H5VL2
15C3VL1
15C3VL2
Control

Figure 9B

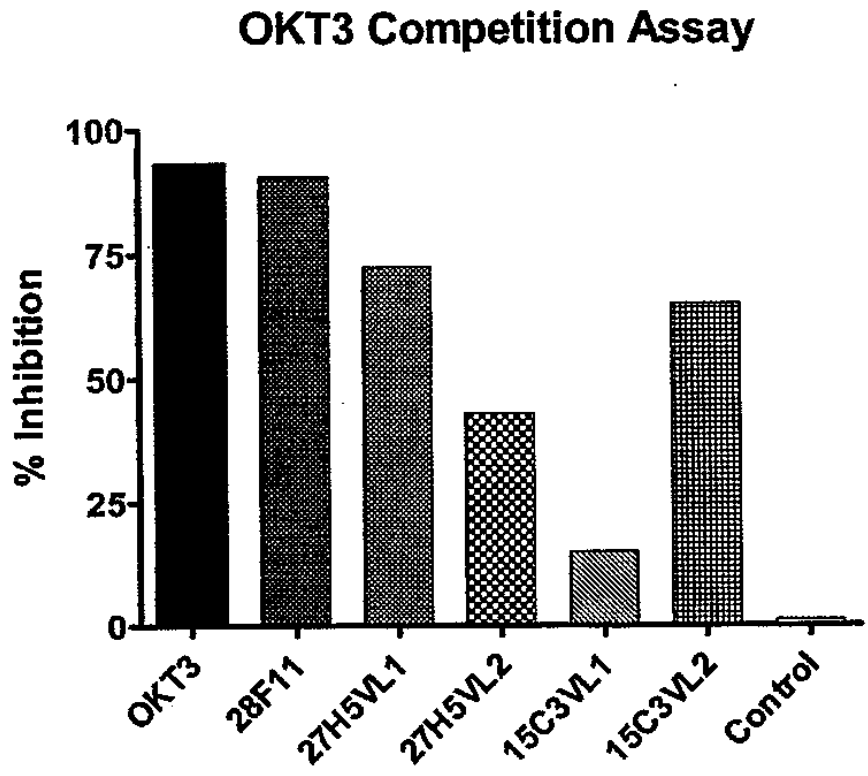


Figure 9C

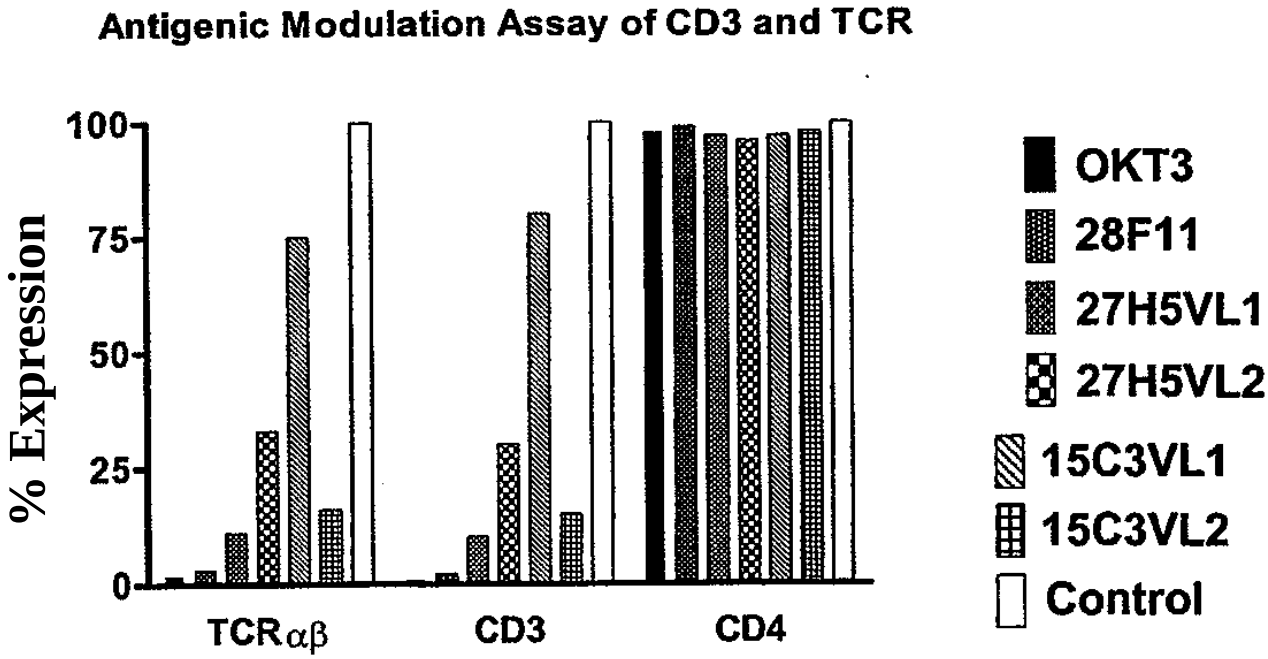


Figure 9D

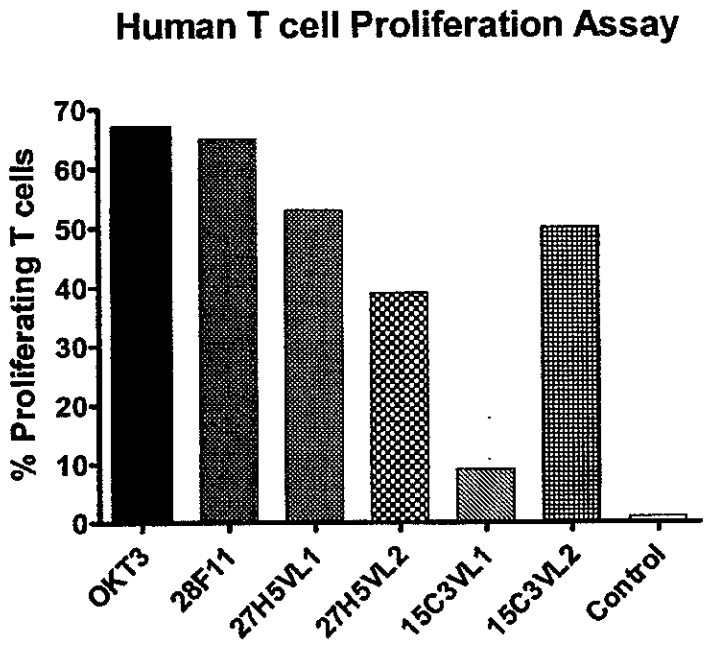

Human T cell Proliferation Assay
% Proliferating T cells
70
60
50
40
30
20
10
0
OKT3
28F11
27H5VL1
27H5VL2
15C3VL1
15C3VL2
Control

Figure 10

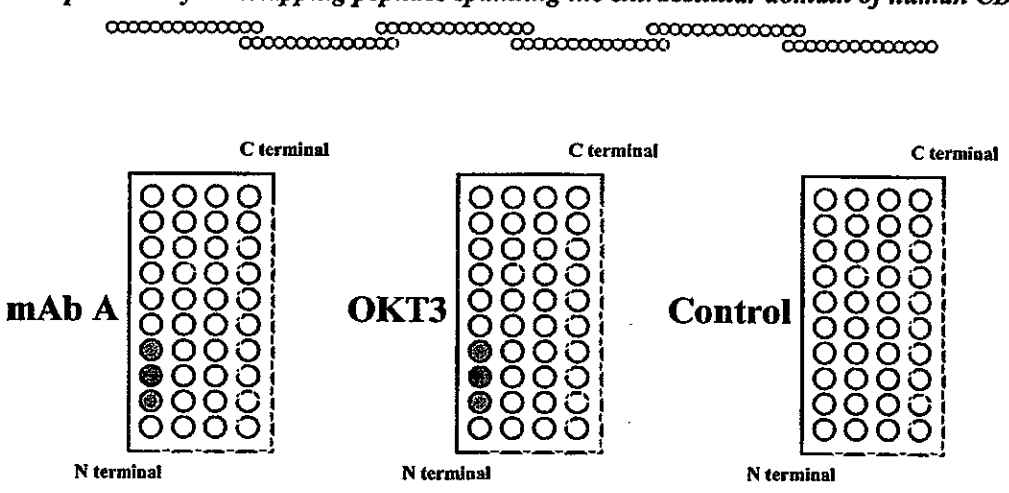

Peptide Array: overlapping peptides spanning the extracellular domain of human CD3ε
C terminal
mAb A
N terminal
C terminal
OKT3
N terminal
C terminal
Control
N terminal

Figure 11A

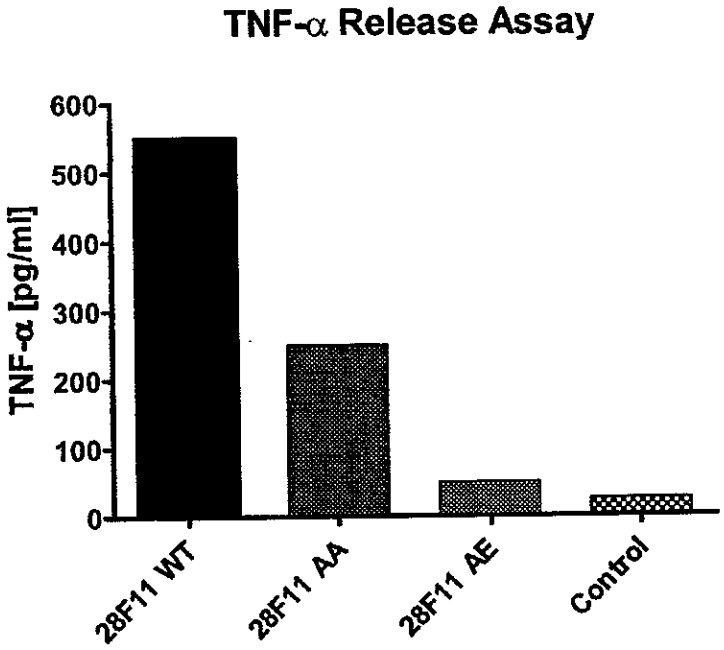


Figure 11B

