

FIG. 1

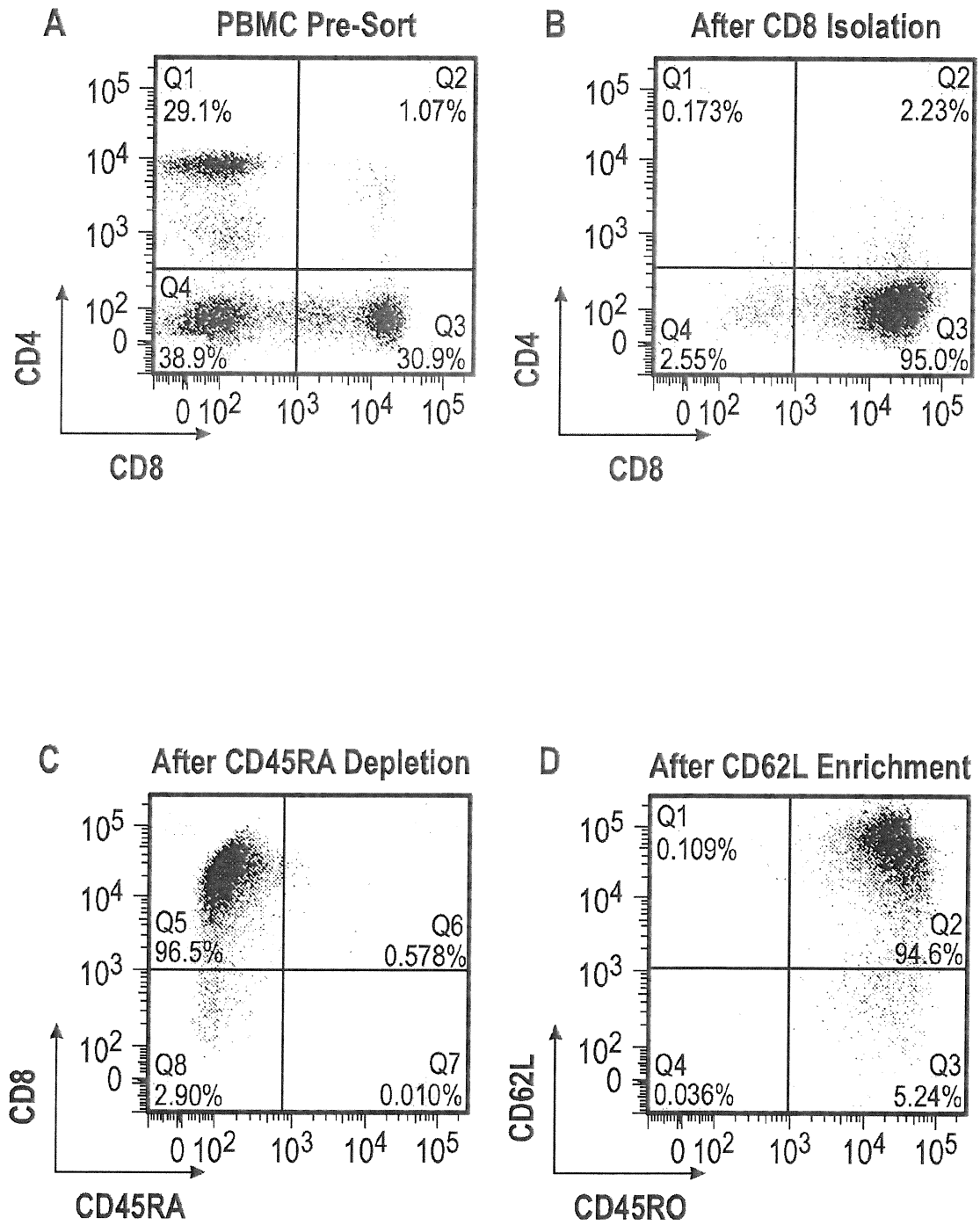
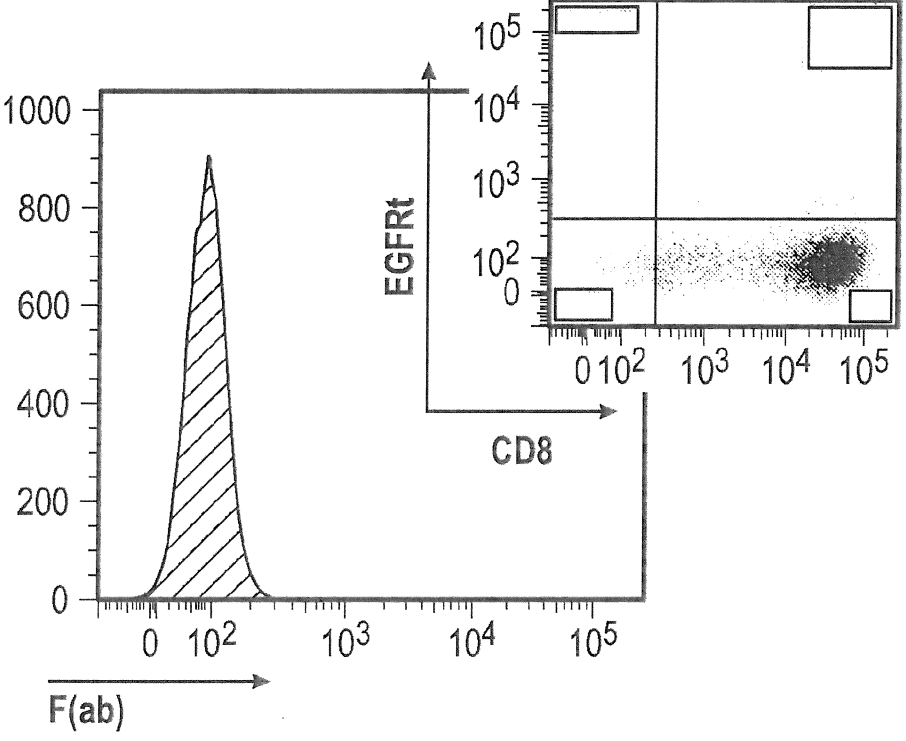


FIG. 2A

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Panel 1

CD171 2nd G Mock



Panel 2

Short

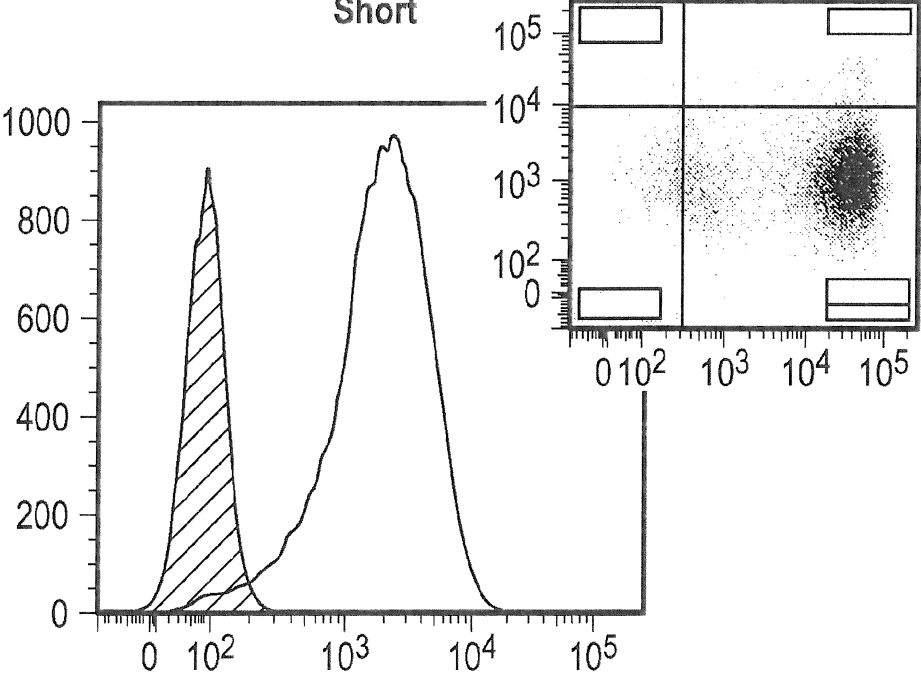
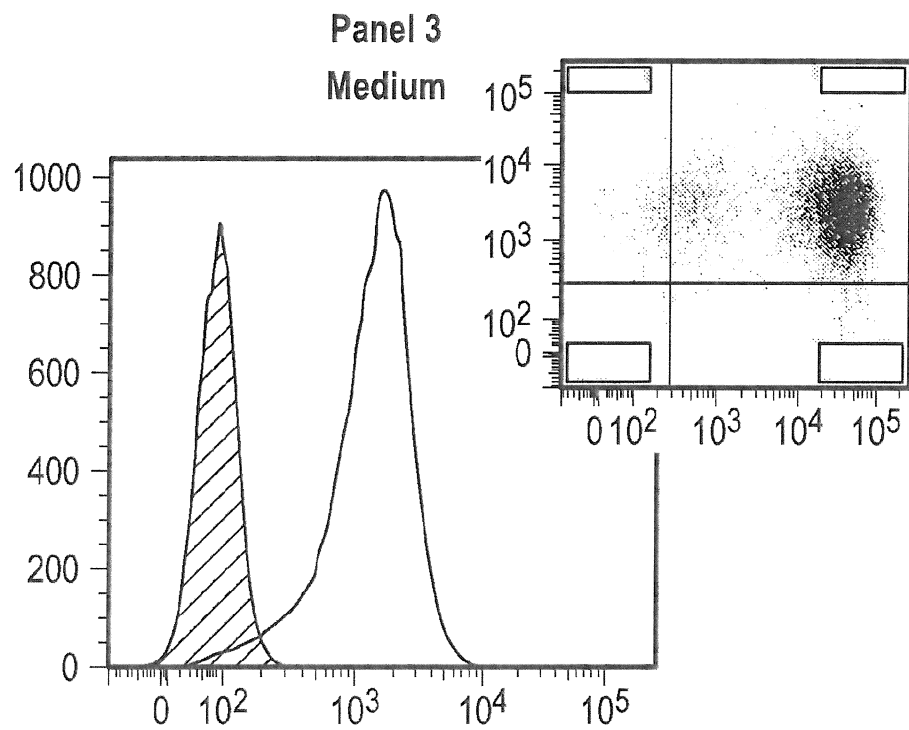
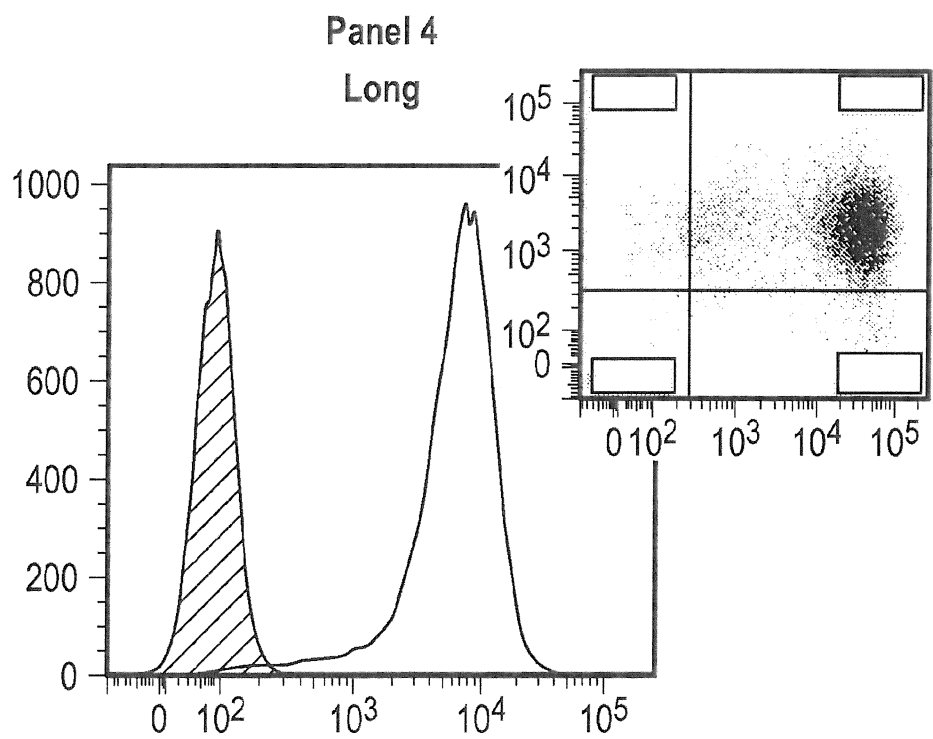


FIG. 2A (Continued)



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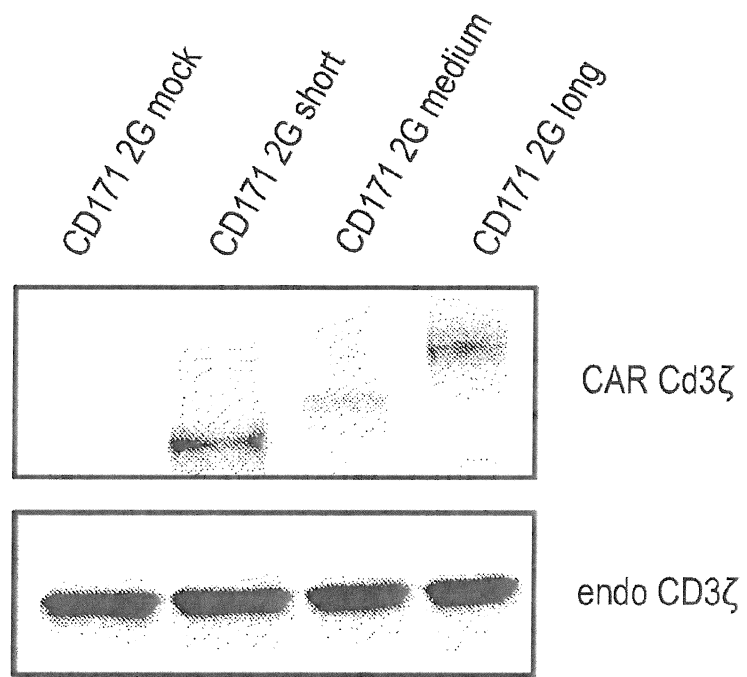


FIG. 2B

FIG. 2C

Panel 1
TMLCL

- Mock
- CD171 2nd G Short
- ▲ CD171 2nd G Medium
- ▼ CD171 2nd G Long

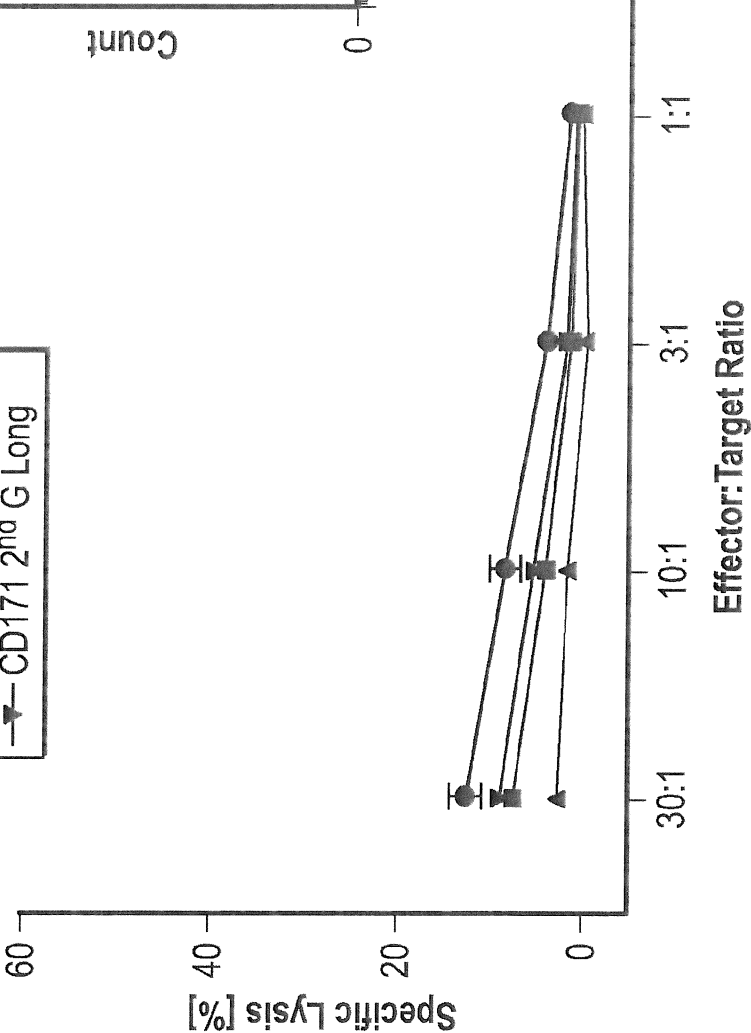
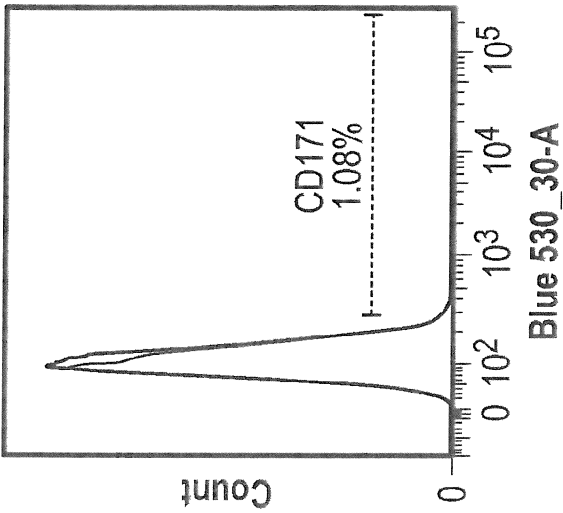


FIG. 2C (Continued)

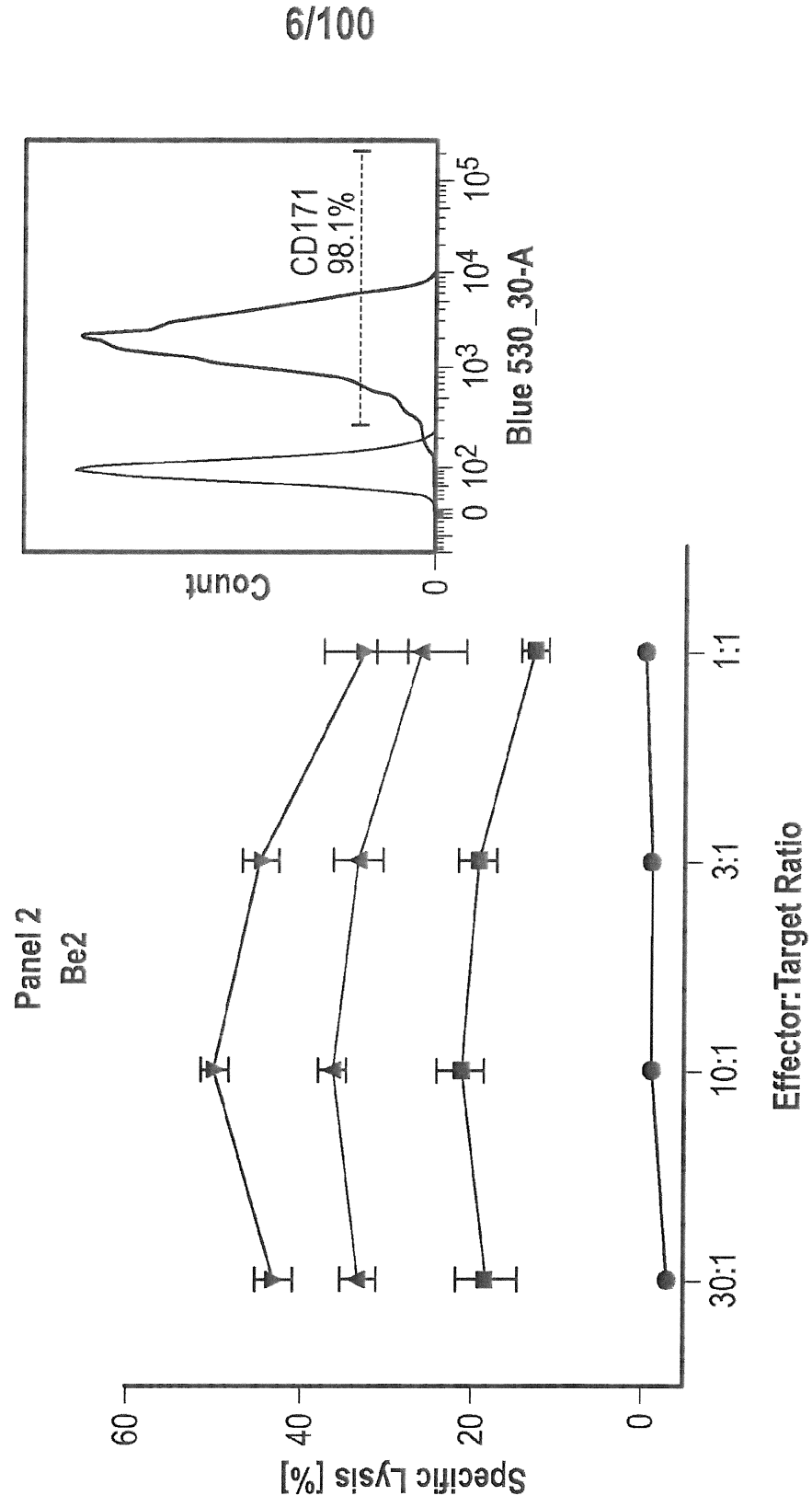


FIG. 2C (Continued)

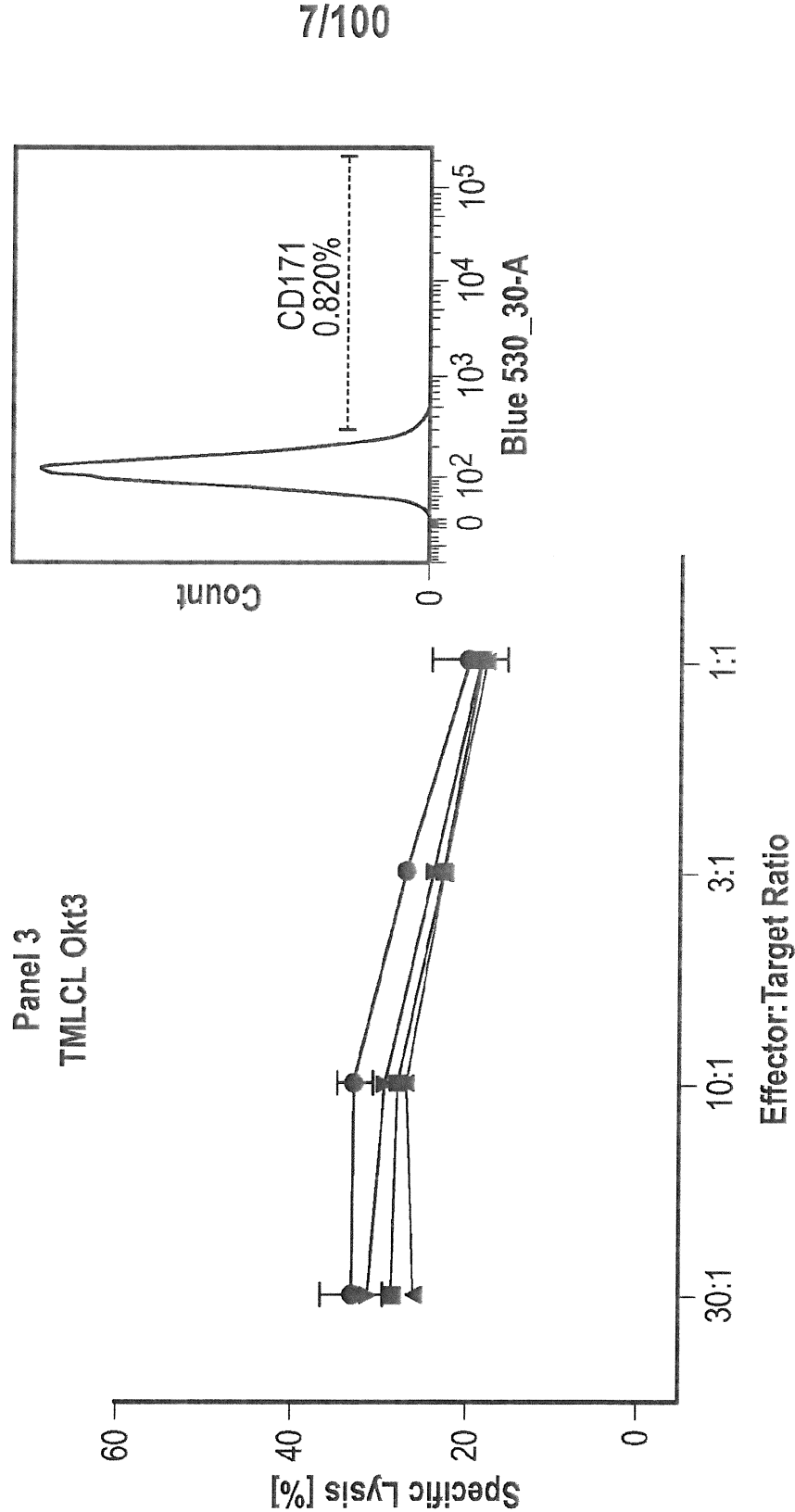


FIG. 2D

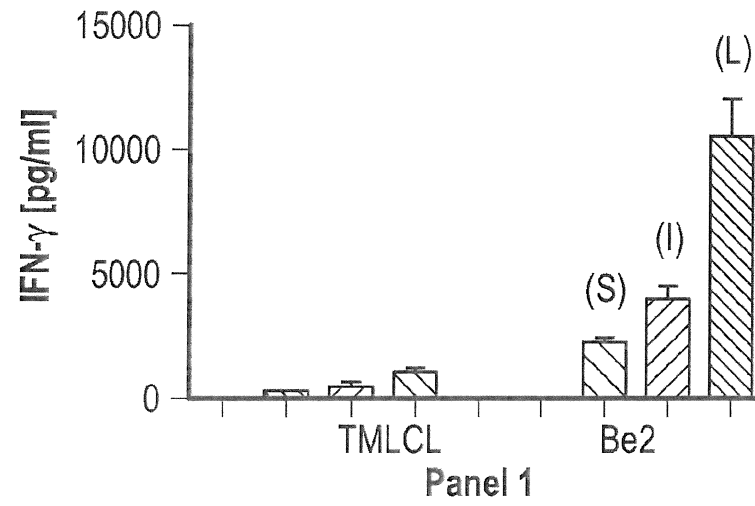
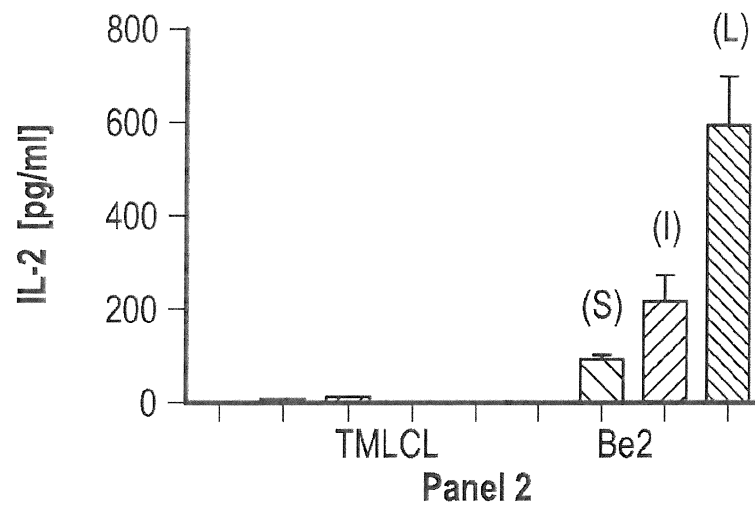
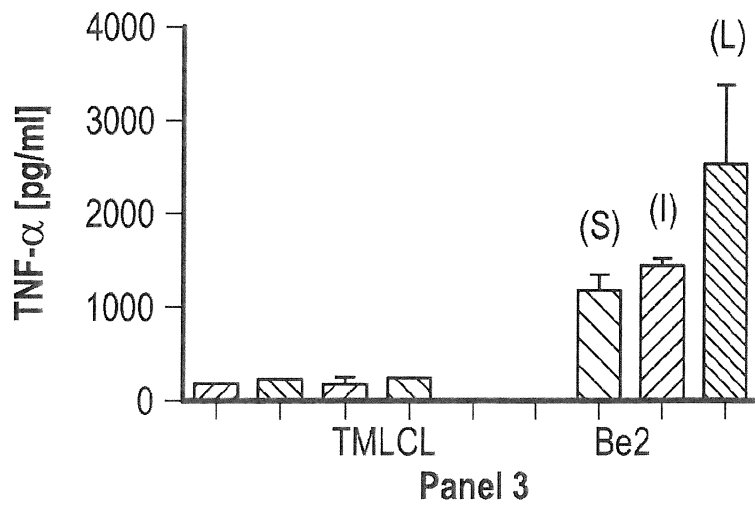
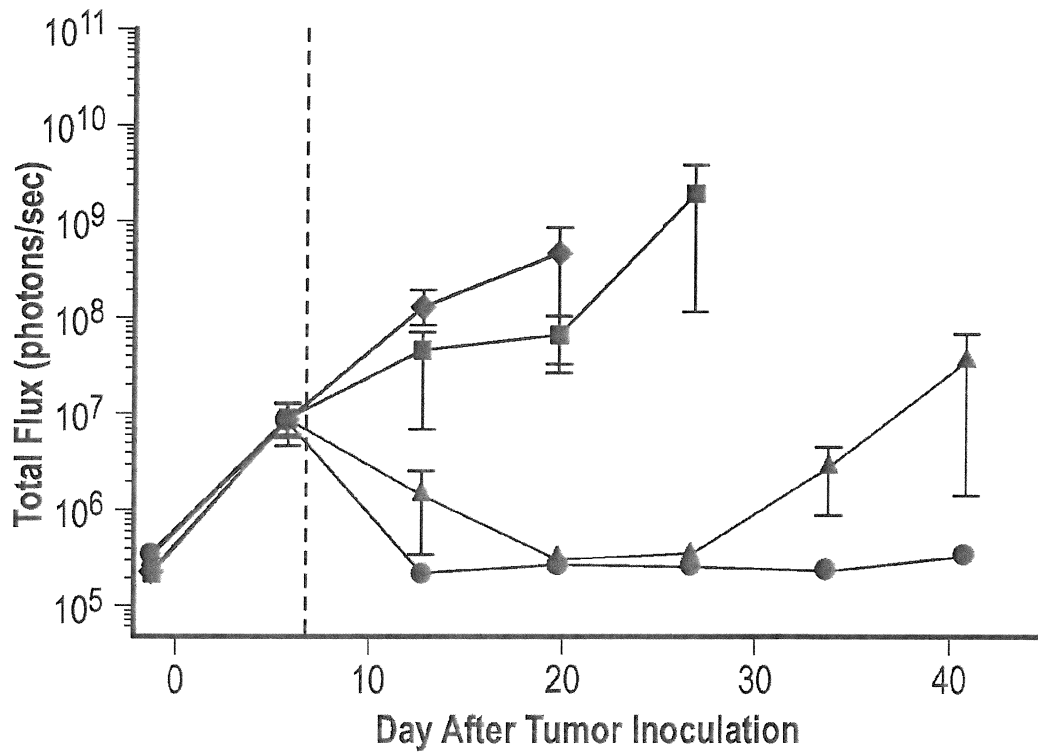
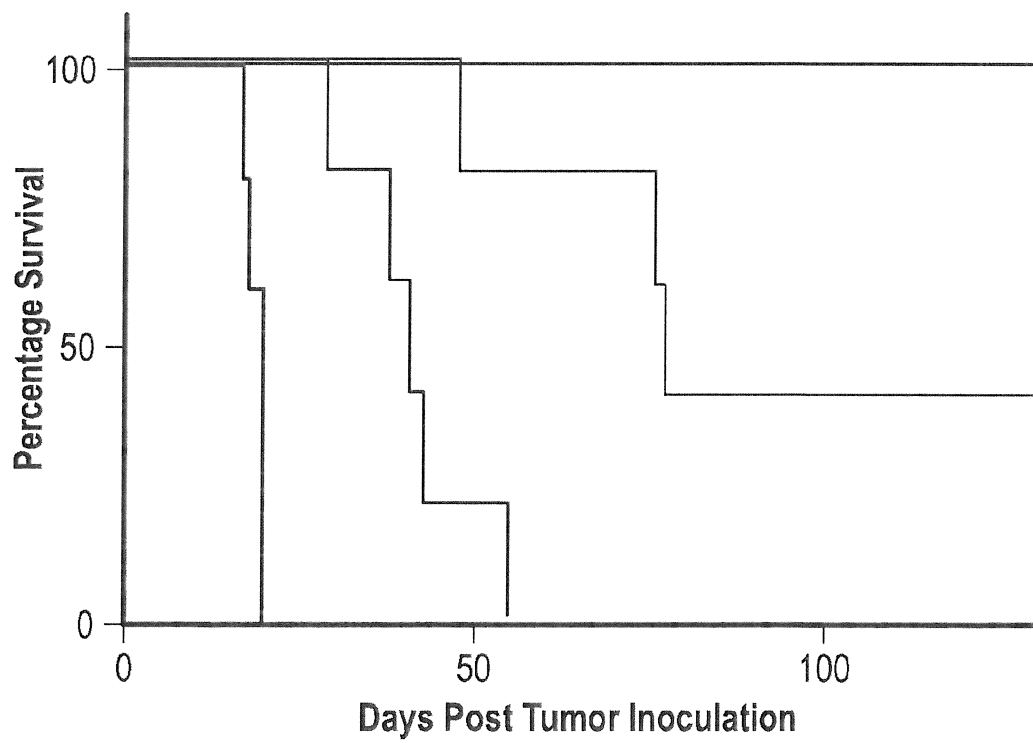


FIG. 2E



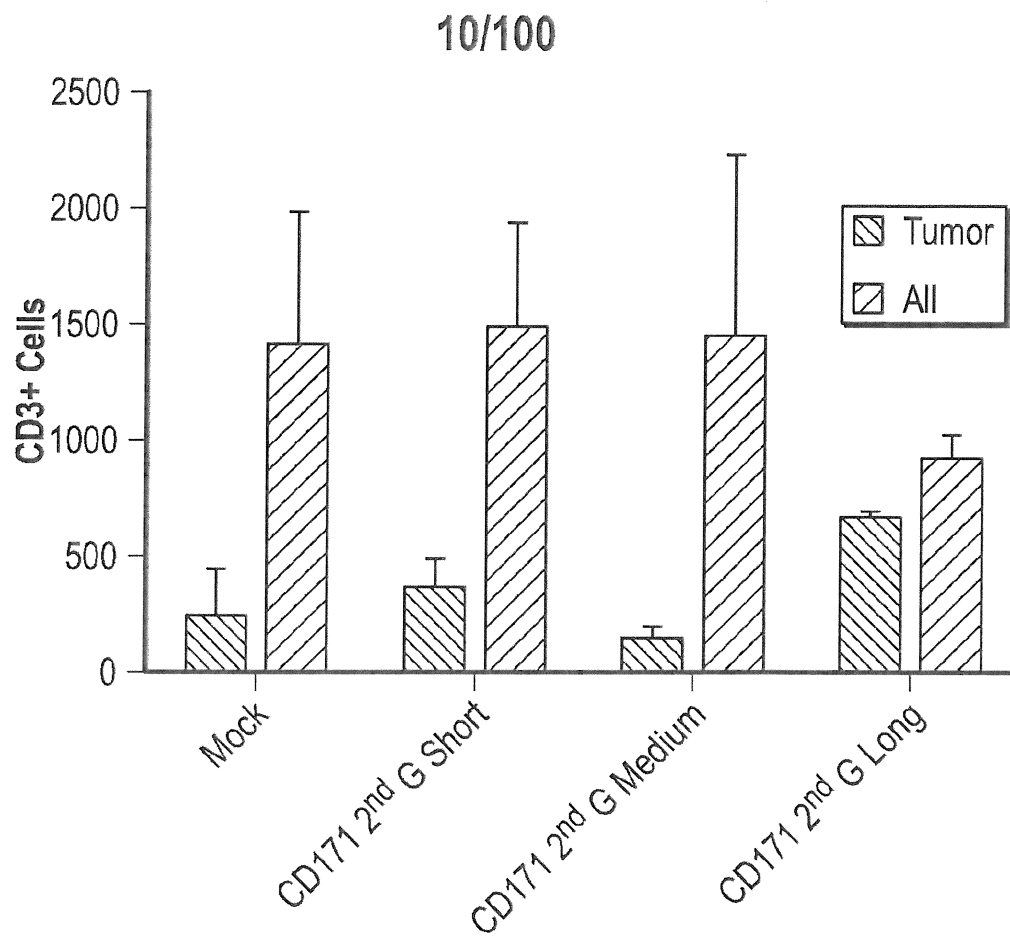


FIG. 2F

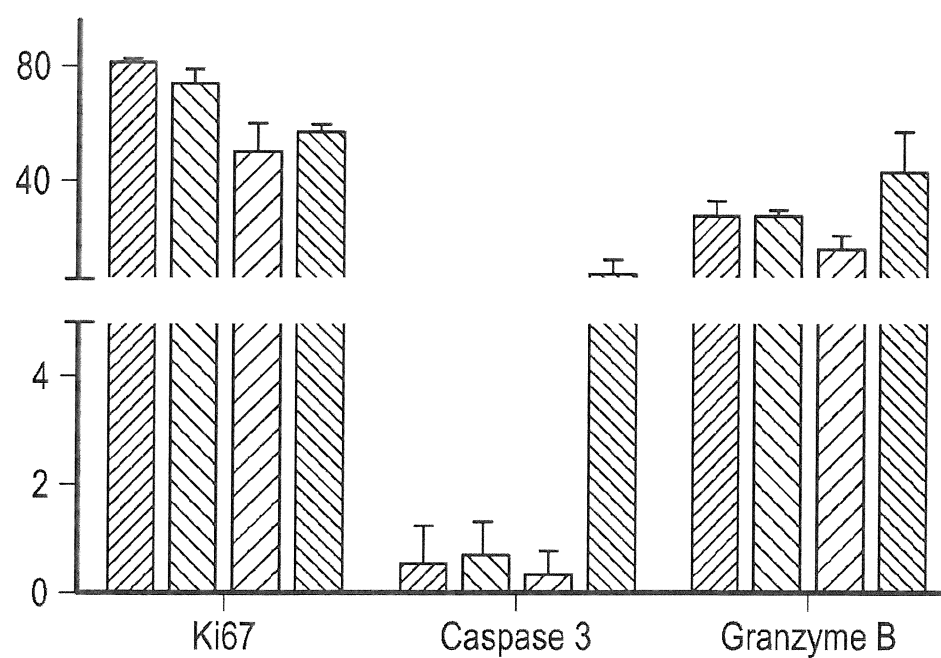


FIG. 2G

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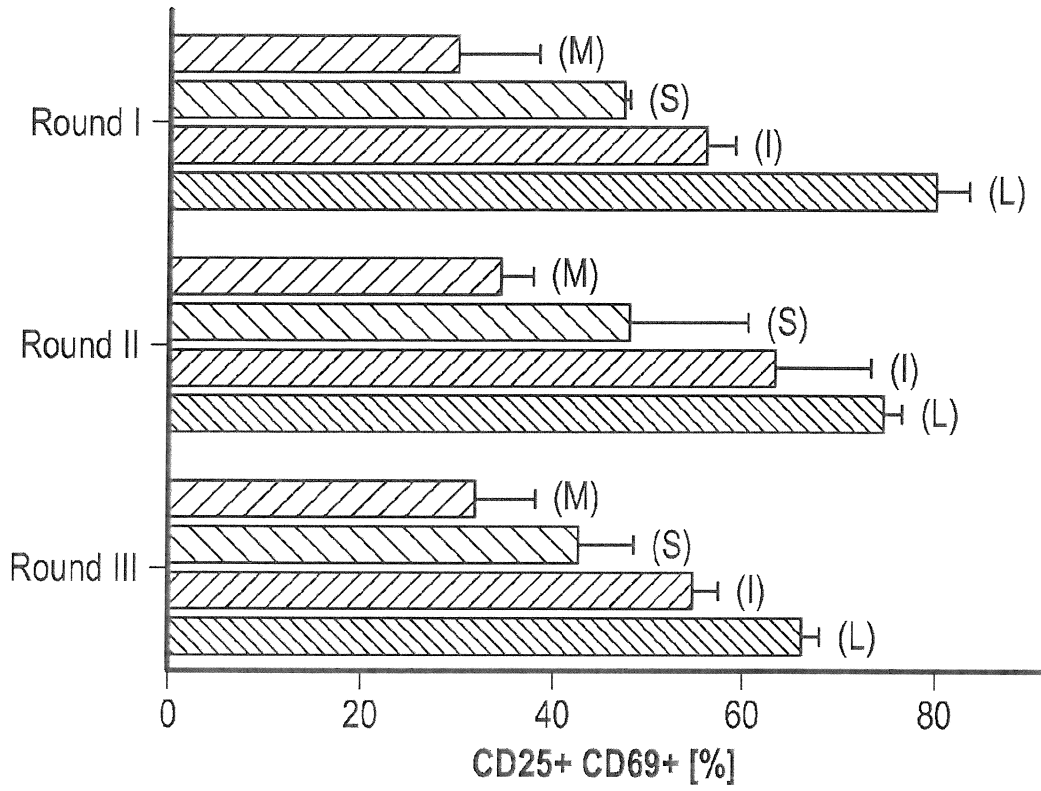


FIG. 3A

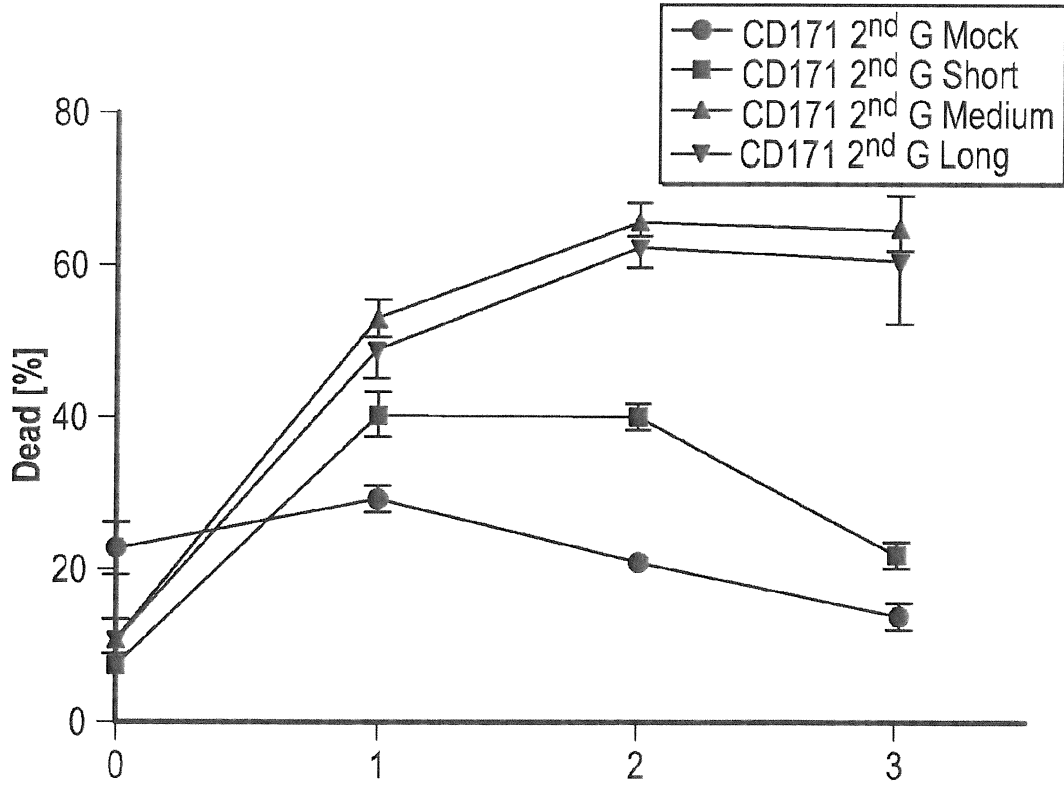


FIG. 3B

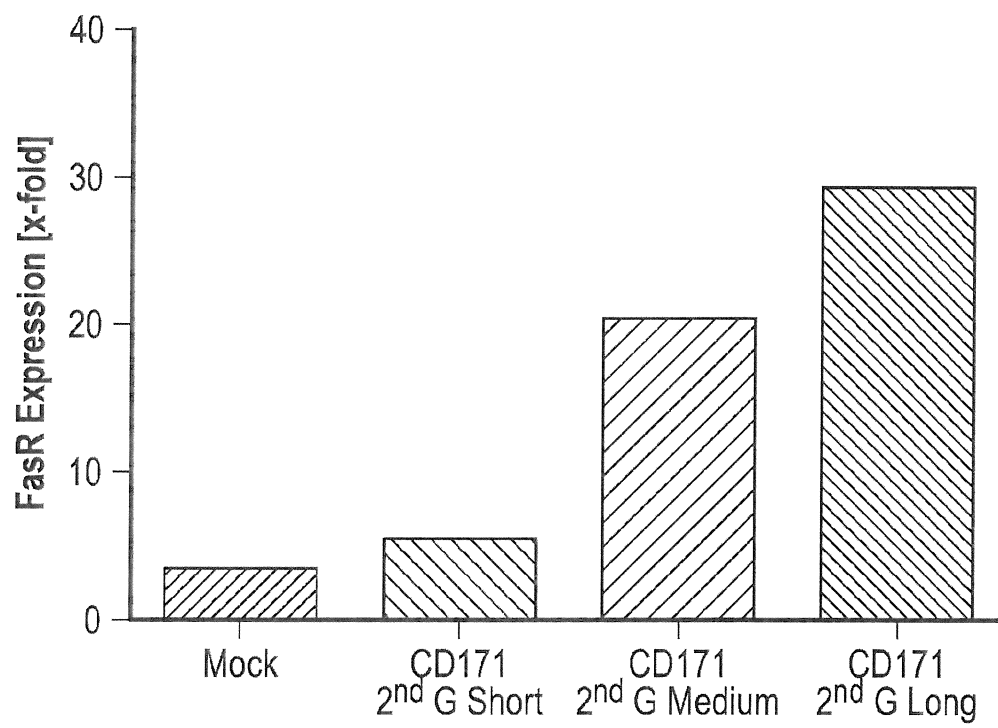
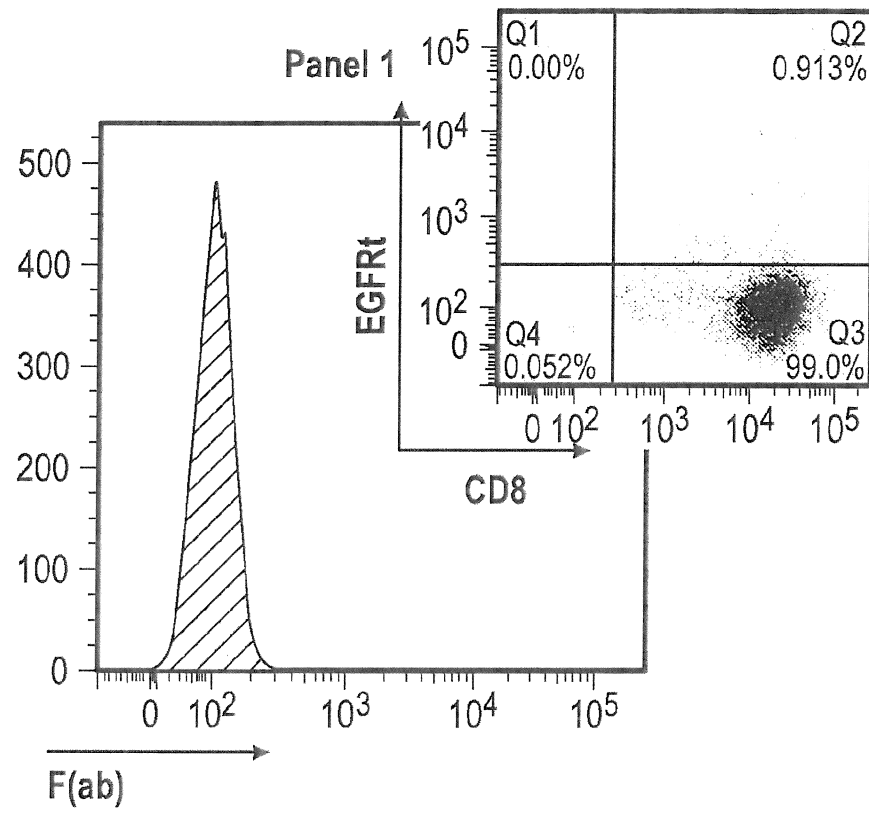
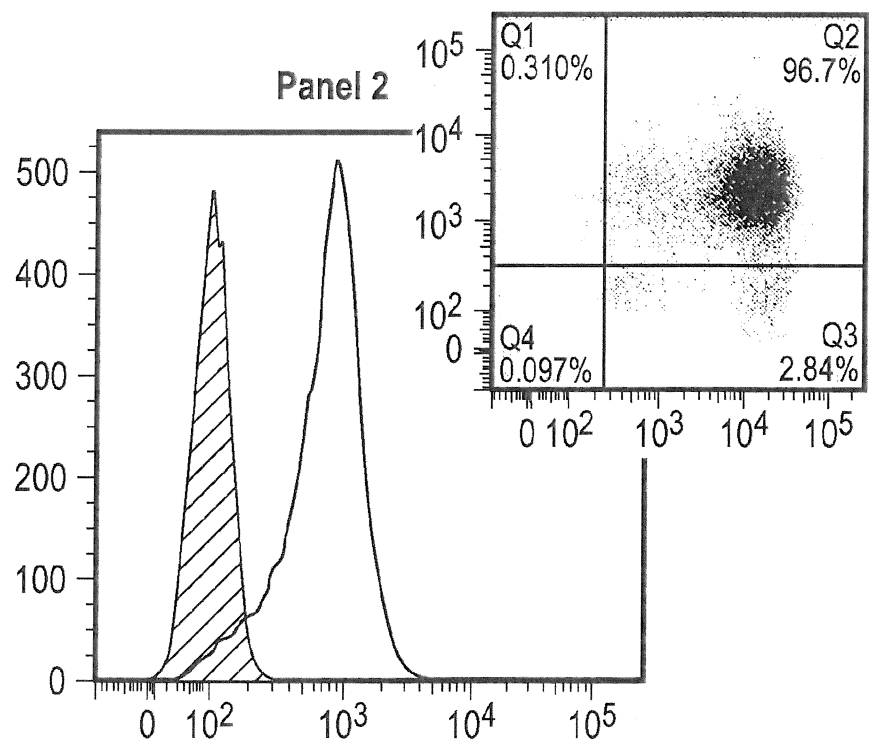
**FIG. 3C**

FIG. 4A



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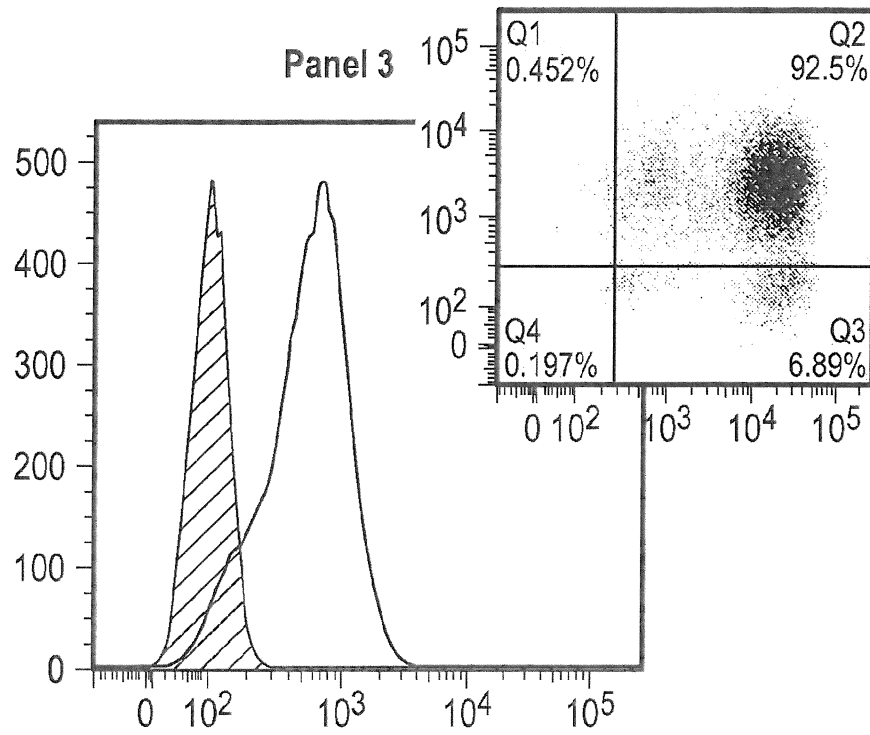


FIG. 4A (Continued)

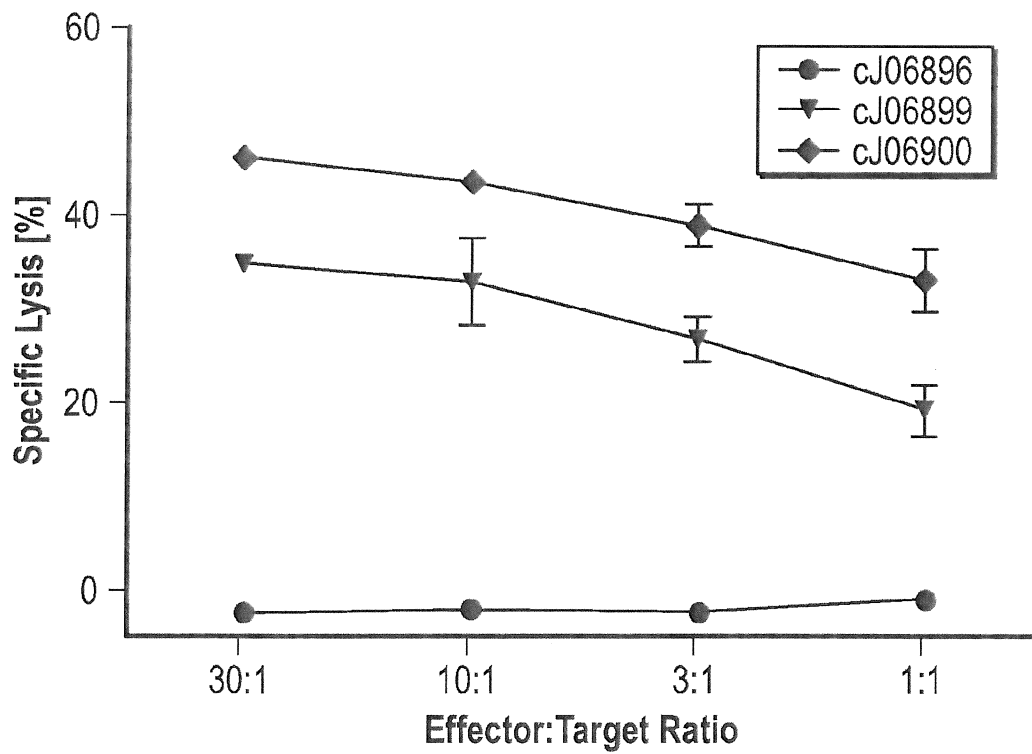


FIG. 4B

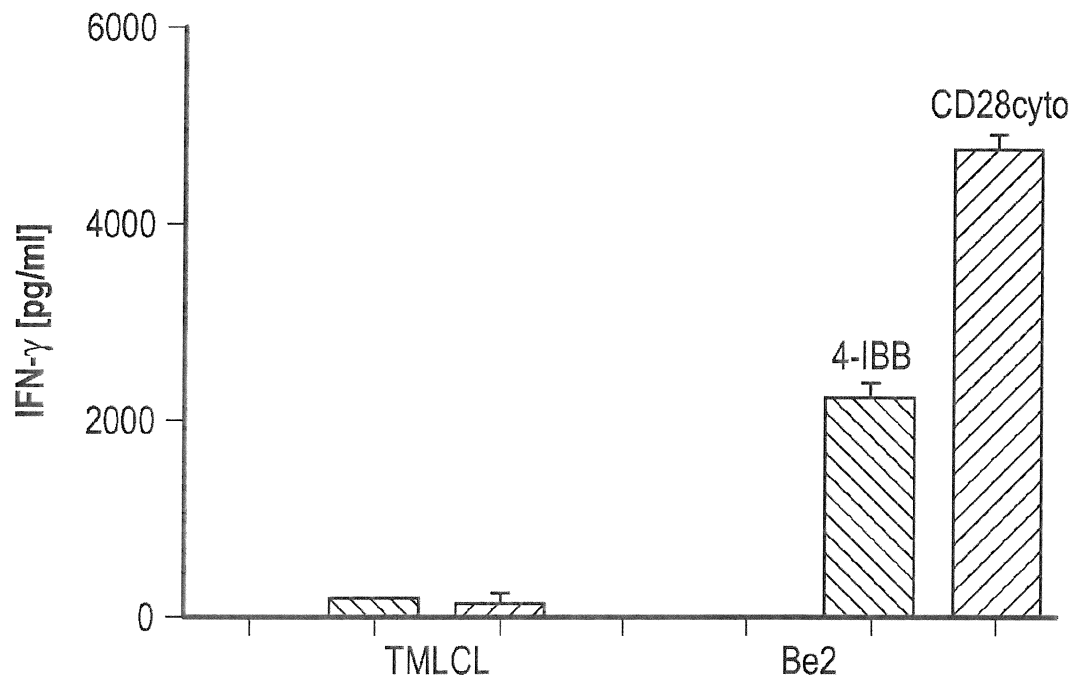


FIG. 4C

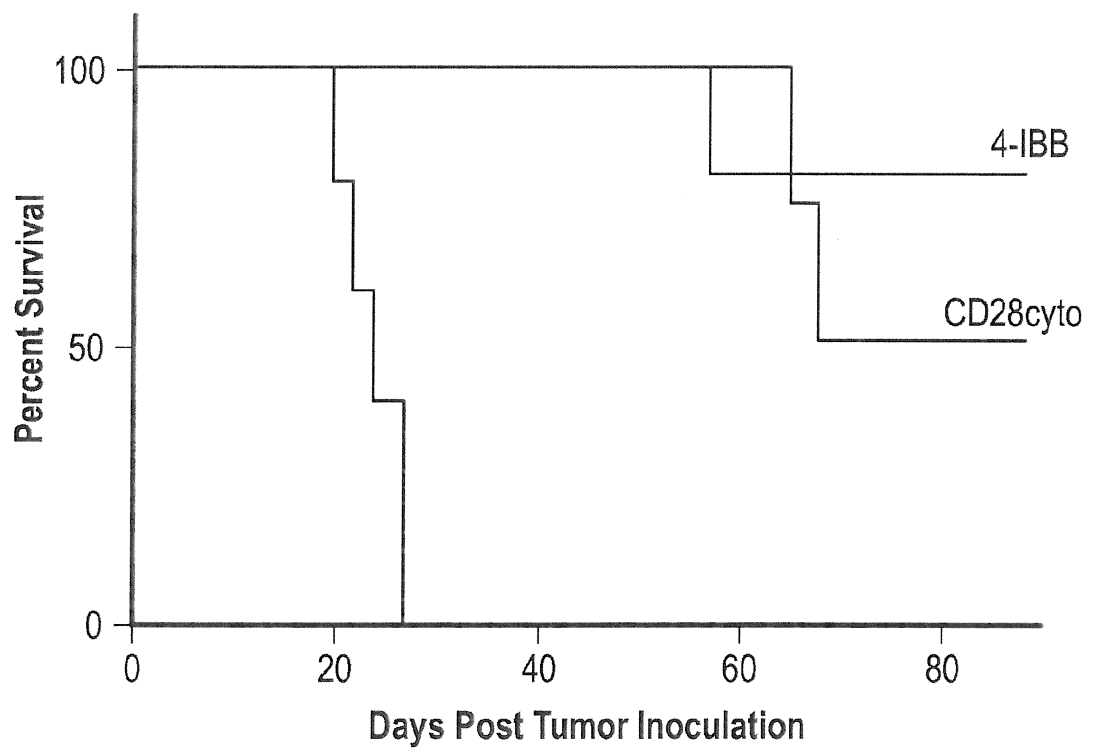


FIG. 4D

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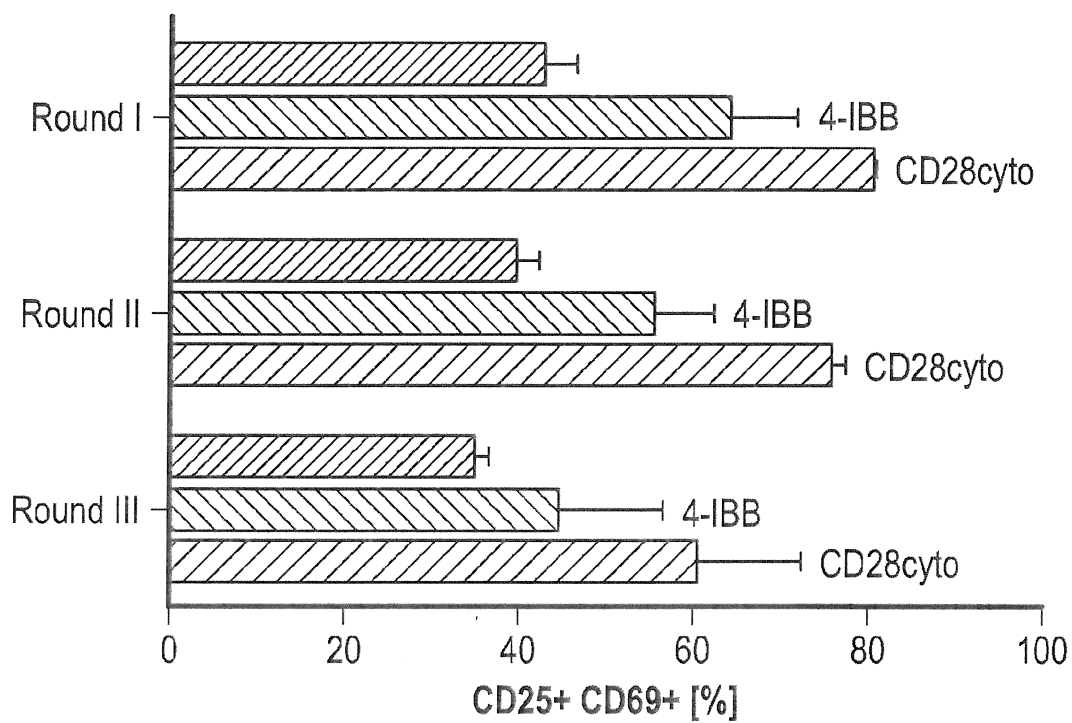


FIG. 4E

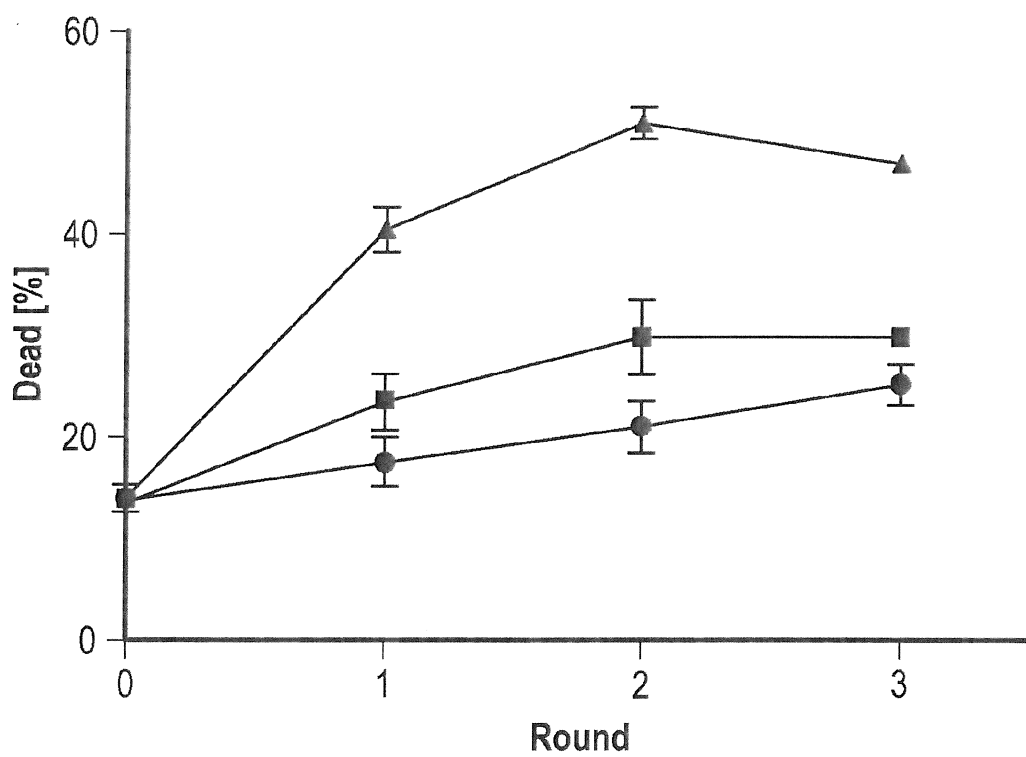


FIG. 4F

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1  GTTAGACCAG ATCTGAGCCT GGGAGCTCTC TGGGTAACCTA GGAACCCAC TGCTTAAGCC TCAATAAAGC TTGCCTTGAG TGCTTCAAGT AGTGTGTGCC
   CAATCTGGTC TAGACTCGGA CCTTCGAGAG ACCGATTGAT CCCTTGGGTG AGCAATTCCG AGTATTTTCG AACGGAATC ACGAAGTTCA TCACACACGG
101 CGTCTGTGT GTGACTCTGG TAACHAGAGA TCCCTCAGAC CCTTTTAGTC AGTGTGAAA ATCTCTAGCA GTGGGCCCGG AACAGGGACT TGAAAGCGAA
   GCAGACAACA CACTGAGACC ATTGATCTCT AGGAGTCTG GAAAAATCAG TCACACCTTT TAGAGATCGT CACCGCGGGC TTGTCCCTGA ACTTTCGCTT

                               psi
201 AGGGAACCA GAGGAGCTCT CTCGAGCGCAG GACTCGGCTT GCTGAAGCGC GACGGGAGGG CGCGGACTGG TGAGTACGCC AAAAATTTTG
   TCCCTTTGGT CTCCTCGAGA GAGCTCGGTC CTGAGCCGAA CGACTTCGG CGTGCCGTTT TCCGCTCCCC GCGCTGACC ACTCATGCGG TTTTAAAC

                               psi
301 ACTAGGGAG GCTAGAAGG GAGAGATGGG TGGGAGAGCG TCAGTATTAA GCGGGGGAGA ATTAGATCGA TGGGAAAAA TTCGGTTAAG GCCAGGGGA
   TGATCGCTC CGATCTTCCT CTCTACCC ACCTCTCGC AGTCATAATT CGCCCCCTCT TAATCTAGCT ACCCTTTTTT AAGCCAATTC CGGTCCCCCT
401 AAGAAAAAT ATAAATTAA ACATATAGTA TGGCAAGCA GGGAGCTAGA ACGATTCGCA GTTAATCCTG GCCTGTTAGA AACATCAGAA GGCTGTAGAC
   TTCTTTTTTA TATTTAAATT TGTATATCAT ACCGTTCTG TCGTAGCTCT TCGTAAGCGT CAATTAGGAC CGGACAATCT TTGTAGTCTT CCGACATCTG
501 AAATACTGG ACAGTACAA CCATCCCTTC AGACGGATC AGAAGAACTT AGATCATTA ATAAATACAGT AGCAACCTC TATTGTGTG ATCAAAGGAT
   TTTATGACCC TGTGATGTT GGTAGGGAAG TCTCTCTAG TCTTCTTGA TCTAGTAATA TATTATGTCA TCGTTGGGAG ATAACACACG TAGTTTCCCTA
601 AGATAAAAA GACACAAGG AAGCTTTAGA CAAGATAGAG GAAGAGCAA ACAAAAGTAA GAAAAAGCA CAGCAAGCAG CAGTGACAC AGGACACAGC
   TCTCTATTT CTGTGGTTC TTGCAAACT GTTCTATCT GTTCTCGTTT TGTTTTCATT CTTTTTTCGT GTCGTTCTG GTCGACTGT TCCTGTGTG
701 AATCAGTCA GCCAAATTA CCTATAGTG CAGAACATCC AGGGCAAT GGFACATCAG GCATATCAC CTAGAACITT AAATGCATGG GTAAAAGTAG
   TTAGTCCAGT CGGTTTAAAT GGGATATCAC GTCTGTAGG TCCCGGTTA CCATGTAGTC CGGTATAGTG GATCTTGAAT TTACGTACC CATTTCATC
801 TAGAAGAGAA GGCCTTCAGC CCAGAAGTGA TACCATGTT TTACAGATTA TCAGAAAGG CCACCCCA AGATTTAAAC ACCATGCTAA ACACAGTGGG
   ATCTTCTCT CCGAAAGTC GGTCTCACT ATGGTACAA AAGTCGTAAT AGTCTTCTC GGTGGGGTGT TCTAAATTG TGGTACGATT TGTGTCACCC

                               RRE
901 GGGACATCAA GCAGCATGC AATCTTAAA AGACACCATC AATCAGGAAG CTGCAGGCAA AGAGAAGAGT GGTGCAGAGA GAAAAAGAG CAGTGGGAT
   CCTGTAGTT CGTCGGTACG TTTACAAATT TCCTGTGTAG TTAATCTCTT CACGTCCGTT TCTCTTCTCA CCACGTCTCT CTTTTTCTC GTCACCCCTTA

                               RRE
1001 AGGAGTTTG TTCCTTGGG TTCCTGGAGC AGCAGGAGC ACTATGGCG CACGCTCAAT GACGCTGACG GTACAGGCCA GACAATTATT GTCTGGTATA
   TCCTCGAAAC AAGGAACCA AGAACCTCG TCGTCTCTG TGATACCCG CTGCGAGTTA CTGCGACTGC CATGTCCGGT CTGTTAATAA CAGACATAAT

                               RRE
1101 GTGCACAGC AGAACAAATT GCTGAGGGCT ATTGAGCGC AAGACATCT GTTGCAACTC ACAGTCTGG GCATCAAGCA GCTCCAGGCA AGAATCCTGG
   CACGTCGTCG TCTTGTAAA CGACTCCCGA TAACTCCGG TTGTCGTAGA CAACGTTGAG TGTGAGACCC CGTAGTTCTG CGAGGTCCGT TCTTAGGACC
   flap
                               ~~~~~
1201 CTGTGAAAG ATACATAAG GATCAACAGC TCCGTTGGGAT TTGGGTTGC TGTGAAAAC TCATTGTCAC CACTGTGTG CCTTGGATCT ACAAATGGCA
   GACACCTTC TATGGATTTC CTAGTTGTCG AGGACCCCTA AACCCCAAC AGACCTTTG AGTAAACGTG GTGACGACAC GGAACCTAGA TGTTTACCGT

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FIG. 5

1301 ~TATTCAATCC~ACAAATTITAA~AAGAAAGGG~GGATPGGG~GGTACAGTGC~AGGGAAAGA~ATAGTAGACA~TAATAGCAAC~AGACATACAA~ACTAAAGAAT~
 CATAAGTAGG~TGTTAAATTT~TTCTTTTCCC~CCCTAACCCC~CCATGTCACG~TCCCCTTCT~TATCATCTGT~ATTATCGTTG~TCTGTATGTT~TGATTTCTTA
 ~~~~~~flap  
 1401 ~TACAAAACA~AATTACAAA~ATTCAAAAT~TTCGGGTTTA~TTACAGGAC~AGCAGAGATC~CAGTTGGGG~ATCAATTGCA~TGAAGAATCT~GCTTAGGGTT~  
 AGTTTTTGT~TTAATGTTTT~TAAGTTTTAA~AAGCCCAAA~AATGTCCCTG~TCGTCTCTAG~GTCAAAACCC~TAGTTAACGT~ACTTCTTAGA~CGAATCCCAA  
 ~~~~~~flap  
 1501 ~AGCGGTTTTG~CGCTGCTTCG~CGAGGATCTG~CGATCGCTCC~GGTGGCGGTC~AGTGGGAGCA~GCGACATCG~CCACAGTCC~CCGAGAAGTT~GGGGGGAGGG~
 TCCGCAAAAC~GCGACGAAGC~GCTCCTTAGAC~GCTAGCGAGG~CCACGGGCAG~TCACCCGTCT~CGGTGTAGC~GGGTGTACAG~GGCTCTTCAA~CCCCCTCCC
 ~~~~~~EFlp  
 1601 ~GTCCGGCAAT~GAACCGGTGC~CTAGAGAAG~TGGCGGGGG~TAACTGGGA~AAGTATGTC~GTGTACTGGC~TCCGCTTTT~TCCCAGGGT~GGGGGAGAAC~  
 CAGCCGTTAA~CTTGGCCACG~GATCTCTTCC~ACCGCGCCCC~ATTGACCCCT~TTCACTACAG~CACATGACCG~AGCGGAAAA~AGGCTCCCA~CCCCCTCTTG  
 ~~~~~~EFlp  
 1701 ~CGTATAAAG~TGCAGTAGTC~GCCGTGAACG~TTCCTTTTCG~CAACGGGTTT~GCCGCCAGAA~CACAGCTGAA~GCTTCGAGGG~GTCGCGATCT~CTCCTTCACG~
 GCATATATTC~ACGTCAATCAG~CGGCACTTGC~AAGAAAAAGC~GTTGGCCAAA~CGGCGGTCTT~GTGTGACTT~CGAAGCTCCC~CGAGCGTAGA~GAGGAAGTGC
 ~~~~~~EFlp  
 1801 ~CGCCCGCGC~CCTACCTGAG~GCCGCGATCC~ACGCGGTTG~AGTCCGTTTC~TGCCTCTCC~CGCTGTGGT~GCTCCTGAA~CTGCGTCCG~CGTCTAGGTA~  
 GCGGCGCGCG~GGATGGACTC~CGGCGGTAGG~TGCGGCCAAC~TCAGGCGCAAG~ACGGCGGAGG~GCGGACACCA~CGGAGGACTT~GAGCGAGGCG~GCAGATCCAT  
 ~~~~~~EFlp  
 1901 ~AGTTTAAAG~TCAGGTGAG~ACCGGGCCTT~TGTCCGGCG~TCCCTTGGAG~CCTACCTAGA~CTGAGCCGGC~TCTCCACGCT~TTGCTTGACC~CTGCTTGCTC~
 TCAAAATTCG~AGTCCAGTC~TGGCCCGGAA~ACAGGCGCG~AGGGAACCTC~GGATGGATCT~GAGTCGGCCG~AGAGGTGCCA~AACGGACTGG~GACGAACGAG
 ~~~~~~EFlp  
 2001 ~AACTCTAGT~CTTTGTTCG~TTTTCTGTTT~TGGCGCGTTA~CAGATCCAAG~CTGTGACCGG~CGCTACGGC~TAGCGCCGCC~TACCGCCGCC~ACCATGCTGC~TGCTGGTGAC~  
 TTGAGATGCA~GAAACAAAGC~AAAAGACAAG~ACGCGGCAAT~GTCTAGGTTT~GACACTGGCC~GCGGATGCCG~ATCGCGGCGG~TGGTACGAGC~ACGACCACTG  
 ~~~~~~Ce7scFv  
 2101 ~CAGCCTGGTG~CTGTGCGAGC~TGCCCAACC~CGCCTTCTG~CTGATCCCC~AGGTGCAGCT~GCAGCAGCCT~GGGCGCGAGC~TGGTGAAGCC~AGGCGCCAGC~
 GTCGGACGAC~GACACGCTG~ACGGGTGGG~GCGGAAAGAC~GACTAGGGG~TCCACGTGCA~CGTCGTGCGA~CCGCGGCTCG~ACCACTTCGG~TCCGCGGTG
 ~~~~~~Ce7scFv  
 2201 ~GTGAAGTGT~CCTGCAAGC~CAGCGGCTAC~ACCTTCACC~GCTACTGGAT~GCACTGGTG~AAGCAGAGAC~CCGGCCACCG~CCTGGAATGG~ATCGGGGAGA~  
 CACTTCCACA~GGACGTTCG~GTCGCGATG~TGGAAATGGC~CGATGACCTA~CGTGACCCAC~TTCTGTCTCTG~GGCCGGTGCC~GGACCTTACC~TAGCCGCTCT  
 ~~~~~~Ce7scFv  
 2301 ~TCAACCCAG~CAACGCGCG~ACCACTACA~ACGAGCGGT~CAAGAGCAAG~GCCACCTGA~CCGTGGACAA~GAGCAGCACC~ACCGCTTCA~TGCAGCTGTC~
 AGTTGGGTC~GTTGCGGCC~TGGTTGATG~TGTCTGCTTC~GTTCTGCTTC~CGTGGGACT~GGCACCTGTT~CTCGTCGTGG~TGGCGGAAGT~ACGTCGACAG
 ~~~~~~Ce7scFv  
 2401 ~CGGCCTGACC~AGCGAGGACA~GCGCGTGTA~CTTCTGCGCC~AGGACTACT~ACGGACCAG~CTACAACCTC~GACTACTGG~GCCAGGCGAC~CACACTGACC~

FIG. 5 (Continued)

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GCCGGAAGTGG TCGCTCCTGT CGCGGCACAT GAACACGCGG TCCCTGATGA TGCCGTGGTC GATGTTGAAG CTGATGACCC CGGTCCCGTG GTGTGACTGG
~
2501 GTGAGCAGCG GCGGAGGGG CTCTGGCGG GGAGGATCTG GGGAGGGGG CAGGACATC CAGATGACCC AGAGCAGCAG CAGCTTCAGC GTGAGCCTGG
CACTCGTGGC CGCCTCCCC GAGACGCGG CCTCTAGAC CCCTCCCCC GTGCTGTAG GTCTACTGGG TCTCGTCGTC GTGGAAGTCG CACTCGGACC
~
2601 GCGACGGGT GACCATCACC TGTAAAGGCCA ACCAGGACAT CAAACACCGG CTGGCCTGGT ATCAGCAGAC CCCCAGCAAC AGCCCCAGGC TGCTGATCAG
CGCTGGCCCA CTGGTAGTGG ACATTCCGGT TGTCTCTGTA GTTGTGGCC GACCGGACCA TAGTCGTCTG GGGGCCGTG TCGGGTCCG ACGACTAGTC
~
2701 CGGCGCACC AACCTGGTGA CCGCGGTGCC CAGCGGTTT AGCGGAGCG GTCCCGCAA GGAATACACC CTGACCATCA CAAGCCTGCA GGCCGAGGAC
GCCGCGGTGG TTGGAACACT GGCACGACCG GTCCGCCAAA TCGCGTCCG CGAGGCCGTT CCTGATGTGG GACTGGTAGT GTTCGGACGT CCGGCTCCTG
~
2801 TTCGCCACCT ACTACTGCCA GCAGTACTGG TCCACCCCTT TCACCTTCGG CAGCGGCACC GAGCTGGAAA TCAAAGAGAG CAAGTACGGA CCGCCCTGCC
AAGCGGTGA TGAATACGGT CGTATGACCG AGGTGGGGA AGTGAAGCC GTCCCGCTGG CTCGACCTTT AGTTTCTCTC GTTCATGCTC GCGGGGACCG
~
2901 CCCCCTGCCC TGGCCCGGAG TTCTCTGGG GACCCAGCGT GTTCTGTTC CCCCCAAG CCAAGGACAC CCTGATGATC AGCCGACCC CCGAGGTGAC
GGGGAACGG ACGGGGGCTC AAGACCCCG CTGGTTCGCA CAAGACAAG GGGGGTTCG GTTCTCTGTG GGAATCTAG TCGGCTGGG GGCTCCACTG
~
3001 CTGCGTGGT GTGACGTGA GCCAGGAAGA TCCGAGGTC CAGTTCAAT GTTACGTGGA CCGCGTGGAA GTGCACAACG CCAAGACCAA GCCAGAGAG
GACGCACCAC CACCTGCACT CGTCTCTTCT AGGCTCCAG GTCAAGTTAA CCATGCACCT GCCGACCTT CAGGTGTTGC GGTCTCTGTT CCGGCTCTCT
~
3101 GAACAGTTCA ACACACCTA CCGGTGGTG TCTGTCTGA CCGTGTCTGA CCAGGACTGG CTGAACGGA AAGAATACAA GTGCAAGGTG TCCAACAAAG
CTTGTCAGT TGTCTGGAT GGGCCACCAC AGACACGACT GGCACGACGT GGTCTTGACC GACTTGCCGT TTCTTATGTT CACGTTCCAC AGGTTGTTCC
~
3201 GCGTCCCGC CAGATCGAA AAGACCATCA GAAGGCCAA GGGCAGCCT CCGGAGCCC AGGTGTACAC CCTGCCCTCC TCCAGGAAG AGATGACCAA
CGGACGGTC GTCTAGCTT TTCTGGTAGT CGTCCGGT CCGGTTCGGA GCGTCCGGG TCCACATGTG GGACGGAGG AGGTCCCTC TCTACTGTT
~
3301 GAACAGGTG TCCCTGACCT GCCTGGTGA GGGTCTTAC CCCAGCGACA TCGCCGTGGA GTGGAGAGC AACGGCCAG CTGAGAACA CTACAAGACC
CTTGTGCCAC AGGACTGGA CCGACCACTT CCGAAGATG GGTCTGCTG AGCGCACCT CACCCTCTCG TTGCCGGTC GACTCTTGT GATGTTCTGG
~
3401 ACCCTCCCG TGTGGACAG CGACGGCAGC TTCTTCTGT AGACCGGCT GACCGTGGAC AAGAGCCGT GGCAGGAAG CAACGCTTT AGCTGCAGCG
TGGGAGGGC ACACCTGTC GTGCCGTG AAGAAGACA TTCTGGCGA CTGGCACCT TTCTCGGCA CCGTCTTCC GTTGCAGAAA TCGACGTGCG

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FIG. 5 (Continued)

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                                ~~~~~
 CD28tm
                                ~~~~~

IgG4 CH3
~~~~~
3501 TGATGCACGA GGCCTGCAC AACCACTACA CCAGAAGAG CCGAGCCTG TCCCTGGCA AGATGTTCTG GGTGCTGGTG GTGGTGGGCG GGGTGTGGC
 ACTACGTGCT CCGGGACGTG TTGGTGATGT GGGTCTTCTC GGACTCGGAC AGGACCCCGT TCTACAAGAC CCAAGACCAC CACCACCCGC CCCACGACCG

                                ~~~~~
                                4-1BB
                                ~~~~~

CD28tm
~~~~~
3601  CTGCTACAGC  CTGCTGGTGA  CAGTGGCCTT  CATCATCTTT  TGGGTGAAC  GGGGCAGAAA  GAAACTCCTG  TATATATTCA  AACAAACCAT  TATGAGACCA
      GACGATGTG  GACGACCACT  CTCACCGGAA  GTAGTAGAAA  ACCCACTTTG  CCCCCTCTTT  CTTTGAGGAC  ATATATAAGT  TTGTTGGTAA  ATACTCTGGT

                                ~~~~~
 Zeta
                                ~~~~~

4-1BB
~~~~~
3701 GTACAAACTA CTCAGAGGGA AGATGGCTGT AGTGCCCGAT TTCCAGAAGA AGAAGAAGGA GGATGTGAAC TCGGGGTGAA GTTCAGCAGA AGCGCCGACG
 CATGTTGAT GAGTCTCCT TCTACCGACA TCGACGGCTA AAGTCTTCT TCTTCTTCT CCTACACTTG ACGCCCACTT CAAATCGTCT TCGCGGTGCG

                                ~~~~~
                                Zeta
                                ~~~~~

3801 CCCCTGCCTA CAGCAGGGC CAGAAATCAG TGTACAACGA GGTGAACCTG GGCAGAAGGG AAGAGTACGA CGTCTTGGAT AAGCGGAGAG GCGGGACCC
 GGGACGGAT GGTGCTCCCG GTCTTAGTGC ACAATGTTGCT CGACTTGGAC CCGTCTTCCC TTCCTCATGT GCAGGACCTA TTCGCCCTCT CGGCCCTTGG

                                ~~~~~
                                Zeta
                                ~~~~~

3901 TGAGATGGC GGAAGCCTC GCGGGAAGAA CCCCAGGAA GGCTGTATA ACGAACCTGA GAAAGACAAG ATGGCCGAGG CCTACAGCGA GATCGGCATG
 ACTTACCCG CCGTTCGGAG CCGCTTCTT GGGGCTCCT CCGGACATAT TGCTTGACGT CTTTCTGTT TACCGGCTCC GGATGTCGCT CTAGCCGTAC

                                ~~~~~
                                Zeta
                                ~~~~~

4001 AAGGCGGAGC GGAGCGGGG CAAGGCGCC GAGGCGCTGT ATCAGGCGCT GTCCACCGCC ACCAAGGATA CCTACGACGC CCTGCACATG CAGGCCCTGC
 TTCCCGCTCG CCTCCGCCCC GTTCCCGGTG CTGCGCGGAC TAGTCCCGGA CAGGTGGCGG TGGTTCCTAT GGATGCTGCG GGACGTGTAC GTCCGGGACG

                                ~~~~~
                                T2A
                                ~~~~~

Zeta
~~~~~
4101  CCCCAAGGCT  CGAGGCGGC  GGAGAGGGCA  GAGGAAGTCT  TCTAACATGC  GGTGACGTGG  AGGAGAAATCC  CGGCCCTAGG  ATGCTTCTCC  TGGTGACAG
      GGGGTCCGA  GCTCCCGCCG  CCTCTCCCGT  CTCTTCAGA  AGATGTACG  CCACTGCACC  TCCTCTTAGG  GCGGGATCC  TACGAAGAGG  ACCACTGTT

                                ~~~~~
 EGFRt
                                ~~~~~

4201  CTTTCTGCTC  TGTGAGTTAC  CACACCCAGC  ATTCTCTCTG  ATCCCAGCA  AAGTGTGTA  CGGAATAGGT  ATTGGTGAAT  TTAAAGACTC  ACTCTCCATA
      GGAAGACGAG  ACACTCAATG  GTGTGGGTG  TAAGGAGGAC  TAGGTGCGT  TTCACACATT  GCCTTATCCA  TAACCACCTA  AATTCTGAG  TGAGAGGTAT

                                ~~~~~
 EGFRl
                                ~~~~~

4301  AATGTACGA  ATATAAACA  CTTCAAAAAC  TGCACCTCCA  TCAGTGGGA  TCTCCACATC  CTGCCGGTGG  CATTTAGGG  TGACTCCTTC  ACACATACTC
      TTACGATGCT  TATAATTGT  GAAGTTTGT  ACGTGGAGGT  AGTCACCGT  AGAGGTGTA  GACGGCCACC  GTAAATCCCC  ACTGAGGAAG  TGTGTATGAG

                                ~~~~~
 EGFRt
                                ~~~~~

4401  CTCCTCTGGA  TCCACAGGAA  CTGGATATTC  TGAANAACCGT  AAAGGAAATC  ACAGGGTTT  TGCTGATTCA  GGCTTGGCCT  GAAACACGA  CGGACCTCCA

```

FIG. 5 (Continued)



GAGGAGACCT AGGTGTCCTT GACCTATAAG ACTTTTGGCA TTTCTCTTAG TGTCCTAAAA ACAGCTAAGT CCGAACCGGA CTTTGTGCTT GCCTGGAGGT  
 EGFRT  
 4501 TGCCTTTGAG AACCTAGAAA TCATACGGG CAGGACCAAG CAACATGGTC AGTTTCTCT TGAGTCGTC AGCTGAACA TAACATCCTT GGCATTACGC  
 ACGGAACCTC TTGGAATCTT AGTATCGCC GTCCCTGGTC GTTGTACCAAG TCATAAGAGA ACGTCAGCAG TCGACTTGT ATTGTAGGAA CCCTAAATGCG  
 EGFRT  
 4601 TCCCTCAAGG AGATAAGTGA TGGAGATGTG ATAAATTCAG GAAACAAAA TTTGTGCTAT GCAATACAA TAACTGGAA AAACTGTTT GGGACCTCCG  
 AGGGAGTCC TCTATTCACT ACCCTACAC TATTAAGTC CTTTGTCTTTT AAACAGATA CGTTATGTT ATTGACCTT TTTTGACAAA CCCTGGAGGC  
 EGFRT  
 4701 GTGAGAAAAC CAAAATATA AGCAACAGAG GTGAAAACAG CTGCAAGGC ACAGGCCAGG TCTGCCATGC CTGTGCTCC CCCGAGGGCT GCTGGGGCCC  
 CAGTCCTTTG GTTTTAATAT TCGTTGTCTC CACTTTTGTG GACGTCGGT TGTCGGTCC AGACGGTACG GAACACGAGG GGGCTCCCGA CGACCCCGGG  
 EGFRT  
 4801 GGAGCCAGG GACTGCTCT CTTGCCGAA TGTACGCCGA GGCAGGAAT GCGTGGACAA GTGCAACCTT CTGGAGGGTG AGCCAAGGA GTTTGTGGAG  
 CCTCGGGTCC CTGACGCAGA GAACGGCCTT ACAGTCGGCT CCGTCCCTTA CGACCTGTT CAGCTTGAA GACCTCCAC TCGGTCCCT CAAACACCTC  
 EGFRT  
 4901 AACTCTAGT GCATACAGT GCACCCAGAG TGCCTGCCCTC AGCGACGAG GGTGGGTCTC TCGCTACTT TAGTGGACG TGTCCTGCC CTGCTCTGT GACATAGGTC ACACGGGTGA  
 TTGAGACTCA CGTATCTAC GGTGGGTCTC ACGACGGAG TCCGCTACTT TAGTGGACG TGTCCTGCC CTGCTCTGT GACATAGGTC ACACGGGTGA  
 EGFRT  
 5001 ACATTGACCG CCCCACCTG CTCACGACCT GCCCGGAGG AGTATGGGA GAAACAAACA CCTGTGCTG GAAGTACGA GACGCCGGC ATGTGTGCA  
 TGTAACTGCC GGGGTGACG CAGTTCTGGA CCGGCGCTCC TCAGTACCCT CTTTGTGTTG GSGACCAGAC CTTCATGCGT CTGCGGGCGG TACACACGGT  
 EGFRT  
 5101 CCTGTGCGAT CCAAACCTGA CCTACGATG CACTGGGCA GGTCTGAAG GCTGTCCAAC GAATGGGCTT AAGATCCCGT CCATCGCCAC TGGGATGGTG  
 GGACACGGTA GGTGTGACGT GGATGCTAC GTGACCGGT CCAGAACTTC CGACAGTTG CTACCCCGA TTCTAGGGA GGTAGCGTG ACCCTACCAC  
 EGFRT  
 5201 GGGCCCTCC TCTTGCTCT GGTGTGGCC CTGGGATCG GCCTCTTCAI GTGAGCGGC GCTCTAGACC CGGGCTGCAG GAATTCGATA TCAAGCTTA  
 CCCCCGAGG AGAACGACGA CCACCACCGG GACCCTAGC CGGAGAAAGTA CACTCGCCCG CGAGATCTGG GCGCGACGTC CTTAAGCTAT AGTTCGAATA  
 WPRE  
 5301 CGATAATCAA CCTCTGGATT ACAAATTTG TGAAGATTG ACTGTATTC TTAACCTATG TGCTCTTTT ACGCTATGT GATACGCTG TTTAATGCTT  
 GCTATTAGTT GGAGACCTAA TGTTTTAAAC ACTTCTAAC TGACATAAG AATTGATACA ACAGGAAAA TCGGATACAC CTATGCGAGC AAATTACGGA  
 WPRE  
 5401 TTGTATCATG CTATTGCTC CCGATGGCT TTCAATTTCT CTCCTTGTA TAAATCTTG TTGCTGCTC TTATAGGA GTTGTGGCC GTTGTGAGG  
 AACATAGTAC GATAACGAAG GGCATACCGA AAGTAAAGA GGAGAACAT ATTAGGACC AACGACAG AAATACTCCT CAACACCGG CAACAGTCCG  
 WPRE  
 5501 AACGTGGCT GGTGTGACT GTGTTGCTG ACGGAACCC CACTGGTGG GGCATTGCCA CCACCTGTCA GCTCCTTTCC GGGACTTCC CTTTCCCTT  
 TTGCACGCA CCACACGTGA CACAACGAC TGCCTTGGG GTACCAACC CCGTAACGT GGTGGACAGT CGAGGAAAG CCCTGAAAGC GAAAGGGGA  
 WPRE

FIG. 5 (Continued)

5601 CCCTATTGCC ACGGCGGAAC TCATCGCCGC CTGCTTGCC CGTGTGCTGGA CAGGGGCTCG GGTGTGGGC ACTGACAATT CCGTGGTGT GTCTGGGAAA  
GGGATAACGG TGCCGGCTTG AGTAGGGCG GACGGAACGG GCGACGACCT GTCCCCGAGC CGACAACCCG TGACTGTAA GGCACCACAA CAGCCCCTTT  
5701 TCATCGTCTT TTCTTGCTT GCTCGCTGT GTTGCCACCT GGATCTGCG GGACGCTCC TTCTGCTAGC TCCTTTCGG CCTCAATCCA GCGGACCTTC  
AGTAGCAGA AAGGAACCGA CGAGCGGACA CAACGGTGA CTAAACACCG GCCTGCGAG AAGACGATG AGGAAAGCCG GGAGTTAGGT CGCCTGGAAG  
5801 CTTCGCGGG CCTGCTGCG GCTTCGCGG CTCTTCGCGG TCCTTCGCTT CGCCTCAGA CGAGTCGGAT CTCCCTTTGG GCGGCTTCCC GGCATCGATA  
GAAGGGGCGC GGACGACGCG CGAGACGCG GAGAAGCGG AGAAGCGAA GCGGAGTCT GCTCAGCCTA GAGGAAACC CGGCGGAGG GCGTAGCTAT  
5901 CCGTCGACTA GCCGTACCTT TAAGACCAAT GACTTACAAG GCAGTGTAG ATCTTAGCCA CTCTTTTAAA GAAAAGGGG GACTTGAAG GCTAATTCAC  
GGCAGCTGAT CGGCATGGAA ATTCGTGTTA CTGAATGTTT CGTCGACATC TAGAATCGGT GAAAAATTTT CTTTTCCTCC CTGACCTTCC CGATTAAGTG  
6001 TCCCAAGAA GACAAGATCT CTTTCTTCCC TGTACTGGT TGTCTTGGT AGACCAATC TGAGCCTGG AGTCTCTGG CTAACTAGG AACCCACTGC  
AGGGTTTCTT CTGTTCTAGA CGAAAACGG ACATGACCCA GAGAGACCA TCTGGTCTAG ACTCGGACCC TCGAGAGACC GATTGATCCC TTGGGTGACG  
6101 TTAAGCCTCA ATAAAGCTTG CTTTGAGTGC TTTCAAGTAGT GTGTGCGCGT CTGTGTGTG ACTGTGTGTA CTAGAGATCC CTCAGACCTT TTTAGTCACT  
AATTCGGAGT TATTCGAAC GGAACCTACG AAGTTCATCA CACACGGGCA GACAACACAC TGAGACCAAT GATCTCTAGG GAGTCTGGGA AAATCAGTCA  
6201 GTGGAATC TCTAGCAGAA TTCGATATCA AGCTATCAG TACGTCGAC CTGAGGGGG GGCCTGGTAC CCAATTCCG CTATAGTGAG TCGTATTACA  
CACCTTTTAG AGATCTCTT AAGCTATAGT TCGAATAGCT ATGCGAGCTG GAGTCTCCCC CCGGGCCATG GGTAAAGCG GATATCCTC AGCATAATGT  
6301 ATTCACTGGC CGTCGTTTAA CAACCTCGTG ACTGGGAAA CCGTGGCGTT ACCCACTTA ATCGCTTTC AGCACAATCC CTTTCGCCA GCTGGCGTAA  
TAAGTGACCG GCAGCAAAAT GTTGAGCAC TGACCTTTT GGGACCGCAA TGGGTGAAT TAGCGGAACG TCGTGTAGG GGAAGCGGT CGACCGCAT  
6401 TAGCGAAGAG GCCGACCG ATCGCCCTC CCAACAGTTG CGAGCCTGA ATGCGGAATG GAAATTGTAA CCGTTAATAT TTTGTTAAAA TTCGCGTTAA  
ATCGCTCTC CGGGCGTGG TAGCGGAAG GGTGTCAAC GCCTCGGACT TACCGCTTAC CTTTAACAT CGCAATTATA AAACAATTT AAGCGCAAT  
6501 ATTTTGTTA ATCAGCTCA TTTTAAACC AATAGCCGA AATCGCCTT TTAGCCGCTT TAGGGAATAT TTAGTTTTCT TATCTGGCT TATCCCACT CACAACAAG  
TAAACAAT TTAGTCGAGT AAAAAATTGG TTAGCCGCTT TTAGCCGCTT TTAGCCGCTT TTAGCCGCTT TTAGCCGCTT TTAGCCGCTT TTAGCCGCTT TTAGCCGCTT  
6601 AGTTTGAAC AAGATCCAC TATTAAAGAA CGTGGACTCC AACCTCAAAG GCGGAAAAAC CGTCTATCAG GCGGATGGC CACTACGTA ACCATCACC  
TCAACCTTG TCTCAGGTG ATAAATTCTT GCACCTGAGG TTGCACTTTC CCGCTTTTTC GCAGATAGTC CCGTACCCG GTGATGCACT TGGTAGTGG  
6701 TAATCAAGTT TTTTGGGTC GAGTGCCGT AAAGCACTAA ATCGGAACCC TAAAGGGAGC CCGCGATTTA GAGCTTGAC GGAAGAGCCG CGAACGTTG  
ATTAGTTCAA AAAACCCAG CTCACGGCA TTTCTGTGAT TAGCCTTGGG ATTTCCCTCG GGGCTAAAT CTCGAACTGC CCGTTTCGGC CGCTTGACC  
6801 CGAGAAGGA AGGAAGAA GCGAAGGAG CGGGCGCTAG GGGCTGGCA AGTGTAGCG TCACGCTGC CGTAACCAAC ACACCCGCG CGCTTAATGC  
GCTCTTCTT TCCCTTCTT CGCTTCTCT CCGCGGATC CCGGACCGT TCACATCGCC AGTGTAGCG AGTGTAGCG CGATTTGGT TGTGGGCG GCGAATTACG  
6901 GCCGTACAG GCGGCTCAG GTGGCACTT TCGGGGAAAT GTGGCGGAA CCGCTATTG TTTATTTTC TAAATACAT CAAATATGA TCCGCTCATG  
CGGCGATGTC CCGCGCAGT CACCGTGAAA AGCCCTTTA CACGCGCTT GGGGATAAAC AAATAAAAAG ATTTATGTAA GTTTATACAT AGCGAGTAC  
7001 AGACATAAC CCTGATAAT GCTTCAATA TATTGAAAA GGAAGAGTAT GAGTATTCAA CATTTCCGT TCGCCCTTAT TCCCTTTT GCGGCAATTT  
TCTGTTATTG GGACTATTTA CGAAGTTATT ATAACTTTT CTTCTCTATA CTCATAAGTT GTAAAGGCAC AGCGGAATA AGGGAAAAA GCGCGTAAAA

FIG. 5 (Continued)

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7101 GCCTTCTGT TTTTGTAC CCAGAAACGC TGGTAAAGT AAAAGATGCT AAAGATGCT TGGTGCACG AGTGGGTTAC ATCGAACTGG ATCTCAACAG
CGAAGGACA AAAACGAGTG GGTCTTTGG ACCACTTCA TTTTCTACGA CTTCTAGTCA ACCACGTCG TCACCCAATG TAGCTTGACC TAGAGTTGTC

7201 CGGTAAGATC CTTGAGAGTT TTCGCCCGA AGAAGCTTT CCAATGATGA GCACITTTAA AGTTCGTCTA TGTGGCGCGG TATTATCCCG TATTGACGCC
GCCATTCTAG GAACTCTCA AAGCGGGCT TCTTGCAAAA GGTACTACT CGTGMAAAT TCAAGACGAT ACACCGCGCC ATAAATAGGC ATAACTGCGG

7301 GGGCAAGAGC AACTCGGTG CCGCATACAC TATTCTCAGA ATGACTTGGT TGACTACTCA CCAGTCACAG AAAAGCATCT TACGGATGGC ATGACAGTAA
CCCGTTCTCG TTGAGCCAGC GCGGTATGTG ATAAGAGTCT TACTGAACCA ACTCATGAGT GGTGAGTGC TTTTCGTAGA ATGCCTACCG TACTGTCAAT

7401 GAGAAATATG CAGTGTGCC ATAACCATGA GTGATAACAC TGGGCGCAAC TTTACTTCTGA CAACGATCGG AGGACCGAAG GAGCTAACCG CTTTTTTGCA
CTCTTAATAC GTCACGACGG TATTGGTACT CACTATTGTG ACGCGGTG AATGAAGACT GTTGCTAGCC TCCTGGCTTC CTCGATTGGC GAAAAAACGT

7501 CAACATGGGG GATCATGTAA CTCGGCTTGA TCGTTGGGA CCGGAGCTGA ATGAAGCCAT ACCAAACGAC GAGCGTGACA CCACGATGCC TGTAGCAATG
GTTGTACCCC CTAGTACATT GAGCGGAAT AGCAACCCCT GGCCTCGACT TACTTCGGTA TGGTTTGTG CTCGCACTGT GGTGCTACGG ACATCGTTAC

7601 GCAACAACGT TGGCAAACT ATTAAGTGG GAACACTTA CTCAGCTTC CCGCAACAA TTAATAGACT GGATGGAGG GGATAAAGTT GCAGGACCA
CGTTGTGTGA ACGCGTTGA TAAATGACCG CTTGTAGAA GAGATCGAAG GCGCGTTGT AATTATCTGA COTACCTCCG CCTATTTCAA CGTCCCTGGT

7701 TCTGGGCTC GGCCTTCCG GCTGGCTGG TTAATGCTGA TAAATCTGA GCGGTGAGC GTGGTCTCG CCGTATCATT GCAGCACTGG GGCAGATGG
AAGACGCGAG CCGGGAAGC CGACCGACCA AATAACGACT ATTTAGACCT CCGCCACTCG CACCCAGAGC GCCATAGTAA CGTCGTGACC CCGTCTTACC

7801 TAAGCCCTCC CGTATCGTAG TTAATCTAC GACGGGGAGT CAGGCAACTA TGGATGAACG AAATAGACAG ATCGCTGAGA TAGGTGCCCT ACTGATTAAAG
ATTGGGAGG GCATAGCATC AATAGATGTG CTGCCCTCA GTCCGTTGAT ACCTACTTGC TTTATCTGTC TAGCGACTCT ATCCACGGAG TGAATAATTC
Ampr

7901 CATTTGTAAC TGTACAGCA AGTTTACTCA TATAACTTTT AGATTGATT AAAACTTCAT TTTTAATTTA AAAGATCTA GGTGAAGATC CTTTTTGATA
GTAACCATG ACAGTCTGGT TCAATGAGT ATATATGAA TCTAATAA TTTTGAAGTA AAAATTAAAT TTTCTTAGAT CCACCTCTAG GAAAACTAT

8001 ATCTATGAC CAAAATCCCT TAACGTGAGT TTTCTTTCCA CTGACGCTCA GACCCCGTAG AAAAGATCAA AGGATCTCT TGAGATCCCT TTTTCTGCG
TAGAGTACTG GTTTTAGGGA ATTGCACTCA AAAGCAAGT GACTCGCAGT CTGGGGCATC TTTTCTAGT TCCTAGAAGA ACTCTAGGAA AAAAGACGC

8101 CGTAATCTGC TGTGTGAAA CAAAAAAC ACCGTACCA GCGGTGTTT GTTTGCCGA TCAAGAGCTA CCAACTCTTT TTCGAAGGT AACTGSCITC
GCATTAGACG ACGAACGTTT GTTTTTTTGG TGGCGATGGT CGCACCAAA CAAACGGCT AGTTCTCGAT GGTGAGAAA AAGGCTTCCA TTGACCGAAG

8201 AGCAGAGCGC AGATACCAA TACTGTCTT CTAGTGTAG CGTAGTTAG CCACCACTC AGAAGCTCTG TAGCACCGC TACATACCT GCTCTGCTAA
TCGTCTCGG TCTATGGTT ATGACAAGAA GATCACATC GCATCAATCC GGTGGTGAAG TTCTTGAGAC ATCGTGGCG ATGTATGGAG CGAGACGATT

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FIG. 5 (Continued)

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8301  ~~~~TCCTGTTACC AGTGGCTGCT GCCAGTGGCG ATAAGTCTGGT TCTTACCGGG ~~~~TTGACTCAA GAGATAGTT ACCGGATAAG GCGCAGCGGT CCGGCTGAAC
    AGGACATGG TCACCGACGA CGGTACCGC TATTACAGCAC AGAATGGCCC ~~~~AACTGAGTT CTGCTATCAA TGGCTATTTC CGCGTCGCCA GCCCGACTTG
    ~~~~CoE1 ori
8401 ~~~~GGGGGGTTCG TGCACACAGC CCAGCTTGGG GCGACGAGCC TACACCGAAC TGAGATACCT ACAGCGTGAG CTATGAGAAA GCGCCACGCT TCCCCAAGGG
 CCCCCAAGC ACSTGTGTG GGTGGAACCT CGCTGTCTGG ATGTGGCTTG ACCTATGGA TGTGCACTC GATACTCTTT CGCGGTGCGA AGGGCTTCCC
    ~~~~CoE1 ori
8501  ~~~~AGAAAGCGG ACAGGTATCC GGTAGCGGC AGGTTCGGAA CAGGAGAGCG CAGCAGGGAG CTTCAGGGG GAAACGCCG GTATCTTTAT AGTCTGTGCG
    TCTTTCCGCC TGTCCATAGG CCATTGCGG TCCAGCCTT GTCTCTCGC GTGCTCCCTC GAAGTCCCC CTTTGGCGAC CATAGAAA TCAGGACAGC
    ~~~~CoE1 ori
8601 ~~~~GGTTTCGCC CCTCTGACT GAGGTGCGAT TTTTGTGATG TTTTGTGATG CTGCTCAGGG GCGCGGAGCC TATGGA AAAA CCGCAGCAAC CCGGCCTTTT TACGGTTCTT
 CCAAGCGGT GGAGACTGAA CTGCGAGCTA AAACACTAC GAGCAGTCCC CCGCCTCGG ATACCTTTT GCGGTCTGTT GCGCGGAAAA ATGCCAAGGA
    ~~~~CoE1 ori
8701  ~~~~GGCCTTTTGC TGGCCTTTTG CTCACATGTT CTTTCTCTGG TTTTCTCTCG TTTTCTCTCG TAAACCGTATT ACCGCCCTTG AGTGAGCTGA TACCGCTCGC
    CCGGAAAACG ACCGAAAAC GAGTGTACAA GAAAGGACGC AATAGGGGAC TAAGACACCT ATTGGCATAA TGGCGGAAAC TCACTCGACT ATGGCGAGCG
    ~~~~CoE1 ori
8801 ~~~~CGCAGCGGAA CGACCGAGCG CAGCGAGTCA GTGAGCGAGG AAGCGGAAGA GCGCCCAATA CGCAAAACCG CTCTCCCCCG GCGTTGGCGG ATTCATTAAAT
 GCGTGGCTT GCTGCTCGC GTGCTCAGT CACTCGCTCC TCGCCTTCT CCGGGTTAT GCGTTTGGCG GAGAGGGCG CGCAACCGG TAAGTAATA
8901 ~~~~GCAGTGGCA CGACAGGTTT CCGACTGGA AAGCGGCGAG TGAGCGCAAC GCAATTAATG TGAGTTAGCT CACTCATTAG GCACCCAGG CTTTACACTT
 CGTCACCGT GCTGTCCAAA GGGCTGACCT TTCGCCCGTC ACTCGCGTTG CGTTAATTAC ACTCAATCGA GTGAGTAATC CGTGGGTCC GAAATGTGAA
9001 ~~~~TATGCTTCG GCTGCTATGT TGTGTGGAAT TGTGAGCGGA TAACAATTTC ACACAGGAAA CAGCTATGAC CATGATTACG CCAAGCTCGA AATTAAACCT
 ATACGAAGC CGAGCATACA ACACACCTTA AACTCGCCT ATTGTTAAAG TGTGTCTCTT GTCGATACTG GTACTAATGC GGTTCGAGCT TTAATTGGGA
    ~~~~SV40
9101  ~~~~CACTAAAGG AACAAAGCT GGAGCTCCAC CGCGGTGGCG GCCTCGAGGT CGAGATCCGG TCGACCAGCA ACCATAGTCC GCGCCCTAAC TCCGCCCATC
    GTGATTTCC TTGTTTTTGA CCTCGAGGTG GCGCCACCGC CGGAGCTCCA GCTCTAGGCC AGCTGGTCTG TGGTATCAGG GCGGGGATTG AGCGGGTAG
    ~~~~SV40
9201 ~~~~CGCCCTAA CTCGCCAG TTCGCCCAT TCTCGCCCC ATGCTGACT AATTTTTTTT ATTTATGCAG AGGCCGAGG CGCCTCGGC TCTGAGCTAT
 GCGGGGATT GAGCGGGTC AAGCGGGTA AGAGCGGGT TACCGACTGA TTAACCAAAA TAAATACGTC TCCGGTCCG GCGGAGCCCG AGACTCGATA
    ~~~~SV40
9301  ~~~~TCCAGAAGTA GTGAGAGGC TTTTGTGGAG GCTTAGGCTT TTGCAAAAAG CTTCGACGCT ATCGATTGGC TCATGTCCAA CATTACCGCC ATGTTGACAT
    AGGTCTTCAT CACTCTCCG AAAAAACCTC CGGATCCGAA AACGTTTTTC GAAGCTGCCA TAGCTAACCG AGTACAGGT GTAATGGCGG TACAACCTGA
    ~~~~CMV
9401 ~~~~TGATTATTGA CTAGTTATTA ATAGTAATCA ATTACGGGT CATATGTTCA TAGCCCATAT ATGGAGTTCC GCGTTACATA ACTTACGTA AATGCCCCC
 ACTAATACT GATCAATAAT TATCATTAGT TAATGCCCCA GTAATCAAGT ATCGGGTATA TACCTCAAG CGCAATGTAT TGAATGCCAT TTACCGGGCG
    ~~~~CMV
9501  ~~~~CTGGTGACC GCCCAAGGAC CCGCGCCCAT TGAGCTCAAT AATGACGTAT GTTCCCATAG TAACGCCAAT AGGACTTTC CATTGACGTC AATGGGTGGA
    ~~~~CMV

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FIG. 5 (Continued)

GACCGACTGG CGGGTTGCTG GGGCGGGGTA ACTGCAGTTA TTTACTGCATA CAAGGGTATC ATTGGGGTTA TCCCTGAAAG GTAACGTCAG TTACCCACCT  
 CMV  
 9601 GTATTACGG TAACTGCCC ACTTGGCAGT ACATCAAGTG TATCATATGC CAAGTACGCC CCTATTGAC GTCAATGACG GTAAATGGCC CGCCTGGCAT  
 CATAAATGCC ATTTGACGGG TGAACCGTCA TGTAGTTTCA ATAGTATACG GTTCATGCGG GGGATAACTG CAGTTACTGC CATTTACCGG GCGGACCGTA  
 CMV  
 9701 TATGCCCAGT ACATGACCTT ATGGGACTTT CCTACTTGGC AGTACATCTA CGTATTAGTC ATCGCTATTA CCATGGTGAT GCGGTTTTGG CAGTACATCA  
 ATACGGGTCA TGTACTGGAA TACCCTGAAA GGATGAACCG TCACTAGAT GCATAATCAG TAGCGATAAT GTACCACCTA CGCCAAAACC GTCATGTAGT  
 CMV  
 9801 ATGGGCGTGG ATAGCGGTTT GACTCACGGG GATTCCAAAG TCTCCACCCC ATTGACGTCA ATGGGAGTTT GTTTTGGCAC CAAAATCAAC GGGACTTTCC  
 TACCCGCACC TATCGCCAAA CTGAGTGCCC CTAAAGGTTT AGAGGTGGGG TAACTGCAGT TACCCTCAA CAAAACCGTG GTTTTAGTTG CCCTGAAAGG  
 CMV  
 9901 AAAATGTCGT AACAACTCCG CCCATTGAC GCAAATGGG GGTAGGCGTG TACGGAATTC GGAGTGGCGA GCCCTCAGAT CCTGCATATA AGCAGCTGCT  
 TTTTACAGCA TTGTTGAGGC GGGTAACTG CGTTACCCG CCAATCCGCAC ATGCCTTAAG CCTCACCGCT CGGGAGTCTA GGACGTATAT TCGTCGACGA  
 10001 TTTTGCCTGT ACTGGGTCTC TCTG  
 AAAACGGACA TGACCCAGAG AGAC

FIG. 5 (Continued)

CE7scFv-IgG4 Hinge-CH2-CH3-CD28tm/4-1BB-Zeta-T2A-EGFRt epHIV7 p102570 (1004 bp)

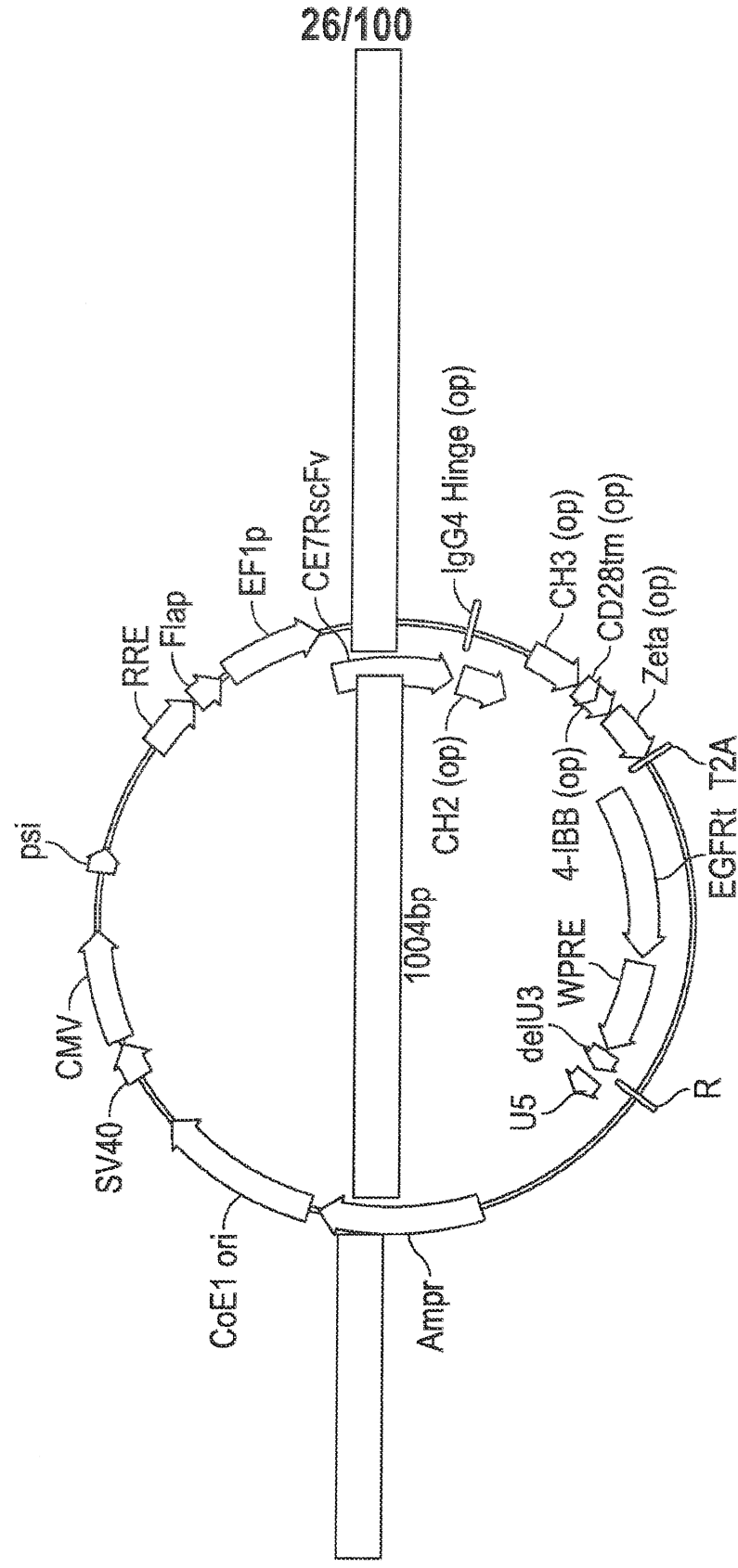


FIG. 6

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1 GTTAGACCAG ATCTGAGCCT GGGAGCTCTC TGGCTAACTA GGGAAACCCAC TGCTTAAGCC TGAATAAAGC TTGCCTTGAG TGCTTCAAGT AGTGTGTGCC
 CAATCTGGTC TAGACTCGGA CCTTCGAGAG ACCGATTGAT CCCCTGGGTG ACGAATTCGG AGTTATTTCC AACCAGACTC ACGAAGTTCA TCACACACGG
101 CGTCTGTGTG GTGACTCTGG TAACTAGAGA TCCCTCAGAC CCTTTAGTC AGTGTGAAA ATCTCTAGCA GTGGGCGCCG AACAGGGACT TGAAAGCGAA
 GCAGACAACA CACTGAGACC ATTGATCTCT AGGAGTCTG GGAANAATCAG TCAACACCTTT TAGAGATCGT CACCGCGGGC TTGTCCCTGA ACTTTCCTT
 psi
201 AGGGAARACA GAGGAGTCT CTGCGGCGAG GACTCGGCTT GCTGAAGCGC GCACGGCAAG AGCGAGGGG CGCGACTGG TGAGTACGCC AAAAATTTTG
 TCCCTTTGGT CTCCTCGAGA GAGCTGGTC CTGAGCGGA CGACTTCGG CGTCCCTTC TCCGCTCCCC GCGCTGACC ACTCATGGG TTTTAAAAAC
 psi
301 ACTAGCGGAG GCTAGAGGA GAGAGATGG TCGGAGCG TCAGTATTAA GCGGGGAGA ATTAGATCGA TGGGAAAAA TTCGGTTAAG GCCAGGSSGA
 TGATCGGCTC CGATCTTCTT CTCTCTACCC ACGCTCTCG AGTCATAATT CGCCCCCTCT TAATCTAGCT ACCCTTTTTT AAGCCAATTC CGGTCCCCCT
401 AAGAAAAAAT ATAAATTAA ACATATAGTA TGGGCAAGCA GGGAGCTAGA ACGATTCCGA GTTAATCCTG GCTGTTAGA AACATCAGAA GGCTGTAGAC
 TTCCTTTTAA TATTTAATTT TGTATATCAT ACCGTTCTG AGCTCGATCT TGCTAAGCGT CAATTAGGAC CGGACAATCT TTGTAGTCTT CCGACATCTG
501 AAATACTGGG ACAGCTACAA CCATCCCTTC AGCAGGATC AGRAGAACTT AGATCAATTAT ATAATACAGT AGCAACCCCTC TATTGTGTG ATCAAAGGAT
 TTTATGACCC TGTGATGTT GGTAGGGAAG TCTGTCTTAG TCTTCTTGA TCTAGTCTCA TCGTTGGAG ATAACACAGC TAGTTTCCCTA
601 AGAGATAAAA GACACCAAGG AAGCTTTAGA CAAGATAGAG GAAGACAAA ACAAAAGTAA GAAAAAGCA CAGCAAGCAG CAGCTGACAC AGGACACAGC
 TCTCTAATTT CTGTGTCTC TTGGAATCT GTTCTATCTC CTCTCTGTTT TGTTTTCAAT CTTTTTTCGT GTCTTCTGTC GTGAGCTGTG TCCTGTGTGC
701 AATCAGCTCA GCCAAATTA CCTATATAGT CAGACATCC AGGGCAAT GGTACATCAG GCATATATC GTAGAACTTT AAATGCATGG GTAAAAGTAG
 TTAGTCAGT CGGTTTAAAT GGGATATCAC GTCGTGAGG TCCCGTTT CCATGTAGTC CGGTATAGTC GATCTTGAAA TTTACGTACC CATTTTCATC
801 TAGAAGAGAA GGCATTGAG CCAGAAGTGA TACCATGTT TTCAGCATT TCAGAGGAG CCACCCCAACA AGATTTAAAC ACCATGCTAA ACACAGTGGG
 ATCTTCTCTT CCGAAAGTGG GGTCTTCACT AIGGTACAA AAGTGTAAAT AGCTTCTC GGTGGGTGT TCTAAATTTG TGGTACGATT TGTGTACCC
 RRE
901 GGGACATCAA GCAGCATGC AATGTTAAA AGAGACCATC AATGAGGAAG CTGCAGGCAA AGAGAAGAGT GGTGCAGAGA GAAAAAAGAG CAGTGGGAAT
 CCTGTAGTT CGTCGGTAG TTTACAATTT TCTCTGGTAG TTACTCTCTC GAGTCCGTT TCTCTTCTCA CCAGTCTCT CTTTTCTC GTCACCCCTA
 RRE
1001 AGGAGTTTG TTCTTGGGT TCTTGGGAGC AGCAGGAGC ACTATGGCG CAGCTCAAT GAGCTCAG GTACAGGCCA GACAATTATT GTCTGGTATA
 TCCCTGAAAC AAGGACCCA AGAACCTCG TCGTCTCTCG TGAATACCCG GTCCAGTTA CTGGACTGC CATGTCCGT CTGTTAATAA CAGACCAAT
 RRE
1101 GTGCAGCAGC AGACAATTT GCTGAGGCT ATGAGGGC AACAGCATCT GTTGCAACTC ACAGTCTGG GATCAGCA GCTCCAGCA AGAATCCTGG
 CACGTCTCG TCTTGTAAA CGACTCCCGA TAACTCCCG TTGTCTGAGA CAACGTTGAG TGTGAGACC CGTAGTCTGT CGAGTCCGT TCTTAGGACC
 flap
                                     ~~~~~
1201 CTGTGAAAG ATACCTAAAG GATCAACAGC TCTTGGGGAT TTGGGTTGC TCTGGAAAC TCATTGGAC CACTGTGTG CTTGGATCT ACAATGGCA
   GACACTTTC TAAGGATTC CTAGTTGTG AGGACCCCTA AACCCCAAC AGACCTTTG ACTAAACGTG GTGAGGAC GGAACCTAGA TGTTTACCGT
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FIG. 7

1301 GTATTCAACC ACAATTTTAA AAGAAAAGGG GGAATGGGG GTACAGTGC AGGGAAAGA AATAGTACA TAATAGCAAC AGACATACAA ACTAAAGAAT  
 CATAAGTAGG TGTAAATTTTCC CCAATACCCC CCAATACCCC CCAATACCCC CCAATACCCC CCAATACCCC CCAATACCCC CCAATACCCC CCAATACCCC  
 1401 TACAAAACA AATTACAAA AATTACAAA AATTACAAA AATTACAAA AATTACAAA AATTACAAA AATTACAAA AATTACAAA AATTACAAA  
 AATTACAAA AATTACAAA AATTACAAA AATTACAAA AATTACAAA AATTACAAA AATTACAAA AATTACAAA AATTACAAA AATTACAAA  
 1501 AGGCGTTTGG CGTGTCTTGG CGAGGATCTG CGAGGATCTG CGAGGATCTG CGAGGATCTG CGAGGATCTG CGAGGATCTG CGAGGATCTG  
 TCCGCAAAAC GCGAGCAAGC GCTCCTAGAC GCTCCTAGAC GCTCCTAGAC GCTCCTAGAC GCTCCTAGAC GCTCCTAGAC GCTCCTAGAC GCTCCTAGAC  
 1601 GTCCGCAAT GAACCGTGC CTAGAGAAGG TGGCGGGGG TAACTGGGA AAGTATGTC GTGTACTGGC TCCGCCCTTT TCCCGAGGGT GGGGGAGAAC  
 CAGCCGTTAA CTTGGCCACG GATCTCTTCC ACCGGCCCC ATTTGACCTT TTTGACCTT TTTGACCTT TTTGACCTT TTTGACCTT TTTGACCTT  
 1701 CGTATATAAG TGCAGTAGTC GCGGTGAACG TTTCTTTTCG CAAGGGGTTT GCGCCAGAA CACAGCTGAA GCTTCGAGG GCTCGCATCT CTCCTTCACG  
 GCATATATTC ACGTCATCAG CCGCACTTGC CCGCACTTGC CCGCACTTGC CCGCACTTGC CCGCACTTGC CCGCACTTGC CCGCACTTGC CCGCACTTGC  
 1801 CGCCCGCGGC CCTACCTGAG GCGCCCATCC ACGCGGTTG AFGCGGTTT TCGCGCTCC GCGCTGTGT GCGCTGTGT GCGCTGTGT GCGCTGTGT  
 GCGCGGGGCG GGAUGGACTC CGCGGTAGG TCGCGCAAC TCAGCGCAAG ACGCGGAGG GCGGACACCA CCGAGGACTT GACGAGGCG GCAGATCCAT  
 1901 AGTTTAAAGC TCAGGTCGAG ACCGGGCTT TGTGCGGCG TCCCTTGGAG CTTACCTAGA CTCAGCGCG TCTCCACGCT TTGCTTGACC CTGCTTGCTC  
 TCAAAATTCG AGTCAGCTC TGGCCCGGAA ACAGCGGCG AGGCACTTC GATGGATCT GATGGATCT GATGGATCT GATGGATCT GATGGATCT  
 2001 AACCTACGCT CTTGTGTTTC TTTCTGTTC TGGCGGTTA CAGATCCAA CAGATCCAA CAGATCCAA CAGATCCAA CAGATCCAA CAGATCCAA  
 TTTGAGATCCA GAAACAAAGC AAACAAAGC ACGCGGCAAT GTTAGGTTT GTTAGGTTT GTTAGGTTT GTTAGGTTT GTTAGGTTT GTTAGGTTT  
 2101 CAGCCTGCTG CTGTGCGAGC TGGCCACCC CCGCTTCTG CCGCTTCTG CCGCTTCTG CCGCTTCTG CCGCTTCTG CCGCTTCTG CCGCTTCTG  
 GTCGAGCAGC GACAGGCTCG ACGGGTGGG GCGGAAAGAC GACTAGGGG TCCACGTCCA CGTCTGTCGA CCGCGGCTCG ACCACTTCGG TCCGCGGTG  
 2201 GTGAAGTGT CCTGAAGGC CAGGGCTAC ACCTTCACCG GCTACTGGAT GCTACTGGAT GCTACTGGAT GCTACTGGAT GCTACTGGAT GCTACTGGAT  
 CACTTCGACA GGAGTTCCG GTCCCGGATG TGAAGTGGC CGATGACCTA CCGTACCCAC TTTGCTCTCG GCGCGGTGCC GGACCTTACC TAGCCGCTCT  
 2301 TCAACCCAG CAGCGCGCG ACCACTACA ACCACTACA ACCACTACA ACCACTACA ACCACTACA ACCACTACA ACCACTACA ACCACTACA  
 AGTTGGGTC GTTGGCGGCC TGGTTGATGT TGGTTGATGT TGGTTGATGT TGGTTGATGT TGGTTGATGT TGGTTGATGT TGGTTGATGT TGGTTGATGT  
 2401 CGGCTGACC AGCGAGGACA GCGCGGTGTA CTTCTGCGCC AGGACTACT AGGACTACT AGGACTACT AGGACTACT AGGACTACT AGGACTACT  
 GCGGACTGG TCGCTCCTGT CCGGCACAT GAAGACGCGG TCCCTGATGA TCCCTGATGA TCCCTGATGA TCCCTGATGA TCCCTGATGA TCCCTGATGA

FIG. 7 (Continued)



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2501 GTGAGCAGCG GCGGAGGGGG CTCTGGGGG GGAGGATCTG GGGGAGGGGG CAGCAGATC CAGATGACCC AGACAGCAG CAGCTTCAGC GTGAGCCTGG
 CACTGCTGC CGCCTC0000 GAGACGCGG C0TCTAGAC C0CCTC0000 GTGCTGTAG GTCTACTGG GTCTGCTGTC GTCGAAGTC CACTCGGACC
 CE7R scFv
2601 GCGACCGGGT GACCATGACC TGTAAAGCCA ACGAGACAT CAACACCGG CTGGCTGGT ATGACGAGC CCGCGGCAAC AGCCCGAGG TGTGATCAG
 CGCTGG00CA CTGGTAGTGG ACATTCGGT TGTCTCTGTA GTTGTGGCC GACCGGACCA TAGTGTCTG GGGGCCGTG TCGGGTCCG ACGACTAGTC
 CE7R scFv
2701 GCGGCGCACC AACCTGGTGA CCGGGTGGC CAGCGGTTT AGCGGAGCG GCTCGGCAA GGACTACACC CTGACCATCA CAGCCTGA GGCAGGAGC
 GCGCGGTGG TTGACCACT GTGCGCACG GCGCGCACG GTGCGGCAAA TCGCGCTGC CGAGGCGGT CCTGATGTT GACTGGTAGT GTTCGGACGT CCGGCTCCTG
 CE7R scFv
2801 TTGCGCACT ACTACTGCCA GCAGTACTGG TCCACCCCT TCACTTCGG CAGCGCACC GAGTGGAAA TCAAGAATC TAAGTACGGA CCGCCCTGCC
 AAGCGGTGGA TGATGACGGT CGTCATGACC AGGTGGGGA AGTGAAGCC GTGCGCGTGG CTCGACCTTT AGTTCTTAG ATTCATGCCT GCGCGGACGG
 IgG4 CH3
 IgG4 Hinge
2901 CCCCTTGGCC TGGCAGCCT AGAGACCCC AGGTGTACAC CCTGCTCCC AGCAGGAAG AGATGACAA GAACAGGTT TCCTGACCT GCTTGGTCAA
 GGGGAACGG ACCGTCGGA TCTCTTGGG TCCACATGTG GGACGAGGG TCGGTCTTC TCTACTGTT CTGTGTCAC AGGACTGGA CCGACCAATT
 IgG4 CH3
3001 AGCTTCTAC CCCAGGATA TCGCGTGGG ATGGGAGAG AACGGCAGC CCGAACAAC CTACAAGACC ACCCCCTG TGTGGACAG CAGCGGACG
 TCCGAAGATG GGGTCGCTAT AGCGCACCT TACCTCTCG TTGCGGTGG GGTCTTGTG GATGTTCTG TGGGGGGAC ACGACCTGTC GCTGCCGTGC
 IgG4 CH3
3101 TTCTTCTGT ACTCCGGGT GACGTTGGC AAGAGCGGT GGCAGGAAG CAAGTCTTC AGTGCAGCG TGTGACAGA GGCCTGCAC AACCACTACA
 AAGAAGACA TGAGGGCGGA CTGGCACCTG TTCTCGGCA CCTGCTTCC GTTGCAGAAG TCGACGTGCT ACTACGTGCT CCGGACGTG TTGGTGTATG
 CD28tm
 IgG4 CH3
3201 CCCAGATCT CCTGAGCCTG AGCCTGGCA AGATGTTCTG GGTGCTGGT GTGTGCGAG GGTGCTGGC CTGCTACAG CTGCTGGTCA CCGTGGCCTT
 GGTCTTTCAG GGACTCGGAC TCGGACCGT TCTACAGAC CCACGACCAC CACGACCTC CCGACGACC GACCATGTC GACGACCACT GGCACCGGAA
 CD28tm
3301 CATCATCTTT TGGGTGAAC GGGGAGAAA GAACTCTCTG TATATATCA AACACCAAT TATGAGACCA GTACAAACTA CTCAGAGGA AGATGGCTGT
 GTAGTAGAAA ACCACCTTTG CCGCGTCTTT CTTTGAGGAC ATATATAAGT TTGTGTTAA ATACTCTGTT CATGTTTGT GAGTCTCCT TCTACCGACA
 Zeta
 4-1BB
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FIG. 7 (Continued)

3401 AGCTGCCGAT TTCCAGAAGA AGAAGAAGGA GGATGTGAAC TCGGGGTGAA GTTCACAGA AGCGCCGACG CCCCTGCCTA CCAGCAGGGC CAGAAATCAGC  
 TCGACGGGTA AAGGTCTTCT TCTTCTTCTT CCTACACTTG ACGCCCACTT CAAGTGTCT TCGGGGTGCG GGGACGGAT GGTCTTCCCG GTCTTAGTCCG  
 Zeta  
 3501 TGTACAAAGA GCTGAACCTG GGCAGACGGG AAGAGTACGA CCGTCTGGAT AAGGGAGAG GCGGGACCC TGAATGGGC GGAAGCCCTC GCGGAAGAA  
 ACATGTTGCT CGACTTGGAC CCGTCTTCCC TTCTCATGCT GCAGGACCTA TTGCGCTCTC CGGCGCTGG ACCTTACCAG CCGTTCGGAG CCGCTTCTT  
 Zeta  
 3601 CCCCCAGAA GGCCTGTATA ACGAATGCA GAAAGACAG AATGGCGAGG CCTACAGCA GATCGCATG AAGGCGAGC GAGGCGGG CAAGGGCCAC  
 GGGGTCTCT CCGACATAT TGGTGTGACG TCTTCTGCTT TACCGCTCC GGAATGCTT CTAAGCGTAC TTCCCGCTCG CTCCCGCCCG GTTCCCGGTG  
 F2A  
 3701 GACGGCTGT ATCAGGGCT GTCCACCGCC ACCAAGATA CCTACACGC CCTGACATG CAGGCTCTG CCGCAAGGT CGAGGCGGGC GGAGAGGGCA  
 CTGCCGGACA TAGTCCCGA CAGGTGGCGG TGGTCTCTAT GGAATGCTCG GGAATGCTAC GTCCGGAGC GGGGTCCGA GGTCCCGCGG CCTCTCCCGT  
 EGFRt  
 3801 GAGGAAGCT TCTAATGTC GGTGACGTGG AGGAGATCC CGGCTTAGG ATGCTTCTCC TGTGACAAG CCTTCTGCTC TGTGAGTTAC CACACCCAGC  
 CTCTTCAGA AGATTGTAG CCACGTGACC TCCTCTTAGG GCGGGAATCC TACGAAGAG ACCACTGTTC GGAAGACGAG AACTCAATG GTGTGGGTG  
 EGFRt  
 3901 ATTCTCTCTG ATCCCAAGCA AAGTGTGTA AAGTGTGTA TTAAGACTC ACCTTCCATA AATCTACGA ATATTAAACA CTTCAAAAAC  
 TAAGGAGGAC TAGGTTGGT TTACACACAT GCCTATATCCA TAACACTTA AATTTCTGAG TGAAGGTAT TTACGATGCT TATAATTTGT GAAGTTTTTG  
 EGFRt  
 4001 TGCACCTCCA TCAGTGGGA TCTCCACATC CTGCCGTGG CATTAGGGG TGAATCTCTC ACACATATC CTCTCTGGA TCCACAGGAA CTGGATATTC  
 ACGTSGAGT AGTCACCGCT AGAGTGTAG GACGGCCACC GTAATCTCC CTCTTGTCTT GCGTGGAGT AGGAGACCT AGGTGTCTTT GACCTATAAG  
 EGFRt  
 4101 TGAAACCGT AAGGAATC ACAGGTTTT TGTGATTTA GCGTGGCTT GAAACAGGA CGGACCTCCA TGGCTTGGAG AACCTAGAA TCATACGGG  
 ACTTTTGGCA TTTCTTTAG TGTCCCAAAA ACGACTAAGT CCGAACCGGA CTTTGTCTCT GCGTGGAGT ACGGAACTC TTGGATCTTT AGTATGGGC  
 EGFRt  
 4201 CAGGACCAAG CAACATGTC AGTTTCTCT TGCAGTGTG AGCTGAACA TAACTCTCTT GSGATACGC TCCCTCAGG AGATAAGTA TGGAGATGTG  
 GTCTGGTTC GTTGATCCAG TCAAAAGAGA ACGTACAGAG TCGGACTTGT ATTGTAGGA CCGTAATGG AGGAGTTCC TCTATTCACT ACCTCTACAC  
 EGFRt  
 4301 ATAATTTTCA GAAACAAAA TTTGTGTAT GCAATATCA TAACTGGAA AAACTGTTT GGACCTCTG GTACAGAAAC CAAATTTATA AGCAACAGAG  
 TATTAAGTC CTTTGTGTTT AAACAGATA CGTTATGTT ATTACCTT TTTTACAAA CCGTGGAGC CACTCTTTTG GTTTTATAT TCGTTGTCTC  
 EGFRt  
 4401 GTGAAACAG CTGCAAGGCC ACAGGCGAGG TCTGCTATG CTTGTCTCT CCGGAGGGT GTTGGGGCC GGAGCCAGG GACTGCTCT CTTGCCGAA  
 CACTTTTGTG GACGTTCCGG TGTCCGCTCC AGAGGTACG GAACACAGG GGGTCTCCGA CGACCCCGG CCGCGGTTC CTGACGCCAG GAACGGCTT  
 EGFRt

FIG. 7 (Continued)

4501 TGTACGGGA GGCAGGGAAT GGGTGGACAA GTGCAACCTT CTGGAGGGTG AGCAAGGGA GTTTGTGGAG AACTCTGAGT GCATACAGTG CCACCCAGAG  
 ACAGTCGGCT CCGTCCCTTA CGACCTGTT CAGGTGGAA GACCTCCAC TCGETTCCCT CAACACCTC TTGAGACTCA CGTATGTAC GTTGGGTCTC  
 EGFR  
 4601 TGCCTGGCTC AGGCCATGAA CATCACTGC ACAGACGGG GACAGACAA CTGTATCCAG TGTGCCCACT ACATTGACGG CCCCACCTGC GTCAAGACCT  
 ACGGACGGAG TCCGTACTT GTAGTGGACG TGTCTGCCC CTGTCTGTT GACATAGGTC ACACGGGTGA TGTAACTGCC GGGGGTGACG CAGTTCIGGA  
 EGFR  
 4701 GCGCGGAGG AGTCATGGGA GAAACAACA CCCGTGCTG GAATACGCA GACCGCGCC ATGTGTGCA CCTGTGCCA CCAAACTGCA CCTACGGATG  
 CGGGCCCTCC TCAGTACCCT CTTTTGTGT GGGACACAG CTTTATCGGT CTGCGGCGG TACACACGGT GGACACGGTA GGTGTGACGT GGATGCCCTAC  
 EGFR  
 4801 CACTGGGCA GGTCTTGAAG GCTGTCCAAC GAATGGGCT AAGTCCCGT CCATCGCCAC TGGATGGTG GGGCCCTCC TCTTGTGCT GTTGGTGGC  
 GTGACCGGT CCAGAACTC CGACAGGTG CTIACCCGA TTCTAGGCA GGTAGCGGTG ACCTACCAC CCGCGGGAGG AGAACGCGA CCACCAACCG  
 EGFR  
 4901 CTGGGGATCG GCCTCTTCAT GTGAGCGGCC GCTCTAGACC CGGCTGCAG GAATCGATA TCAAGCTTAT CGATAATCAA COTCTGGATT ACAAAATTTG  
 GACCCCTAGC CGGAGACTA CACTCGCCG CGAGATCTGG GCGGACCTAT AGTTCGAATA GCTATTAGTT GGAGACCTAA TGTTTTAAAC  
 WPRE  
 5001 TGAAGATTG ACTGTATTG TTAATATGT TGTCTTTT AGCTATGTG GATAGCTGC TTAAATGCT TTGTATCATG CTATTGCTT CCGTATGGCT  
 ACTTTCTAAC TGACCAATAG AATTGATACA ACGAGGAAA TGGCATACAC CATAGCGAGC AATATTACGA AACATAGTAC GATAACGAAG GGCATACCGA  
 WPRE  
 5101 TTCAATTTCT CCHCCTTGT TAAATCTGG TTGCTGCTC TTATAGGGA GTTGTGGCC GTTGTAGGC AACCTGGCGT GGTGTGCACT GTGTTTGTG  
 AAGTAAAGA GGAGGAACAT ATTTAGGACC AACGACAGAG AATATCTCT CAACACCGG CAACAGTCCG TTGCACCGCA CCACACGTGA CACAAACGAC  
 WPRE  
 5201 ACGCAACCC CACTGGTGG GGCATGGCA CCACCTGCA GCTCTTTCC GGGACTTTCG CTTTCCCTT CCGTATTGCC ACGGCGGAAC TCATCGCCG  
 TCGCTTGGG GTGACCAACC CCGTAACGGT GGTGGACAGT CGAGGAAGG CCGTCAAGC GAAAGGGGA GGCATAACGG TCGCGCTTG AGTAGCGGG  
 WPRE  
 5301 CTGCCCTGCC CGTGTGGA CAGGGCTCG GCTGTGGG ACTGACAAT CCGTGGTGT GTGGGGGAA TCATGCTCT TTCTTGGCT GCTCGCTGT  
 GACGGACCG GCGACACCT GTCCCCGAG CGACACCCG TGACTGTAA GGCACACAA CAGCCCTTT AGTAGCAGGA AAGGAACCGA CGAGCGGACA  
 WPRE  
 5401 GTTGCACCT GGAATCTCG CGGAGCTCC TTCTGTAGC TCCCTGCG CCAATCCA GGGACCTTC CTTCCCGGG CTTGCTGCC GCTCTGCGG  
 CAACGGTGA CCTAGACG GCGCTGAGG AAGCATGC AGGGAAGCG GAGTATAGT CGCTGGAAG GAAGGGGGC GGACGAGCG CGAGACGGC  
 WPRE  
 5501 CTCCTCGCG TCTTGGCTT CGCCCTCAGA CGAGTCGAT CTTCTTTGG GCGCCTCC CCGATCGATA CCGTCGACTA CCGGTACCTT TAAGACCAAT  
 GAGAGGCGC AGAAGCGGA GCGGAGTCT GCTCAGCTA GAGGAACCG CCGCGGAGG GGTAGCTAT GGCAGCTGAT CGGCATGGA ATTCTGTTA  
 del U3  
 del U3  
 R

FIG. 7 (Continued)

5601 GACTTACAAG GCAGCTGTAG ATCTTAGCCA CTTTTTAAAA GAAAGGGGG GACTGGAAGG GCTAATTCAC TCCCAAGAA GACAAGATCT GCTTTTGGC  
CTGAATCTTC CGTCGACATC TAGAATCGGT GAAAAATTT CTTTTCCCCC CTGACCTTCC CGATTAAGTG AGGTTTCTT U5 ~~~~~  
5701 TGTACTGGGT CTCCTGGTT AGACGAGATC TGAGCTGGG AGCTCTCTGG CTAAGTAGGG ACCCACTGC TTAAGCCTCA ATAAAGCTTG CCTTGAGTGC  
ACATGACCCA GAGAGACCAA TCTGGTCTAG ACTCGACCC TCGAGAGACC GATTGATCCC TTGGGTGAGG AATTCGAGT TATTTCGAAC GGAACCTCAGG  
~~~~~  
5801 TTCAAGTAGT GTGCGCCGT CTGTTGTG AGCTGTGTAA CTAGATACC CTGAGACCT TTATGTCAGT GTGGAATA TCAGCAGAA TTCGATATCA
AGTTTCATCA CACACGGCA GACACACAC TGAGACCATT GATCTTAGG GAGTCTGGG AATCAGTCA CACTTTTAG AGATCGTCTT AAGCTATAGT
5901 AGCTTATCGA TACCGTCGAC CTCGAGGGG GCGCGGTAC CCAATTCGC CTATAGTGG TCTATTACA ATCACTGGC CGTCGTTTA CAACGTCGTG
6001 TCGAATAGCT ATGGCAGCTG GAGCTCCCC CCGGGCCATG GATATCACTC AGATAAATGT TAAGTGACCG GCAGCAAAAT GTTGCAGCAC
ACTGGGAAA CCTTGGGTT ACCCACTTA ATCGGCTTGC AGCATATCCC CCTTTCGCA TCGGCGTAA TAGCGAAGG GCCGCAACG ATCGCCCTTC
6101 TGACCTTIT GGGACGCAA TGGTTGAAT TAGCGAATG GAAATGTAA GCGTAATAT TTGTTAAA TTGCGTAA AATTCAGTCA TTTTAAAC
6201 GGTGTCAAC GCGTCGACT TACCGCTTAC CTTTACAT CCGAATTATA AACAAATTTT AAGCGCAAT TARAACAAT TTAGTCGAGT AAAAATTTG
AATAGGCGA ATCGGCAA ATCCCTATA AATCAAGA ATAGCGTGA ATAGGTTGA GGTGTTC CACAAACAAT TATTGAAC AAGATCCAC TATTAAAGAA
6301 CTGTGGCTC TTAGCGTCTT TAGGGAATAT TTAGTTTCT TATCTGGCTC TATCCCACT CACAAACAAT TARAACAAT TTAGTCGAGT AAAAATTTG
GCACCTCAGG TTGCACTTC CCGTCTTTC GCGATAGT GCGATAGT TATCTGGCTC TATCCCACT CACAAACAAT TARAACAAT TTAGTCGAGT AAAAATTTG
6401 AAAGCACTAA ATCGGACCC TAAAGGAGC CCGGATTTG GCGATAGT GCGATAGT TATCTGGCTC TATCCCACT CACAAACAAT TARAACAAT TTAGTCGAGT AAAAATTTG
TTTCGCTGATT TAGCTTGGG ATTTCCCTCG GGGCTTAAAT CTCGAATGCT CCGTCTGGC CCGTCTGGC GCGTCTGGC GCGTCTGGC GCGTCTGGC
6501 CGGCGCTAG GCGCTGGCA AGTGTAGCGG TCACGCTGG CCGTCTGGC CCGTCTGGC GCGTCTGGC GCGTCTGGC GCGTCTGGC GCGTCTGGC
6601 GCGCGGATC CCGGACCGT TCACATCGCC AGTGGACCG GATGTGGTG TGTGGCGCG GCGTCTGGC CCGTCTGGC GCGTCTGGC GCGTCTGGC
TCGGGGAAT GTGGGGA CCGCTATTG TTTATTTTC TAATATGTA TCGCTCATG AGACAATA CCGTCTGGC GCGTCTGGC GCGTCTGGC GCGTCTGGC
AGCCCTTTA CACGCGCTT GGGGATAAC AATAAAG AATTATGTA GTTATACAT ATSCGAGTAC TCTGTATTG GACTATTTA CGAAGTTAT
~~~~~  
6701 TATTGAAAA GGAAGATAT GAGTATCAA CATTTCCGTG TCGCCTTAT TCCCTTTT GCGCATTTT GCGTCTGT TTTTGTCTAC CCAGAAACGC  
ATAACTTTT CTTTCTCATA CTCATAGTT GTAAAGGCAC AGCGGAATA AGGAAAAA GCGCGTAAA CCGAAGGACA AAAACGAGTG GGTCTTTGG  
~~~~~  
6801 TGGTGAAGT AAAGATGCT GAAGATCAGT TGGGTGCAG AGTGGTTAC ATCGAATGG ATCTCAACAG CGGTAAGATC CTTGAGAGT TTGCCCCGA
ACCACITTA TTTTCTAGCA CTTTCTAGTCA ACCCAGTGC TCACCCAATG TAGCTTGACC TAGCTTGACC CCAATTTCTAG GAACTCTCA AAGCGGGCT
~~~~~  
6901 AGAACGTTT CCAATGATG GCACTTTAA AGTCTGCTA TGTGGCGCG TATTATCCG TATTGACGCC GGGCAAGAGC AACTCGGTG CCGCATACAC  
TCTTGCAAAA GGTACTACT CGTGAAAA TCAAGACAT ACACGCGCC AFAATAGGC AFAACTGCG CCGGTCTCG TTGAGCCAGC GCGTATGTG  
~~~~~  
7001 TATTCTCAGA ATGACTTGGT TGAGTACTCA CCAATCAGC AAGACATCT TAGGATGGC ATGACAGTAA GAGAAATATG CAGTGTGCTG ATAACTATGA
ATAAGATCT TACTGAACCA ACTCATGAGT GGTCTAGTGC TTTTCTAGT ATGCTACCG TACTGTCTT CTCTTAATAC GTACAGAGC TATTGGTACT
~~~~~  
7101 GTGATAACAC TCGGGCAAC TTACTTCTGA CAAGATCGG AGACCGAAG GAGTAACG CTTTTTGA CAACATGGG GATCATGTAA CTCGCTTGA  
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FIG. 7 (Continued)

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CACTATTGTG ACGCCGGTTG AATGAAGACT GTTGTAGACC CTCGATTGGC GAAAAACGT GTTGTACCCC CTAGTACATT GAGCGGAAC
Ampr
7201 TCGTTGGAA CCGGAGCTGA ATGAAGCAT ACCAAGCAG CAGCGTGACA CCACATGCC TGTAGCAATG GCACAACGT TGGCAAACT ATTAACCTGG
AGCAACCCCT GGCCTCGACT TACTTCGGTA TGGTTTCTG CTCGCACTGT GGTGCTACGG ACATCGTTAC CGTGTGTGA ACGCGTTGA TAATTGACCG
Ampr
7301 GAACACTCTA CTCGAGCTTC CCGGGAACA TTAATAGACT GGAATGAGGC GGAATGAGT GCAGGACCAC TTCTGCGCTC GGCCCTTCGG GCTGGCTGGT
CTTGAAGAT GAGATCGAAG GGCCGTTGTT AATTATCTGA CCTACTCCG CCTATTCAA CGTCTGGTG AAGACGCGAG CCGGAAGGC CGACCGACCA
Ampr
7401 TTATTGTGA TAAATCTGA GCGGTGAGC GTGGTCTCG CGGTATCAT GCAGCACTGG GGCAGATGG TAAGCCCTCC CGTATCGTAG TTATCTACAC
AATAACGACT ATTTAGACCT CGGCCACTCG CACCCAGAGC GCCATAGTAA CGTCTGACC CCGTCTACC ATTGGGAGG GCATAGCATC AATAGATGTG
Ampr
7501 GACGGGAGT CAGGCACCTA TGGATGAAG AATAGACAG ATCGTGAGA TAGGTGCCCTC ACTGANTAG CATTTGGTAAC TGTACAGACA AGTTTACTCA
CTGCCCTCA GTCCGTTGAT ACCTACTTGC TTTATCTGTC TAGGACTCT ATCCAGGAG TGAATAATC GTAACCATG ACAGTCTGGT TCAATATGAGT
CoEl ori
7601 TATATACTTT AGATTGATTT AAAACTTCAT TTTTAATTTA AAGATCTA GGTGAAGATC CTTTGTGATA ATCTCATGAC CAAAATCCCT TAACGTGAGT
ATATAAGAA TCTAACTAAA TTTTGAAGTA AAAATTAAT TTTCTAGAT CCACCTTCTAG GAAAAACTAT TAGAGTACTG GTTTTAGGGA ATTGCACTCA
CoEl ori
7701 TTTCTGCTCA CTGAGCTCA GACCCCGTAG AAAAGATCAA AGGATCTCT TGATCTCTG TTTTCTGCG CGTAATCTGC TGGTTGCAA CAAAAAAC
AAAGCAAGT GACTCGCAGT CTGGGCAATC TTTTCTAGT TCTTAGAAGA ACTCTAGGAA AAAAGACGC GCATAGACG ACGAACGTTT GTTTTTTTGG
CoEl ori
7801 ACCGTACCA GGGTGGTTT GTTTGCGGA TCAAGACTTA CCAACTCTT TTCCGAAGT AACTGGCTTC AGCAGAGCGC AGATACCAA TACTGTTCTT
TGGCGATGGT CGCCACCAA CAAACGGCT AGTTCTCGAT GGTGAGAAA AAGCTTCCA TTGACOGAAG TCGTCTCGG TCTATGGTTT ATGACAAGAA
CoEl ori
7901 CTAGTGAGC CGTAGTAGG CCACCACTTC AAGACTCTG TAGCACGCC TACATACCTC GCCTGTCTAA TCTGTTACC AGTGGTGTCT GCCAGTGGCG
GATCACATCG GCATCAATCC GGTGTGAAG TTCTTGAGAC ATCGTGGCGG ATGTATGGAG CGAGACGATT AGSACAATGG TCACCGACGA CGGTCAACCG
CoEl ori
8001 ATAAGTCTG TCTTACCGG TTGGACTCAA GACGATAGT ACCGATAAG GCGCAGCGGT CGGCTGAAC GGGGGTTCG TGCACACAGC CCAGCTTGG
TATTCAGCAC AGAATGGCCC AACCTAGTT CTGCTATCAA TGGCTATTC CGCGTGGCA GCGGACTTG CCCCCAAGC ACGTGTGTCG GGTGGAACCT
CoEl ori
8101 GCGAAGACC TACACGAAC TGAGATACCT ACAGGTGAG CTATGAGAAA GCGCACCGT TCCGAAGGG AGAAAGGCGG ACAGGTATCC GGTAAAGCGC
CGCTTGTGG ATGTGCTTG ACTCTATGA TGTGCACTC GATACTCTT CGCGTGGCA AGGCTTCC TCTTCCGC TGTCCATAGG CCATTGCGCG
CoEl ori
8201 AGGTGCGAA CAGGAGAGC CACGAGGAG CTTCCAGGG GATACGCTG GTATCTTAT AGTCTGTG GGTTCGCCA CCTCTGACT GAGCGTCTGAT
TCCCAGCCT GTCCCTCGC GTGCTCCCTC GAAGTCCCC CTTTGGCGG CATAGAATA TCAGGACAGC CCAAGCGGT GGAGACTGAA CTCGCAAGTA
CoEl ori

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FIG. 7 (Continued)

8301 TTTTGTGATG CTCGTGAGG GGGGGAGCC TATGGA AAA CGCGAGCAAC GCGGCTTTT TACGTTCCCT TGGCTTTTGC CTCACATGTT
 AAAACACTAC GAGCAGTCCC CCCGCTCTCG ATACCTTTT GCGGTGTTG CGCGGAAAA ACGCAAAAC ACCGAAAC GAGTGACAA
 8401 CTTTCCCTCG TTATCCCTG ATTCTGTGA TAACGTAAT ACCGCTTG AGTACCTGA TACGCTCG CGAGCGGA CGACCGAGCG CAGCGACTCA
 GAAAGGAGCG AATAGGGGAC TAAGACACCT ATTGGGATAA TGGCGGAAC TCACCTGACT ATGGCGAGCG GCGTGGCTT GCTGGCTCGG GTGCTCAGT
 CoE1 ori
 8501 GTGAGCGAGG AAGCGGAGA GCGCCCAATA CGCAACCCG CTCCTCCCGG GCGTTGGCG ATTCATTAA ATGAGCTGGA CGACAGGTT CCCGACTGGA
 CACTCGCTCC TTGCGCTTCT CGCGGTTAT CGCTTTGGCG GAGAGGGCG CGCAACCCG TAAGTAATTA GCTCGACCGT GCTGTCCAAA GGCCTGACCT
 8601 AAGCGGCGAG TGAGCGCAAC GCAATTAATG TGAGTAGCT CACTCATAG GCACCCGAG CTTTACACTT TATGCTCCG GCTCGTATGT TGTGTGGAAT
 TTGCGCGCTC ACTCGGCTG CGTAAATAC ACTCAATCGA GTGAGTAATC CGTGGGCTC GAATGTGA ATACGAAGG CGAGCATACA ACACACCTTA
 8701 TGTGAGCGGA TAACAATT ACACAGGAA CAGTATGAC CATGATTACG CCAAGCTCGA AATTAACCT CACTAAAGG AACAAAAGT GGAGCTCCAC
 AACTCCCT ATTGTAAAG TGTGCTCTT GTCGATACTG GTACTAATGC GGTTCGAGCT TTAATTGGA GTGATTCCC TTGTTTTCGA CCTCGAGGTG
 SV40
 8801 CGCGTGGCG GCTCGAGGT CGAGATCCG TCGACAGCA ACCATAGTCC CGGCTTAAC TCGCCCATC CGGCTCTAA CTCCGCCAG TTCCGCCCAT
 GCGCCACCG CGGAGCTCCA GCTCTAGGCC AGCTGCTCT TGGTATCAG CGCGGATG AGCGGGTAT GCGGGGAT CACTCCTCG AAAAACCCTC
 8901 TCTCCGCGG ATGCTGACT AATTTTAT ATTATGCG AGCGGAGG CGCTCGGC TCTAGCTAT TCCAGAAGTA GTGAGGAGG TTTTGTGGAG
 AGAGCGGGG TACCGACTGA TTAATAAAA TAAATAGCT TCGGCTCCG CGCGGCTCG AGACTCGATA AGTCTTCAT CACTCCTCG AAAAACCCTC
 SV40 CMV
 9001 GCCTAGGCT TTGCAAAAAG CTTGAGCGGT ATCGATGGC TCATGTCCAA CATTACCGC AFTTGACAT TGATTTATGA CTAGTTATTA ATAGTAATCA
 CGGATCCGAA AACGTTTTTC GAAGCTGCCA TAGCTAACCG AGTACAGGT GTAATGCGG TACAACCTGA ACTAATACT GATCAATAAT TATCATTAGT
 CMV
 9101 ATTACGGGT CATTAATTCA TAGCCATAT ATGGAGTCC GGTATCAT ACTTACGTA AATGGCCCG CTGGCTGACC GCCCAACGAC CCCCGCCCAT
 TAATGCCCA GTAATCAAGT ATCGGTATA TACCTCAAG CGCAATGAT TGAATGCCAT TACCGGGG GACCGACTGG CCGGTTGCTG GGGCGGGGA
 CMV
 9201 TGACGCAAT AATGACCTAT GTTCCCATAG TAAGCCAT AGGACTTC CATGACGTC ATGGGTGA GTATTACGG TAACTGCC ACTTGGCAGT
 ACTGCACTA TTACTGCATA CAAGGTAIC ATTGCGTTA TCCCTGAAG GTAATGCAG TTAACCCACT CATAAATGCC ATTTGACGGG TGAACCGTCA
 CMV
 9301 ACATCAAGT TATCATATG CAAGTACGCG CCTATTGAC GTCAATGACG GTAATGGC CGCTGGCAT TATGCCAGT ACATGACCTT ATGGGACTTT
 TGTAGTTCAC ATAGTATACG GTTCATGCGG GGTATGCTG CAGTACTGC CATTTACCG GCGACCGTA ATACGGGTCA TGTACTGGA TACCCTGAA
 CMV
 9401 CCTACTGGC AGTACATCTA CGTATTAGT ATCGTATTA CCAATGCTAT CGGTTTGG CAGTACATCA ATGGCGTGG ATAGCGGTTT GACTCACGGG
 GGATGACCG TCAATGATGAT GCATAATCAG TAGCATATAT GGTACACTA CGCCAAAAC GTCATGTAGT TACCGCACC TATCGCCAAA CTGAGTGGCC
 CMV
 9501 GATTTCAAG TCTCCACCC ATTTGAGTCA ATGGAGTT GTTTGGCAG CAAATCAAC GGAATTTCC AATATGCTG AACACTCCG CCCCATTGAC
 CTAAGGCTC AGAGTGGG TAACTGCAGT TACCTCAAA CAAACCGTG GTTTAGTTG CCTGAAAGG TTTTACAGCA TTGTTAGGC GGGTAACTG
 CMV

FIG. 7 (Continued)

9601 GCAAATGGGC GGTAGGCGTG TACGGAATTC GGAGTGGCGA GCCCTCAGAT CCTGCATATA AGCAGCTGCT TTTTGCCTGT ACTGGGTCTC TCTG
CGTTTACCCG CCATCCGCCAC ATGCCTTAAG CCTCACCCT CCGGAGTCTA GGACGTATAT TCGTCGACGA AAACGGACA TGACCCAGAG AGAC

FIG. 7 (Continued)

CE7scFv-IgG4 Hinge-CH3-CD28tm/4-1BB-Zeta-T2A-EGFRt epHIV7 pJ02569 (9694 bp)

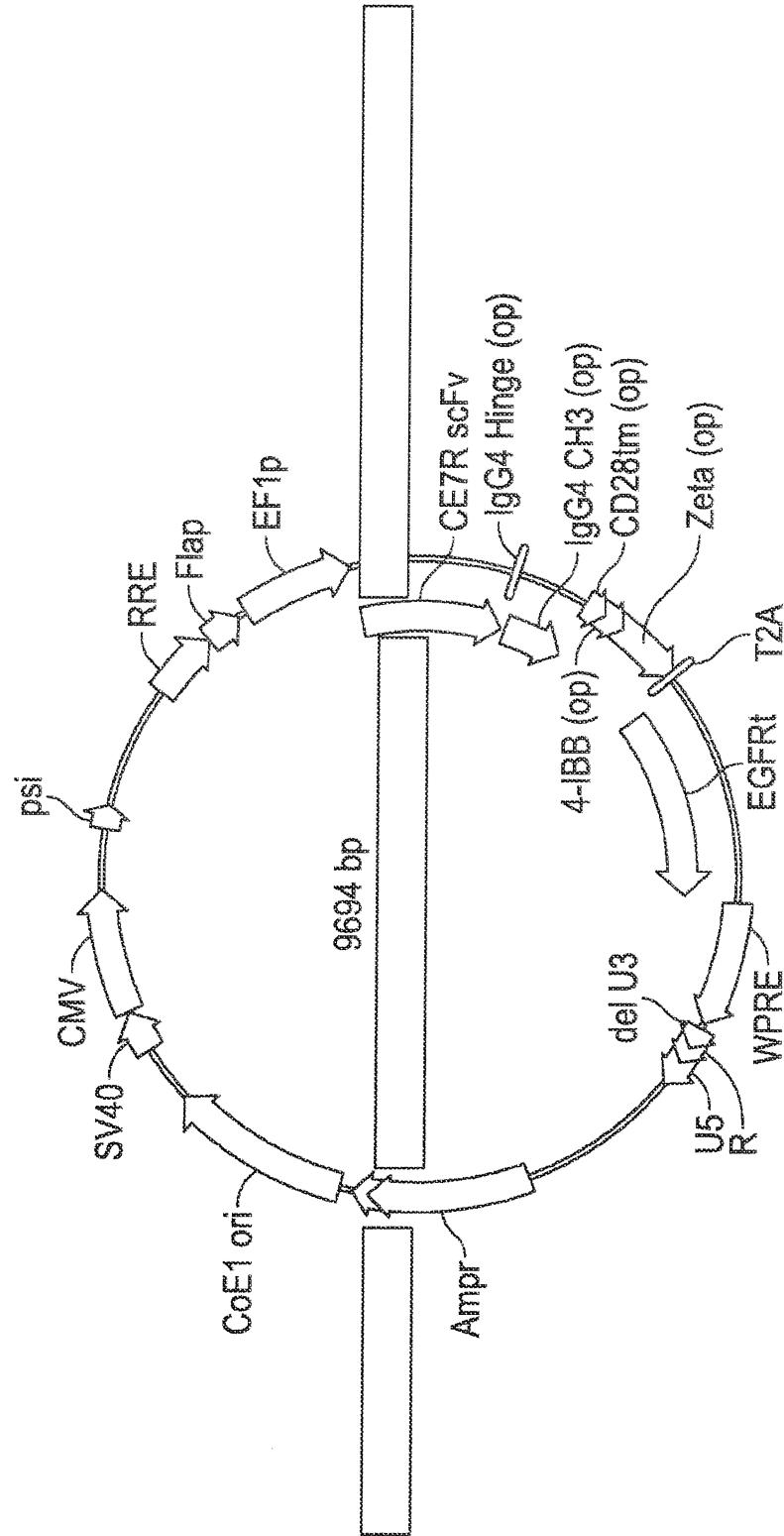


FIG. 8


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1  GTTAGACACG ATCTGAGCCT GGGAGCTCTC TGGCTAACTA GGGAAACCCAC TGCCTTAAGCC TCAATAAAGC TTGCTTTGAG TGCCTTCAAGT AGTGTGTGCC
   CAATCTGGTC TAGACTCGGA CCTTCGAGAG ACCGATTGAT ACCGTTGGTG ACGAATTCGG AGTATATTTCG AACGGAATCTC ACGAAGTTCA TCACACACCG
101 CGTCTGTTCT GTGACTCTGG TAACCTAGAGA TCCCTCAGAC CCTTTTAGTC AGTGTGAAA AJCTGTAGCA GTGGGCGCG AACAGGGACT TGAAGCGAA
   GCAGACAACA CACTGAGACC ATTTGATCTT AGGAGTCTG GGAATATCAG TCACACCTTT TCAGATCTGT CACGCGGGC TTGTCCCTGA ACTTTCGCTT
                                     psi
201 AGGGAACCA GAGGAGCTCT CTCGAGCCAG GACTGGCTT GCTGAGCGC GACGGAAG AGGCGAGGG CGCGACTGG TGAGTAGGCC AAAAATTTG
   TCCCTTTGGT CTCCTCGAGA GAGCTGGCTC CTGAGCGGAA CGACTTCGG CGTGGCGTTC TCCGTCCCC GCGGTGACC ACTCATGGG TTTTAAAC
                                     psi
301 ACTAGCGGAG GCTAGARGA GAGATGGG TGGAGAGCG TCAGTATTA GGGGGGAGA ATTAGATCGA TGGGAAAAA TTCGGTTAAG GCCAGGGGGA
   TGATCGGCTC CGATCTCTCT CTCTCTACCC AGCTCTGCG AGCTATAAT CGCCCTCTCT TAATCTAGCT ACCCTTTTIT AAGCCAATTC CCGTCCCCCT
401 AAGAAABAAT ATAAATTAA ACATATAGTA TGGGCAAGCA GGGAGCTAGA ACGATTCCGA GTTAATCTCTG GCTGTTAGA AACATCAGAA GGCTGTAGAC
   TTCTTTTATA TATTTAATTT TGTATATCAT ACCCTTCGT TGCCTCATCT TGCCTAAGCGT CAATTAGGAC CGGACAATCT TTGTAGTCTT CCGACATCTG
501 AAATACTGGG ACAGCTACAA CCATCCCTC AGACAGGATC AGAAGACTT AGATCATTA ATATACAGT AGCAACCTC TATTGTGTC ATCAAAGGAT
   TTTATGACCC TGTGATGTT GGTAGGGAAG TCTGTCTAG TCTTCTGAA TCTAGTAATA TATTATGTC TCGTTGGGAG ATAAACACAG TAGTTTCTTA
601 AGAGATAAAA GACACCAAGG AAGCTTTAGA CAAGATAGAG GAAGACAAA ACATAAGTAA GAAAAAGCA CAGCAAGCAG CAGCTGACAC AGGACACAGC
   TCTCTATTTT CTGTGTTTCC TTGGAATCT GTTCTATCTC CTCTCTGTT TGTCTCATTT CTCTTTCTCT GTCGACTGTG GTGACTGTG TCCTGTGTG
701 AATCAGGTC GCGAAATTA CCGTATAGTG CAGAAATCC AGGGCAAT GGTACATCAG GCCATATCAC CTCTTTCTCT CTTGCTGTCG GTGACTGTG TCCTGTGTG
   TTAGTCCAGT CGGTTTAAAT GGGATATCAC GTCTGTAGG TCCCGTTA CCATGATGTC CGGTATAGTG GAICTGAAA TTACGCTACC CATTTTCATC
801 TAGAAGAGAA GGTCTTACG CCGAAGTGA TACCATGTT TTAGAANTA TCAGAGGAG CCACCCACA AGATTAAAC ACCATGCTAA ACACAGTGG
   ATCTTCTCTT CCGAAAGTCG GGTCTTCACT ATGGGTACAA AAGCTGTAAT AGCTCTCTC TGTTACGATT TGTGTACCC
                                     RRE
901 GGGACATCAA GCAGCATGC AATGHTAAA AGAGACATC AATGAGGAG CTGAGGCAA AGAGAAGAGT GGTGAGAGA GAAAAAGAG CAGTGGGAAT
   CCTCTAGTT CGTGGGTAG TTTACAAAT TCTCTGCTAG TTACTCTCTC GAGCTCCGT TCCTCTCTCA CCAGTCTCT CTTTITCTC GTCACCTTA
                                     RRE
1001 AGGAGCTTG TTCTTGGGT TCTTGGAGC AGCAGGAGC ACTATGGCG CAGCTCAAT GACCTGACG GTACAGGCCA GACAATTAT GTCTGGTATA
   TCCTCGAAC AAGGAACCA AGAACCTCG TCGTCTCTG TGAATCCCG GTCCGAGTTA CTGGACTGC CATGTCCGT CTGTTAATA CAGACCATAT
                                     RRE
1101 GTGAGGAGC AGAACAATTT GCTGAGGCT ATTGAGCGC AACAGATCT GTTGCACTC ACAGTCTGG GCATCAGCA GTTCCAGGA AGAATCTCTG
   CAGCTGCTG TCTTGTTAAA CGACTCCCGA TAACCTCCCG TTGTGTAGA CAACCTGAG TGTGAGACC CBTAGTCTGT CGAGGTCCGT TCTTAGGACC
                                     flap
1201 CTGTGGAAG ATACCTAAA GATCAACAGC TCCCTGGGAT TTGGGTTGC TCTGGAAC TCATTTCCAC CACTGCTGTG CCTTGGATCT ACAAATGGA
   GACACTTTC TATGGATTTC CTAGTGTCTG AGGACCCCTA AACCCCAAG AGACTTTT ASIAAACGTG GTGAGGACAC GGAACCTAGA TGTTTACCGT
                                     flap
1301 GTATTATCC ACAATTTAA AAGAAAGGG GGAATGGGG GGTACAGTGC AGGGAAAGA ATAGTAGACA TAATAGCAAC AGACATACAA ACTAAGAAT
   CATAAGTAGG TGTAAATTT TTTCTTTTCCC CCCTAACCCC CCATGTCAGC TCCCCTTTCT TATCATCTGT ATTATCGTTG TCTGTATGTT TGATTTCTTA

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FIG. 9

THE

CE7R scFv
 2501 GTGAGCAGG GCGGAGGGG CTCTGGGGG GGAGGATCTG GGGAGGGGG CAGGACATC CAGATGACCC AGACAGCAG CAGATTGAGC GTGAGCCCTGG
 CACTCGTGG CCGCTCCGCC GAGACGGCG CCTCTTAGAC CCGCTCCGCC GTGCTGTAG GTGCTGTAG GTGCTGTAG GTGCTGTAG GTGCTGTAG GTGCTGTAG
 CE7R scFv
 2601 GCGACGGGT GACCATCACC TGTAGGCA ACAGACAT ACAGACAT ACAGACAT ACAGACAT ACAGACAT ACAGACAT ACAGACAT ACAGACAT
 CGCTGGCCA CTGGTAGGG ACATTCCGT TGTCTCTGTA GTTGTGGGG GACCGGACCA TAGTGTCTG GGGGGCTTG TCGGGTCCG ACCACTAGTC
 CE7R scFv
 2701 GCGGCGACC AACCTGGGA CCGGGTGGC CAGCGGTT AGCGGAGG GCTCGGCA GACTACATC CAGCTGCA CAGCTGCA CAGCTGCA CAGCTGCA
 GCGCGGTGG TTGGACCAT TTGGACCAT GCGCGGACG GTGCGGCAAA TCGCGGTGG CAGCGGCTT CCGAGTGG GACTGTAGT GTGCGGAGT CCGGCTCCG
 CE7R scFv
 2801 TTGCGCACCT ACTACTGCA GCAGTACTGG TCCACCCCT TCACCTTCGG CAGCGGACC GAGTGGAA TCAAGATC TAAGTACGGA CCGCCCTGCC
 AAGCGGTGA TGATGACGT CGTCAAGACC AGTGGGGA AGTGGGGA AGTGGGGA AGTGGGGA AGTGGGGA AGTGGGGA AGTGGGGA AGTGGGGA
 CD28tm
 IgG4 Hinge
 2901 CCCCTTGCC TAGTTCGG GTGCTGGGG TGGTCGAGG CGTGTGGCC TGTACAGCC TGTGTCTC CBTGGCTTC ATCATCTTTT GGTGAAACG
 GGGGAACGG ATACAAGACC CACGACACC ACCAGCTCC GCACGACGG ACGAGTGG ACAGTGGG TACTAGAAA CCACTTTTC
 4-1BB
 3001 GGGCAGAAAG AACTCTGT ATATATCAA ACAACATTT ATGAGACAG TACAACTAC TCAAGAGAA GATGGCTGA GCTGCCGATT TCCAGAAGAA
 CCCGTCTTC TTGTAGGACA TATATAAGTT TGTGGTAAA TACTGTGTC ATGTTGATG AGTGTCTT CTACCGACAT CAGCGGCTAA AGTCTTCTT
 Zeta
 4-1BB
 3101 GAAGAGGAG GATGTGACT GCGGGTGAAG TTCAGCAGAA GCGCGACGC CCGTGGCTAC CAGCAGGGCC AGATCAGCT GTACACCGAG CTGAACCTGG
 CTCTCTCTC CTACACTGA CCGCCACTC AGTCTCTT CCGCGGTGG GGGACGGATG GTCTGCTCCG TCTTAGTGA CATGTGCTC GACTTGGACC
 Zeta
 3201 GCAGAGGGA AGGTACGAC GTCCTGGATA AGCGGACGG CCGGACCTT GATGTGGGG GCAAGCTTC GCGAAGAAC CCGAGGAAG GCTGTATATA
 CGTCTTCCCT TCTCATGCTG CAGGACCTAT TCGCTCTCC GCGCTGGGA CTCTACCCG CGTTCGGAGC CGCTTCTTG GGGTCTCTC CCGACATATT
 Zeta
 3301 CGAACTGCAG AAAGACAAGA TGGCGAGGC CTACAGCAG ATCGGATGA AGGGGAGCG GAGGCGGGC AAGGCGCAG ACGCTCTGA TCAGGGCCTG
 GCTTGACGC TTCTGTCT ACCGGTCCG GATGTGCTC TAGCCTACT TCCGCTGCT CCGCGCCCG GTCCGCTGC TCGCGGACAT AGTCCCGGAC
 T2A
 3401 TCCACGGCA CCAAGGATAC CTACGACGC CTGACATGC AGGCTTGG CCGAGGCTC GAGGCGGGC GAGAGGGCAG AGGAGTCTT CTAACATGCG

FIG. 9 (Continued)

AGGTGGCGGT GGTTCCTATG GATGCTGCGG GACGTGTACG TCCGGGACGG GGGTTCGAG CTCGCCCGC CTCCTCAGAA GATTGTACGC
 T2A
 3501 GTGAGTGGG GGAGAAATCC GGCCTTAGA TGTCTCTCT GGTGCAAGC CTTCTCTCT GTGAGTTACC ACACCCAGCA TTCTCTCTGA TCCCACGCAA
 CACTGCACCT CCTCTTAGG CCGGATCCT ACGAAGAGG CCACTGTTG GAAGACGAGA CACTCAATGG TGCGGTCTG AAGGAGGACT AGGTGCGGT
 EGFR
 3601 AGTGTGTAC GGAATAGTA TTGGTGAAT TAAAGACTA CTCCTGATAA ATGCTAGAA TATTAACAC TTAATAAAT GCACCTCCAT CAGTGGCGAT
 TCACACATG CCTATCCAT AACCACTAA ATTTCTAGT GAGAGTATT TACGATGCTT ATAATTGTG AAGTTTGA CGTGGAGTA GTCACCGTA
 EGFR
 3701 CTCCACATC TCGCGGTGC ATTTAGGGT GACTCCTCA CACTACTCC TCCCTCTGGT CCACAGGAAC TGGATATTCT GAAACCGTA AAGGAATCA
 GAGGTGTAG ACGGCCACG TAAATCCCA CTGAGGAAGT GTGTATGAG GTGTCTCTG AGGACACCTA GGTGTCTTG ACCATAAGA CTTTGGCAT TTCTTTAGT
 EGFR
 3801 CAGGGTTTT GCTGATTGAG GCTTGGCTG AAAACAGGAC GGACCTCCAT GCCTTTGA ACCTAGAAAT CATACGCGG AGGACCAAG AACATGGTCA
 GTCCCAAAA CGACTAAGT CGAACCGGAC TTTTGTCTG CCGTGGAGTA CGGAACCTT TGGATCTTA STATGCGCG TCGTGGTTCG TTGTACCAGT
 EGFR
 3901 GTTTTCTCT GCAGTCTCA GCCTGAACAT AACATCTTG GAATTAAGT CCGTCAAGCA GATTAAGTGA TAAATTCAGG AAACAATAAT
 CAAAAGANA CGTCAGCAGT CGGACTTGA TTGTAGGAAC CCTAATCGA GGGAGTCTT CTATCACTA CCTACACT ATTAAGTCC TTGTTTTTA
 EGFR
 4001 TTGTGCTAT CAAATACAT AAACGTGAAA AAACGTGTT GGACCTCTGG TCAGAAACCC AAATATATA GCACAGAGG TGAACACAG TGAAGGCCA
 AACACGATC GTTTATGTA TTTGACCTT TTTGACAAAC CCTGGAGGCC AGTCTTTGG TTTTAATATT CGTTGTCTCC ACTTTGTG ACCTTCCGGT
 EGFR
 4101 CAGGCCAGT CTGCCATGC TTGTCTTCC CCGAGGCTG CTGGGCGCG GAGCCAGGG ACTGCTCTC TTGCGGAT GTACGCCAG GAGGGAATG
 GTCCGGTCA GACGGTACG AACACGAGG GGCTCCGAC GACCCCGCG CTCGGTCCC TGACCCAGG AACGCCCTA CAGTCGGCTC CTTCCCTTAC
 EGFR
 4201 CGTGGACAG TGAACCTTC TGGAGGTGA GCCAAGGAG TTGTGAGA ACTCTGAGT CATACAGTG CACCCAGAGT GCCTGCCCTA GGCATGAAC
 GCACCTGTC ACGTTGGAAG ACCTCCACT CGGTTCCTC AAACACTCT TGAGACTCA GTATGTCAG GTGGTCTCA CGGACGGAGT CCGTACTTG
 EGFR
 4301 ATCACTGCA CAGGACGGG ACCAGACAAC TGTATCCAG GTGCCACTA CATGACGGC CCCACTGCG TCAAGACCTG CCGGACGGA GTCATGGAG
 TAGTGGACT GTCTGCCCC TGGTCTGTT ACATAGTCA CACGGGTGAT GTACTGCCG GGGGTGACG AGTTTGGAC GGGCCGTCT CAGTACCCCTC
 EGFR
 4401 AAACAACAC CCTGTCTGG AAGTACGAG ACGCCGSCCA TGTGTCCAC CTGTGCCATC CAACTGCAC CTAGGATGC ACTGGGCCAG GTCTTGAAG
 TTTTGTGTT GGACCAAGC TTCAATGCTC TGGCGCGGT ACACAGGTTG GACACGGTAG GTTTGACGTG GATGCTACG TGACCCCGTC CAGAATTCC
 EGFR
 4501 CTGTCCACG AATGGGCTA AGATCCGCT CATCGCACT GGGCTCTCT GTGTGCTCTG GTGTGGCCC TGGGATCGG CCTCTTCATG
 GACAGGTGC TTACCCGAT TCTAGGCAG GTAGGGTGA CCTACCAAC CCGGAGGA GAAACAGGAC CACACCGGG ACCCTAGCC GGAGAAGTAC

FIG. 9 (Continued)

EGFRt
 4601 TGAGCGGGCG CTCTAGACCC GGGCTGCAGG AATTCGATAT CAAGCTTATC GATAATCAAC CTTGGAATTA CAAATTTGT GAAAGATTGA CTGGTATTCT
 ACTCGCCGCG GAGATCTGGG CCCGACGTC TTAAGCTATA GTTCGATAG CTATTAGTTG GAGACCTAAT GTTTAAACA CTTCTAACT GACCATAAGA
 WPRE
 4701 TAACTATGTT GCTCCTTTTA CGCTATGTGG ATACGCTGCT TTAATGCTT TGTATCATGC TATTGCTTCC GGTATGGCTT TCAATTTCTC CTCTTTGTAT
 ATTGATACAA CGAGGAATAT GCGATACACC TATGCCAGCA AATTACGAA ACAATAGTACG ATAACCAAGG GCATACCAGG AGTAAAGAG GAGGAACATA
 WPRE
 4801 AAATCCIGT TGTGTCTCT TTAGAGAGG TTGTGCGCG TTGTAGGCA ACGTGCCTG GTGTGCACTG TGTGTGCTGA CGAACCCCC ACTGTTGGG
 TTTAGGACA ACGACAGAGA AATACCTCTC AACACCGGC AACAGTCCGT TGCACCGCAC CACACTGAC ACAACGACT GCGTTGGGG TGACCAACCC
 WPRE
 4901 GCATTGCCAC CACCTGTACG CTCCTTTCCG GGACTTTGCG TTTCCCTCT CCTATTGCCA CGCGGAACT CATCGCGCC TGCCTTGGCC GCTGCTGGAC
 CGTAACGGTG GTGGACAGTC GAGGAAGGC CCTGAAGCG AAGGGGGAG GGATAACGTT GCCGCTTGA GTAGCGCGG ACGGAACGGG CGACGACCTG
 WPRE
 5001 AGGGCTCGG CTGTTGGGA CTGACAAATC CGTGGTGTG TCGGGGAAT CATGTCCTT TCGTGGCTG CTCGCTGTG TTGCCACCTG GATTCTGGC
 TCCCCGAGC GACAAACCGT GACTGTATG GCACCACAAC AGCCCTTTA GTAGCAGAA AGGACCGAC GAGCGACAC AACGTGGAC CTAAGACGG
 WPRE
 5101 GGGACGTCCT TCTGTACGT CCCTTCGCG CTCAATCCAG CGGACCTTC TTCCCGCGG CTCGTGCGCC TCTTCCGGT TCTTCCGCTT CTTGCGCTTC
 CCCTGCAGG AGACGATGCA GGAAGCGG GAGTTAGTC GCCTGAAGG AAGGGCGG GACGACGCG GACGACGCG AGAAGCGCA GAGCGGAAG
 WPRE
 5201 GCCCTCAGC GAGTCGGATC TCCCTTGGG CCGCTTCCC GCATCATAC CGTCACTAG CCGTACCTT AAGACCAATG ACTTACAAG CACCTGTAGA
 CGGGAGTCTG CTCAGCCCTAG AGGGAACCC GCGGAGGGG CGTAGCTATG GCAGCTGATC GGCATGAAA TTCTGGTTAC TGAATGTTCC GTGACATCT
 del U3
 5301 TCTTAGCAC TTTTAAAG AAAAGGGGG ACTGGAGGG CTAATCACT CCCAAGAAG ACAGATCTG CTTTTGCTT GACTGGGTG TCTCTGGTTA
 AGAATCGGTG AAAAATTTT TTTTCCCCC TGACCTTCCC GATTAAGTGA GGGTTTCTT TGTCTAGAC GAAAAACGGA CATGACCCAG AGAGACCAAT
 R
 5401 GACCAGATCT GAGCCTGGG GCTCTCTGG TAACTAGGA ACCCACTGT TAAGCTCAA TAAAGCTTC CTTGAGTGT TCAAGTAGTG TGTGCCCCGTC
 CTGGTCTAGA CTCGGACCT CGAGAGACCG ATTGATCCCT TGGGTACGA ATTCGAGT ATTGGAACG GAATCAGCA AGTTCAATC ACACGGGCG
 US
 5501 TGTGTGTGA CTCGTGGTAC TAGATCCC TCAGACCTT TTAGTCAGTG TGGAAATCT CTAGCAGAA TCGATATCAA GCTTATCGAT ACGTCCGACC
 ACAACACACT GAGACCATG ATCTCTAGG AGTCTGGAA AATCACTAC ACCTTTAGA GATCGTCTTA AGCTATAGT CCAATAGCTA TGGCAGCTGG
 5601 TCGAGGGGGG GCCCGGTACC CAATTCGCC TATAGTACG CCGTATACAA TTAAGTGGC GTCTGTTTAC AAGCTCGTGA CTGGGAAAC CCGTGGCTTA
 AGCTCCCCC CGGGCCATG GTTAAGCGG AATCACTCA GCATATGTT AAGTACCGG CAGCAAAATG TTGACGACT CACCTTTTG GACCCGCAAT
 5701 CCCAACHTAA TCGCCTTGA GCATATCCC CTTTCGCAG CTGGGTAAAT AGCGAAGG CCGCACCGA TCGCTTTC CACAGTTGC GCAGCCTGAA
 GGGTTGAAT AGCGGAACGT CGTGTAGGG GAAAGCGCTC GACCGATTA TCGCTCTCC GGGCTGGCT AGCGGAAGG GTTGTCAACG CCGTGGACTT

FIG. 9 (Continued)

5801 TGGCGAATGG AAATTGTAAG CGTTAAATAT TTGTTAAAT TCGGCTHAAA TTTTHTTAA ATCAGTCAT TTTTAAACCA ATAGCCGAA ATCGGCAAAA
 ACCGCTTACC TTAAACATTC GCAATTATTA AACAAATTT AGCGCAATTT AGTCAGTA AARAATTGGT TATCCGGCTT TATCCGGCTT TATCCGGCTT
 5901 TCCCTTATAA ATCAAAAGAA TAGACCGAGA TAGGGTTGAG TGTGTTTCCA GTTTGGAACA AGAGTCCACT ATTAAGAAGC GTGACTCCA ACCTCAAAGG
 AGGAATATTT TAGTTTCTTT ATCTGGCTCT ATCCCACTC ACAACAGGT CAACCTTGT TCTCAGTGA TAATTTCTTG CACTGAGGT TGCAGTTTCC
 6001 GCGAAAACC GTCTAICAGG GCGATGGCCC ACTACGTA GATGCTGGA TTAGTTCAA AACCCTCAGC FCCACGGCAT TTCTGTATTT AGCTTGGGA
 CGCTTTTGG CAGATAGTCC CGTACCCTG AGCTTGAGG GGAAGCGG CGAACGTCG GAGAAAGAA CTTTCTTTC GAGAAAGAGC GGCCTGAGG GGCCTGAGG
 6101 AAAGGAGCC CCCGATTAG AGCTTGAGG GGAAGCGG CGAACGTCG GAGAAAGAA CTTTCTTTC GAGAAAGAGC GGCCTGAGG GGCCTGAGG
 TTTCCCTCGG GGGCTAATC TCGAATGCG CCTTTCGGC CTTTTCCTT CTTTCTTTC GAGAAAGAGC GGCCTGAGG GGCCTGAGG GGCCTGAGG
 6201 GTGTAGCGGT CACGCTGGC GTAACCAACA CACCGCGCG GCTTAATCG CCGTACAGG GCGCTCAGG TGGCACTTT CCGGAAATG TGGCGGAAC
 CACATCGCCA GTGCGACCG CATTTGCTT GTGGCGCGG CGAATTACG GCGCTGTC CCGCGAGTCC ACCGTGAAA GGCCTTTAC ACCGCGCTTG
 6301 CCCTATTGT TTATTTTCT AAATACATTC AAATATGTA CCGCTCATG GACAAATACC CTGATAAATG CTTCATAAT ATTGAAAAG GAAGAGTATG
 GGGATAAACA AATAAAGA TTTATGTAAG TTTATACATA GCGGAGTACT CTGTAATGG GACTATTAC GAAGTATTA TAATTTTTC CTTCATATC
 6401 AGTATTCAAC ATTTCCGCT GCGCTTTAT CCGCTTTTG CGGCTTTTG CCTTCTGTT TTTGCTCACC CAGAAACGCT GGTGAAAGTA AAAGATGCTG
 TCATAAGTG TAAAGGCACA GCGGGAATA CACCCAAATG AGCTTGACT AGAGTTGCG CCATCTAGG AACTCTAAA AGCGGGCTT CTTCGAAAAG GTTACTACTC
 6501 AAGATCAGT GGGTGACGA GTGGGTTACA TCGAATCGA TCTCAACAGC GGTAAATCC TTGAGAGTT TCGCCCCGAA GACGTTTTC CAATGATGAG
 TTCTAGTCAA CCCACGTGCT CACCCAAATG AGCTTGACT AGAGTTGCG CCATCTAGG AACTCTAAA AGCGGGCTT CTTCGAAAAG GTTACTACTC
 6601 CACTTTTAAA GTTCTGCTAT GTGGCGCGT ATTATCCGT ATTGAGCGG GGCAGAGCA ACTCGGTGCG CGATACACT ATTCTCAGAA TCACCTTGGT
 GTGAAAATTT CAAGACGATA CACCGCGCA TAATAGGCA TAACGCGCG CCGTCTCTG TGAGCCAGCG GCGTATGTGA TAAGAGTCTT ACTGAACCAA
 6701 GAGTACTAC CAGTCACGA AAGCATCTT ACGGATGCA TGCAGTAAG AGAATTATG AGTGTGCGA TAACCATGAG TGATAACACT GCGGCCAAT
 CTCATGAGTG GTCAGTCTT TTTCGTAGAA TGCCTACCGT ACTGTCAATC TCTTAATACG TCACGAGGT ATTGCTACT ACTATTGTA CCGCGGTTGA
 6801 TACTTCTGAC AACGATCGA GGAACGAGG AGCTAACCG TTTTGTGAC AACATGGGG ATCATGTAC TCGCTTGTAT CGTTGGGAA CCGAGCTGAA
 ATGAAGACTG TTGCTAGCT CCGCTGCTC TCGATTGCG AAAAACTG TTGTACCCCT TAGTACATTG AGCGGAATA GCAACCTTG GCTCGACTT
 6901 TGAAGCATA CCAACGAGG AGCGTGAC CACGATGCT CACGATGCT GTGCTACGGA CATCGTACC GTTGTGCAA CCGCTTGTAT AATGACCGG TGATGAATG AGATCGAAG
 ACTTCGGTAT GGTTCGCTG TCGCACTGTG GTGCTACGGA CATCGTACC GTTGTGCAA CCGCTTGTAT AATGACCGG TGATGAATG AGATCGAAG
 7001 CGGAACAAT TAATAGACTG GATGGAGCG GATAAAGTG CAGGACACT TCTGCGCTG GCGCTTCCG CTGGCTGTT TATTGCTGAT AAATCTGGG
 GCGGTGTA ATTATCTGAC CTACCTCGC CTATTTCAC GTCTGCTGA AGACCGAGC CCGGAGGCC GACCGACCA ATACGACTA TTTAGACCTC
 7101 CCGGTGAGG TGGTCTGCT GGTATCATG CAGCACTGG GCGCATGTT AAGCCTCCC GTATGCTAGT TATCTACAGG ACGGGAGTC AGGCAACTAT
 GGCACATGCG ACCGAGCG CCATAGTAAC GTCGTGACCC CCGTGTACCA TTCGGAGGG CATAGCATCA ATAGATGTC TCGCCCTCAG TCGGTGATA

FIG. 9 (Continued)

7201 GATGAACGA AATAGACAGA TCCTGAGAT AGGTGCTCA CTGATTAAAGC ATTGTAACCT GTCAGACCAA GTTACTCAT ATATACTTTA GATTGATTTA
 CCTACTTGGCT TTATCTGTCT ACCGACTCTA TCCACGGAGT GACTAATTCG CoE1 ori
 7301 AAACCTTCATT TTTAATTAA AAGGATCTAG GTGAAGATCC TTTTTCATAA TCTCATGACC AAAATCCCTT AACGTGAGT TTTGTTCCAC TGAGCGTCAG
 TTTGAAGTAA AAATTAAAT TTCTTAGATC CACTTCTAGG AAAAATATTT AGAGTACTGG TTTTAGGAA TTGCACTCAA AAGCAAGGTG ACTCCGAGTC
 CoE1 ori
 7401 ACCCGGTAGA AAAGATCAA GGATCTTCTT GAGATCTTCT TTTTCTGCGC GTAACTGCT GCTTGCAAC AAAAAACCA CGCTACCG CGTGGTTTG
 TGGGGCATCT TTTCTACTTT CCTAGAGAA CTCTAGAAA AAAGACGGC CATTAGACGA CGAACGTTG TTTTCTGGT GGCATGGTC GGCACCAAC
 CoE1 ori
 7501 TTTGCGGAT CAAGAGCTAC CAACCTCTTT TCCGAAGTA ACCTGCTTCA GCAGAGCGCA GATACCAAT ACTGTTCTTC TAGTGTAGCC GTAGTTAGGC
 AAACGGCTA GTTCTCGAT GTTGAGAAA AGCTTCCAT TGACCGAAGT CGTCTCGGT CTAATGTTTA TGACAAGAAG ATCAGATCGG CATCAATCCG
 CoE1 ori
 7601 CACCACTTCA AGAATCTGT AGCAGCGCT ACATACCTCG CTCTGCTAAT CCTGTATCCA GTGCTGCTG CAGTGGCGA TAAGTGGTGT CTTACCGGGT
 GTGGTGAGT TCTTGAGACA TCGTGGCGA TGTATGGAGC GAGACGATTA GGACAATGGT CACGACGAC GGTCAACGCT ATTCAGCACA GAATGGCCCA
 CoE1 ori
 7701 TGGACTCAAG ACGATAGTA CCGGATAAG CGCAGCGTC GGGGTTCGT GCACACAGCC CAGCTTGGAG CGAACGACCT ACACCGAAT
 ACCTGAGTTC TGCTATCAAT GGCTATTC GGGTATTC CCGGATTC CCCCCAAGCA CGTGTGTCG GTCAACCTC GCTTGTGCTGA TGTGGCTTGA
 CoE1 ori
 7801 GAGATACCTA CAGCTGAGC TATGAGAAAG CGCCAGCTT CCGGAGGGA GAAGGCGGA CAGTATCCG GTAGCGGA GGTTCGGAC AGCAGAGCGC
 CTCTATGAT GTGCACTCG ATACTCTTC GCGTGGGA GGGCTTCCCT CTTTCCGCT GTCCATAGGC CATTCGCGT CCCAGCCTTG TCCTCTCGCG
 CoE1 ori
 7901 ACGAGGAGC TTCAGGGG AAACGGCTGG TATCTTTATA GTCTGTTCG GTTTCCGCTAC AGCTTGGAT TTTGTGATGC TCCTCAGGGG
 TGCTCCCTCG AAGTCCCTT TTTGGGACC ATAGAAATAT CAGGACAGCC CAAAGCGGTG GAGACTGAAC TCGCAGCTAA AACACTACG AGCAGTCCCC
 CoE1 ori
 8001 GCGGAGCTT ATGGAANAAC GGCAGCAAG CCGCTTTT ACCTTCTCTG GCCTTTTGT GGCCTTTTC TCACATGTTT TTTCTGCGT TATCCCTGA
 CCGCTCCGA TACCTTTTG CGGTCTGTC GCGGANAAC TGCCAAGGAC CGGANAACGA CCGGANAACG AGTGTACAG AAAGGACGCA ATAGGGGACT
 CoE1 ori
 8101 TTTCTGGAT AACGTATTA CCGCTTTTGA GTGAGTGTAT ACCGTTCGCT GCAGCGGAC GACCGAGCTG TCAGCTCAG TCAGCGGAGG ACGGGAAGG
 AAGACACTA TTGGCATAAT GCGGGAACCT CACTGACTA GTGGAGCGG CGTGGCTGTG TGGCTCGG ACTCGCTCCT TCGCTTCTC
 8201 CGCCCATAC GCAACCGCC TCTCCCGCG GTTGTGCGA TTTCTAATAT CAGCTGGCAC CAGAGTTC TCAGCTGGAA ACCGGGAGT GAGCGCAACG
 GCGGTTATG CGTTTGGG AGAGGGCGC GCAACCGCT AAGTAATAT CTCGACCGTG CTGTCCAAAG GGTGACCTT TCGCCCGTCA CTCGCGTTGC
 8301 CAATTATGT GAGTTAGTC ACTCATTAG CACCCAGC TTTACACTTT ATGCTTCCG CTCTATGTT GTGTGAATTT GTGAGCGGAT AACAAATTTCA
 GTTAATTACA CTCAATCGAG TGAGTAATCC GTGGGTTCG AAATGTGAAA TACGAAGGCC GAGCATACA CACACTTAA CACTCGCCTA TTGTTAAAGT
 SV40
 8401 CACAGGAAC AGCTATGACC ATGATTACGC CAAGCTCGAA ATTAACCTC ACTAAAGGA ACAAAGCTG GAGCTCCACC GCGGTGGCGG CCTCGAGGTC

FIG. 9 (Continued)

GTGTCCTTTG TCGATACIGG TACTAAATGG GTTCGAGGTT TAATTGGAG TGAITTCCT TGTTCGAC CTCGAGGTGG CGCCACCGCC GGAGCTCCAG
 ~~~~~  
 8501 ~GAGATCCGGT CGACCAGCAA CCATAGTCCC GCGCCCTAAT CCGCCCTAAC TCCGCCCAGT TCGAGCTATT TGCGCCCCA TGGCTGACTA  
 CTCTAGGCCA GCTGTCTT GGTATCAGG CGGGGATGA GCGGGATG AGGGGGTCA AGGGGGTAA GAGCGGGGT ACCGACTGAT  
 ~~~~~  
 8601 ~ATTTTITIA TTTATGCAGA GCGCGAGGCC GCGTCGGCT CTGAGCTATT CCAGAGTAG TGAGGAGGCT TTTTGGAGG CCTAGGCTTT TGCAAAAGC
 TAAAAAAT AAATACGCT CCGGCTCCG CGGAGCGGA GACTCGATAA GGTCTTCATC ACTCTCCGA AAAACCTCC GGATCCGAA ACGTTTTCG
 ~~~~~  
 8701 ~TTCGACGGTA TCGATTGGT CATGTCCAAC ATTACCGCCA TGTTCGACT TGTATGAC TAGTATTA TAGTAATCAA TTACGGGGTCT ATTAGTTCTAT  
 AAGCTGCCAT AGCTAACGA GTACAGTTG TAATGGCGT ACAACTGTAA CTATTAAGT ATCAATAATT ATCATTAGTT AATGCCCCAG TAATCAAGTA  
 ~~~~~  
 8801 ~AGCCCATATA TGGAGTTCG CGTTACATAA CTTACGGTAA ATGGCCGCC TGGTGCACG CCCAACGACC CCGGCCCAT GAGTCAATA ATGACGTATG
 TCGGGTATAT ACCTCAAGC GCAATGTATT GAATGCCATT TACCGGGCGG ACCGACTGGC GGGTGTCTGG GGGGGGTAA CTGAGTTAT TACTGCATAC
 ~~~~~  
 8901 ~TTCCCATAGT AACGCCAATA GGGACTTTC ATTGACCTCA ATGGTGGAG TATTACGGT AAATGCCCC CTTCGCAGTA CATCAAGTGT ATCATATGCC  
 AAGGGTATCA TTGCGGTAT CCGTGAAGG TAACTGCAGT TACCACTTC ATAAATGCCA TTTGACGGGT GAACGTCTAT GTAGTTCACA TAGTATACGG  
 ~~~~~  
 9001 ~AGTACGGCC CCTATTGAG TCAATGACG TAAATGGCC GCGTGGCAT ATGCCAGTA CATGACCTTA TGGACTTTC CTACTTGGCA GTACATCTAC
 TTCATGCGG GATAACTGC AGTTACTGCC ATTTACCGG CGGACGTAA TACGGTCTAT GTACTGGAAT ACCGTGAAG GATGAACCGT CATGTAGATG
 ~~~~~  
 9101 ~GTATTAGTCA TCGCTATTAC CATGGTGATG CGGTTTGGC AGTACATCAA TGGGGTGGG TAGGGTTTG ACTACAGGG ATTCCAAGT CTCCACCCCA  
 CATAATCAGT AGCGATAATG GTACCACTAC GCCAAAACCG TCATGTAGT ACCCGACCT ATCGCCAAAC TGAATGCCCT TAAAGTTCA GAGTGGGGT  
 ~~~~~  
 9201 ~TTGACGTCAA TGGAGTTTG TTTTGGACC AAAATCAAG GGACTTCCA AATGTCTGA AACTCCCG CCATTCAGC CAAATGGCG GTAGGCGTGT
 AACTGCAGT ACCCTCAAAC AAAACCGTG TTTTACTTGC CCTGAAGGT TTTACAGCAT TGTGAGCG GGTAACTGC GTTACCCCG CATCCGCACA
 ~~~~~  
 9301 ~ACGGAATTG GAGTGGCGAG CCTCAGATC CTGCATATAA GCAGTCTCT TTTGCTCTA CTGGTCTCT CTG  
 TGCCTTAAG CTCACCGTC GGGAGTCTAG GACGTATATT CGTCAGCAA AAACGACAT GACCCAGAGA GAC

FIG. 9 (Continued)



CE7scFv-IgG4 Hinge-only-CD28tm/41BB-Zeta-T2A-EGFRt epHIV7 pJ02460 (9373 bp)

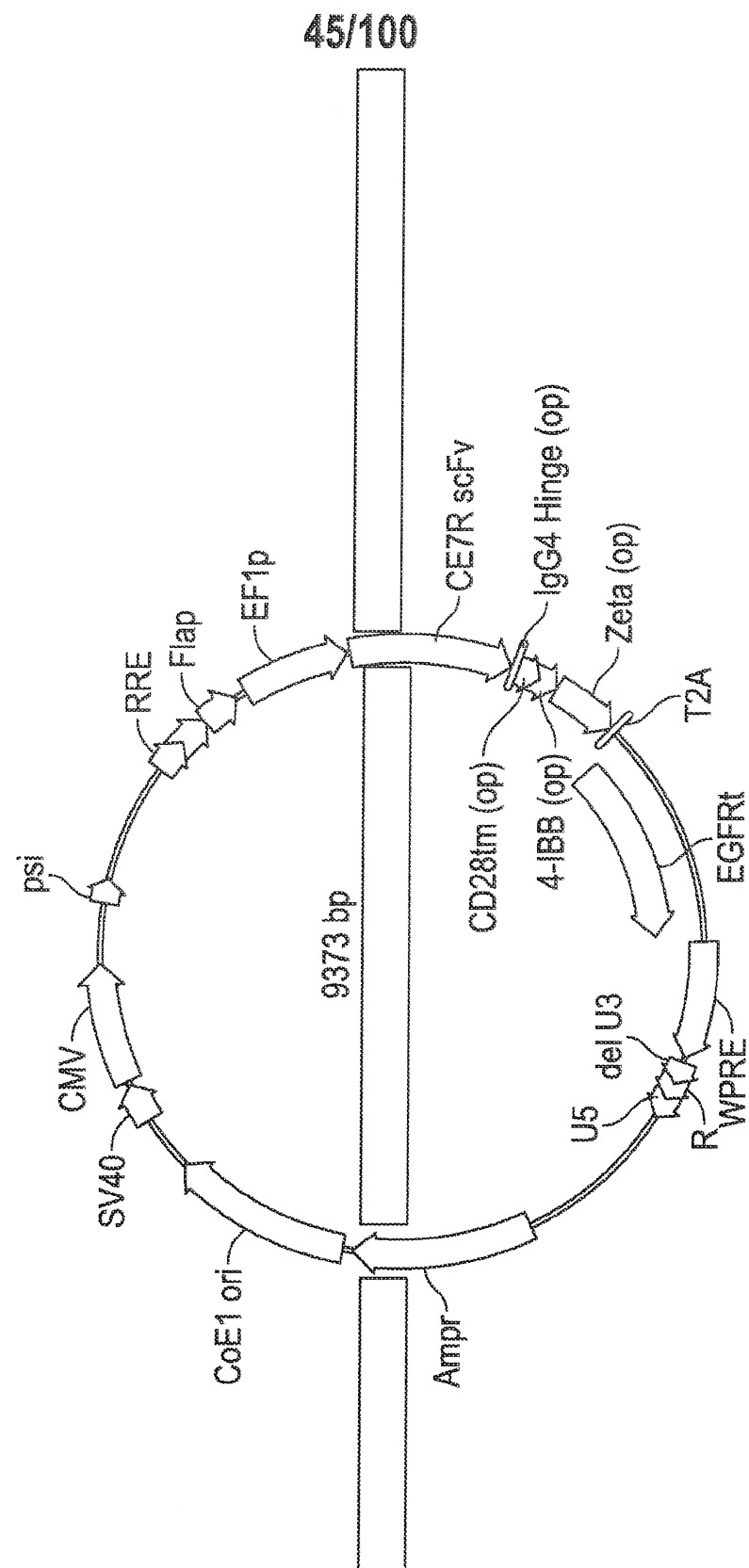


FIG. 10

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1  GTTAGACCAG ATCTGAGCCT GGGAGCTCTC TGGTAACTA GGAACCCAC TGGTAAAGC TCAATAAAGC TTGCTTGAG TGCCTCAAGT ACTGTGTGCC
   CAATCTGGTC TAGACTCGGA CCTTCGAGAG ACCGATTGAT CCTTTGGTG AGCAATTGG AGTATTTCG AACGAACATC ACGAATTCA TCACACACCG
101 CGTCTGTTGT GTGACTCTGG TAACTAGAGA TCCCTCAGAC CCTTTAGTC AGTGTGAAA ATCTTAGCA GTGGCCCGC AACAGGACT TGAAGCGAA
   GCAGACAACA CACTGAGACC AITGATCTCT AGGAGTCTG GGAATACAG TCACACCTTT TAGAGATCGT CACCGCGGC TTGTCCCTGA ACTTTCGCTT

201 AGGAAAACA GAGGAGTCTT CTCGACGAG GACTCGGCTT GCTGAAGCG GCACGGCAAG AGGCGAGGG CGGAGACTGG TGAGTAGGCC AAAAATTTTG
   TCCCTTTGGT CTCCTCGAGA GAGCTGGTTC CTGAGCCGAA CGACTCGCG CGTGGCTCCC GCCCTGACC ACTCATGCCG TTTTAAAC

301 ACTAGCGGAG GCTAGAAGG GAGAGATGG TGGAGAGCG TCAGTATTA GCGGGGAGA ATTACATCGA TGGAAAAAA TTCCGTTAAG GCCAGGGGA
   TGATCGCTC CGATCTCCT CTCTACCC AGCTCTGC AGTCATAAT CGCCCTCT TAATCTAGCT ACCCTTTT AAGCAATTC CGGTCCCCCT

401 AAGAAAAAT ATAAATAAA ACATATAGTA TGGGCAAGCA GGGAGTAGA AGATTCGCA GTTAATCCTG GCTGTAGA AACATCAGAA GGCTGTAGC
   TTCTTTTATA TATTATTT TGTATATCAT ACCCGTCTG CCTCGATCT TGTAAAGCGT CAATTAGGAC CGGACATCT TTGTAGTCTT CGACATCTG

501 AAATACTGG ACAGCTACAA CCATCCCTC AGACAGATC AGAAGACTT AGATCATTA ATATACAGT AGCAACCTC TATTGTGTC ATCAAGGAT
   TTTATGACC TGTGATGTT GGTAGGAAG TCTGTCTAG TCTTCTGAA TCTAGTATA TATTATGTC TCGTTGGAG ATACACACG TAGTTTCCTA

601 AGCATAAAA GACACCAAG AAGCTTACA CAAGATAGAG GAAGACAAA ACAAAAGTAA GAAAAAGCA CAGCAAGCAG CAGCTCACAC AGCACACAGC
   TCTCTATTT CTGTGGTTC TCGAATCT GTTCTATCT CTTCTCGTT TGTTCATT TGTTCATT GCCATATC CCAATATC AAATGCATGG GTAAAGTAG

701 AATCAGTCA GCCAAATTA CCTATAGTG CAGACATCC AGGGCAAAAT GGTATATC CCATATAGT CCGTATAGT GATCTGAAA TTACGTACC CATTTTCATC
   TTAGTCCAGT CGGTTTTAAT GGGATATCAC GTCTTGTAGG TCCCCTTTA CCATATAGT CCGTATAGT GATCTGAAA TTACGTACC CATTTTCATC

801 TAGAAGAGAA GGCTTTCAGC CCAGAGTGA TACCATGTT TCCACATTA TCAGAAGGAG CCACCCACA AGATTTAAAC ACCATGCTAA ACACAGTGGG
   ATCTTCTCT CCGAAAGTC GGTCTCACT ATGGTACAA AAGTCTCAAT AGTCTCTCT GGTGGGTGT TCTAAATTTG TGGTACGATT TGTGTACCC

901 GGCACATCAA GCAGCCATGC AAATGTTAAA AGAGACCATC AATGAGGAG CTGCAGGCAA AGAGAAGAGT GTTCAGAGA GAAAAAGAG CAGTGGGAAT
   CCCTGTAGT CGTCGGTAG TTTACAATTT TCTCTGTAG TTAATCTCT GACGTCCGT TCTCTCTCA CCAGTCTCT CTTTTTCTC GTCACCTTAA

1001 AGGAGCTTG TTCCTTGGT TCTTGGAGC AGCAGGAGC ACTATGGCG ACTATGGCG CAGGCTCAAT GACGTGACG GTACAGGCCA GACAATTAT GTCTGGTATA
   TCCTCGAAC AAGGAACCA AGAACCTCG TCGTCTCTCG TGAACCCGC GTCCGAGTTA CTGCGACTGC CATGTCCGT CTGTATATA CAGACCATAT

1101 GTGAGGAGC AGAACAATTT GCTGAGGCT ATTGAGGCG AACAGATCT GTTGAATC GATCAAGCA GTTCAGGA GAATCTCTG AGAATCTCTG
   CACGTCTCG TCTTGTAAA CGACICCGA TAACCTCGG TTGCTGTAGA CAACCTGAG TGCAGACCC CGTAGTCTGT CGAGTCCGT TCTTAGGACC
   flap

1201 CTGTGGAAG ATACCTAAG GATCAACAG TCCCTGGGAT TTGGGTTGC TCTGAAAAC TCATTTCAC CACTGCTG CCTTGGATCT ACAAATGGCA
   GACACCTTC TATGGAATTC CTAGTTGTC AGGACCCCTA AACCCCAAC AGACTTTTG AGTAAAGTG GTGAGGACAC GGAACCTAGA TGTATTACCGT
   flap

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FIG. 11

1301 GTATTCAATCC ACAATTTTAA AAGAAAGGG GGGATTGGGG GGTACAGTGC AGGGGAAGA ATAGTAGACA TAATAGCAAC AGACATACAA ACTAAAGAAT  
 CATAAGTAGG TGTAAATTTT TTTCTTTTCC CCGTAACCCC CCAATGCACG TCCCTTTTCT TATCACTGT ATATCTGTTG TCTGTATGTT TGATTTCTTA  
 ~~~~~~flap~~~~~  
 1401 TACAATAACA AATTACAAA AATCAAAAT TTCGGGTTTA TTACAGGAC AGCAGATC CAGTTGGG ATCAATGCA TGAAGAATCT GCTTAGGGTT
 ATGTTTTTGT TTAATGTTTT TAAGTTTTAA AAGCCAAAT AATGTCCTG TGTCTCTAG GTCAACCCC TAGTTACGT ACTTCTTGA CGAATCCAA
 ~~~~~~EF1p~~~~~  
 1501 AGCGGTTTTG CGCTGCTTCG CGAGCACTG CCGTGGTCC GGTGCGGTC AGTGGCAGA GCGACATCG CCGACAGTCC CCGACAAGTT GGGGGGAGG  
 TCCGCAAAAC GCGACGAAGC GCTCCTAGAC GCTAGCGAG GCTAGCGGAG CCACGGGAG TCACCGCTCT CGCGTGTAGC GGGTGTGAG GGTCTTCAA CCCCCCTCCC  
 ~~~~~~EF1p~~~~~  
 1601 GTCGGCAAT GAACGGTGC CTAGAGAGG TGGCGGGGG TAACTGGGA AAGTATGTC GTGTACTGGC TCGGCTTTT TCCGAGGGT GGGGAGAAC
 CAGCCGTTAA CTTGGCCACG GATCTCTTCC ACCGGCCCC ATTTGACCTT TTCACTACAG CACATGACC AGGCGGAAA AGGCTCCCA CCCCCTCTTG
 ~~~~~~EF1p~~~~~  
 1701 CGTATATAAG TGCAGTACT GCCGTGAACG TTTCTTTTTC CAACGGTTT GCGGCCAGAA CACAGCTGAA GCTTCGAGG GTTCGCATCT CTCTTTCACG  
 GCATAATTC ACGTCAACAG CCGCACTGC AAGAAAGC GTTGGCCAAA CCGCGTCTT GTGTGACTT CGAAGCTCCC CGAGCGTAGA GAGAAAGTGC  
 ~~~~~~EF1p~~~~~  
 1801 GCGCGCGCG CCGTACCTGAG GCGGCCATCC AGCGCGTTC AGTCGGTTC TGCCTCTCC CCGCTCTGAA CTGCGTCCG CGTCTAGGTA
 GCGGGCGGG GGATGGACT CCGGGGTAGG TGCGGCAAC TCAGGCAAG ACGGGGAG GCGACACCA CGAAGACTT GAGCAGGCG GCAGATCCAT
 ~~~~~~EF1p~~~~~  
 1901 AGTTTAAGC TCAGGTGAG ACCGGGCTT TGTCCGGCG CCGTTGGAG CCGTACTAGA CTCACCGGC TCTCCAGCT TTGCTTGACC CTGCTTGCTC  
 TCAAAATTC AGTCCAGTC TGGCCCGAA ACAGGCGCG GAGGAACCTC GGTGATCT GAGTGGCG AGAGTGGGA AACGACTGG GACGAACGAG  
 ~~~~~~EF1p~~~~~CE7R scFv~~~~~  
 2001 AACTCTAGT CTTTGTTCG TTTTCGTTC TCGGCGTTA CAGATCCAAG CTGTACCGG CCGCTACGG TAGCGCGCC ACCATGCTGC TGTGTTGAC
 TTGAGATCCA GAAACAAGC AAAACAAG ACGCGGCAAT GTCTAGTTC GACTAGGCG GCGGATGCC ATCCGCGCG TGTACGAGC ACGACCACTG
 ~~~~~~CE7R scFv~~~~~  
 2101 CAGCCTGCTG CTGTGCGAG TGCCTCCACC CGCTTCTG CTGATCCCC AGTGCAGCT GCAGAGCCT GCGCGCGAG TGTGAAGCC AGGCGCCAG  
 GTCGGACGAC GACACGCTG ACGGGGTGG GCGGAAGAC GACTAGGCG TCCAGCTGA CGTGTCTGGA CCGCGGCTCG AACACTTCG TCCGCGGTG  
 ~~~~~~CE7R scFv~~~~~  
 2201 GTGAAGTGT CCGTCAAGC CAGCGGTAC ACCTTTCCG GCTACTGGAT GCCTGGTG AAGCAGAGC CCGGCCACCG CCGTGAATGG ATCGGGGAGA
 CACTTCGACA GGAGGTTCCG GTCGCGGANG TGAAGTGGC CGATGACCTA CBTGACCCAC TTTCTCTCTG GCGCGGTGCC GBACTTACC TAGCCGCTCT
 ~~~~~~CE7R scFv~~~~~  
 2301 TCAACCCAG CAACGGCGG ACCCACTACA ACGAGGGTT CAAGAAGG GCCACCTGA CCGTGGACAA GAGCAGCACC ACCGCTTCA TGCAGCTGTC  
 AGTTGGGTC GTTGGCGGCC TGGTTGATG TGTCTGCTC CCGTGGGACT GGCACCTGTT CTGCTGTG TGGCGGAGT TGGCGGAGT ACGTTCGACAG  
 ~~~~~~CE7R scFv~~~~~  
 2401 CGGCTGACC ACGGAGACA GCGCGGTGTA CTTCTGGGCC AGGACTACT ACGGACCAG CTAACAATTC GACTACTGG GCGAGGCGC CACACTGACC
 GCGGACTGG TCGTCTCTGT CCGGGCACAT GAAGACGCGG TCCCTGATGA TGGCTGGTC GAGTGTGAAG CTGATGACCC CCGTCCCGTG GTGTGACTGG
 ~~~~~~CE7R scFv~~~~~

FIG. 11 (Continued)

2501 GTGAGCAGG GCGGAGGGG CTCGGGGG GGAGGATG GGGAGGGG CAGGACATC CAGATGACCC AGACAGCAG CAGTTCAGC GTGAGCCTGG  
 CACTCGTGC CGCTCCGCC GAGACCGCG CCTCCAGAC CCCCCTCCC GTGCTGTAG GTCTACTGG TCTGTCGTC GTGAGAGTC CACTCGGACC  
 CE7R scFv  
 2601 GCGACCGGT GACCATCAC TGTAGGCCA ACGAGGACAT CAACACCGG CTGGCTGGT ATCAGAGAC CCGGCAAC AGCCAGGC TGTGATCAG  
 CGCTGGCCA CTGGTAGTG ACATTCGGT TGTCTCTGTA GTTGTGCGC GACCGACCA TAGTCTGTG GGGGCGGTG TCGGGTCOG ACGACTAGTC  
 CE7R scFv  
 2701 CGGCGCAC AACTGTGA CCGGCTGCC CAGCGGTTT AGCGGAGCG GCTCCGGCA GGACTACACC CTGACCATCA CAGCCTGCA GCGCGAGGAC  
 GCGGCGGTG TTGGACCACT GCGCGACGG GTCGGCCAA TCGCCCTGC CGAGCGGTT CTTGATGTG GACTGTAGT GTTCGGACGT CCGCTCCTG  
 CE7R scFv  
 2801 TTGCGGACT ACTACTGCA GCAGTCTGG TCCACCCCT TCACCTCGG CAGCGCAC TCAAGAAATC TAAGTACGGA CCGCCCTGCC  
 AAGCGTGA TGTGACGT CGTCAAGAC AGTGGGGGA AGTGGAGCC GTGCGGTGG CTCGACCTT AGTTCTTAG ATTCATGCTT GCGGGGACGG  
 CD28tm  
 IgG4 Hinge  
 2901 CCCCTTGCC TATGTTCTG GTGCTGGTG TGGTCGAGG CGTGTCTGC TGTACAGCC TGTGCTTTC ATCATCTTTT GGTCCCGCAG  
 GGGGACGG ATACAAGAC CACGACACC ACCAGCCTC GCAGGACGG ACGATGTGG GCACCGGAG TACTAGAAA CCCAGCGTC  
 CD28gg  
 3001 CAAGCGGAG AGAGCGGC ACAGGACTA CATGACATG ACCCTAGAC GGCTGGGCC CACAGAAAG CACTACCAGC CTTACGCCC TCCCGGGAC  
 GTTCGCTCG TCTCCGCGG TGTGCTGTAT GTACTGTAT TGGGATCTG CCGGACGGG GTGCTCTTC GTGATGGTC GATGCGGGG AGGGGCCCC  
 CD28gg  
 3101 TTTGCGGCT ACAGAAGCA ACGGGGAGA AAGAACTCC TGTATATAT CAACAACCA TTTATGAGC CAGTACAAAC TACTCAAGAG GAAGATGGCT  
 AAACGGCGA TGTCTTCTT TGCCCCGCTT TTCTTTGAG ACATATATA GTTTGTGGT AAATACTCTG GTCATGTTT ATGAGTTCT CTTCACCGA  
 Zeta  
 4-1BB  
 3201 GTAGCTGCG ATTTCCAGAA GAGAGAGAG GAGGATGTA ACTGGGGTG AAGTTCAGCA GAGGCGCGA CGGCCCTGCC TACCAGCAGG GCCAGATCA  
 CATCGACGC TAAAGTCTT CTCTCTCTC CTCTACACT TGACGCCAC TTCAAGTCGT CTTCGGGCT GCGGGACGG ATGGTCGTCC CGGTCTTAGT  
 Zeta  
 3301 GGTGTACAC GAGCTGAAC TGGGAGAG GGAAGACTAC GAGTCTCTG ATAGCGGAG AGGCGGGAC CTTGAGATGG GCGCAAGCC TCGCGGAG  
 CGACATGTT CTGACCTGG ACCCGTCTC CTTCTCATG CTGAGGACC TATCGCTC TCGGCCCTG GACTCTACC CCGCTTCGG AGCCGCTTC  
 Zeta  
 3401 AACCCGAGG AAGGCTGTA TAAGGACTG CAGAGACA AGATGCCGA GGCTACAGC GAGTCCGCA TGAAGGGCG GCGAGGCGG GCGAAGGGCC  
 TTGGGGTCC TTCCGSACAT ATTGCTTAC GTCTTCTGT TCTACCGCT CCGATGTCT CTTCCCGCT ACITCCCGT CCGCTCCGCC CCGTCCCGG  
 T2A

FIG. 11 (Continued)

3501 ~~~~ACGACGGCCT~GTATCAGGC~CTGTCCACCG~CCACCAAGGA~TACCTAGCAC~GCCCTGCACA~TGCAGGCCCT~GCCCCCAAGG~CTGCAGGGCG~GCGGAGAGGG  
 ~~~~TGCTGCCGA~CATAGTCCCG~GACAGGTGCG~GGTGGTTCT~ATGGATGCTG~CGGGAGGTGT~ACGTCCGGGA~CGGGGGTTCC~GAGTCCCCG~CGCTCTCTCC  
 ~~~~EGFRt  
 3601 ~~~~CAGAGGAAGT~CTTCTAAGAT~GCGGTGAGT~GGAGGAGAAT~CCGGGCCCTA~GGATGGTTCT~CCTGGTGACA~AGCCTTCTGC~TCTGTGAGTT~ACCACACCCA  
 ~~~~GTCTCCCTCA~GAAGATICTA~CGCCACTGCA~CCTCCTCTTA~GGCCCGGAT~CCTACGAAGA~GGACCACTGT~TCGGAAGACG~AGACACTCAA~TGGTGTGGGT  
 ~~~~EGFRt  
 3701 ~~~~GCATTCTCC~TGATCCACG~CAAAGTGTG~AACGGAATAG~GTAATGGTGA~ATTTAAAGAC~TCACTCTCCA~TAAATGCTAC~GAATATTAA~CACTTCAAAA  
 ~~~~CGTAAGGAG~ACTAGGTGC~GTTTCACACA~TTGCCCTTATC~CATAACCACT~TAAATTCTG~AGTGACAGT~ATTACGATG~CTATATAAT~GTGAAGTTTT  
 ~~~~EGFRt  
 3801 ~~~~ACTGCACCTC~CATCAGHGC~GATCTCCACA~TCCTGCCGGT~GGCAATTAGG~GGTGACTCCT~TCACACATAC~TCCCTCTCTG~GATCCACAGG~AACTGGATAT  
 ~~~~TGACGTGGAG~GTAGTCACCG~CTAGAGGTGT~AGGACGGCCA~CCGTAAATCC~CCACTCAGGA~AGTGTGATG~AGGAGGAGAC~CTAGGTGTCC~TTGACCTATA  
 ~~~~EGFRt  
 3901 ~~~~TCTGAAMACC~GTAAGGAAA~TCAACAGGTT~TTTGTGANT~CAGGCTTGGC~CTGAAACAG~GACGACCTC~CATGCCCTTG~AGAACCTAGA~AATCATACGC  
 ~~~~AGACTTTTGG~CATTTCCCTT~AGTGTCCCAA~AAACGACTAA~GTCCGACCG~GACTTTTGTG~CTGCCGTGGAG~GTACGGAAC~TCTTGGATCT~TTAGTATGCG  
 ~~~~EGFRt  
 4001 ~~~~GGCAGGACCA~AGCAACATGG~TCAGTTTCT~CTTGCAGTCG~TCAGCTGAA~CATACATCC~TTGGGATAC~GCTCCCTCAA~GGAGATAAGT~GATGGAGATG  
 ~~~~CCGTCTGTGT~TCGTTGTACC~AGTCAAAAGA~GAACGTACG~AGTCGACTT~GTATTTAGG~AACCTAATG~CGAGGGAGTT~CCTCTATTCA~CTACCTCTAC  
 ~~~~EGFRt  
 4101 ~~~~TGATAATTTC~AGGAACAAA~AATTTGTCT~ATGCAATAC~AATAAAGTGG~AAAAACTGT~TTGGACCTC~CGGTACAGAA~ACCAAAATTA~TAAGCAACAG  
 ~~~~ACTATTAAAG~TCCTTTGTTT~TTAAACAGCA~TACGTTTATG~TTATTTGACC~TTTTTTGACA~AACCTGGAG~GCCAGTCTTT~TGGTTTTAAT~ATTCGTTGTC  
 ~~~~EGFRt  
 4201 ~~~~AGGTGAATAC~AGTGCAGG~CCACAGGCCA~GGTCTGCCAT~GCCCTTGCT~CCCCGAGGG~CTGCTGGGG~CCGAGGCCCA~GGGACTGCGT~CTCTTGCCCG  
 ~~~~TCCACTTTTG~TCGACGTCC~GGTGTCCGGT~CCAGACGTA~CGGAACAGCA~GGGGGTCCC~GACGACCCC~GGCTCGGGT~CCTGACGCA~GAGAACGGCC  
 ~~~~EGFRt  
 4301 ~~~~AATGTCAGCC~GAGGCAGGGA~ATGCGTGAC~AGTGCAACC~TTCTGGAGG~TGAGCCAAGG~GAGTTGTGG~AGACTCTGA~GTGCATACAG~TGGCACCCCAG  
 ~~~~TTACAGTCGG~CTCCGTCCCT~TAGGCACCTG~TTCACGTGG~AAGACCTCCC~ACTCGTTCC~CTCAACACACC~TCTTGAGACT~CAGGTATGTC~ACGGTGGGTC  
 ~~~~EGFRt  
 4401 ~~~~AGTGCCCTGC~TCAGGCCATG~AACATCACCT~GCACAGGAG~GGGACAGAC~AACTATATCC~AGTGTGCCCA~CTACATTGAC~GGCCCCCACT~GGTCAAGAC  
 ~~~~TCACGGACGG~AGTCCGGTAC~TTGTAGTGA~CGTGTCTGC~CCCTGCTGTG~CCCTGCTGTG~TTCACATAGG~TCAACAGGGT~GATCTAAGT~CCGGGGGTGA~CCAGTTCTG  
 ~~~~EGFRt  
 4501 ~~~~CTGCCCGGCA~GGAGTCATGG~GAGAAACAA~CACCTGTGTC~TGGAGTAGG~CAGACGCCGG~CCATGTGTG~CACTGTGTC~ATCCAAACTG~CACCTACGGA  
 ~~~~GACGGGCCGT~CCTCAGTACC~CTCTTTTGT~GTGGGACCAG~ACCTTCATGC~GTCCTCGGCC~GGTACACAG~GTGACACAGG~TAGGTTTGAC~GTGGATGCGT  
 ~~~~EGFRt

FIG. 11 (Continued)

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4601 TGCACGGGC CAGGTCTTGA AGGTGTGCA AGCAATGGC CTAAGATCCC GTCAATGCC ACTGGATGG TGGGGCCCT COTTTGCTG CTGGTGGTGG
ACGTGACCG GTCCAGACT TCCGACAGT TGCCTACCG GATTACCG CAGGTAGGG TGACCTTACC ACCCCCGGA GGAGAACGAC GACCACCACC
EGRT
4701 CCTTGGGAT CGGCTCTTC ATGTGCGG CCGCTCTAGA CCGGCTGTC AGCAATGCA TATCAAGCTT ATCGATAATC AACCTCTGA TTACAAAAT
GGGACCCCTA GCGGAGAG TACACTCGC GCGGAGATCT GGGCCGACG TCCCTAAGCT ATAGTTCGAA TAGCTATTAG TTGGAGACCT AATGTTTTAA
WPRE
4801 TGTGAAGAT TGACTGGTAT TCTTAATAT GTTGTCTCTT TTACGCTATG TGGATAGCT GCTTAATGC CTTGTATCA TGCTATTGCT TCCGTATGG
ACACTTCTA ACTGACCATA AGAATTGATA CAACGAGAA AATGGATAC ACCATAGCGA CGAATTACG GAAACATAGT ACGATAACGA AGGGCATAAC
WPRE
4901 CTTTCATTT CTCCTCTTG TATAATCTT GGTGCTGTC TCTTATGAG GAGTGTGGC CCGTGTGTC GACAGTGGC GTGGTGTGCA CTGTGTTTGG
GAAAGTAAA GAGGAGAAC ATATTAGGA CCAACGACAG AGAATATCT CTCACACCG GGCACAGTC CGTTGCACCG CACCACACGT GACACAAACG
WPRE
5001 TGACGCAAC CCCACTGGT GGGGCAATG CACCACTGT CAGCTCTTT CCGGACTTT CGCTTTCCTT CTTCTTATG CCACGGCGGA ACTCATCGCC
ACTGCGTTG GGTGACCAA CCCCCTAAC GGTGTGACA GTGGAGAA GTCCCTGAA GCGAAGGGG GAGGATAAC GGTGCCGCT TGAGTAGCGG
WPRE
5101 GCCTGCTTG CCGCTGCTG GACAGGGCT CCGCTGCTG GCACGACAA TTTCTGGTG TTGTCGGGA AATCATCTC CTTTCTTGG CTGCTCGCTT
CGGACGGAAC GGGGACGAC CTGTCTCCGA GCGCAACAC CGTACTGTT AAGGACCAAC AACAGCCCT TTAGTAGCAG GAAAGAAC GACGAGCGGA
WPRE
5201 GTGTGTCAC CTGGATTCTG CCGGGGACGT CTTTCTCTA CGTCTCTTG GCCCTAATC CAGGGACCT TCTTCCCGC GGCTGTGTC CGGCTCTGG
CACACCGTG GACCTAACAC GCGCCCTGCA GGAAGACGAT GCAGGGAAGC CGGAGTAG GTGCTCTGA AGGAAGGGG CCGGACGAC GCGGAGACG
WPRE
5301 GCCTCTCCG CGTCTCTG TCGGCTCTA GACGAGTGG ATCTCTTT GGGCGCTC CCGCATCGA TACCGTGCAC TAGCCGTACC TTTAAGACCA
CGGAGAGGC GCAGAACGG AAGCGGAGT CTGCTCAGCC TAGAGGAA CCGGCGGAG GGGCTAGCT ATGGCAGCTG ATGGCATGG AATTTCTGGT
del U3
5401 ATGACTTACA AGGCAGCTGT AGATCTTAG CACTTTTAA AAGAAAGGG GGGCTAATTC ACTCCCAAAG AAGACAAGAT CTGCTTTTGG
TACTGAATG TCCGTGACA TCTAGATCG GTGAAAAAT TTTCTTCCC CCTGACCTT CCGATTAAG TGAGGGTTTC TTCTGTTCTA GACGAAAAAC
R
5501 CCTGACTGG GTCTCTCTG TTAGACAGA TCTGACCTG GGAGCTCTT GGTAACCTAG GGAACCCACT GCTTAAGCTT CAATAAGCT TGCCTTGAGT
GGACATGACC CAGAGACAC AATCTGTCT AGACTCGAC CCTGACAGA CCGATGATC CTTGGGTGA CGAATTCGA GTTATTTCGA ACGGAACCTA
U5
5601 GCTTCAGTA GTGTGCTCC GTCTGTGTG TGACTCTGGT AACTAGAGAT CCGTCAGACC CTTTGTAGTCA GTGTGGAATA TCTCTAGCAG AATTCGATAT
CGAAGTTCAT CACACACGG CAGACAACAC ACTGAGACCA TTGATCTCTA GGGAGTCTGG GAAATCAGT CACACCTTTT AGAGATCTGC TTAAGCTATA

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FIG. 11 (Continued)

5701 CRAAGCTTATC GATACCGTCG ACCTCGAGGG GGGGCCCGGT ACCCAATTTC CCCTATAGTG AGTCGTAATTA CAATTCACTG GCCGTCGTTT TACAACGTCG  
 GTTTGAATAG CTATGGCAGC TGGAGCTCCC CCCCAGGCCA TGGGTTAAGC GGGATATCAC TCAGCATATAT GTTAAGTGAC CGGCAGCAA ATGTTGCAGC  
 5801 TGAAGTGGAA AACCTGGCG TTACCCAACT TAATCGCCTT GCAGCACATC CCCCCTTCGC CAGCTGGCT AATAGCGAG AGGCCGAC CSATCGCCT  
 ACTGACCTTT TTGGGACCGC AATGGTTGA AATGGGCGAA TGGAAATTT AAGCGTTAT TTATGTTAA AATTGCGGT TAAATCAGT CATTTTTTAA  
 5901 TCCCAACAGT TGGCAGCCT GAAHGGCGAA CATTACCGCTT ACCTTTAACA TTCCGAATTA TAAACAATTA TTAAGCGCA ATTAGTCCA GTAAAAAT  
 AGGTTGTCA ACCGTCGGA GAATCCGCTT TAATCCCTTA TAATCAAAA GAATAGACCG AATAGGTTT GAGTGTGTT CCAGTTTGA ACAAGATCC ACTATTAAG  
 6001 CCAATAGGCC GAATCGGA CTTAGCCGT TTTAGGGAAT ATTTAGTTTT CTATCTGGC TCTATCCAA CTCACAACAA GGTCAACCT TGTCTCAGG TGATAATTTC  
 GGTATCCGG CTTAGCCGT CCAAGTCAA AGGCGGAAA ACCGCTATC AGGCGATGG CCACTACGT GAACCATCAC CTAATCAAG TTTTTTGGG TCGAGGTCC  
 6101 AAGGTGGACT CCAAGTCAA AGGCGGAAA ACCGCTATC AGGCGATGG CCACTACGT GAACCATCAC CTAATCAAG TTTTTTGGG TCGAGGTCC  
 TTGACCTGA GGTGCACTT TCCGCTTTT TGGCAGATAG TCCGCTACC GGTGATGCA CTGCTAGTG GGTAGTTT AAAAAACCC AGCTCCAGG  
 6201 GTAAAGCACT AAATCGGAAC CTTAAAGGA CCCCCTGAT TAGAGCTTGA CCGGGAAGC CGGGAACGT GCGGAGAAG GAAGGAAGA AAGCGAAGG  
 CATTTCGTGA TTAGCCTTG GATTTCCCT CCGGGCTAA ATCTCGAAT GCGCTTTTC GCGCTTGA CCGCTTTTC CTTCCTTCT TTCCGCTTCC  
 6301 AGCGGGGCT AGGCGCTTG CAAGTGTAG GGTACGCTG CCGTAACCA CCACACCGC CCGCTTAAAT GCGCGCTAC AGGCGCTC AGTGGCACT  
 TCGCCGCGA TCCGCGACC GTTCACATG CCAAGTGTAG GGTGTTGGT GGTGTTGGT GCGGAATTA CCGGCGATG TCCGCGCAG TCCACCTGA  
 6401 TTTCGGGGA ATGTCGGGG AACCCCTAT TGTATTATTT TCTAATAACA TTCAATAATG TATCCGCTCA TGAGACAATA ACCCTGATA ATGCTTCAAT  
 AAAGCCCTT TACACGCGC TTGGGGATA ACAATAAAA AGATTATGT AAGTTATATC ATAGCGAGT ACTCTGTTAT TGGACTATT TACGAAGTTA  
 6501 AATATTGAAA AAGGAAGAGT ATGAGTATTC AATTTCCG TGTGCGCTT ATTCCCTTT TTGCGCATT TTGCTTCTT GTTTTGTCT ACCGAAAC  
 TTAATACTTT TTCTTCTCA TACTCATAAG TTGTAAGGC ACAGCGGAA TAAGGAAA AACGCCGTA AACGGAAGA CAAAAACGAG TGGTCTTTG  
 6601 GCTGGTGAAA GTAAAAGATG CTGAAGATCA GTTGGGTGCA CGAGTGGTT ACATCGAAT GGTCTCAAC AGCGTAAGA TCCTTGAGAG TTTTCGCCCC  
 CGACCACTT CATTCTCTAC GACTTCTAGT CAACCCAGT GGTACCCAA TGTAGCTGA CCTAGAGTTG TCGCATTT AGGAATCTC AAAAGCGGGG  
 6701 GAAGAAGCTT TTCCAATGAT GAGCACTTTT AAAGTTCTGC TATGTGGGC GGTATTATCC CGTATTGAG CCGGGAAGA GCAACTCGT CGCCGCTATC  
 CTCTCTGCAA AAGTTACTA CTCGTGAAA TTCAAGAGC ATACACCGG CCATAATAG GCATACTGC GCGCGTTCT CGTTGAGCA GCGGCGTATG  
 6801 ACTATTCTCA GATGACTTG GTTGAAGTCT CACCAAGTCA AGAAGAGCAT CTACGGAGT GCATGACGT AAGAGAATA TGCAGTGTG CCATAACCAT  
 TGATAAGAGT CTTACTGAAC CAATCTAGA GTGCTCAGT TCTTTTCGA GAATGCCCTAC CGTACTGCA TTCTCTTAAT ACCTCAGCAG GGTATTGGTA  
 6901 GAGTGATAAC ACTCGGCCA ACTTACTTCT GACAACGATC GGAGGACGA AGGAGTAAAC CGCTTTTTT CACAACATGG GGTATCATGT AACTCGCTT  
 CTCACTATTG TGACGCGCGT TGAATGAAGA CTGTGCTAG CTTCTGCTT CTTCTGCTT TCGGAAAAAC GTGTTGTACC CCTAGTACA TTGAGCGGAA  
 7001 GATCGTTGG AACGGAGCT GAATGAAGCC ATACCAACG ACAGCGATG CCGTAGCAA TGGCAACAAC GTTGGCAA CTATTAACTG  
 CTAGCAACCC TTGGCCTCGA CTTACTTCG TATGTTTTC TGTCTGCACT GTGGTCTAC GGACATGTT ACCGTTGTTG CAACGCGTT GATAATTGAC  
 7101 GCAACTACT TACTCTAGCT TCCGGGCAAC AATTAATAGA CTGGATGAG GCGGATAAG TTGCAGGAC ACTTCTGCG TCGGCCCTTC CGGTGGTG  
 CGCTTGATGA ATGAGATCGA AGGCGGCTT TTAATTATCT GACCTACCT CGCTATTTC AACGCTCTG TGAAGACGG AGCCGGGAG GCCGACCGAC

FIG. 11 (Continued)



7201 GTTATTGCT GATAAATCTG GAGCGGGTGA GCGTGGGTCT CGCGGTATCA TTGCAGCACT GGGGCCAGAT GGTAGSCCT CCCGTATCGT AGTTATCTAC  
 CAAATAACGA CTATTAGAC CTCGGGCCACT CGCACCCAGA GCGCCATAGT AACGTCGTA CCCCCTCTA CCATTCGGA GGGCATAGCA TCAATAGATG  
 7301 AGACGGGA GTCAGGCAAC TATGGATGA CGAATAGAC AGATCGCTGA GATAGTGCC TCACTGATTA AGCATTTGTA ACTGTCAGAC CAAGTTTACT  
 TGCTGCCCT CAGTCCGTG ATACCTACTT GCTTTATCTG TCTAGCGACT CTATCCACGG AGTACATTAAT TCGTAACCAT TGACAGTCTG GTTCAATGA  
 7401 CATATATACT TTAGATTGAT TTAAAACTTC ATTTTAAAT TAAAGGATC TAGGTGAAGA TCCCTTTTGA TAATCTCAIG ACCAAATCC CTTAACGTGA  
 GATATATGA AATCTAATA AATTTGAAG TAAAAATTA AATTTCTAG ATCCACTTCT AGGAAAACT ATTAGAGTAC TGGTTTAGG GAATTGCACT  
 7501 GTTTCGTT CACTGAGCGT CAGACCCCGT AGAAAGATC AAAGGATCTT CTGAGATCC TTTTTCG CGGTAACT GCTGCTGCA AACAAAAA  
 CAAAAGCAAG GTCACTCGCA GTCTGGGCA TCTTTCTAG TTTCCTAGAA GAATCTAGG AAAAAAGAC GGCATTAGA CGACGAACGT TTGTTTTTTT  
 7601 CCACCGCTAC CAGCGGTGGT TTGTTTGGG GATCAAGAGC TACCAACTCT TTTTCGAAG GTAACGTGGT TCAGCAGAGC GCAGATACCA AATACGTTC  
 GTGGCGATG GTGCCACCA AACAAACGGC CTAGTTCTCG ATGTTTGA AAAAGGCTTC CATTGACCGA AGTCGTCTCG CGTCTATGTT TTAGACAAG  
 7701 TTCTAGTGA GCGTAGTTA GGCACCACT TCAAGAACTC TGTAGCACG GATGATGG AGCGAGACGA TTAGACAAAT GGTACACGAC GACGGTCACC  
 AAGATCACAT CGGCATCAAT CCGGTGGTGA AGTCTTGAG ACATCGTGGC GGTATGATGG AGCGAGACGA TTAGACAAAT GGTACACGAC GACGGTCACC  
 7801 CGATAAGTCG TGCTTACCG GGTGGAC TCAGAGATAG TTACCGGATA AGCGCGAGC GTGCGGCTGA ACGGGGGT CGTGCACACA GCGCAGTTG  
 GCTATTACG ACAGAATGGC CCAACCTGAG TTCTGCTATC AATGGCTAT TCGCGTCCG CAGCCCGACT TCGCCCCAA GCACGTGTT CCGGTGCAAC  
 7901 GAGCGAACCA CTTACACCGA ACTGAGATAC CTAAGCGTG AGCTATAGA AAGCGGACG CTTCCGAG GGAGAAAGC GGACAGGTAT CCGGTAGCG  
 CTCGCTTGT GATGTGGCT TGACTCTATG GATGTGGAC TCGATACTCT TCGCGGTGC GAAGGCTTC CCTCTTCCG CCTGTCCATA GGCCATTCG  
 8001 GCGGGTGG AACAGGAG CGCACGAGG AGCTTCCAG GGAACGCG TGATCTCTT ATAGTCTGT CGGGTTTCG CACCTCTGAC TTGAGCGTGG  
 CGTCCAGC TTCTCTCTC GCGTCTCTC TCGAAGGTCC CCTTTGCG ACCATAGAAA TATCAGGACA GCGCAAGCG GTGGAGACTG AACTCGCAGC  
 8101 ATTTTGTGA TGCTCGTCAG GGGGCGGAG CCTATGGAA AACCCAGCA ACCTGCTTC TTTACGTTTC CTGGCTTTT GCTGGCTTT TGCTCATG  
 TAAAAACACT ACGAGCAGTC CCGCGGCTC GATACCTTT TTGCGGTCTG TCGCGCGMA AATGCCAAG GACCGGMAA CGACCGMAA ACGATGTAC  
 8201 TTCTTCTCTG CGTATCCC TGAATCTGT GATAACCGTA TTACCGCTT TGAGTGAGT GATACCGTC GCGCAGCG AACGACGAG CGCAGCGAGT  
 AAGAAAGGAC GCAATAGGG ACTAAGACAC CTATTGGCAT AATGGCGAA ACTCACTGA CTATGGCGAG CGGCTCGGCT TTGCTGGCTC GCGTGGCTCA  
 8301 CAGTACGGA GGAAGCGGA GAGCGGCAAC TACGCAACCC GCTCTCCC GCGGTGGC CGATTCTTA ATGCAGCTCG CACGACAGGT TTCCCGACTG  
 GTACCTCGT CTTGCGCTT CTCGGGGT AFCTGTTTG CGGAGAGGG CGGCAACCG GCTAAGTAA TACGTCGACC GTGCTGTCCA AAGGCTGAC  
 8401 GAAAGCGG AGTACGCGA ACGCAATTA TGTGATTAG CTCACCTATT AGCACCCCA GGTCTTACG TTTATGCTTC CGGCTCTAT GTTGTGGA  
 CTTTCCGCCG TCACTCGCT TCGTTAAAT AACTCAATC GAGTGAHAA TCCGTGGGT CCGAAATG AATACGAAG GCGGAGGATA CAACACACT

FIG. 11 (Continued)



8501 ATTGTGAGCG GATAACAAATT TCACACAGGA AACAGCTATG ACCATGATTA CGCCAAGCTC GAAATTAACC CTCACTAAAG GGAACAAGAAG CTGGAGCTCC  
 TAACACTCGC CTATTGTTAA AGTGTGTCTT TGTTCGATAC TGGTACTAAT GCGGTTCGAG CTTTAATTGG GAGTGATTTT CTTGTTTTTC GACCTCGAGG  
 SV40  
 8601 ACCGCGGTGG CGGCTCGAG GTCCGAGATCC GGTCCGACCAG CAACCAATAGT CCGGCCCTTA ACTCGGCCA TCCCGCCCT AACTCGGCC AGTTCCGCC  
 TGGCGCCACC GCGGAGCTC CAGCTCTAGG CAGCTGTGTC GTTGGTATCA GGGCGGGGAT TGAGGCGGAT AGGCGGGGA TTGAGGCGGG TCAAGGGGG  
 SV40  
 8701 ATTCTCCGCC CCATGGCTGA CTAATTTTTT FTAATTATGC AGAGGCGGAG GCGGCTCGG CCTCTGAGCT ATTCCAGAAG TAGTGAGGAG GCTTTTTGG  
 TAAGAGGGG GGTACCGACT GATTAAAAA AATAAATAG TCTCCGGCTC CGGCGGAGCC GGAGACTCGA TAAGGTCTTC ATCACTCCTC CGAAAAAACC  
 CMV  
 8801 AGGCTTAGGC TTTTGCAAA ACCTTCGACG GTATCGATTG GCTCATGTCC AACATTACCG CCATGTTGAC ATTGATTAAT GACTAGTTAT TAATAGTAAT  
 TCCGGATCCG AAAACGTTTT TCGAAGCTGC CATAGCTAAC CGAGTACAGG TTGTAATGGC GGTACAACCTG TAACATAATA CTGATCAATA ATTATCATT  
 CMV  
 8901 CAAATTACGG GTCATTAGT CATAGCCCAT ATATGGAGT CCGGTTACA TAACTTACGG TAAATGGCC GCTTGGCTGA CCGCCCAACG ACCCCCGCCC  
 GTTAATGCC CAGTAATCAA GTATCGGTA TATACCTCAA GGGCAATGT ATGAATGCC ATTACGGG CGGACCGACT GCGGCTTC TGGGSGGGG  
 CMV  
 9001 ATTGACGTCA ATATGACGT ATGTTCCTAT AGTAACGCCA ATAGGAGCTT TCCATTGACG TCAATGGG GAGTATTTAC GGTAAACTGC CCACTTGGCA  
 TAAC TGCACTGCA TATTACTGCA TACAAGGTA TCATTGCGGT TATCCCTGAA AGGTAACCTG AGTTACCCAC CTCATATAATG CCATTTGAGG GGTGAACCGT  
 CMV  
 9101 GTACATCAAG TGTATCATAT GCAAGTACG CCCCCTATTG ACGTCAATGA CGGTAAATGG CCGGCTGGC ATTATGCCA GTACATGACC TTATGGGACT  
 CATGTAGTTC ACATAGTATA CGGTTCATGC GGGGATAAC TGCAGTTACT GCCATTTACC GGGCGGACCG TAATACGGGT CATGTACTGG AATACCTGA  
 CMV  
 9201 TTCTACTTG GCAGTACATC TAGGTATTAG TCATCGCTAT TACCATGGTG ATGCGGTTTT GGCAGTACAT CAATGGCGGT GGATAGCGGT TTGACTCAGC  
 AAGGATGAAC CGTCATGTAG ATGCATAATC AGTAGCGATA ATGGTACCAC TAGGCCAAA CCGTCATGTA GTTACCCGCA CCTATCGCA AACTGAGTGC  
 CMV  
 9301 GGGATTCCA AGTCTCCACC CCATGACGT CAATGGGAGT TGTGTTGGC ACCAAATCA ACGGACTTT CCAAAATGTC GTAAACATC CGCCCCATTG  
 CCTTAAAGGT TCAGAGGTGG GGTAACTGCA GTTACCCTCA AACAAACCG TGGTTTTAGT TGGCCTGAAA GGTTTTACAG CATTGTTGAG GCGGGGTAAAC  
 CMV  
 9401 ACGCAATGG GCGGTAGCG TGTACGGAAT TCGAGTGGC GAGCCCTCAG ATCCTGCATA TAAGAGCTG CTTTTGCT GTACTGGGT TCTCTG  
 TGGGTTTACC CGCCATCCG ACATGCCCTA AGCCCTCACC CTGCGGAGT TAGGACGTAT ATTCTCGAC GAAAAACGA CATGACCCAG AGAGAC

FIG. 11 (Continued)

CE7scFv-IgG4 Hinge-CD28tm/cyto-4-1BB-Zeta-T2A-EGFRt e (9496 bp)

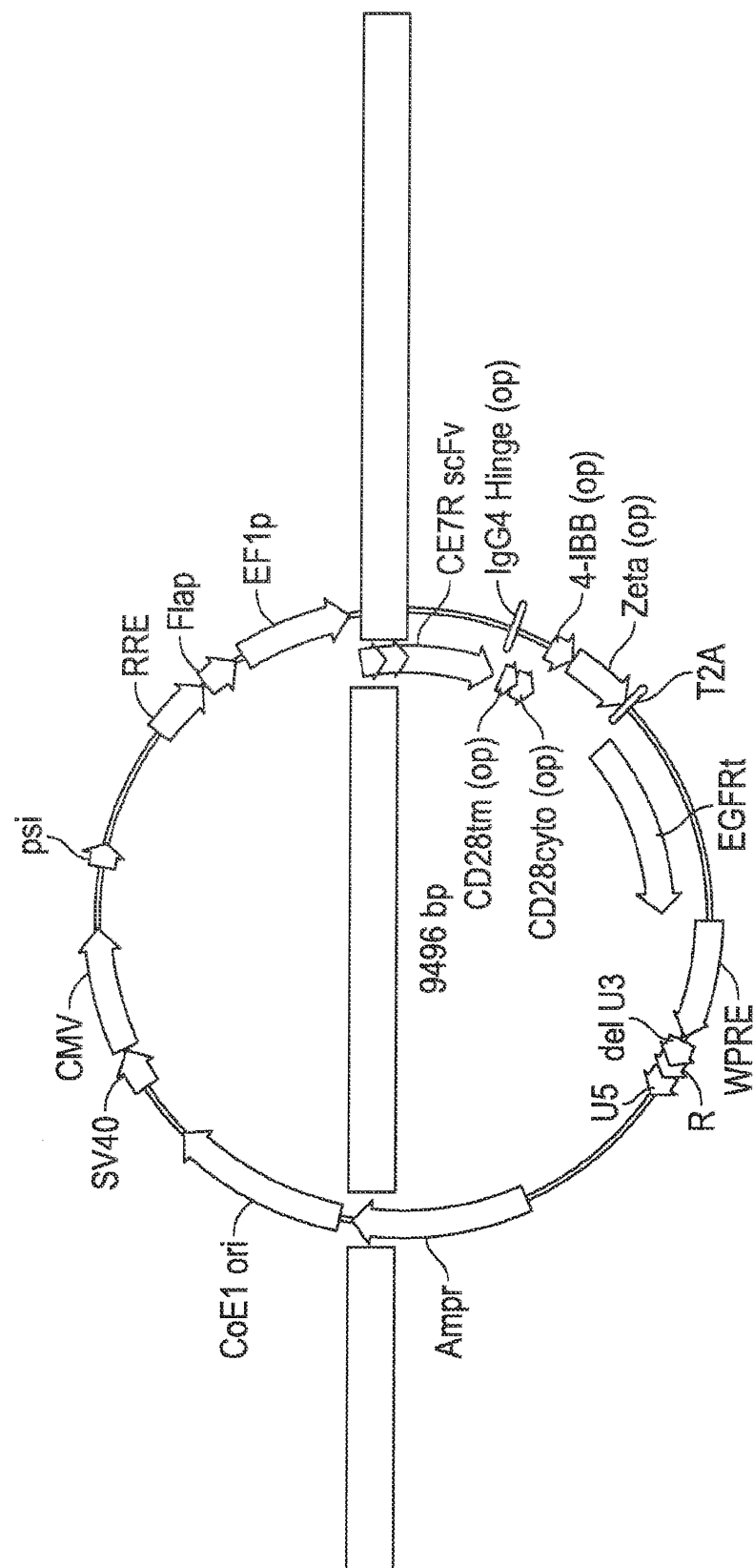


FIG. 12

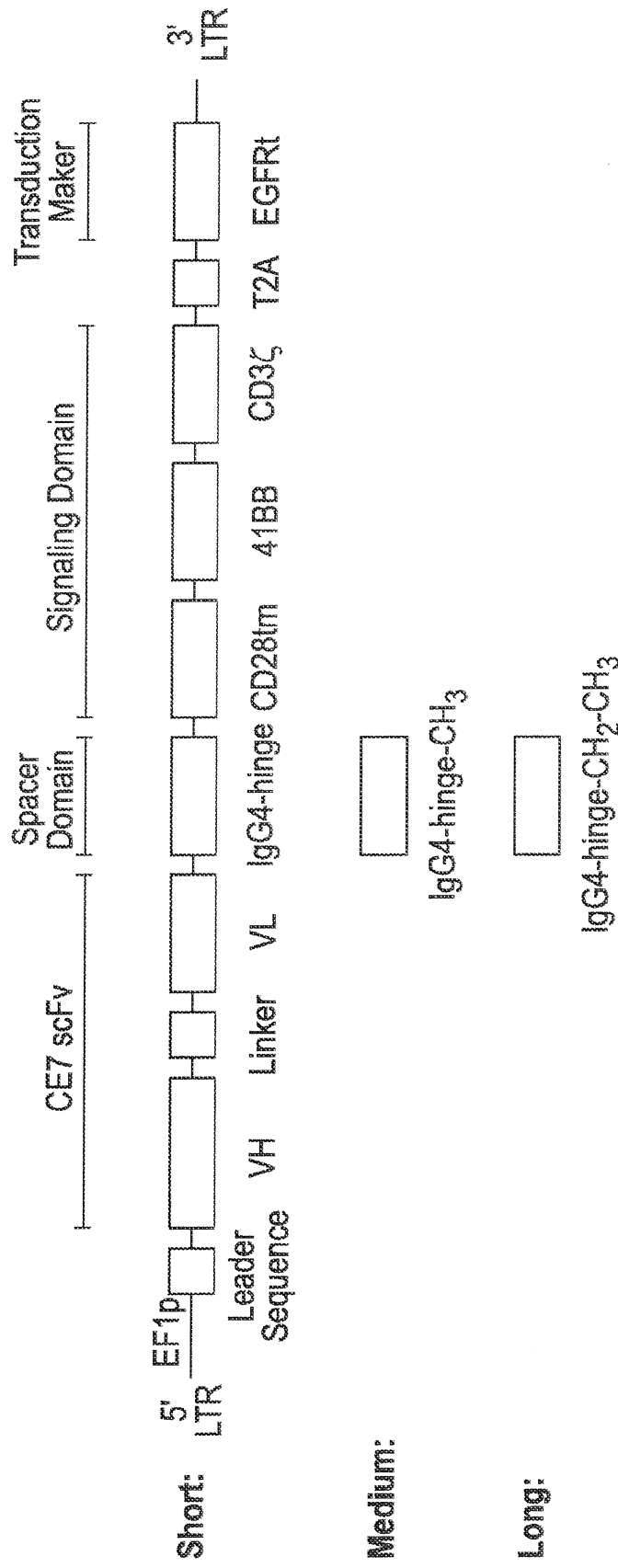
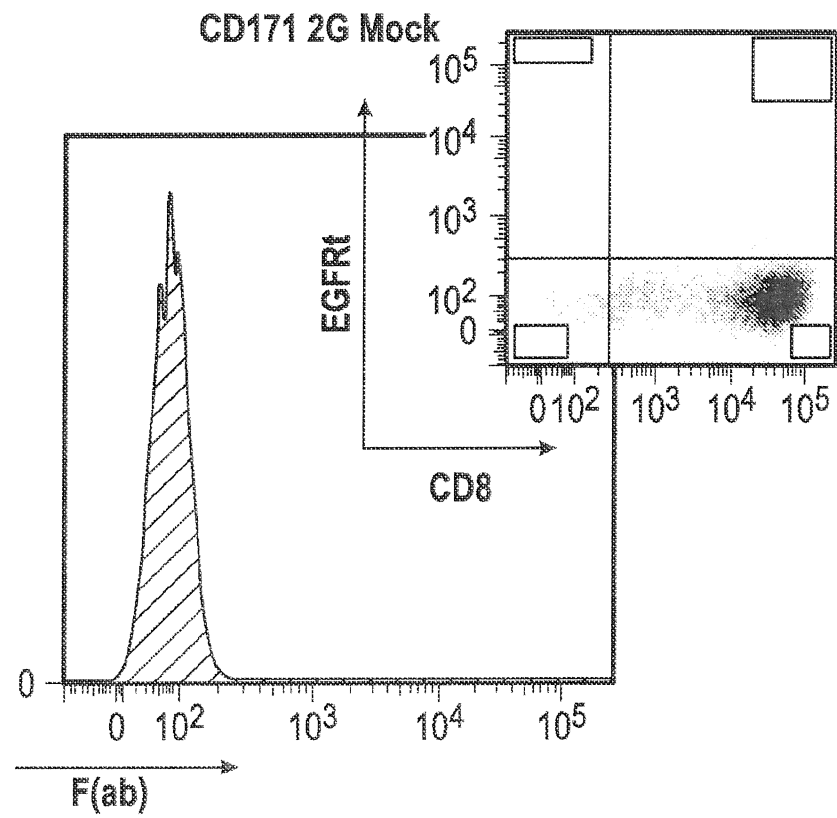
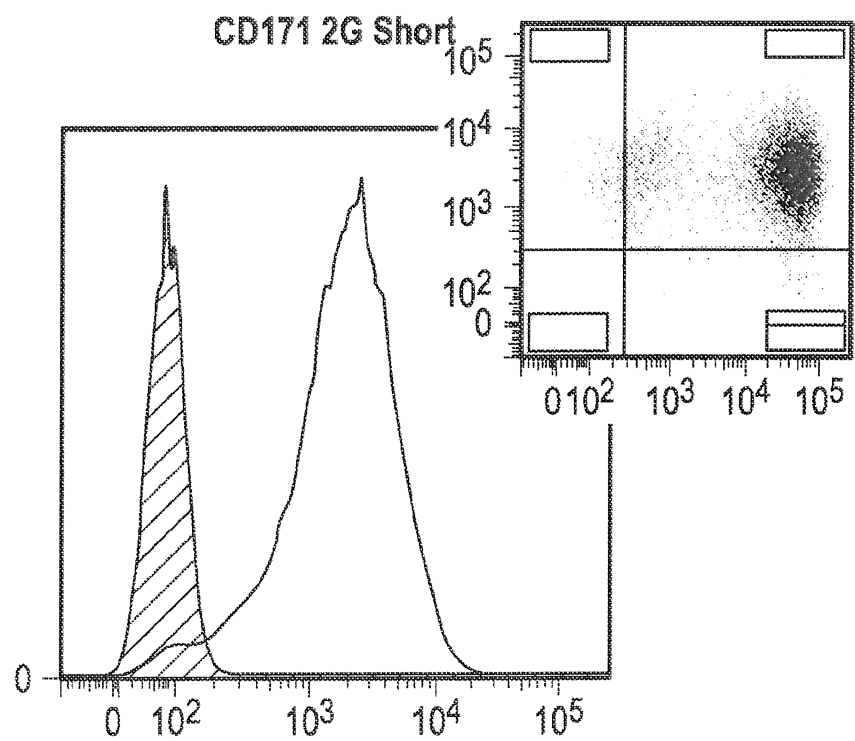


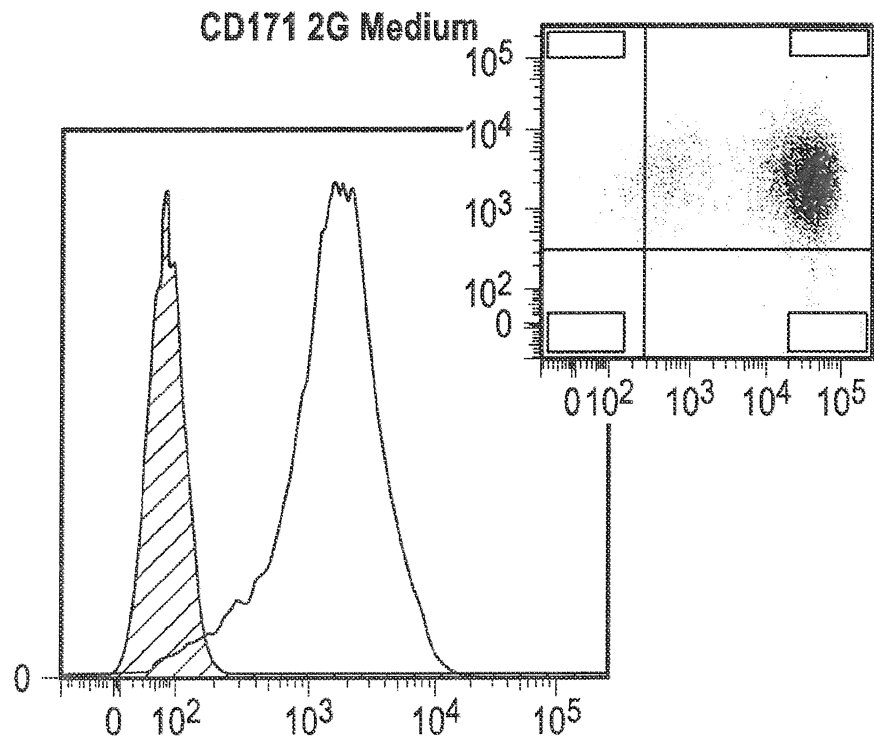
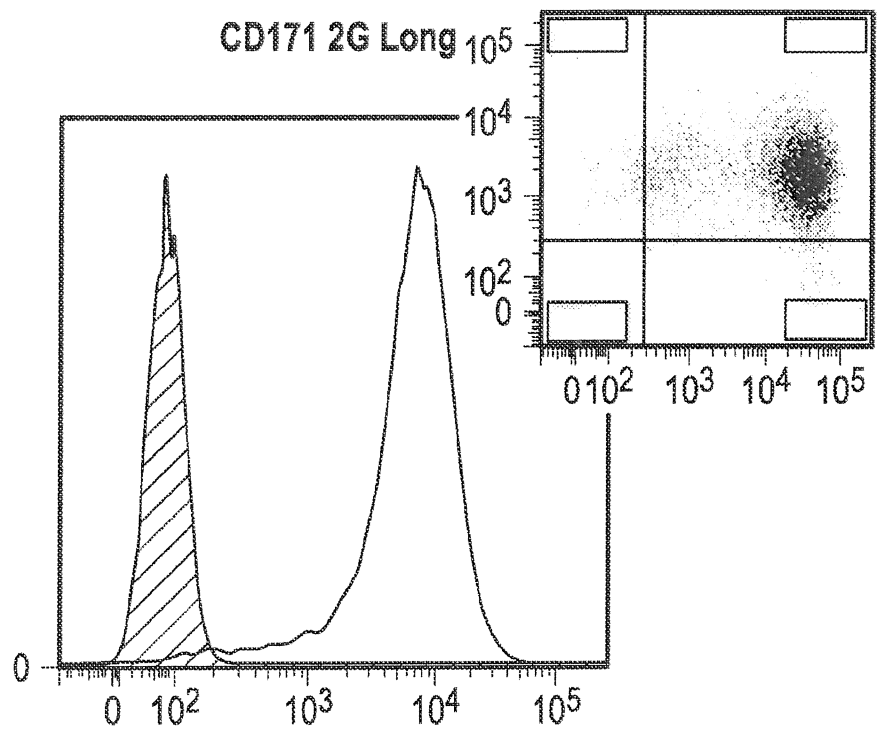
FIG. 13A

FIG. 13B



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FIG. 13B (Continued)



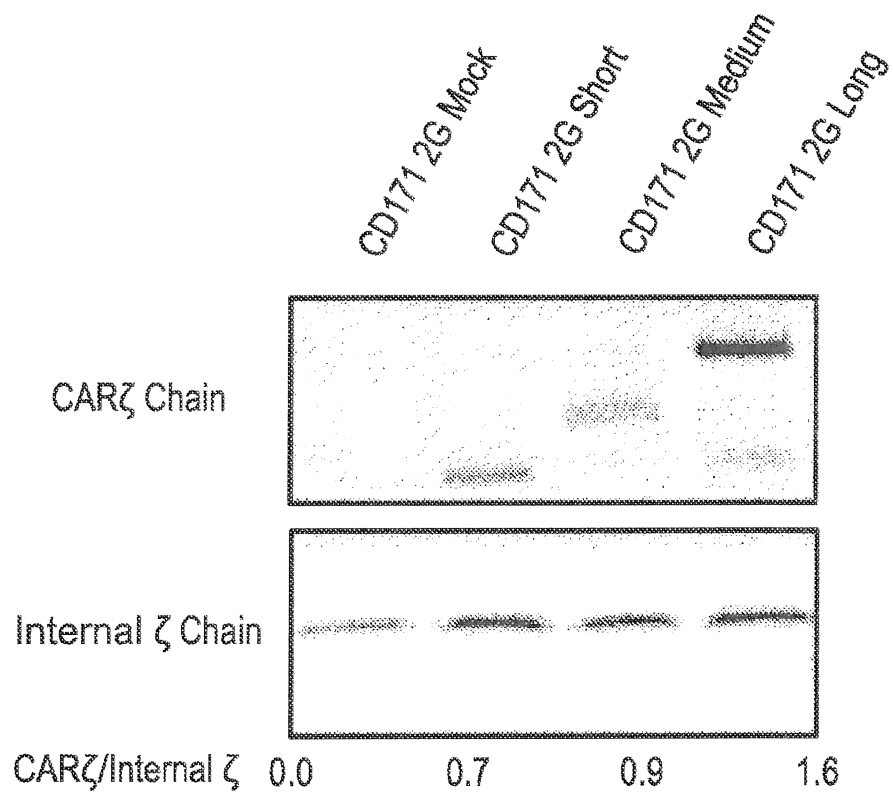


FIG. 13C

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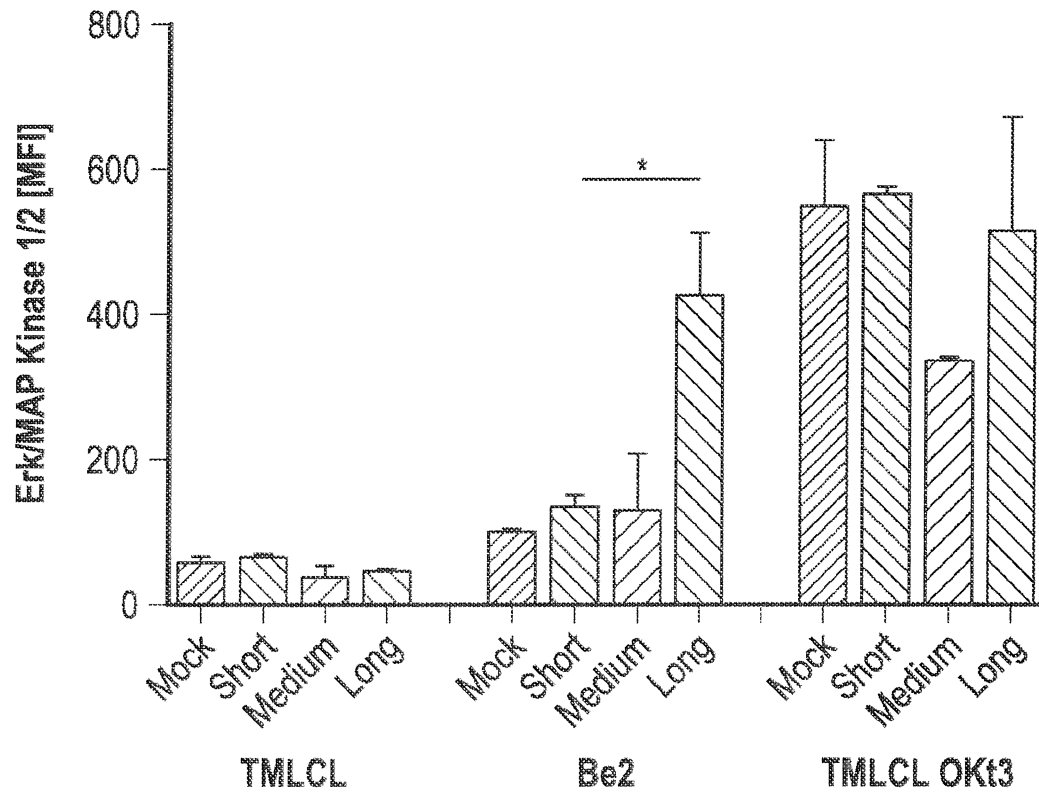


FIG. 13D

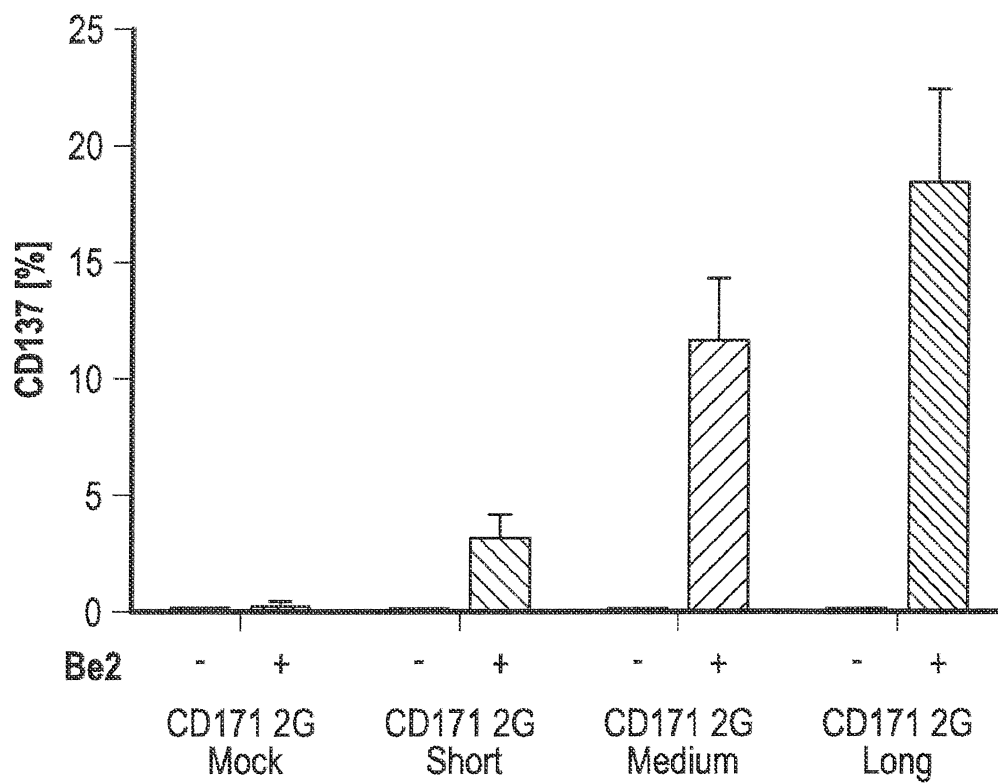


FIG. 13E

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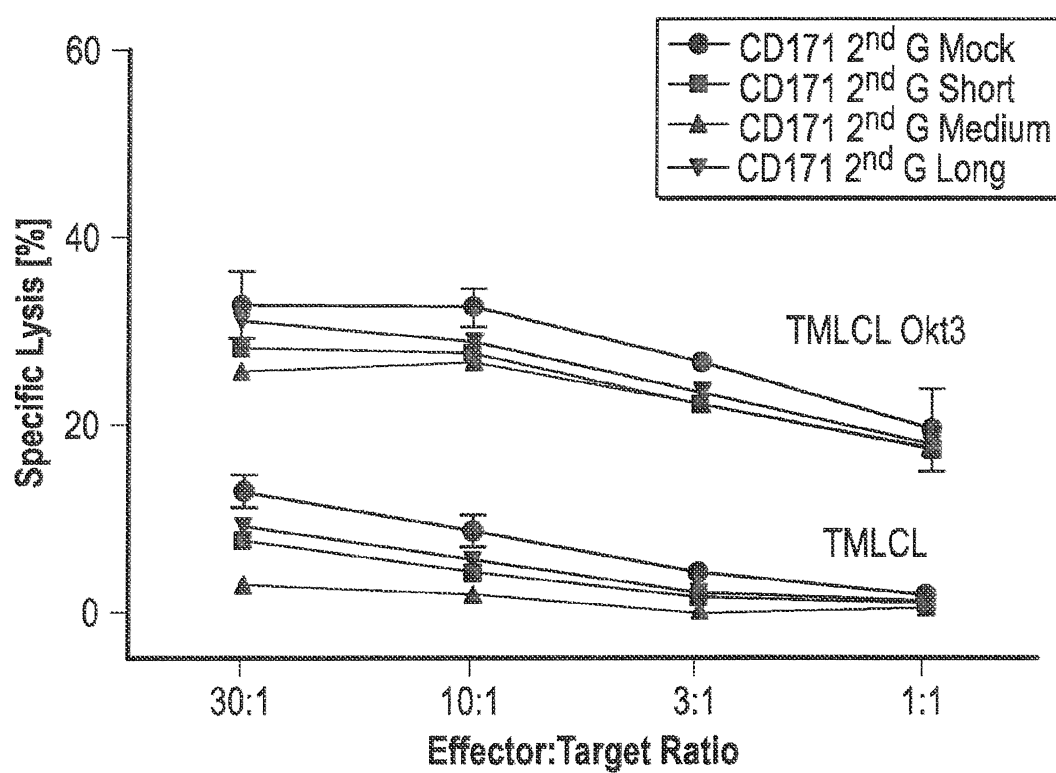


FIG. 13F



FIG. 13F (Continued)

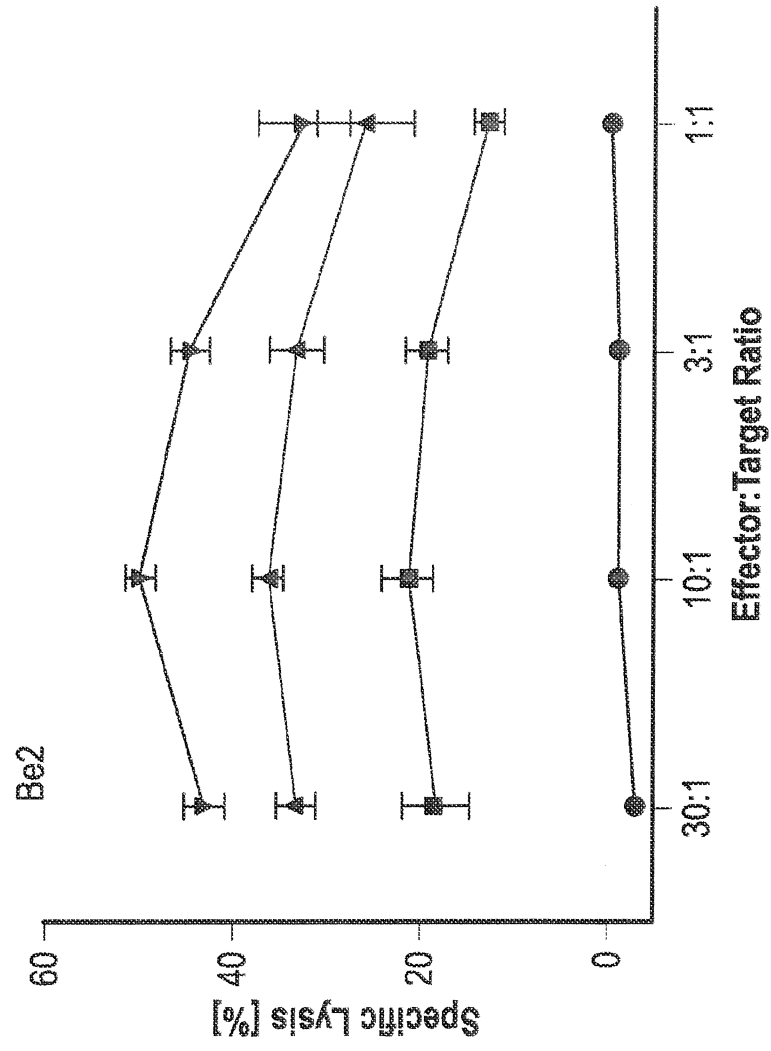
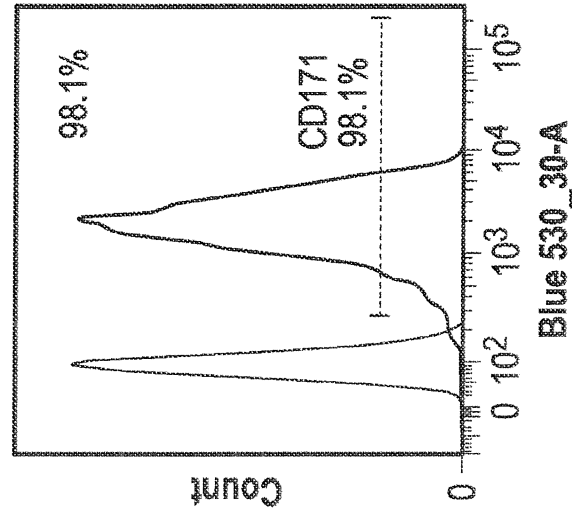


FIG. 13F (Continued)

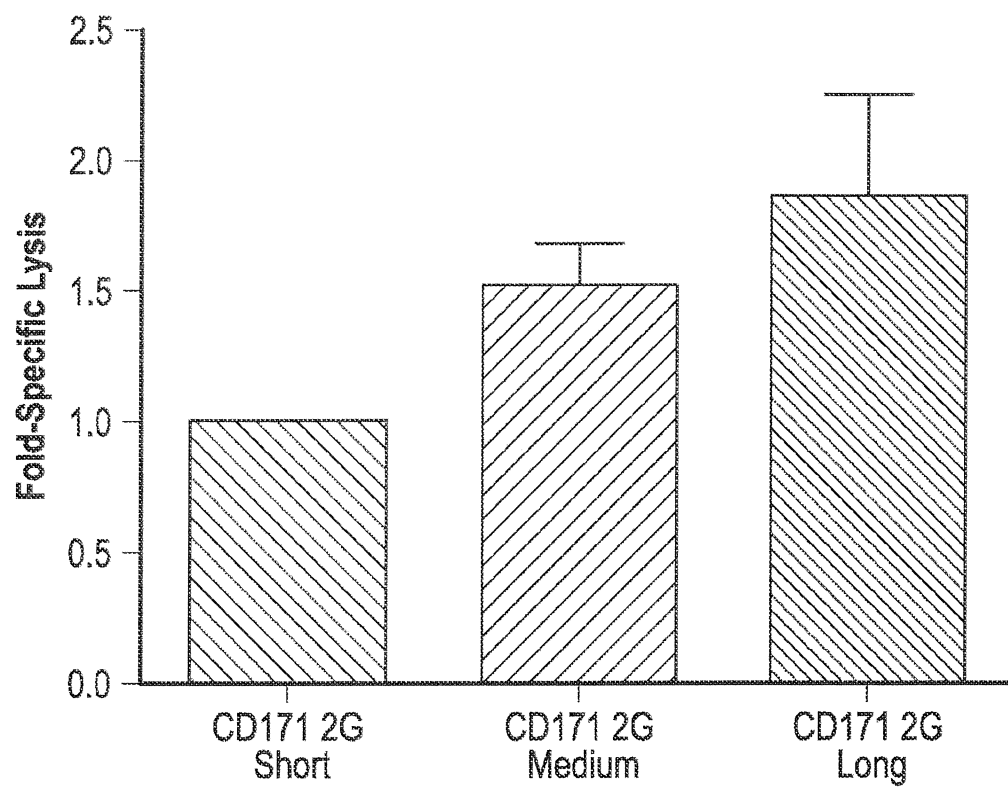


FIG. 13G

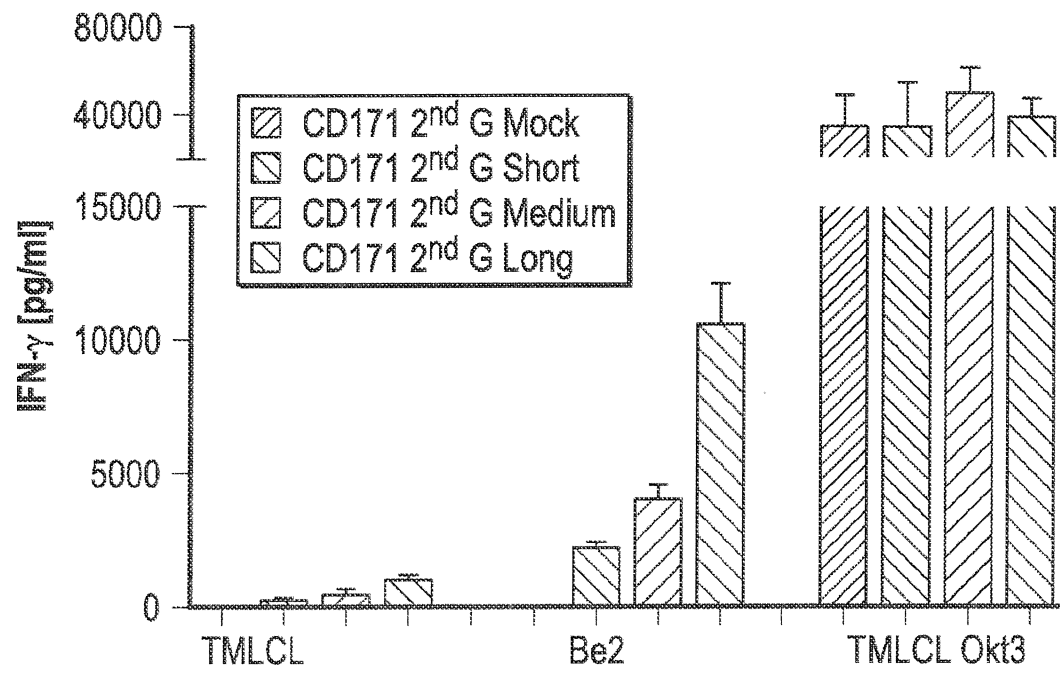
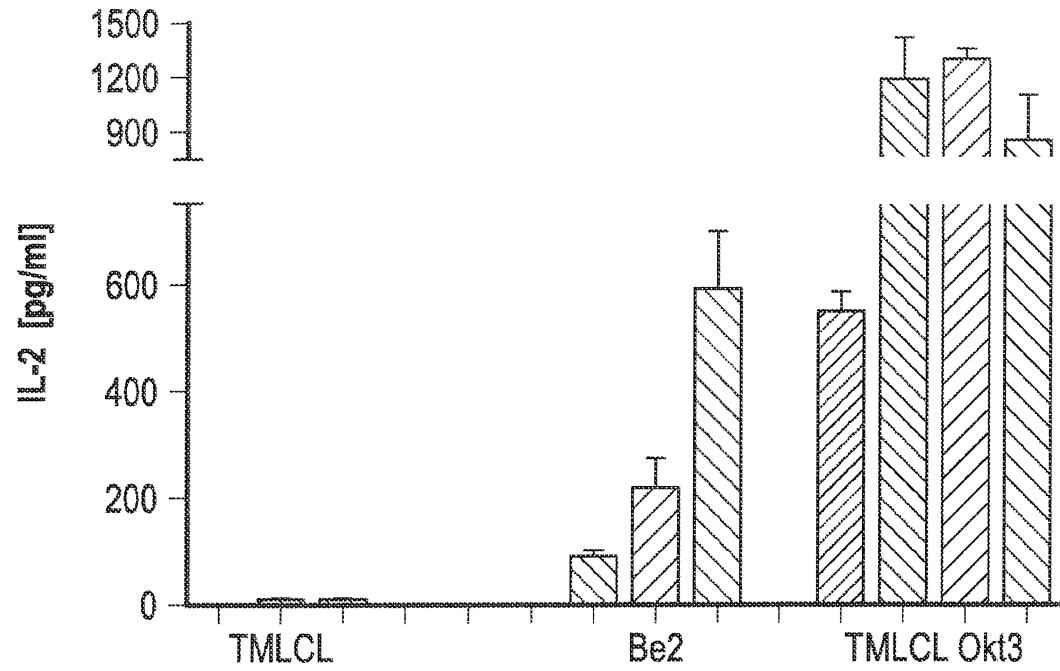


FIG. 13G (Continued)

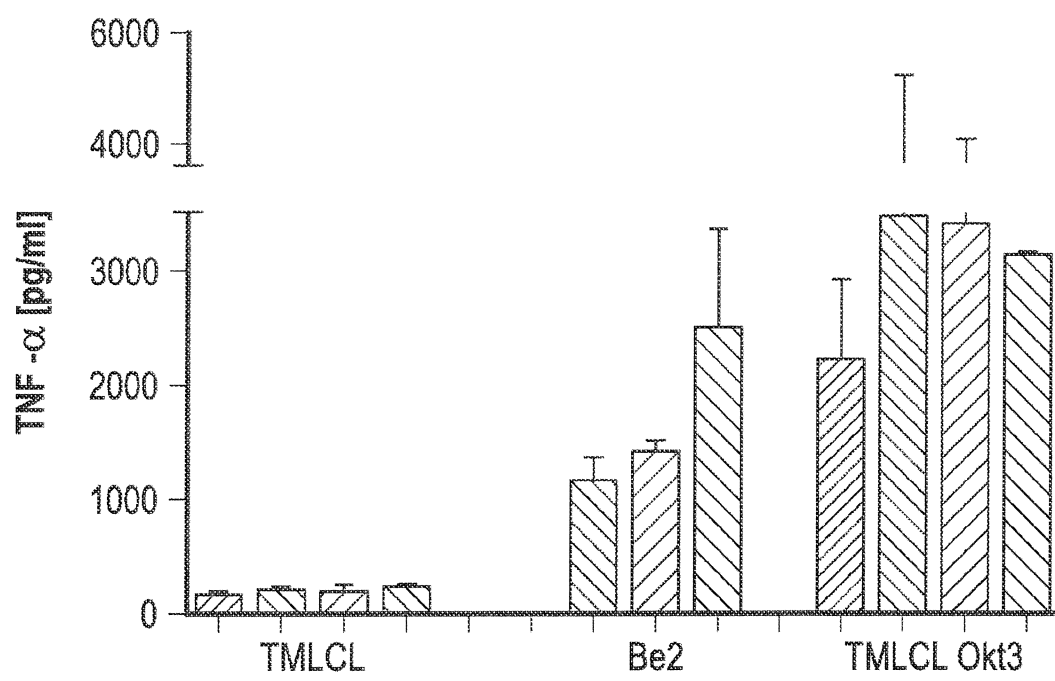


FIG. 13H

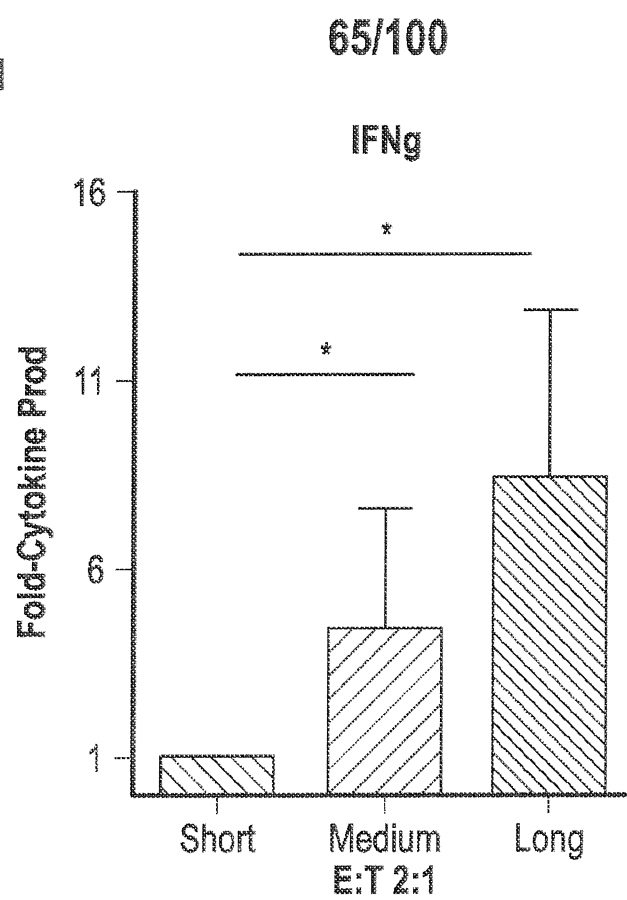
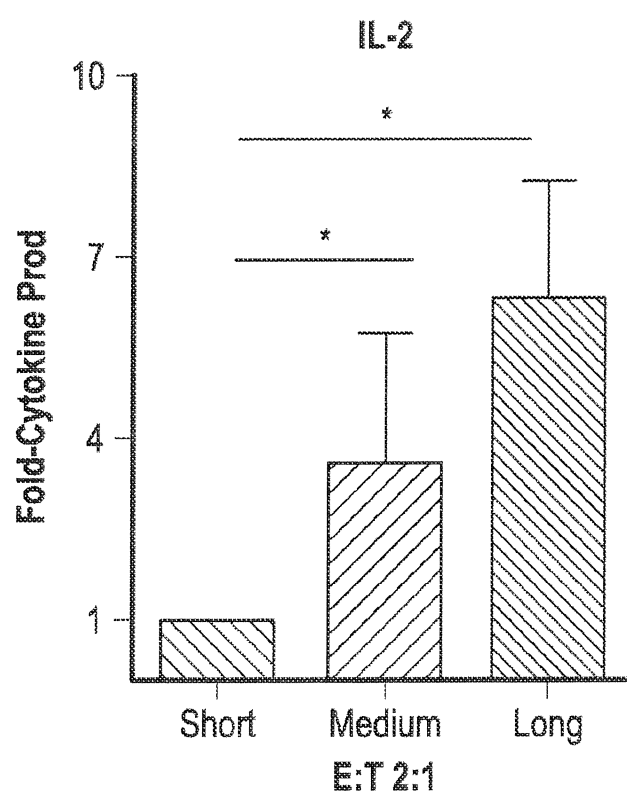
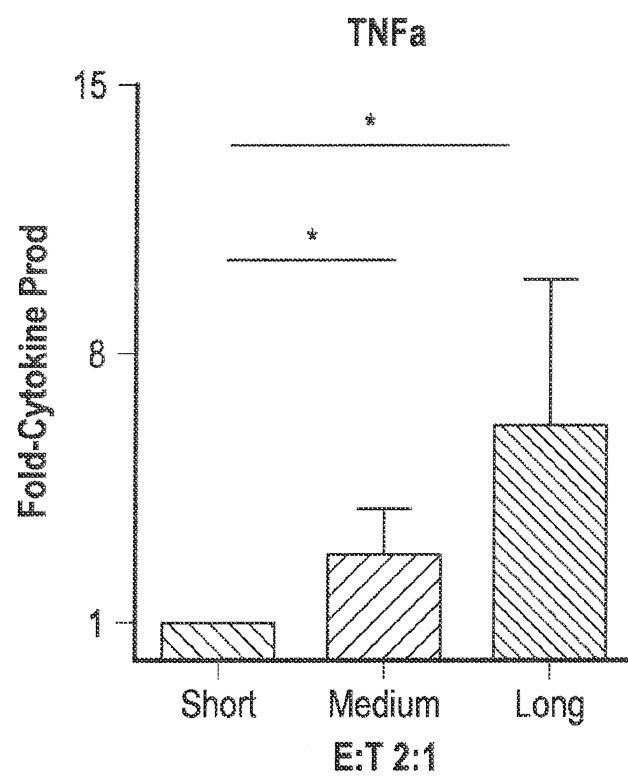


FIG. 13H (Continued)

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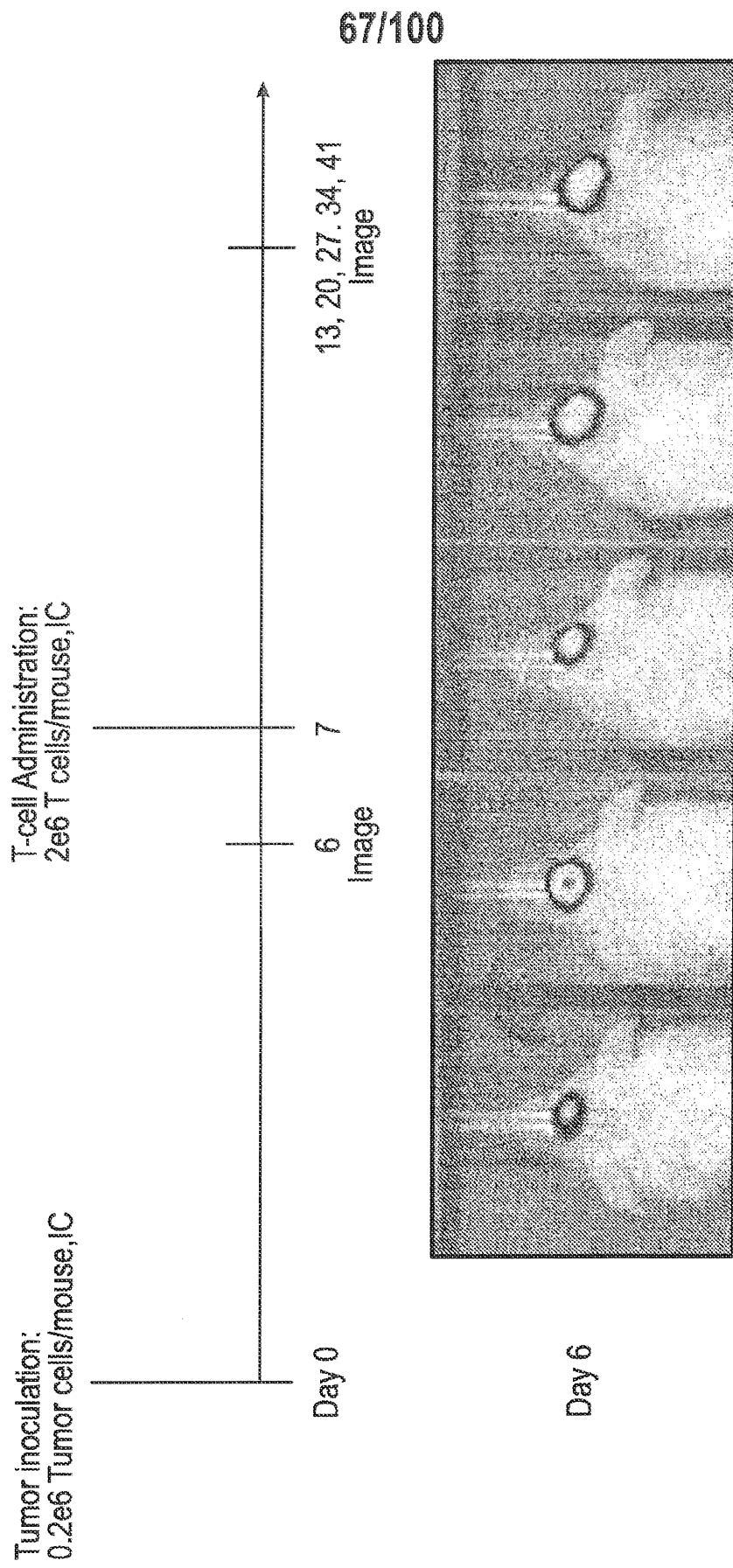


FIG. 14A

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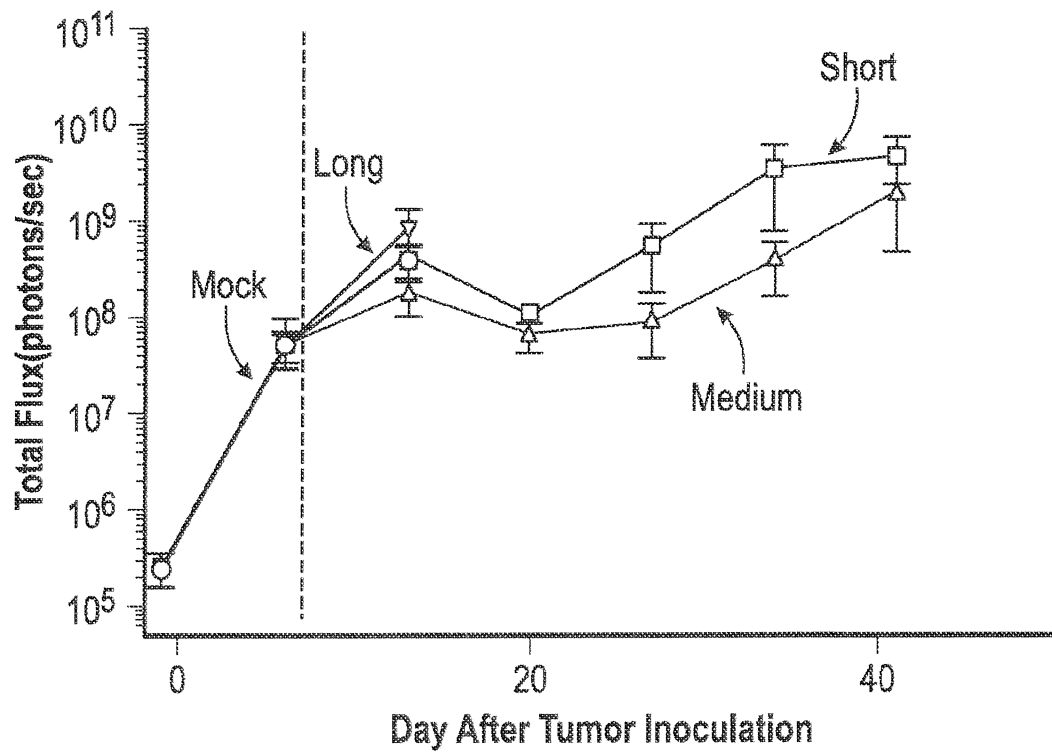


FIG. 14B

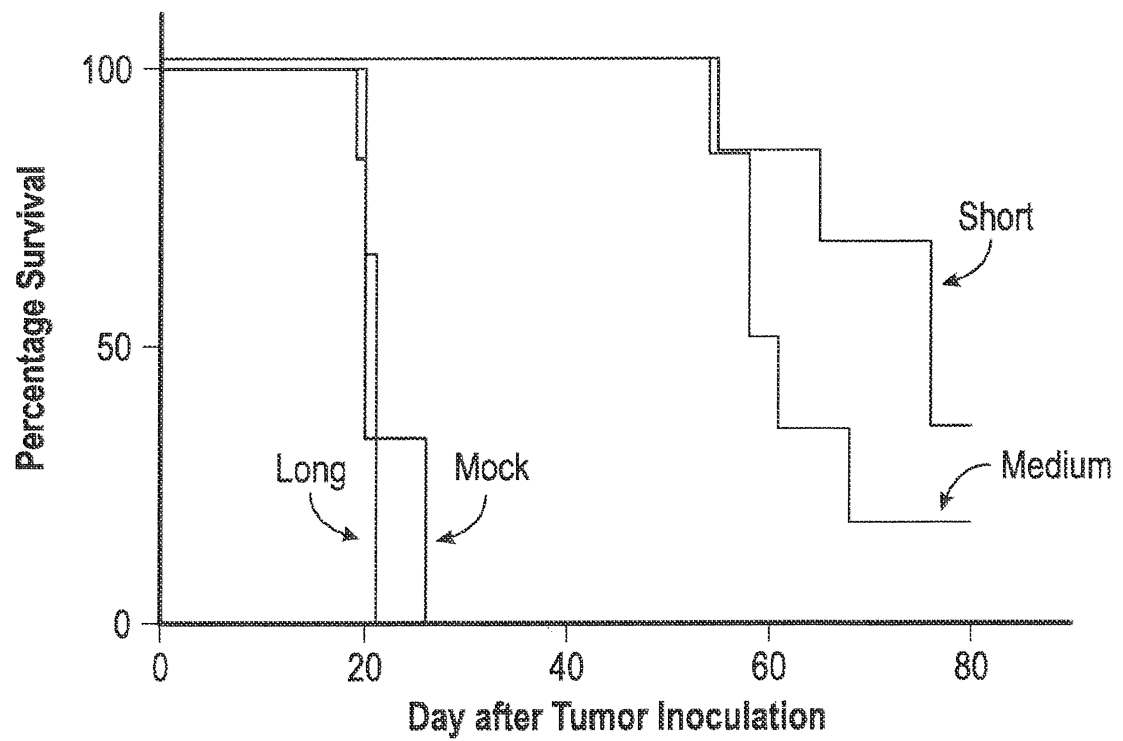


FIG. 14C



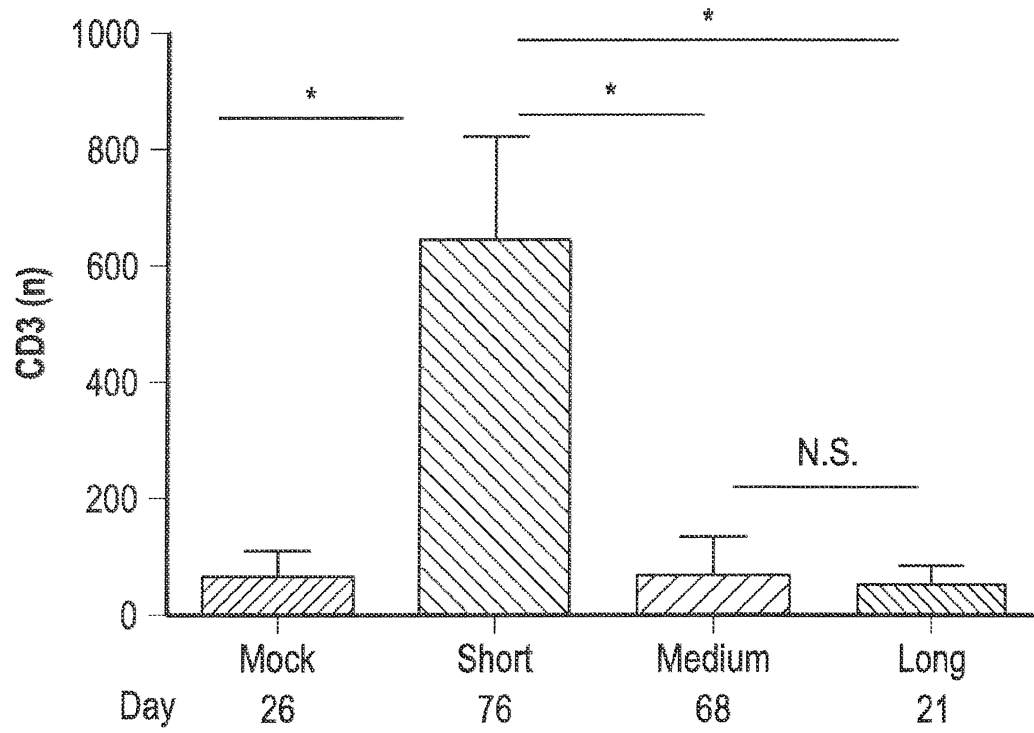


FIG. 14D

Tumor inoculation:  
0.2e6 Tumor cells/mouse, IC

T-cell Administration:  
2e6 T cells/mouse, IC

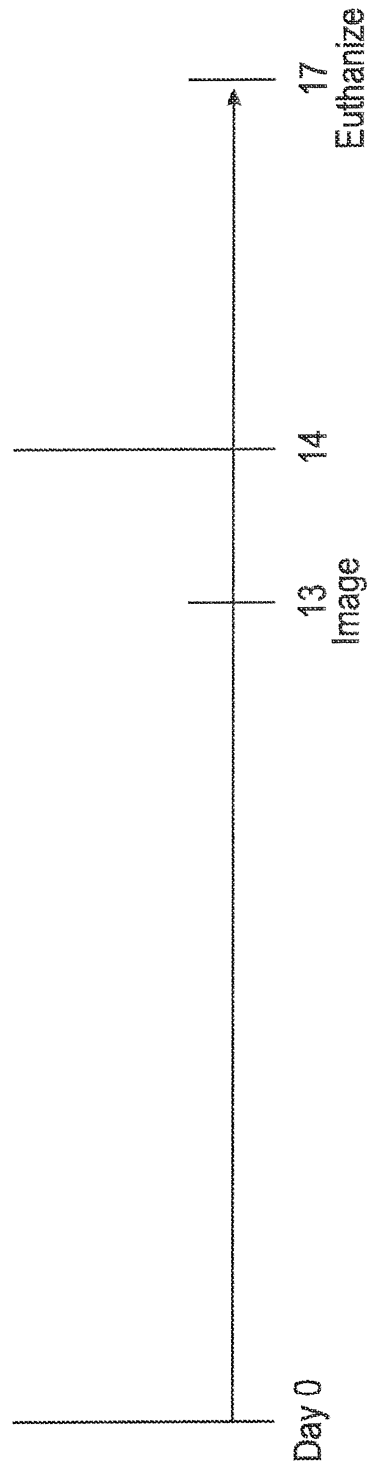
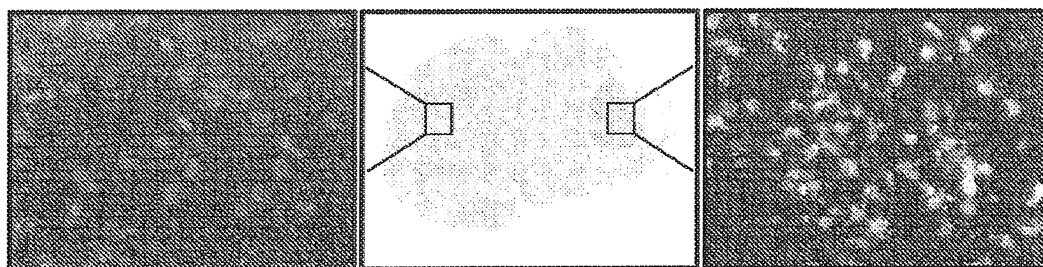


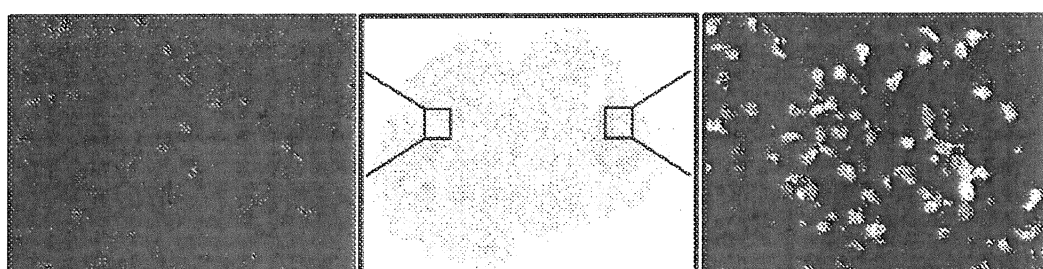
FIG. 14E

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CD3, Ki67, Caspase 3, Hoechst

FIG. 14F1



Cd3, Ki67, Caspase 3, Hoechst

FIG. 14F2

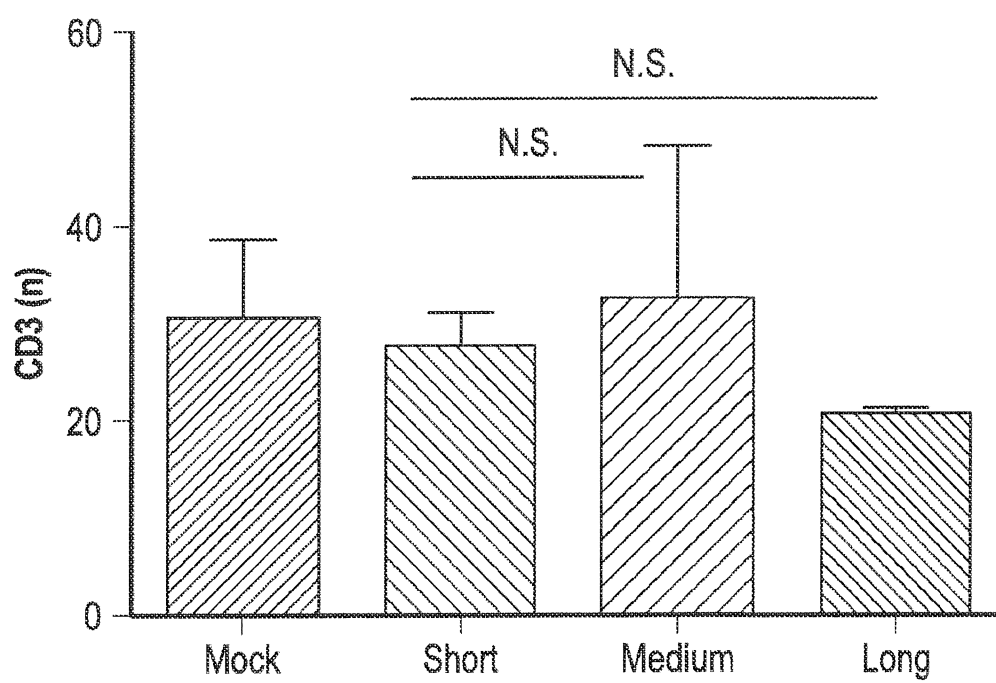
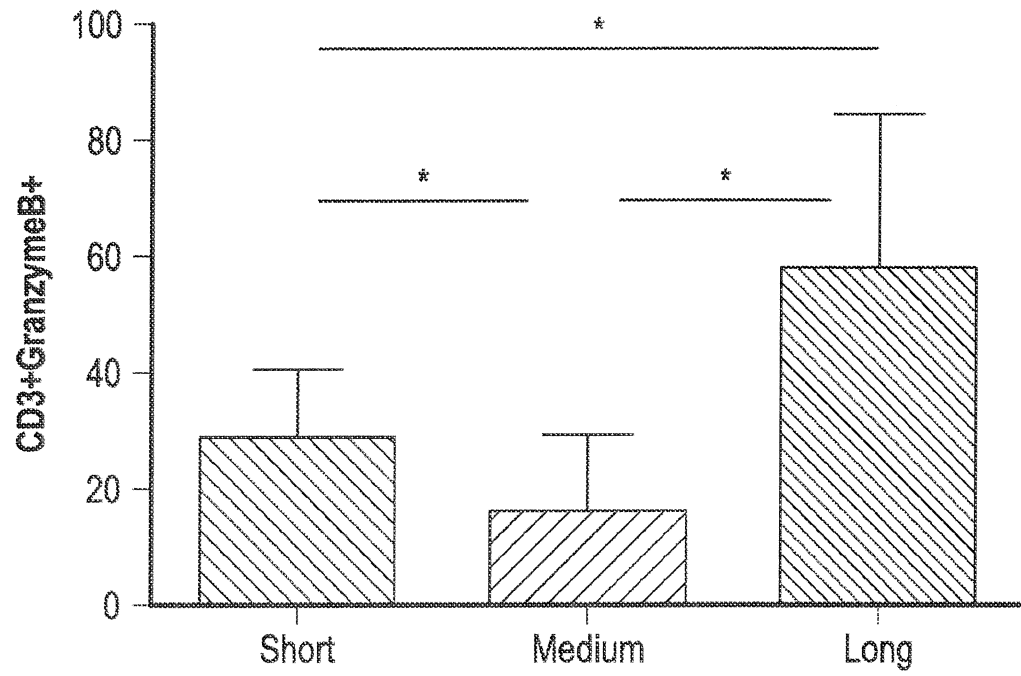
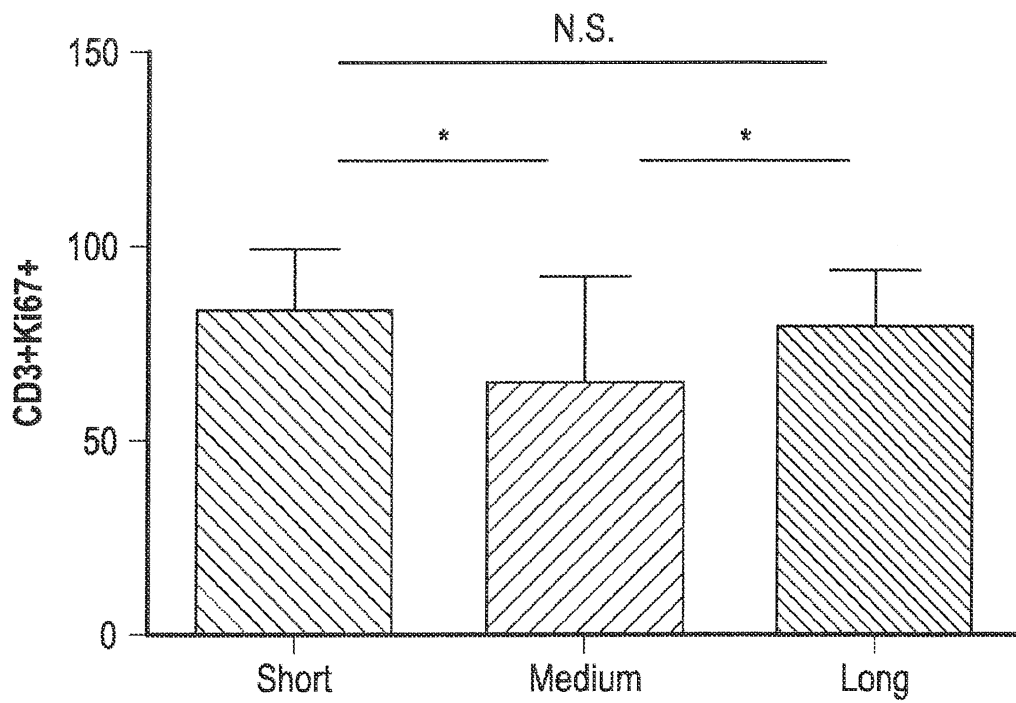


FIG. 14G

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FIG. 14H



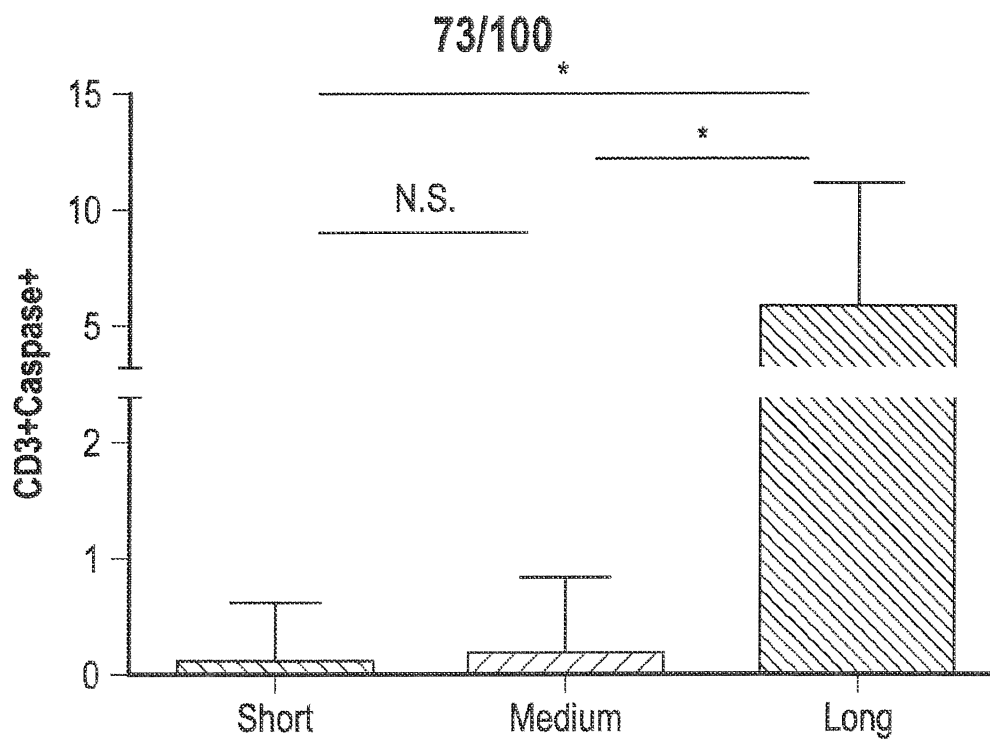


FIG. 14H (Continued)

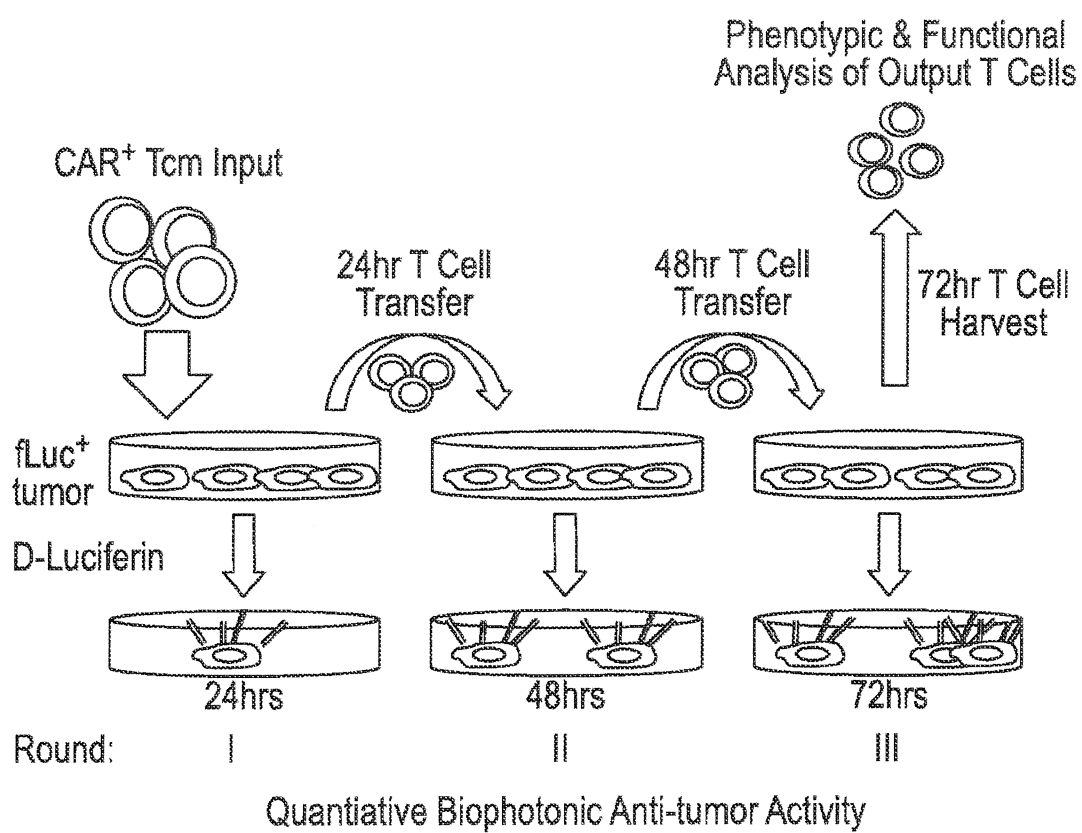


FIG. 15A

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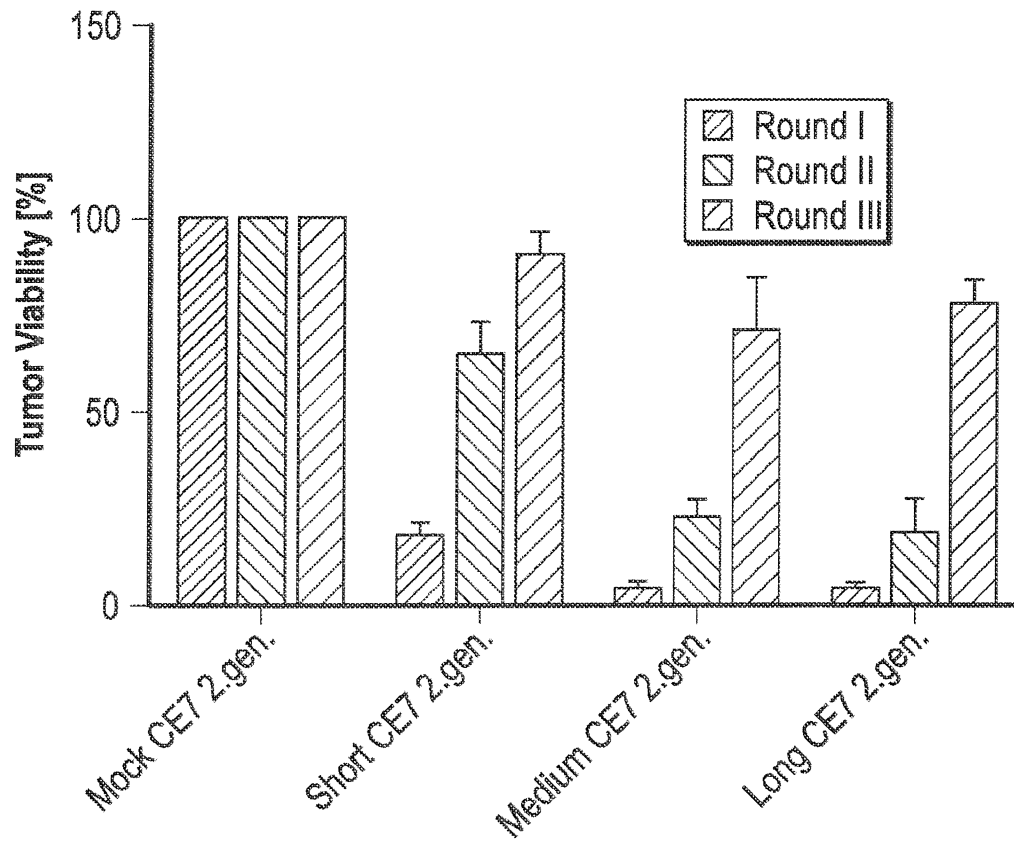


FIG. 15B

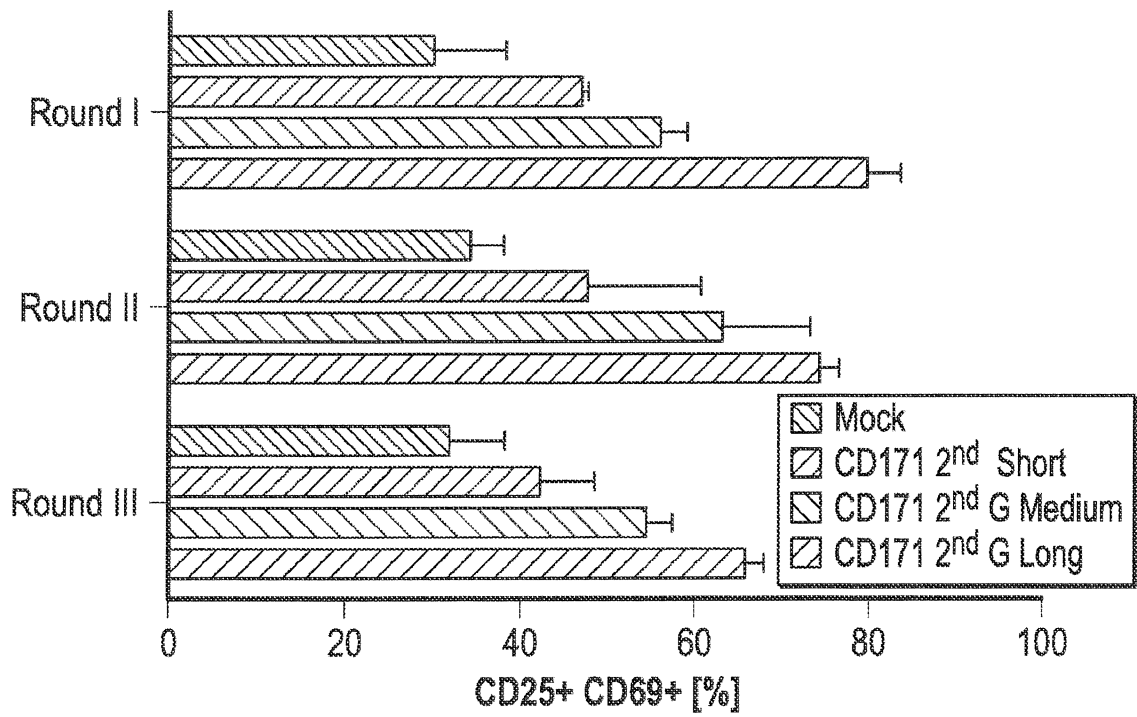
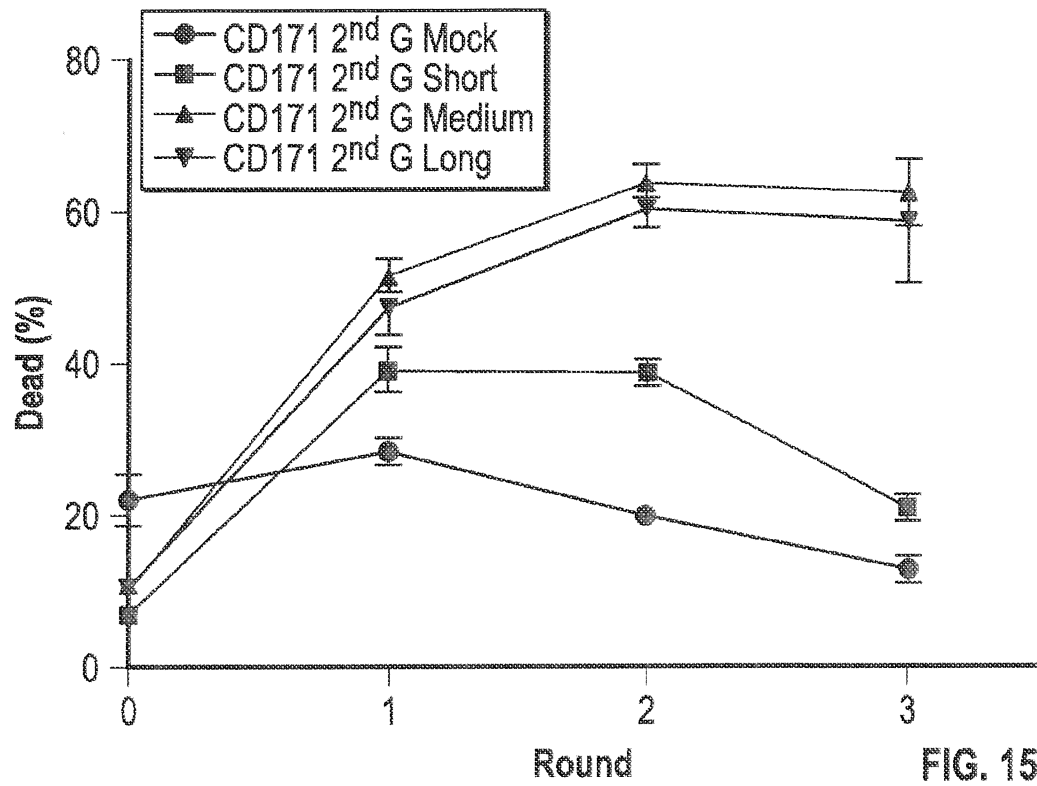
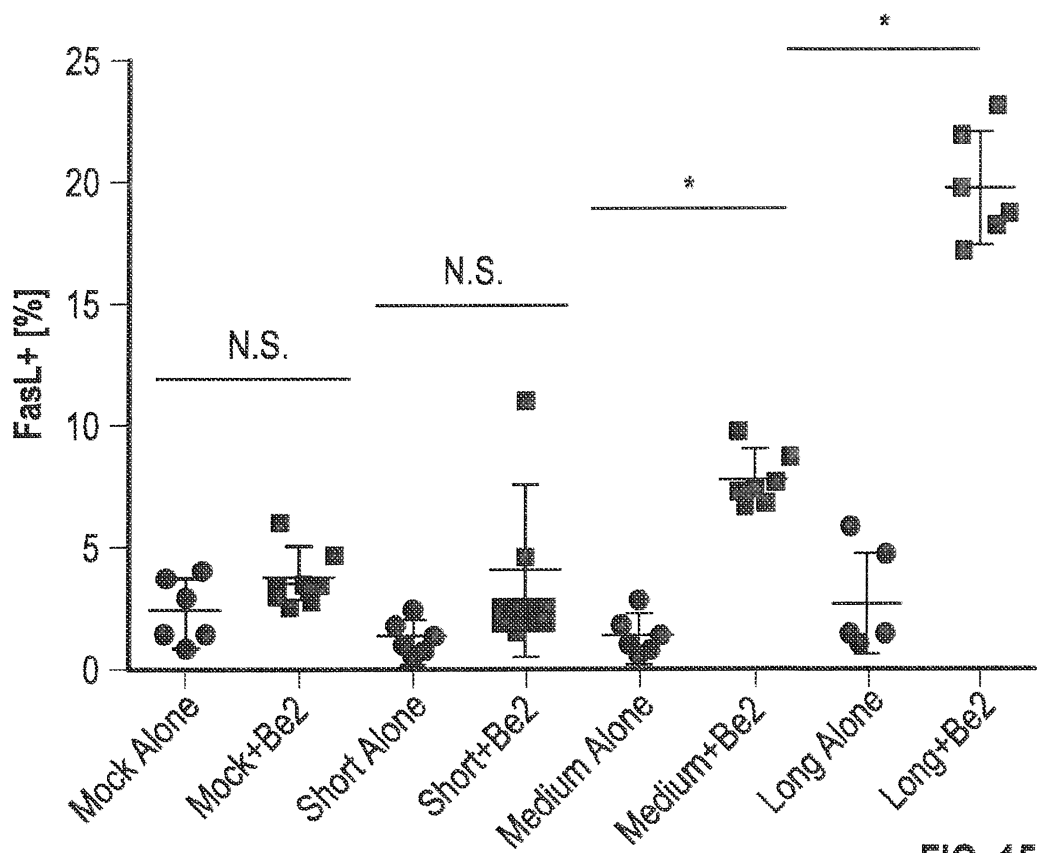


FIG. 15C

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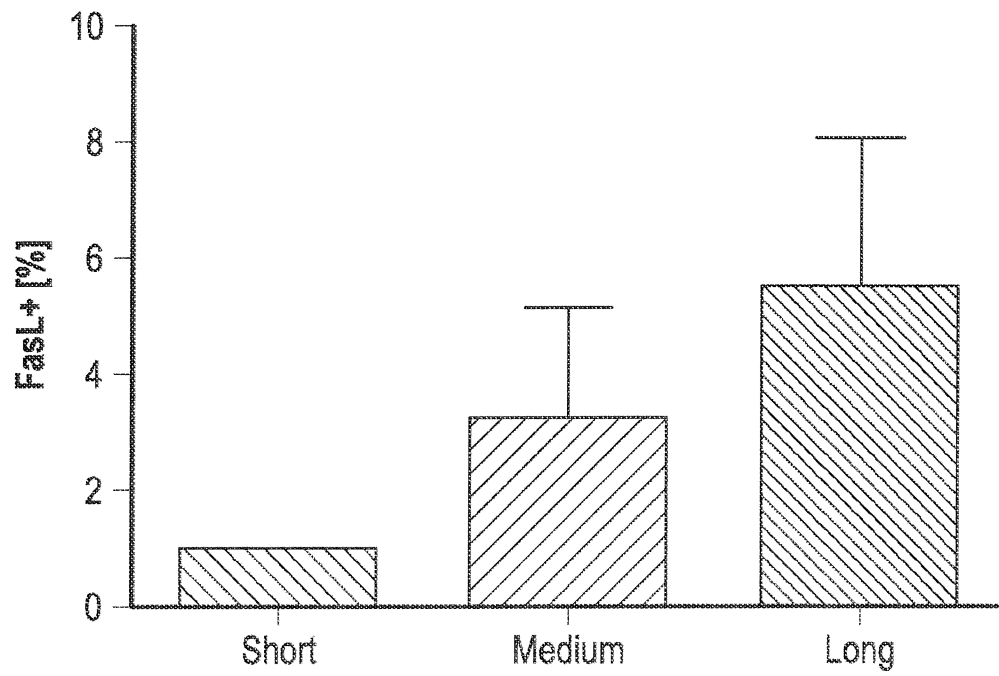


FIG. 15F

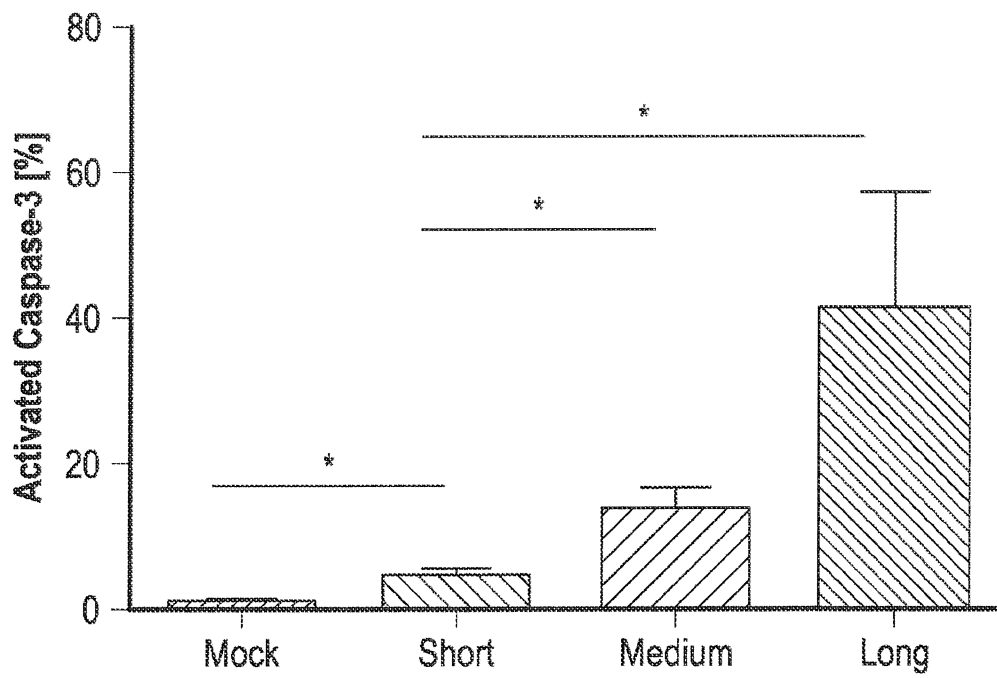


FIG. 15G



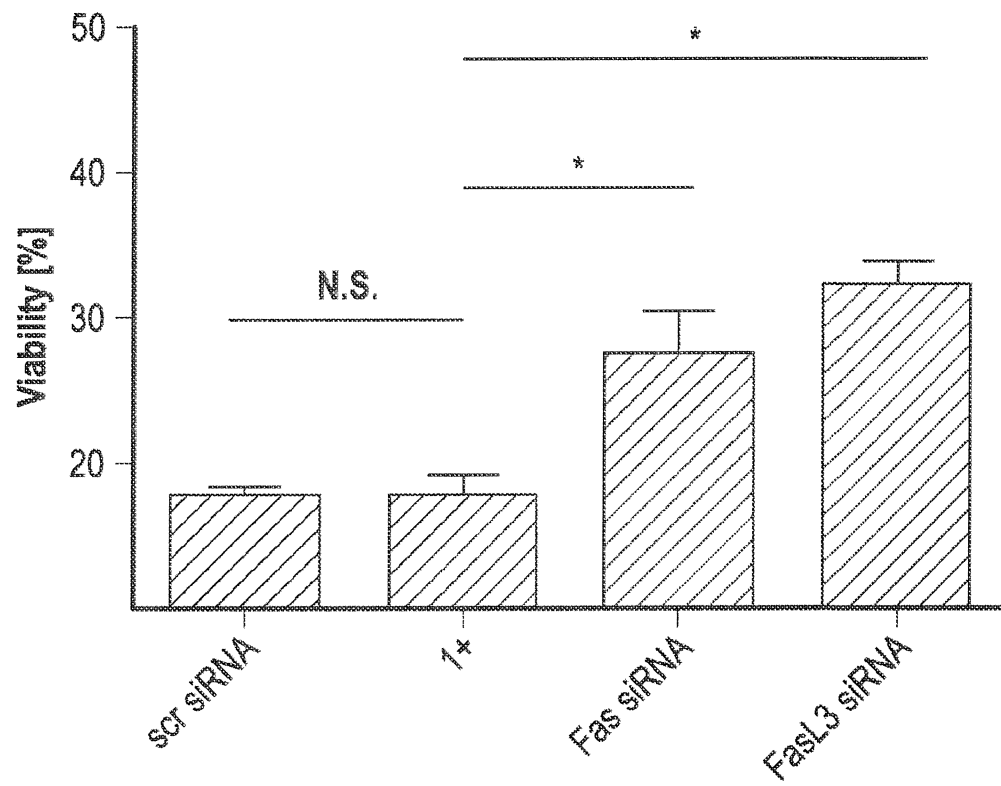


FIG. 15H

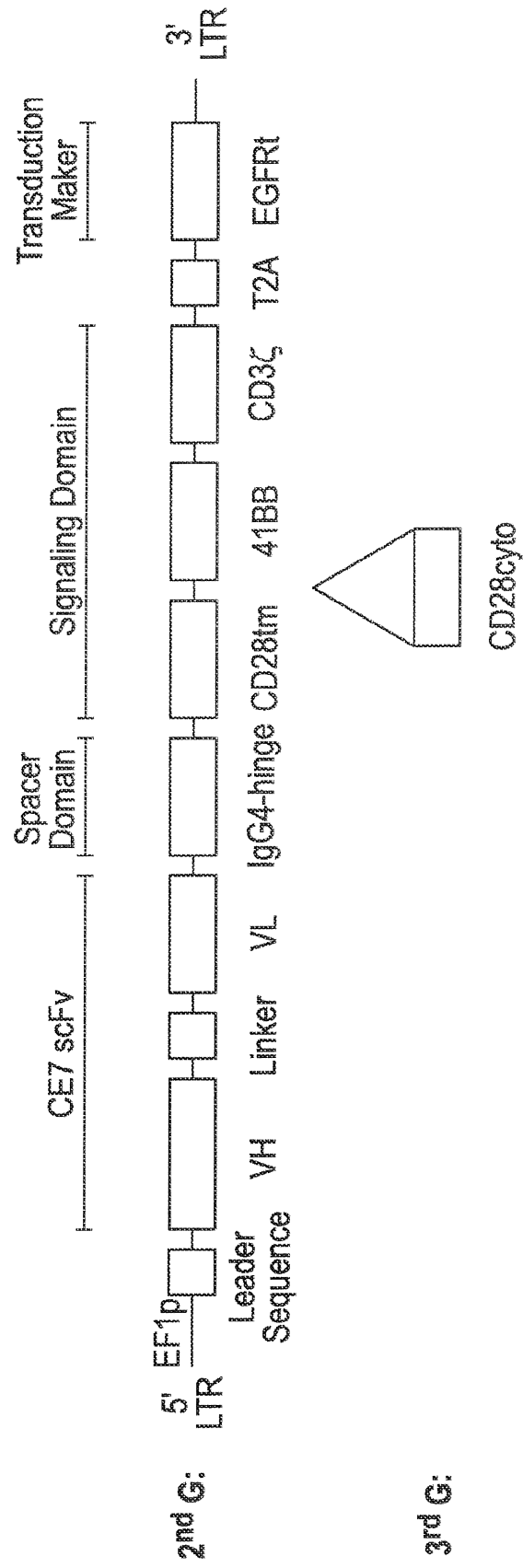


FIG. 16A

FIG. 16B

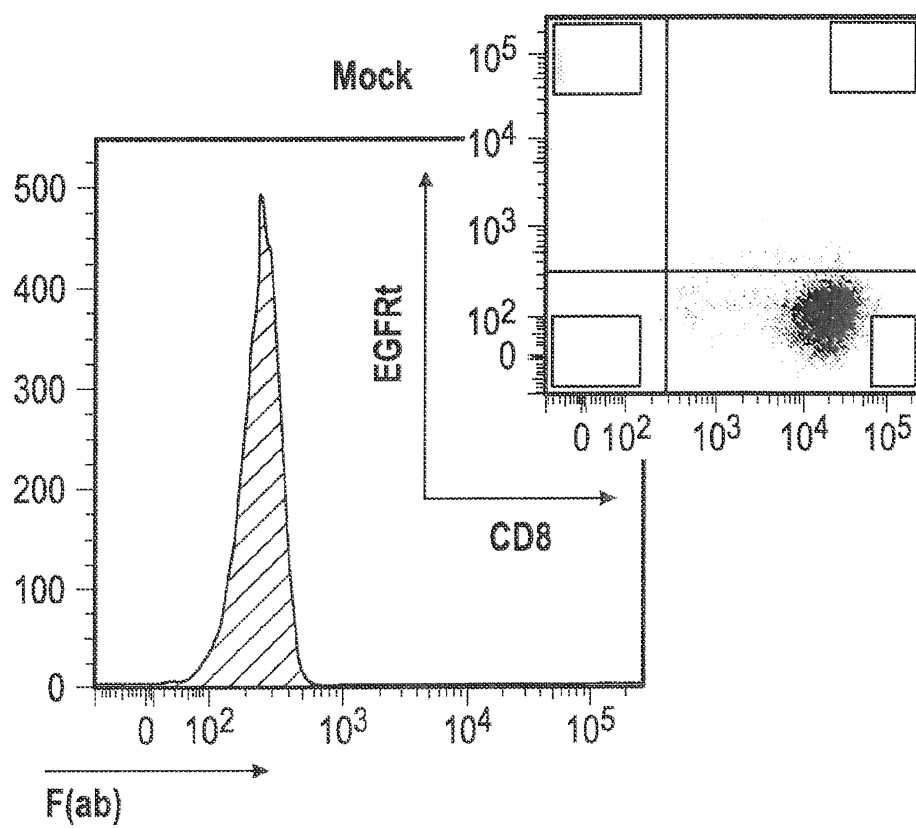
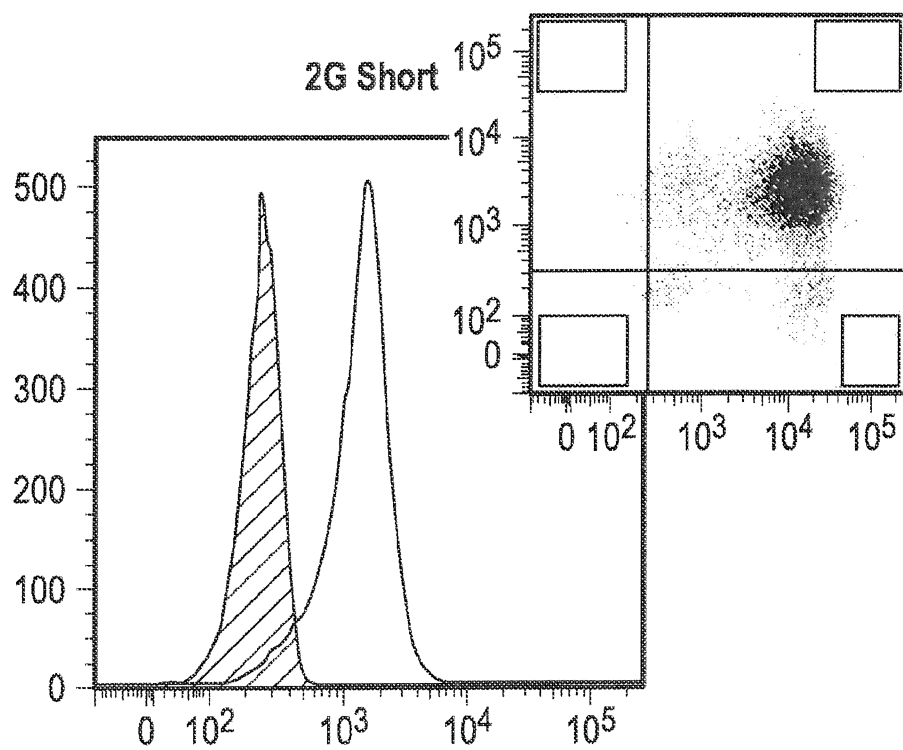
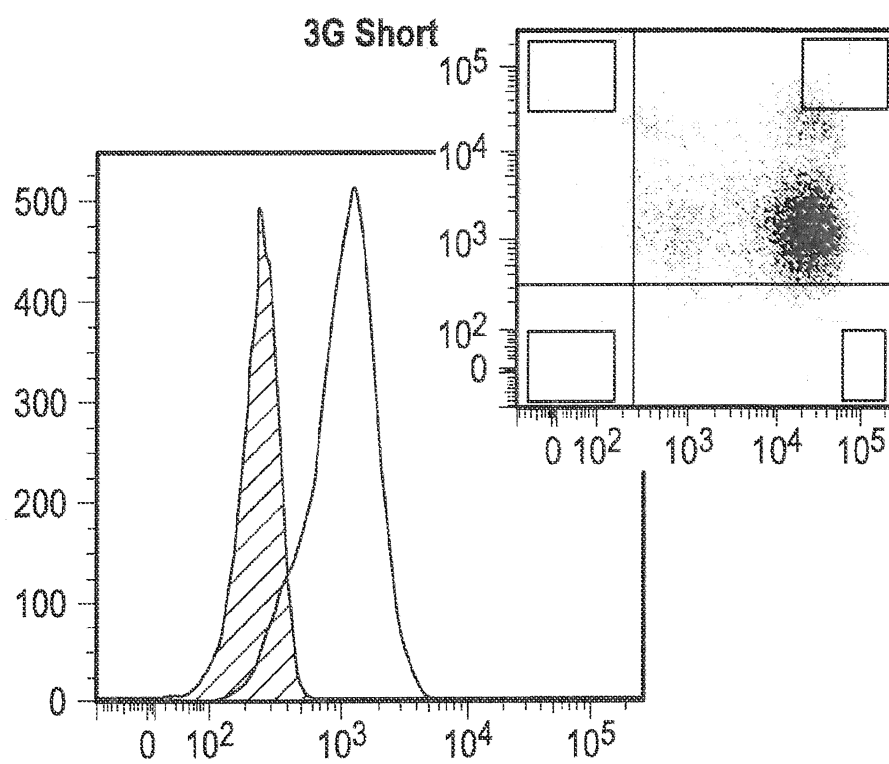


FIG. 16B (Continued)



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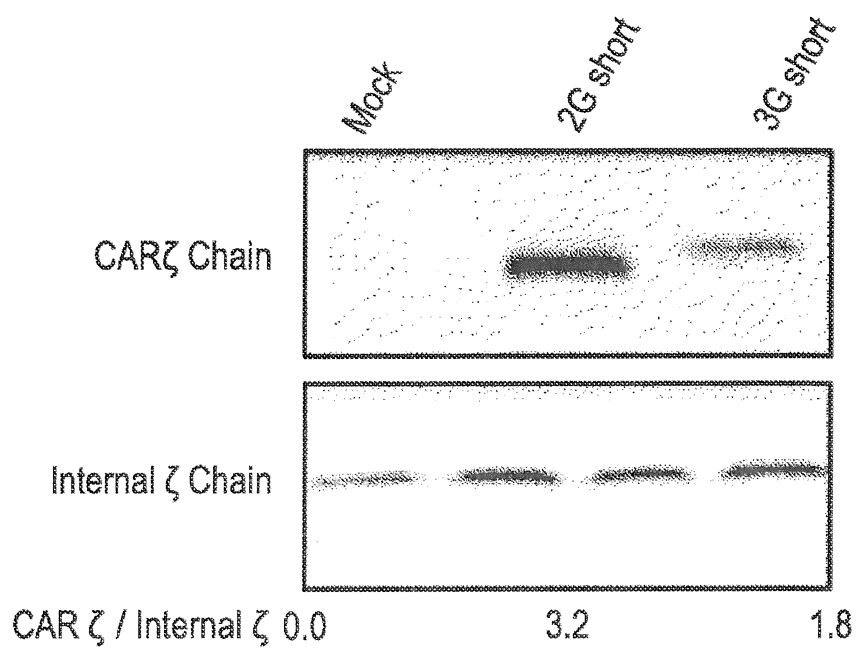


FIG. 16C

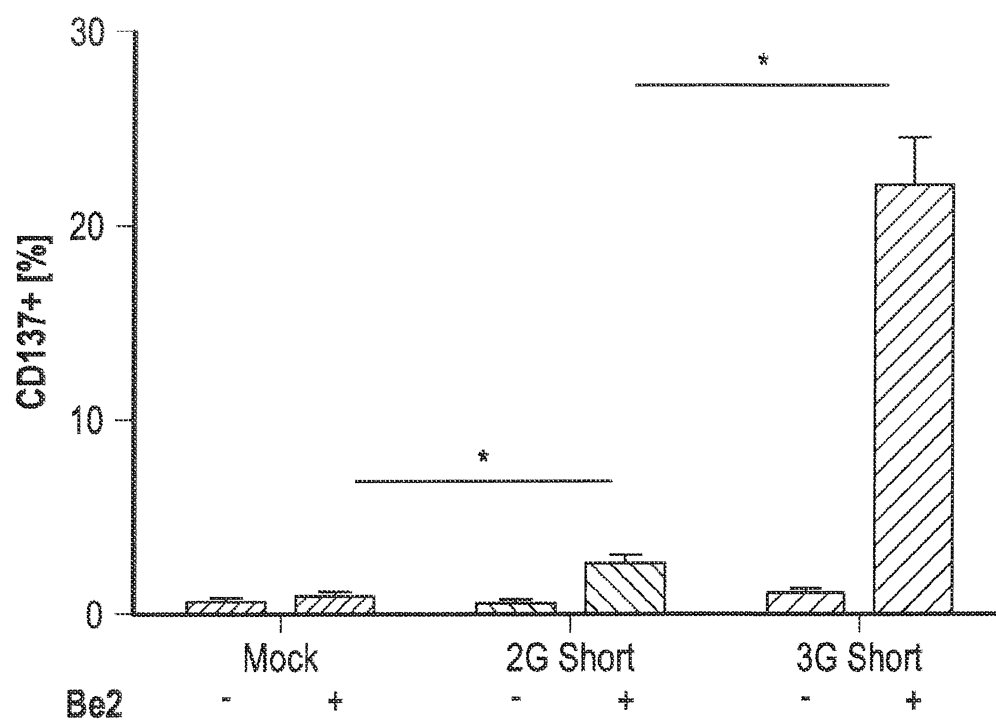


FIG. 16D

FIG. 16E

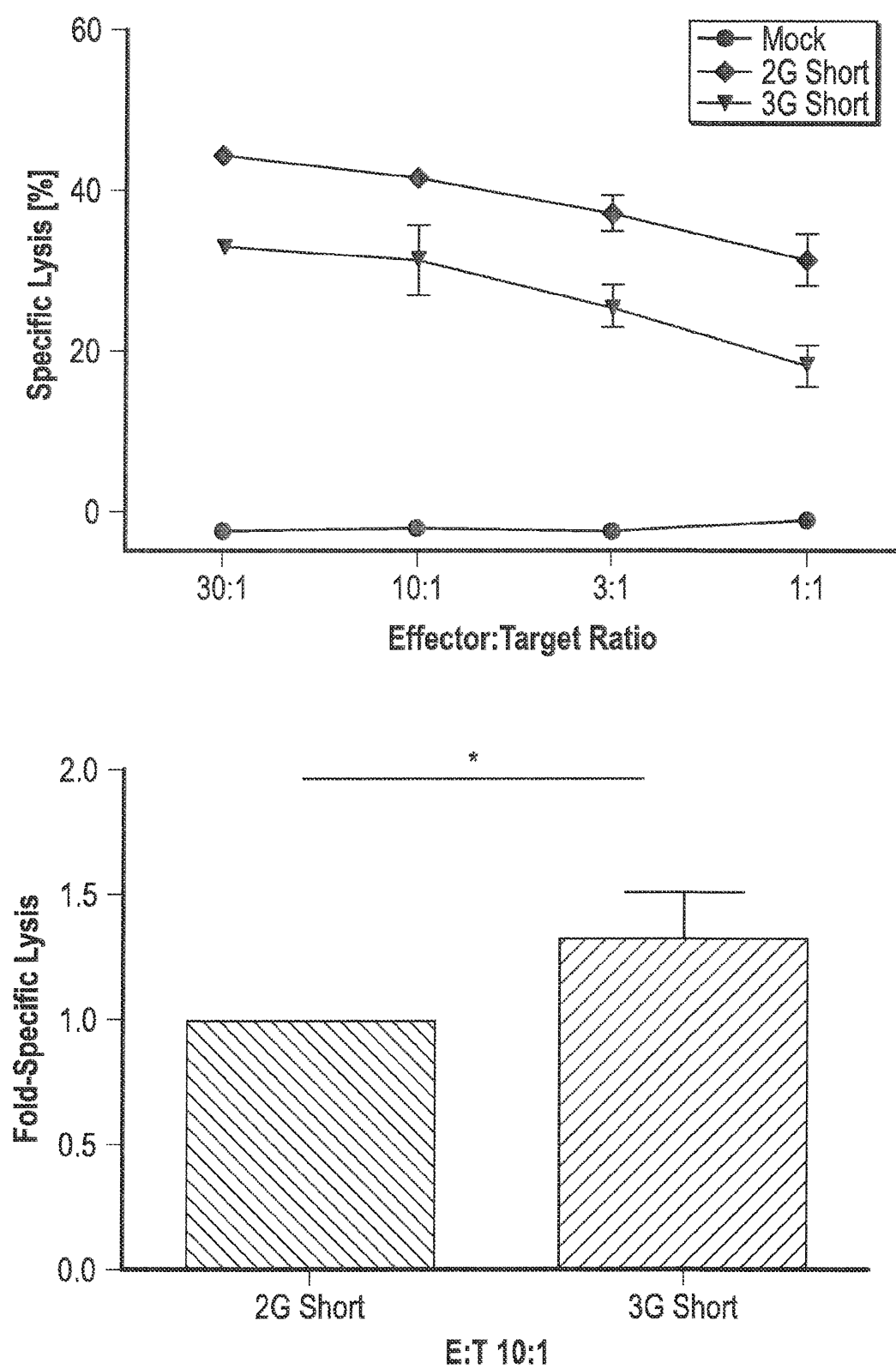


FIG. 16F

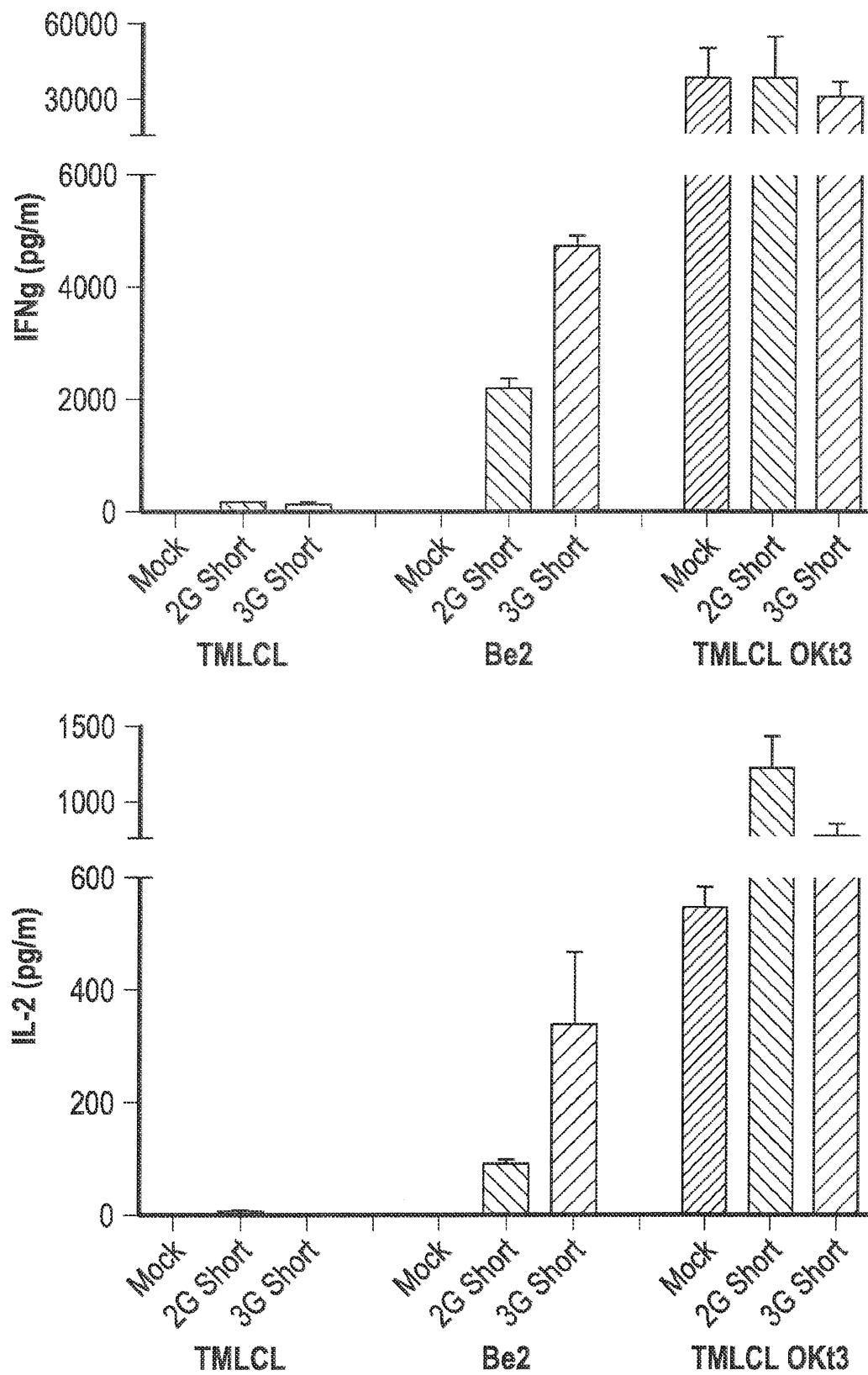


FIG. 16F (Continued)

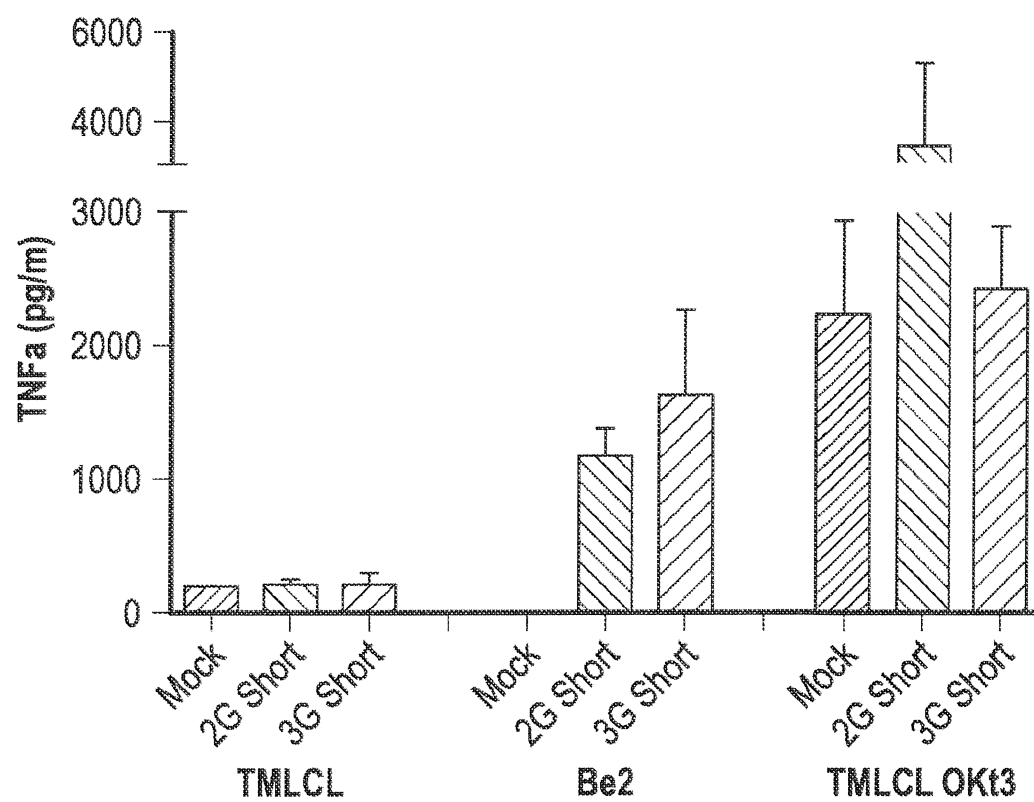
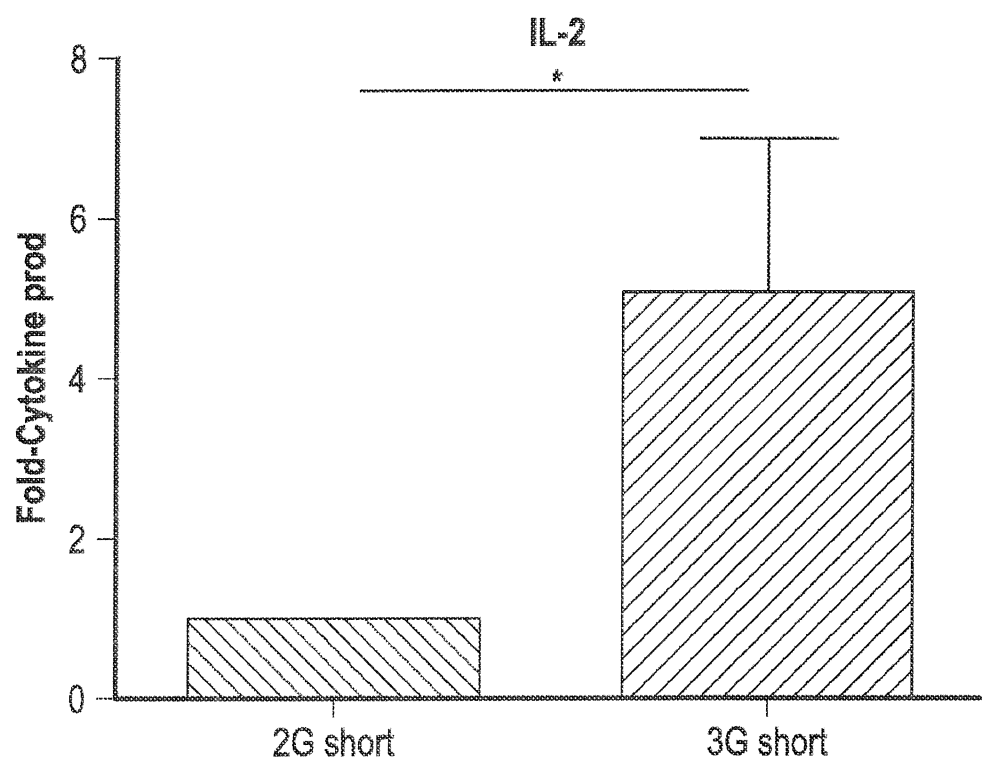
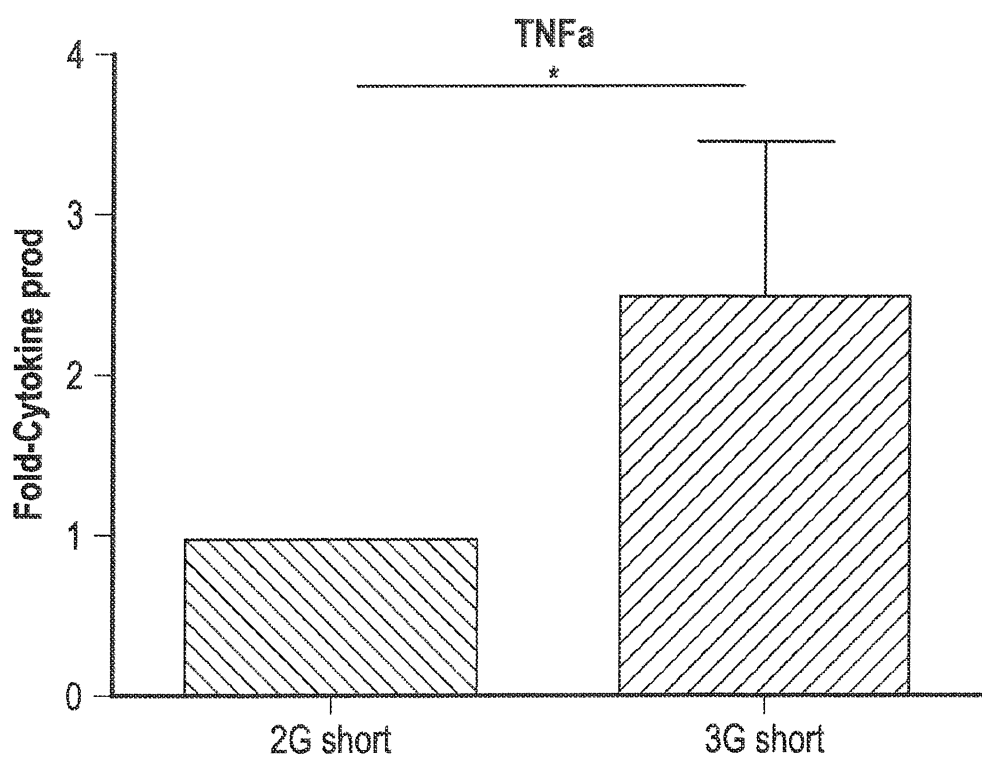




FIG. 16F (Continued)



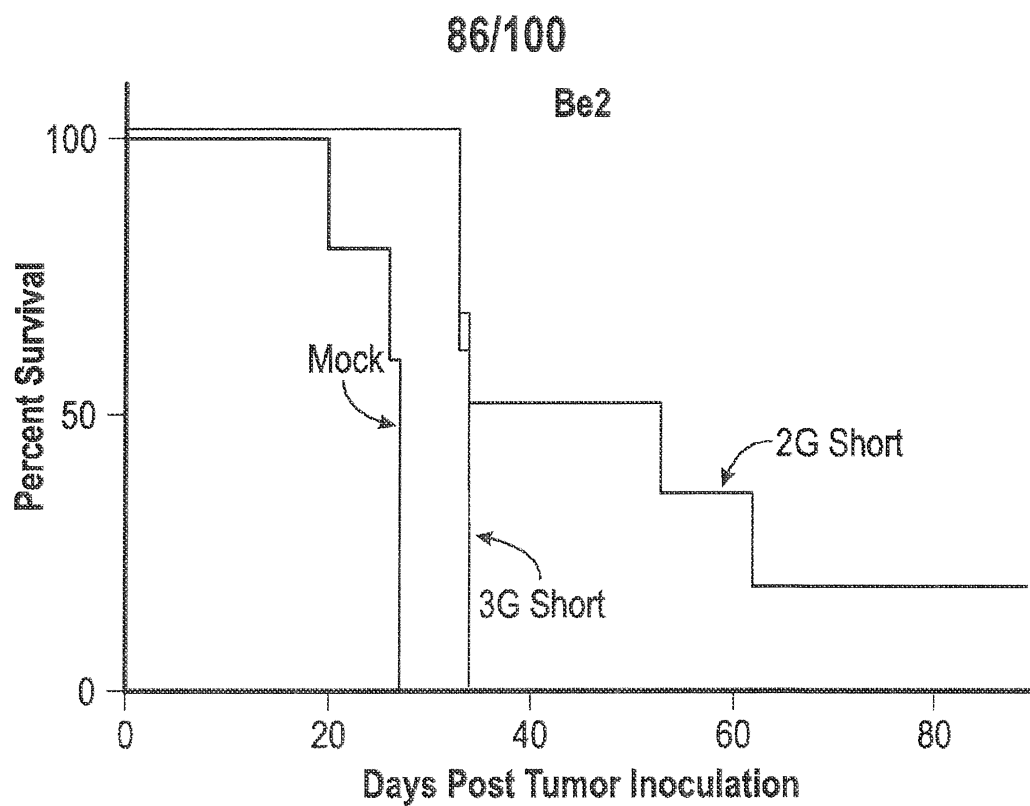


**FIG. 17A**

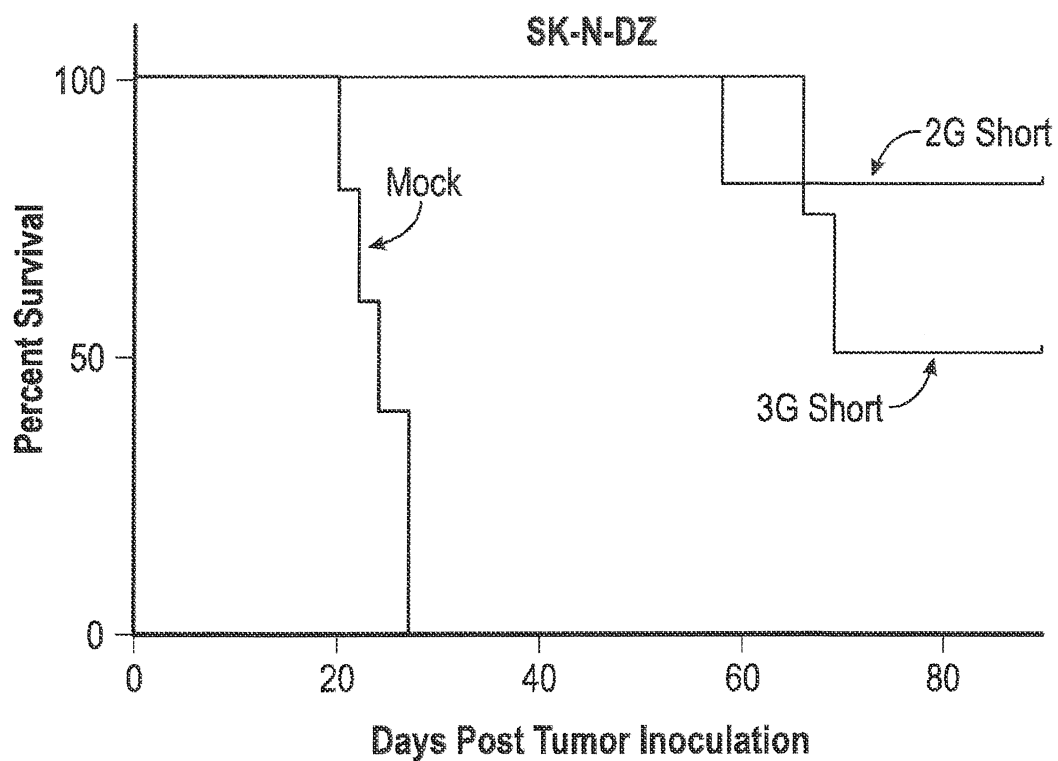
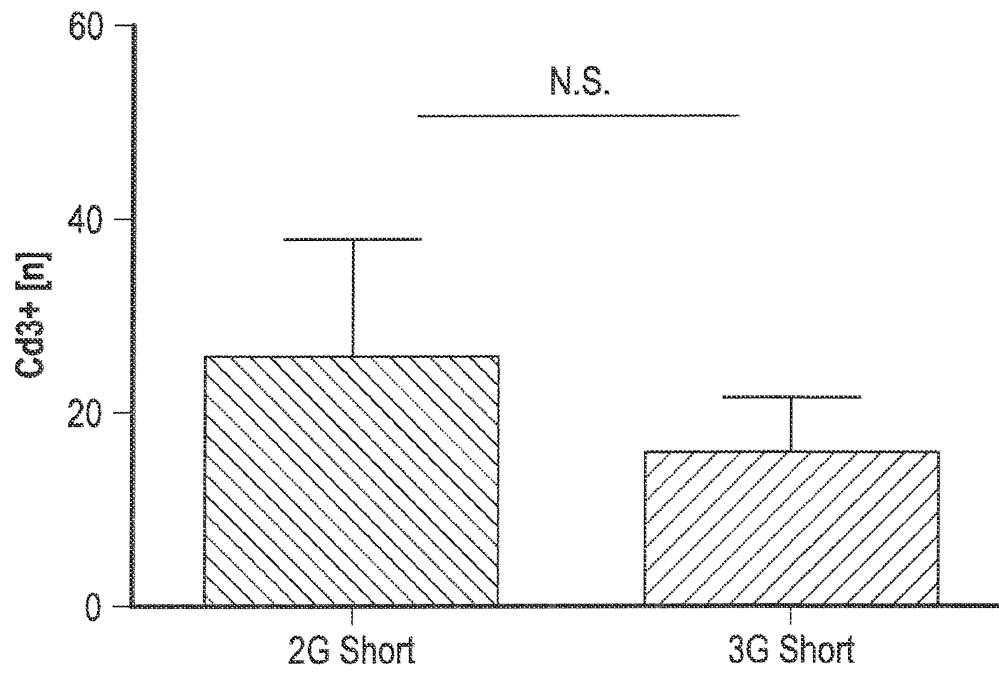
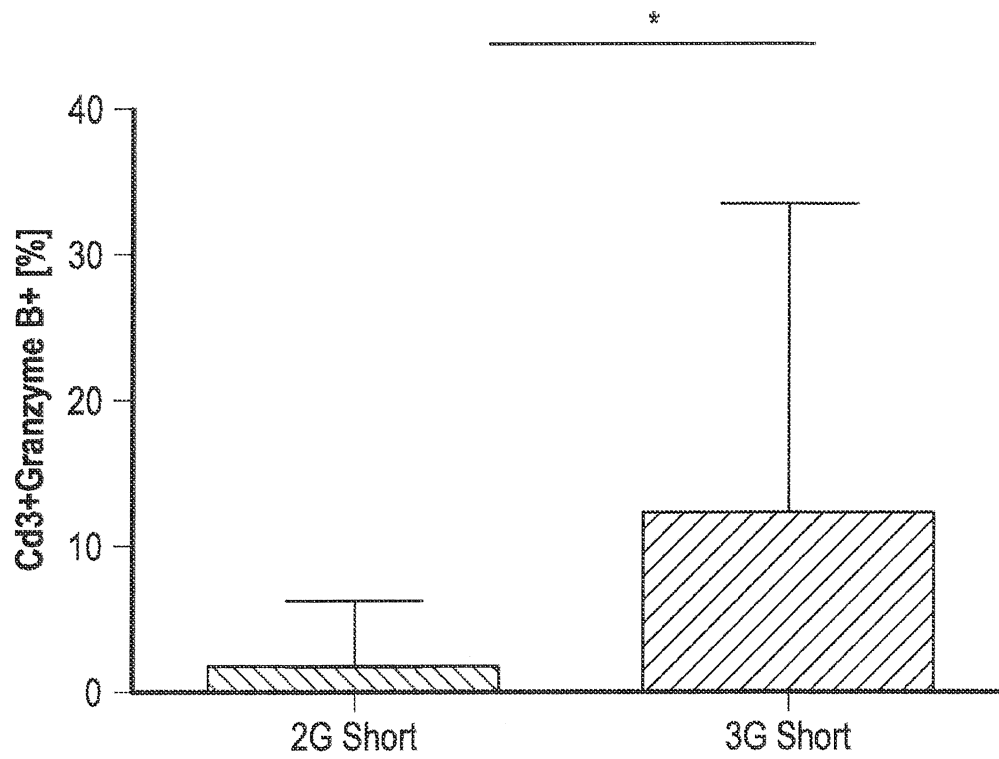


**FIG. 17B**

FIG. 17C



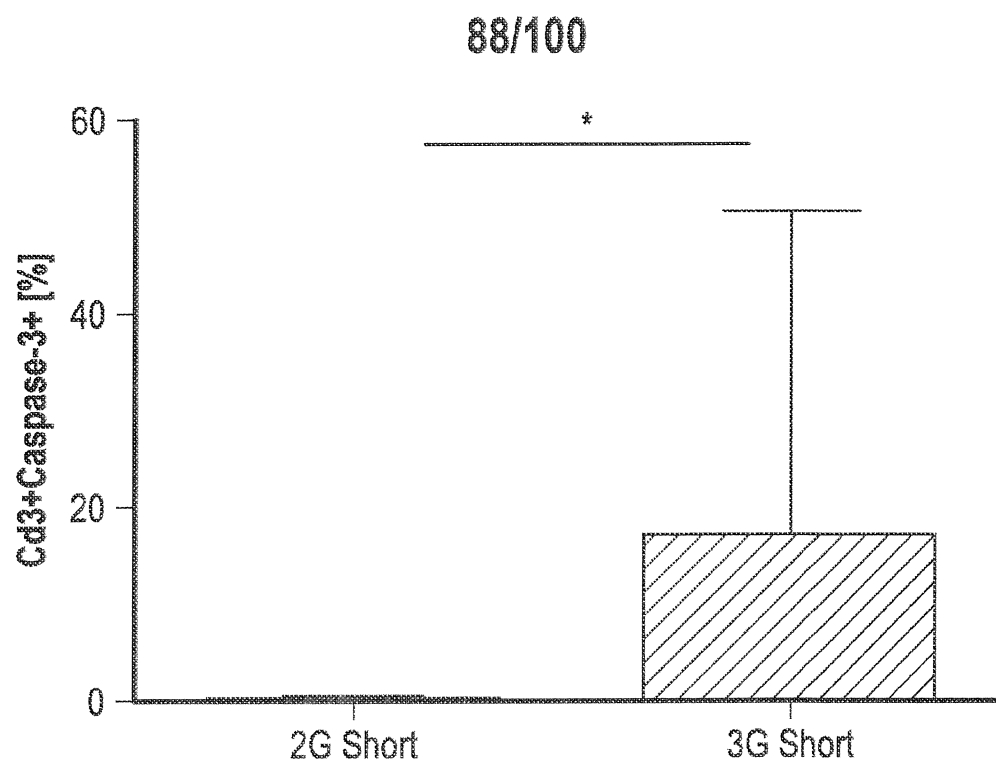


FIG. 17C (Continued)

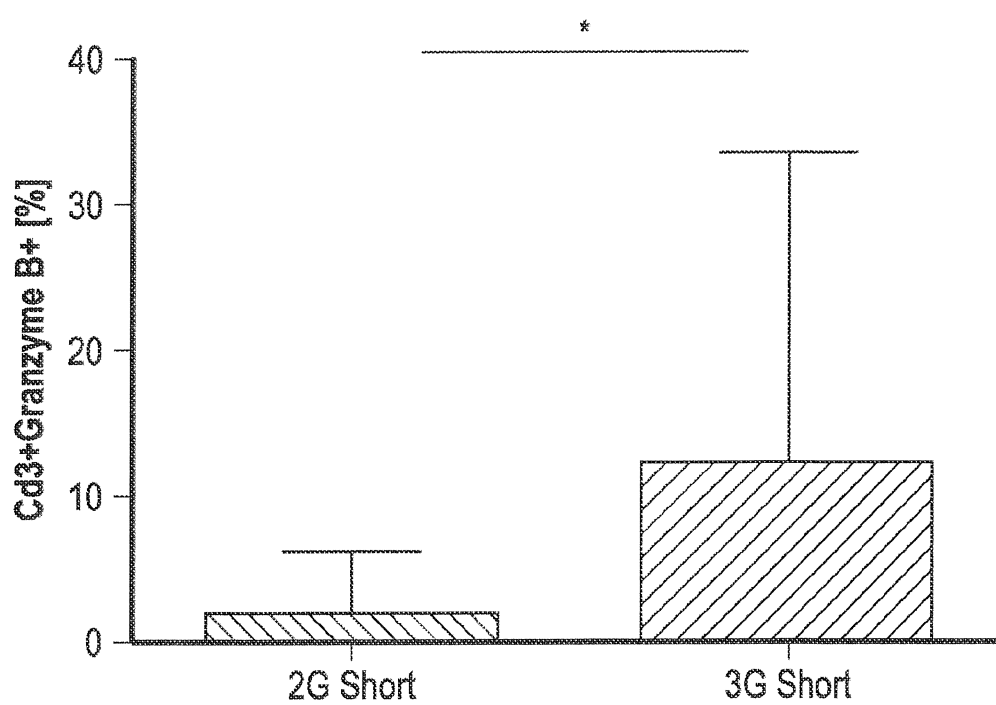


FIG. 17D

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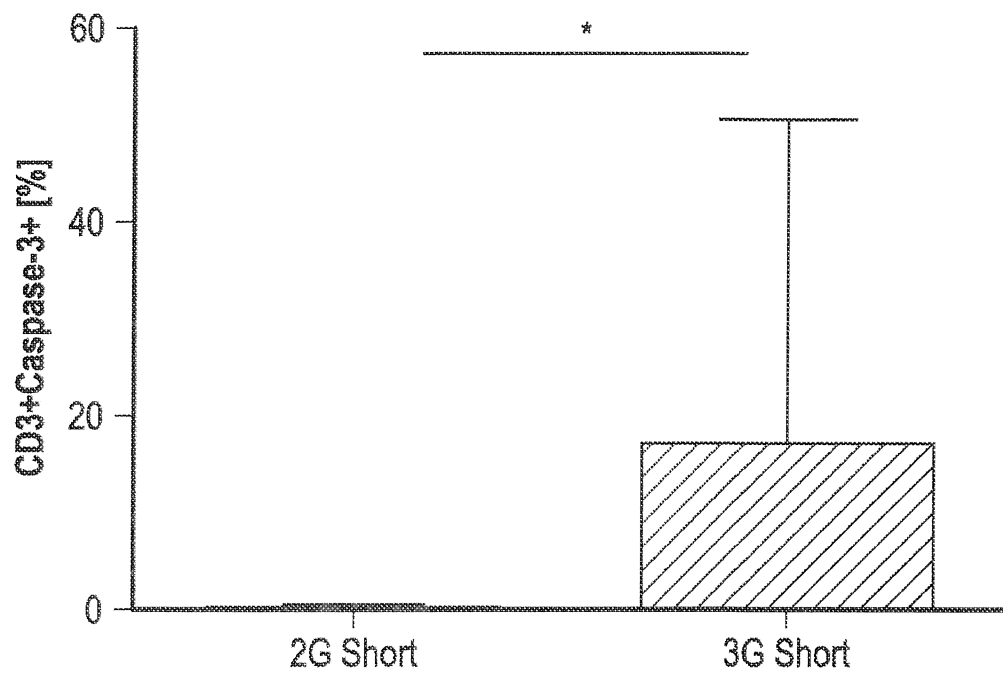


FIG. 17D (Continued)

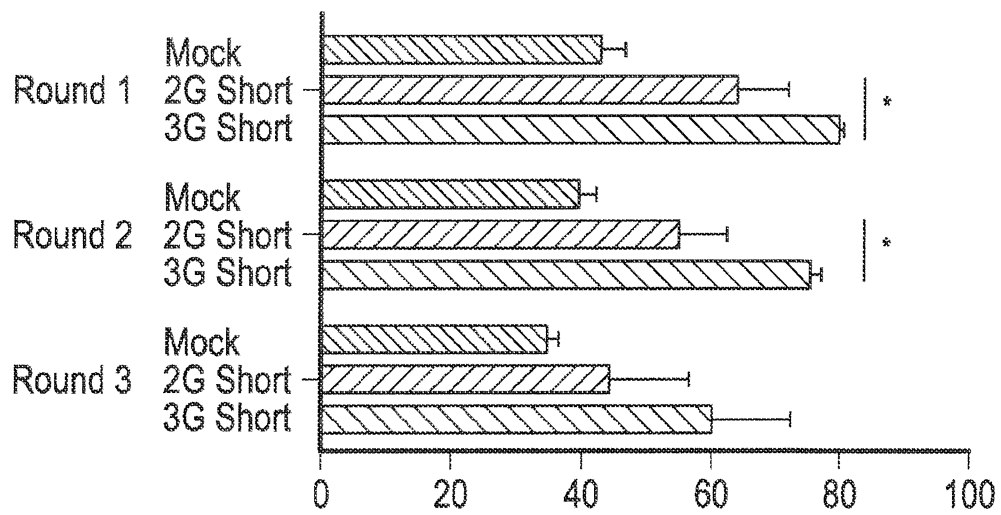


FIG. 18A

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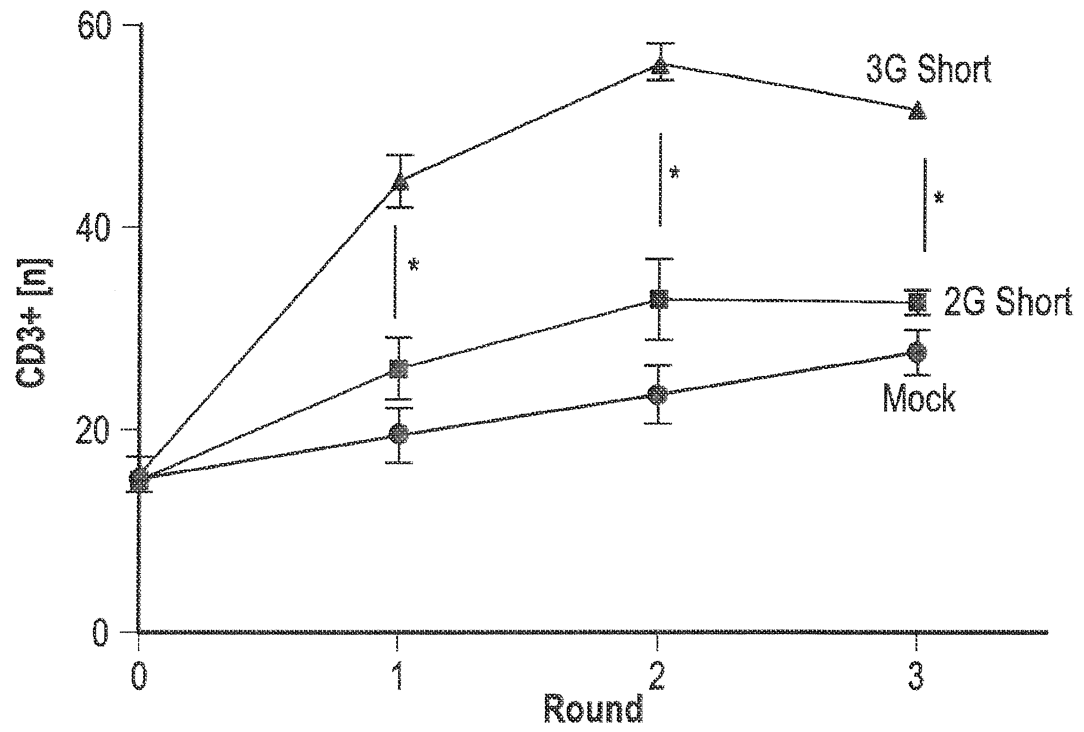


FIG. 18B

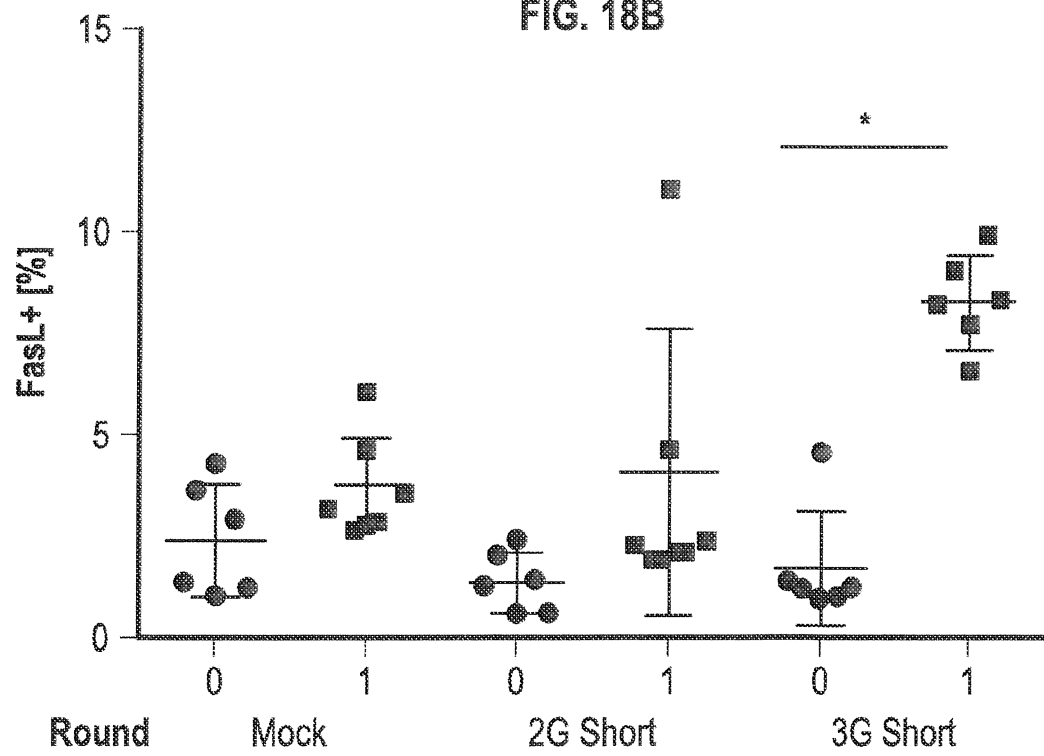


FIG. 18C

91/100

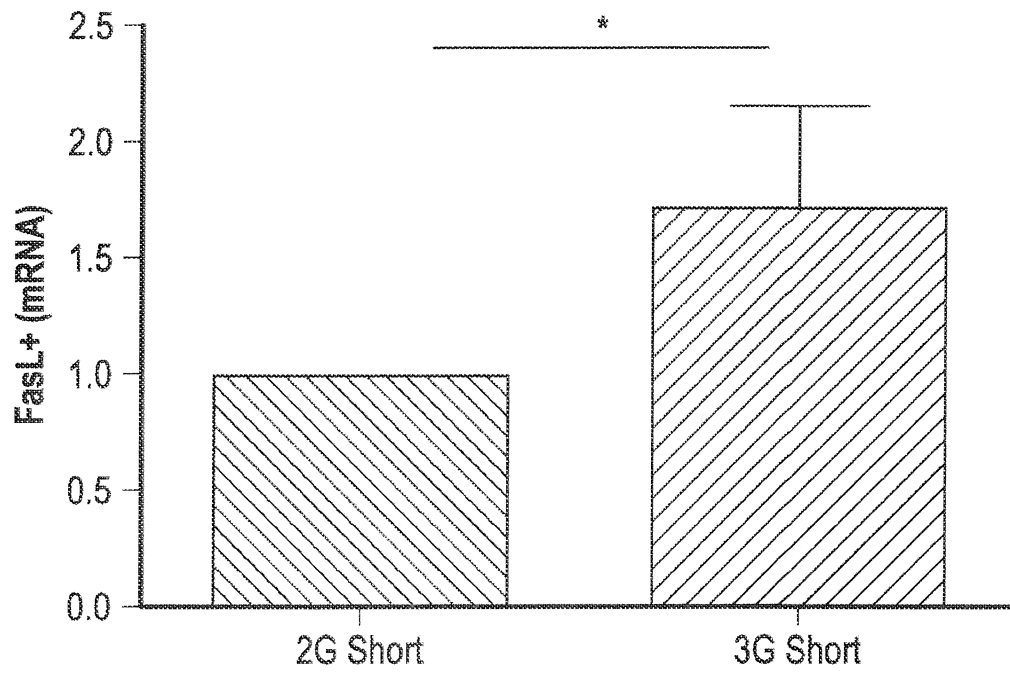


FIG. 18D

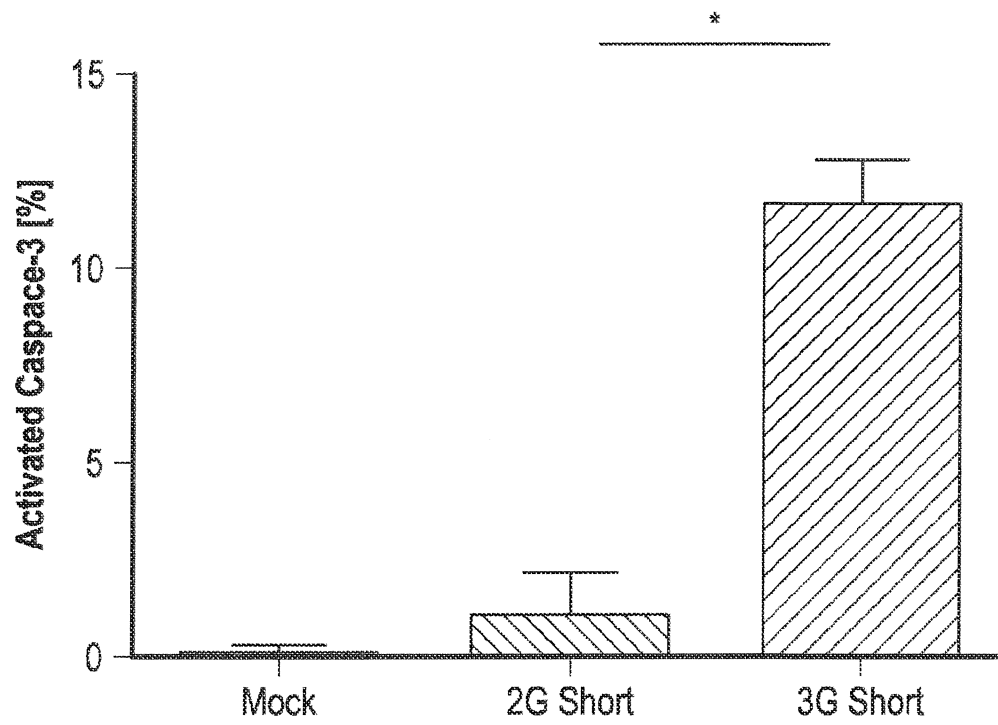


FIG. 18E

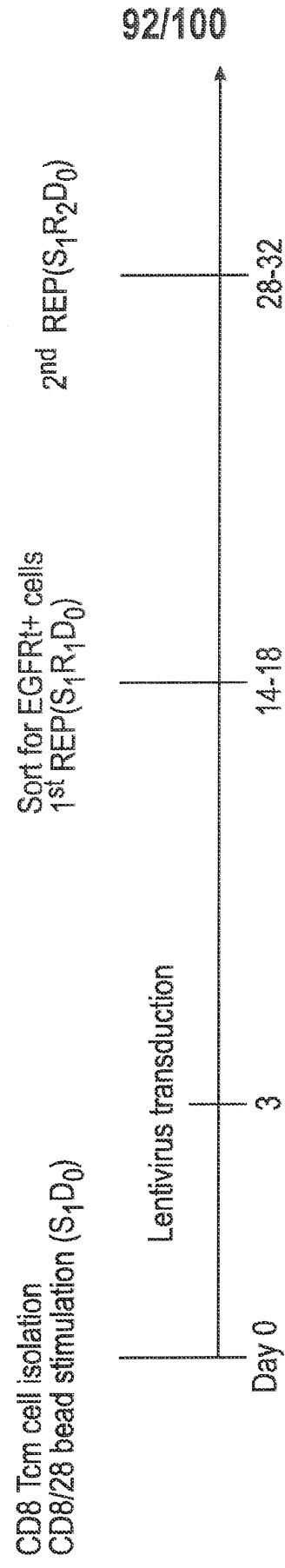


FIG. 19A



FIG. 19B

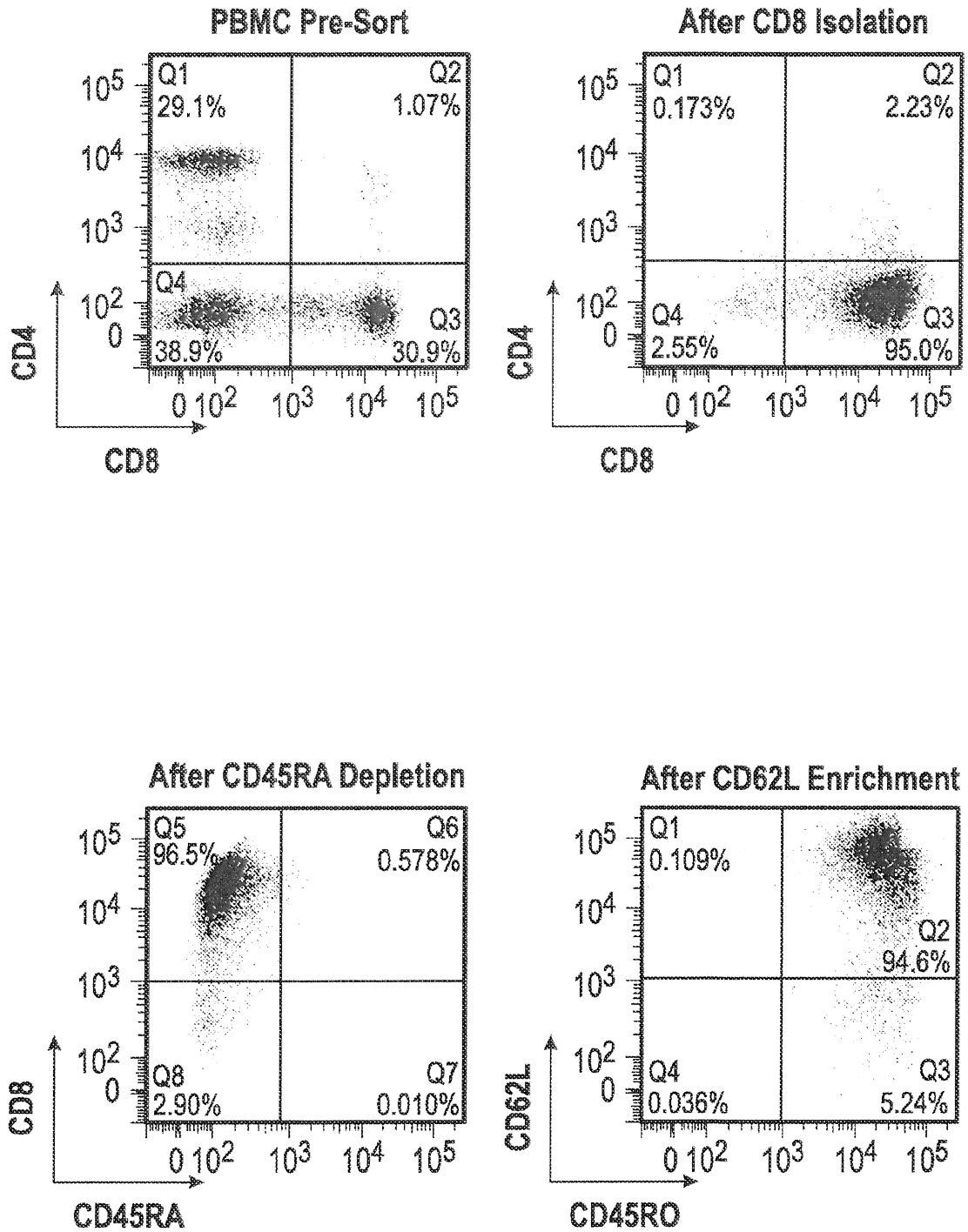


FIG. 19C

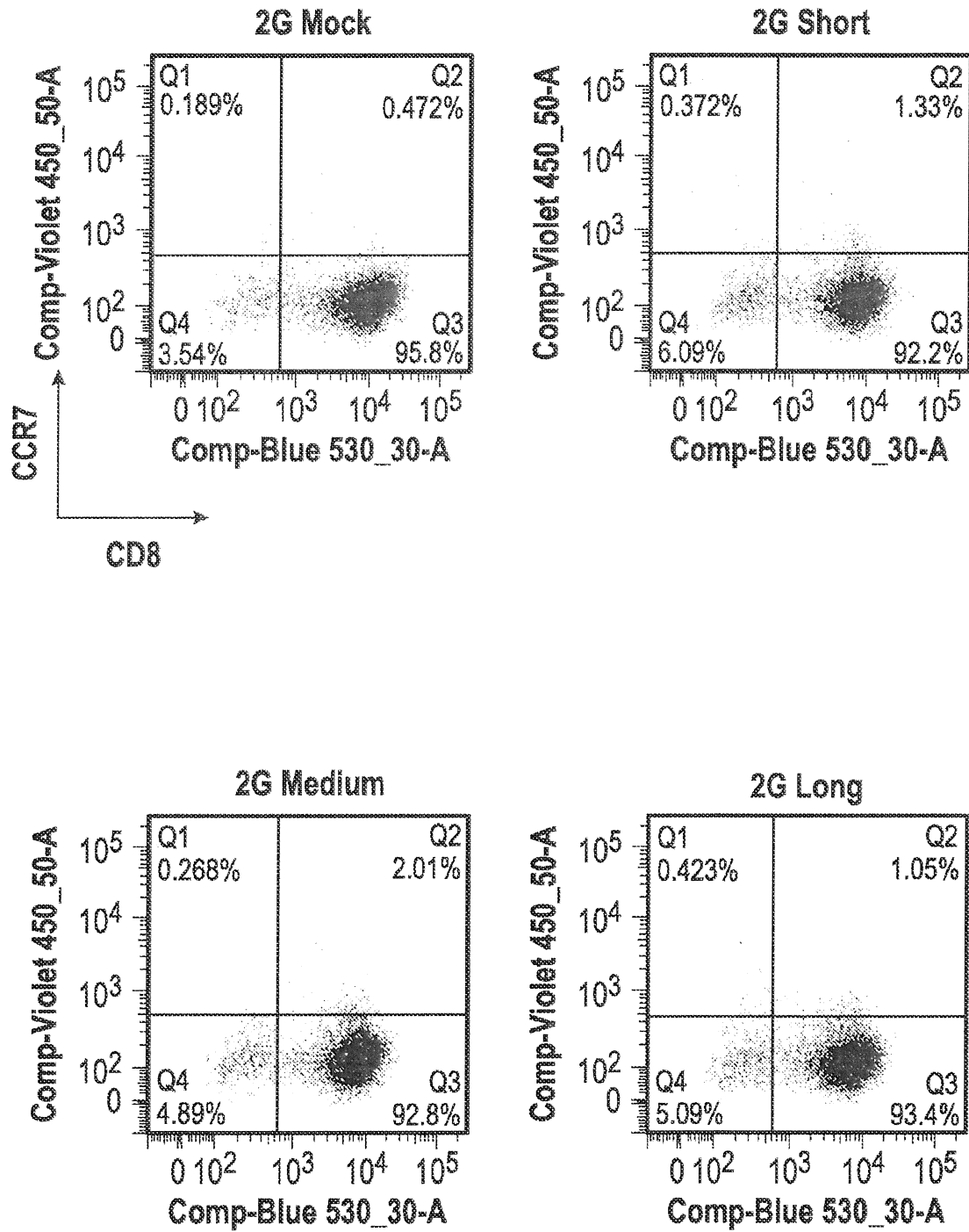


FIG. 19C (Continued)

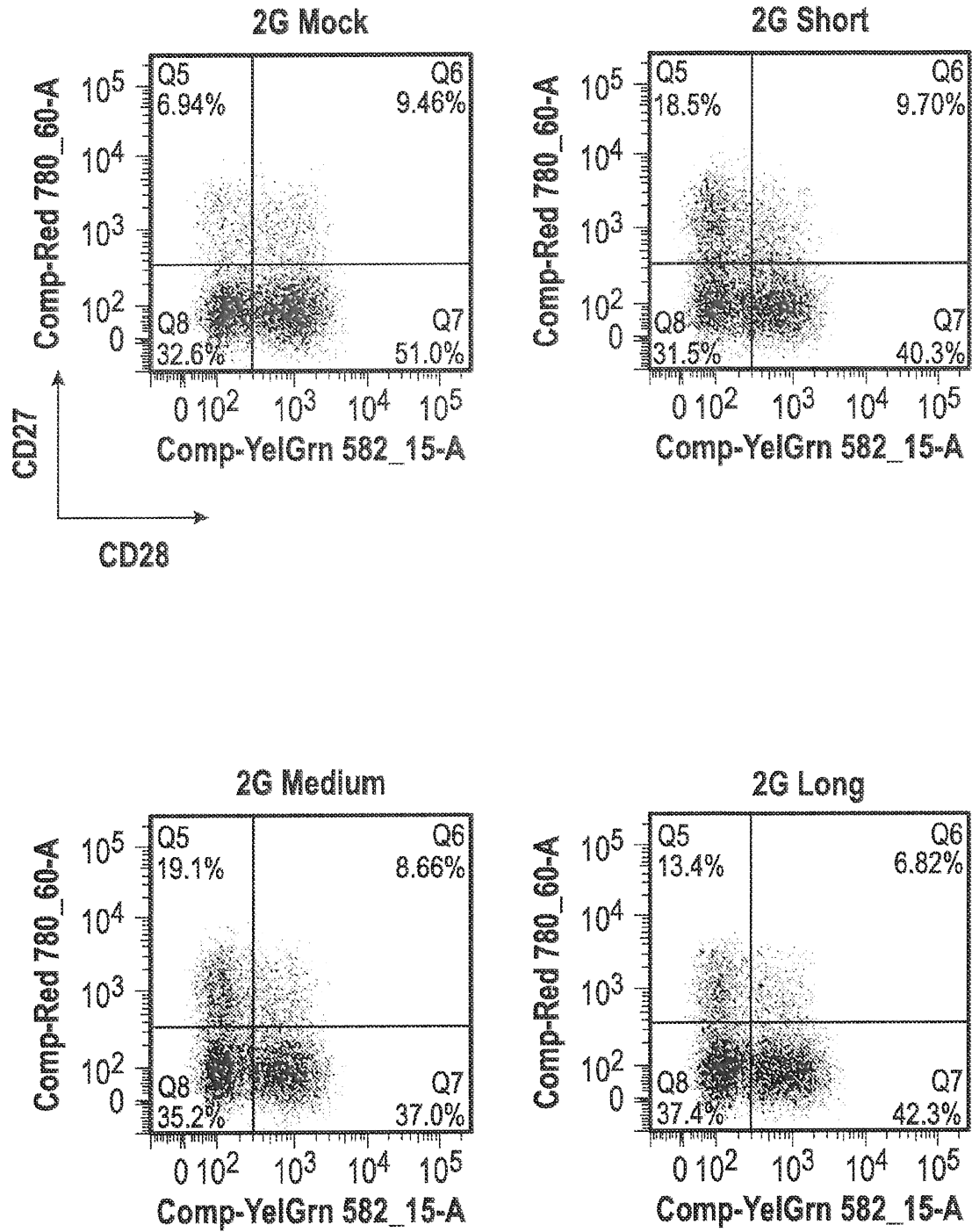


FIG. 19C (Continued)

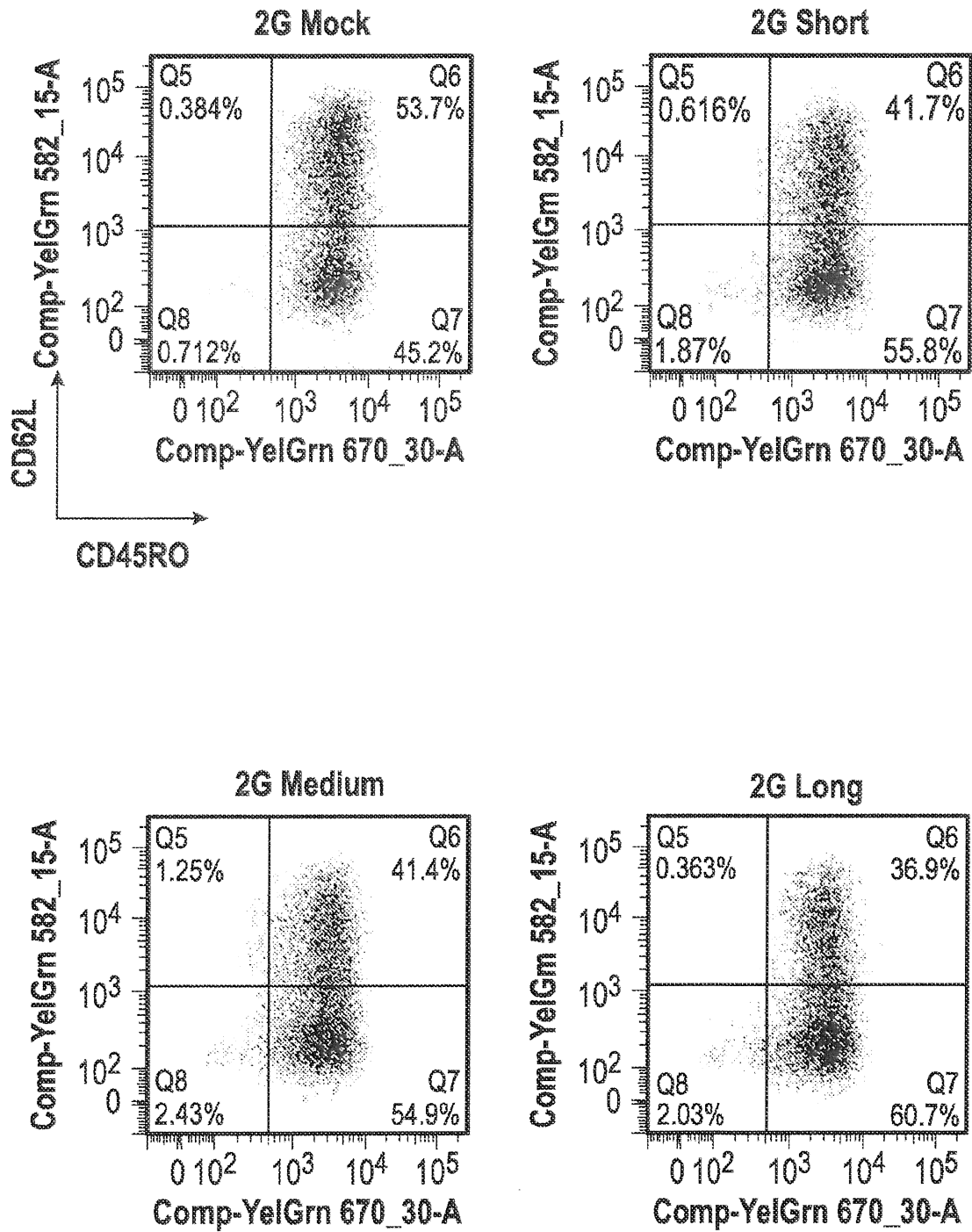
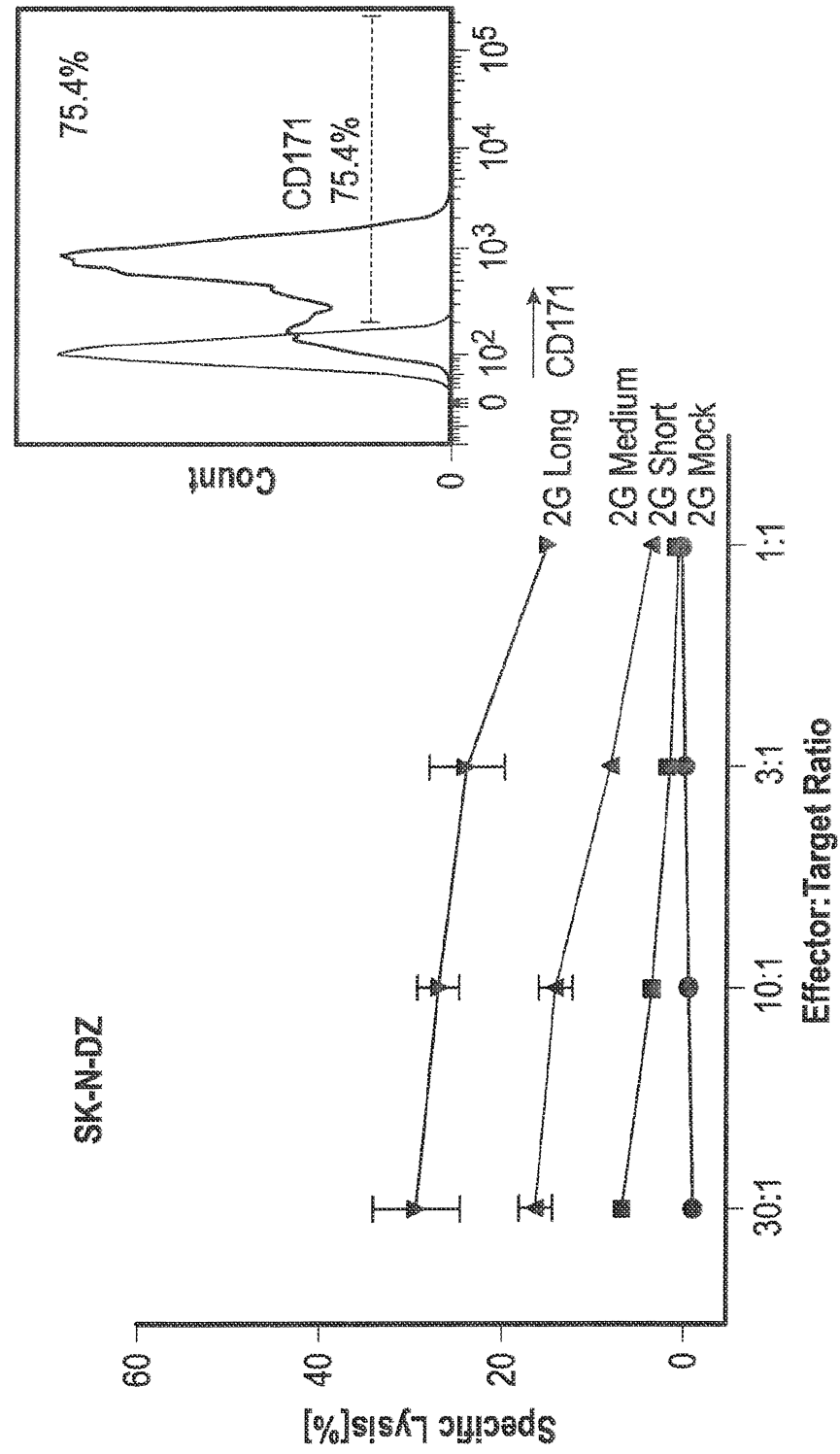


FIG. 20A



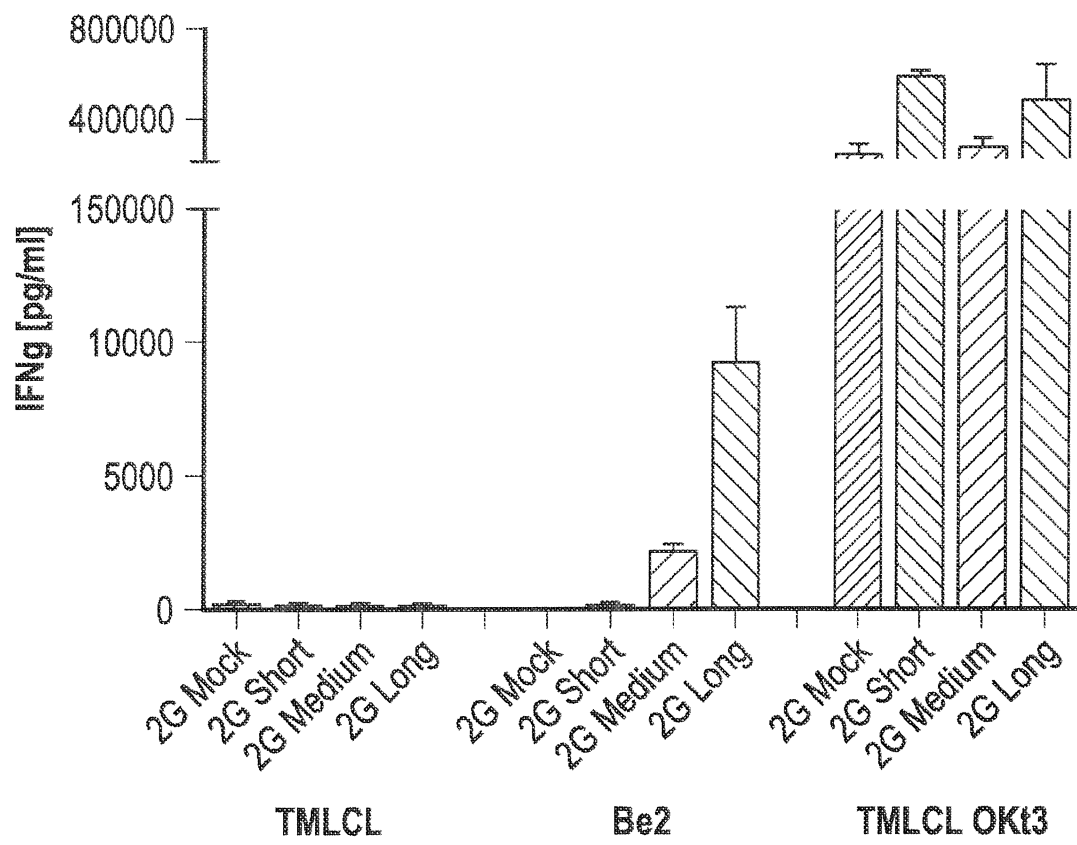


FIG. 20B

99/100

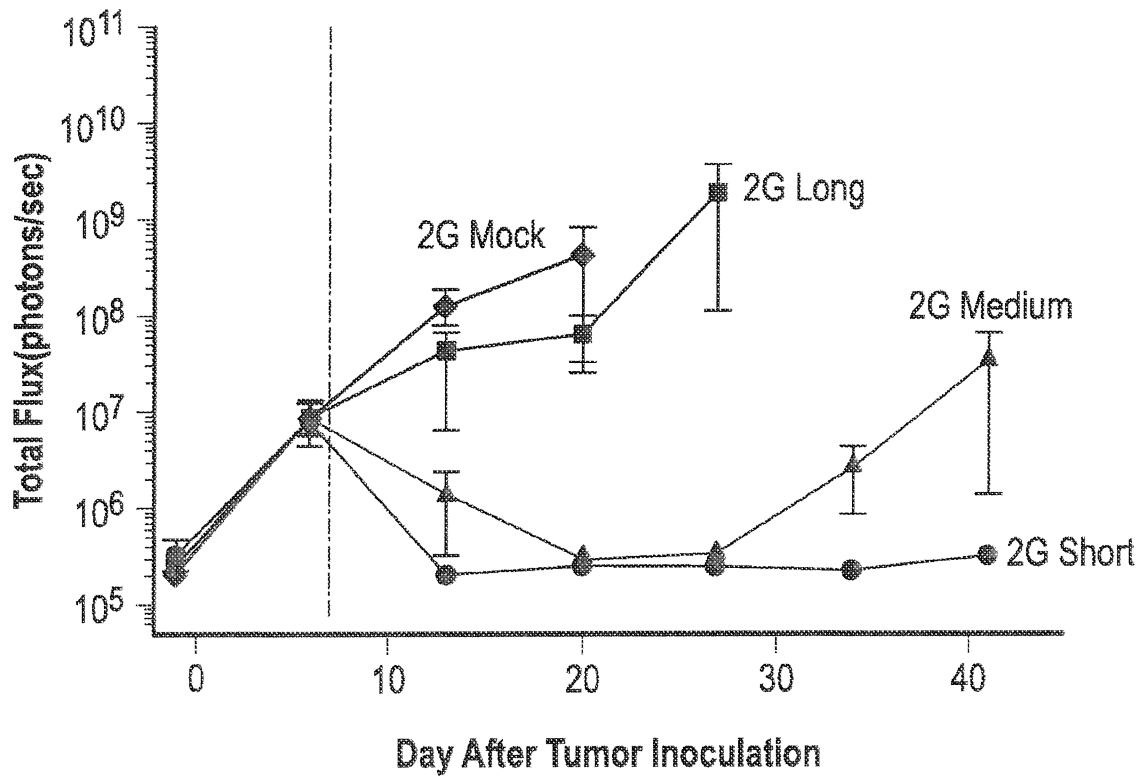


FIG. 20C

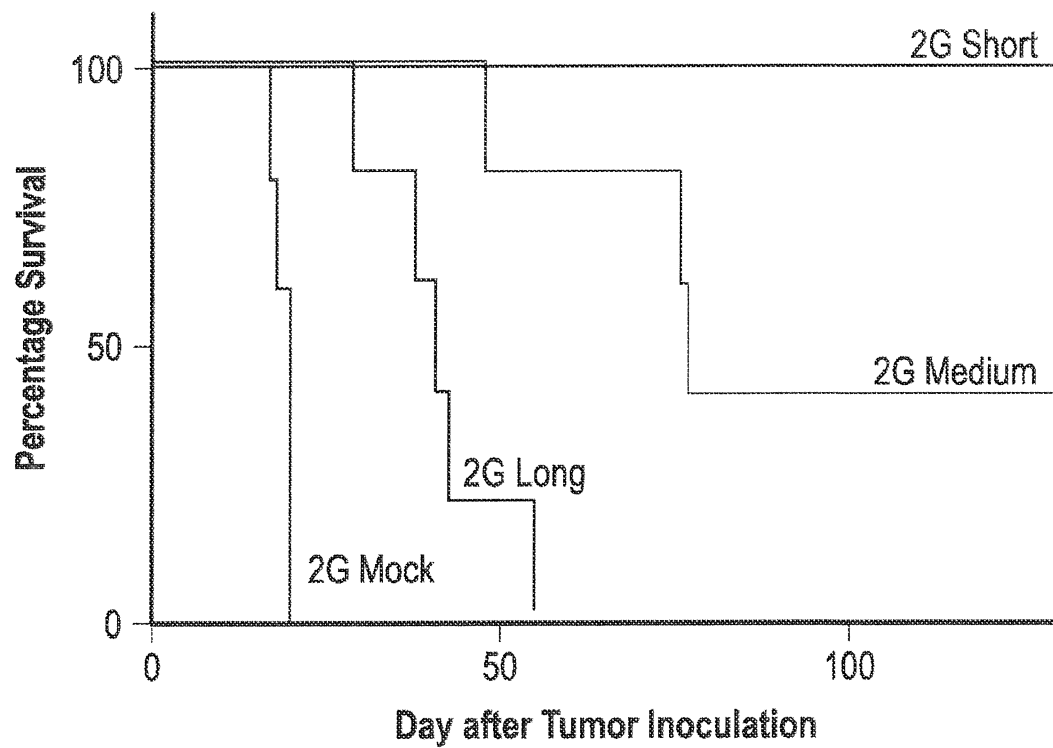
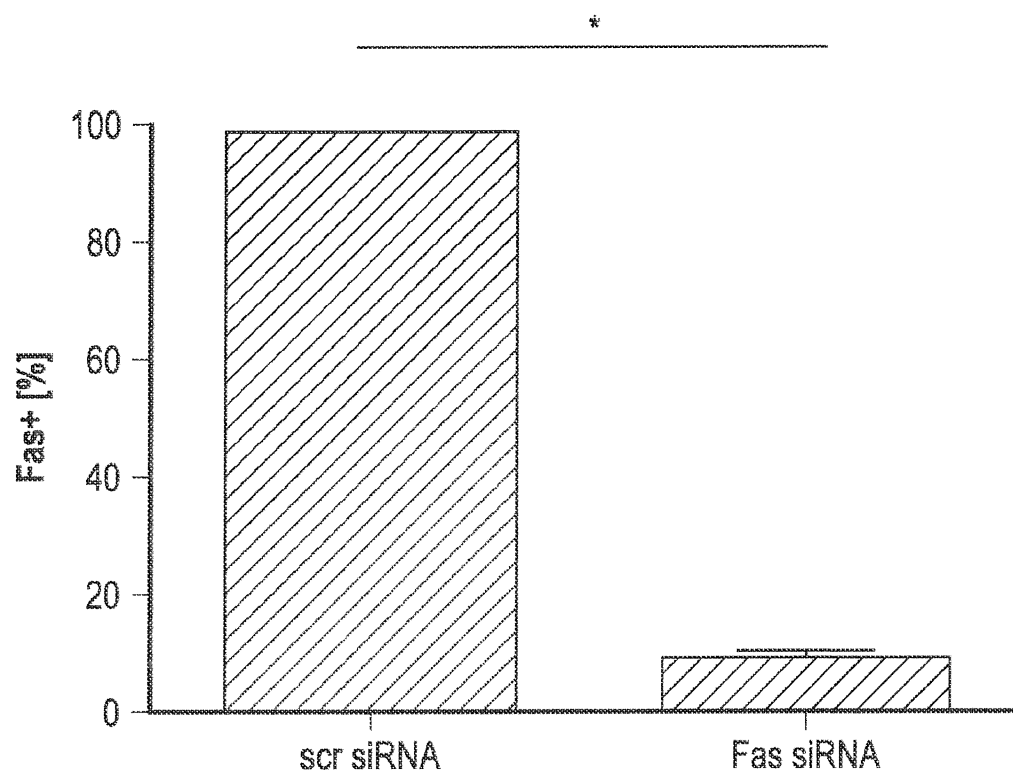


FIG. 20D

FIG. 21

100/100

Panel A



Panel B

