

104077_0012PCT_ST25.txt
SEQUENCE LISTING

<110> NantKwest

<120> ANTI-B7-H4 CHIMERIC ANTIGEN RECEPTOR-MODIFIED NK-92 CELLS

<130> 104077.0012PCT

<160> 30

<170> PatentIn version 3.5

<210> 1

<211> 405

<212> PRT

<213> Artificial Sequence

<220>

<223> Anti-B7-H4 CAR

<400> 1

Met Asp Trp Ile Trp Arg Ile Leu Phe Leu Val Gly Ala Ala Thr Gly
1 5 10 15

Ala His Ser Ala Gln Pro Ala Glu Val Gln Leu Val Glu Ser Gly Gly
20 25 30

Gly Leu Val Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser
35 40 45

Gly Phe Thr Phe Asn Ser Tyr Ala Met His Trp Val Arg Gln Ala Pro
50 55 60

Gly Lys Gly Leu Glu Trp Val Ser Ala Ile Ser Gly Asn Gly Gly Ser
65 70 75 80

Thr Arg Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp
85 90 95

Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu
100 105 110

Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Arg Phe Arg Lys Val His
115 120 125

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Gly Phe Asp Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Gly
130 135 140

Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly
145 150 155 160

Gly Gly Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser
165 170 175

Val Gly Asp Arg Val Thr Ile Thr Cys Gln Ala Ser Gln Asp Ile Ser
180 185 190

Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu
195 200 205

Leu Ile Tyr Asp Ala Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe
210 215 220

Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu
225 230 235 240

Gln Pro Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Asp Ala Thr Phe
245 250 255

Pro Leu Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Ala Ala Ala
260 265 270

Leu Ser Asn Ser Ile Met Tyr Phe Ser His Phe Val Pro Val Phe Leu
275 280 285

Pro Ala Lys Pro Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr Pro Ala
290 295 300

Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala Cys Arg
305 310 315 320

Pro Ala Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe Ala Cys
325 330 335

Phe Trp Val Leu Val Val Val Gly Gly Val Leu Ala Cys Tyr Ser Leu
 340 345 350

Leu Val Thr Val Ala Phe Ile Ile Phe Trp Val Arg Leu Lys Ile Gln
 355 360 365

Val Arg Lys Ala Ala Ile Thr Ser Tyr Glu Lys Ser Asp Gly Val Tyr
 370 375 380

Thr Gly Leu Ser Thr Arg Asn Gln Glu Thr Tyr Glu Thr Leu Lys His
 385 390 395 400

Glu Lys Pro Pro Gln
 405

<210> 2
 <211> 1215
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> anti-B7-H4 CAR (nucleic acid sequence)

<400> 2
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 cttgcctga gttgtgcagc ctctggtttt actttcaata gttacgctat gcattggggtt 180
 cgtcaggctc ctgggaaagg cctggaatgg gtttcagcta ttagtggtaa tggaggtagt 240
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 actttgtacc tgcaaataaa ctccttgccg gcagaagaca cggctgtgta ctattgtgcc 360
 cgtgatcgct ttcggaaggt tcatggtttc gatgtatggg gacaaggtag cctggtaacg 420
 gtttctagcg gaggtgggtg gagtggtgga ggcggctcgg gtggaggtgg ttcaggagga 480
 ggcggagata tccaaatgac tcaatctcct agttcactgt cagcctctgt tggtagatgc 540
 gtgaccatta cctgccaagc tagccaggat attagcaact acttgaactg gtatcagcag 600
 aagcctggca aagcccaaaa gctgttgatc tacgatgcaa gtaacttgga aactggcgtc 660

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ccaagccgct tctctggatc tggttcaggc accgacttca ctttcactat cagcagcctg      720
cagcctgaag atatcgcaac ctactattgc cagcaggatg ctacttttcc ttgactttc      780
ggccaaggca ccaaggtgga gatcaaggcg gccgcgctga gcaacagcat catgtacttc      840
agccacttcg tgcctgtggt cctgcctgcc aagcctacaa caacaccagc ccctagacct      900
ccaaccctg cccctacaat tgcctctcag cctctgtctc tgaggcccga agcttgtaga      960
cctgctgctg gcggagctgt gcacaccaga ggactggatt tcgcctgctt ttgggtgctg     1020
gtggtcgtgg gcggagtgtt ggcttggttat tctctgctgg tcaccgtggc cttcatcatc     1080
ttttgggtcc gactgaagat ccaggtccga aaggccgcca tcaccagcta cgagaagtct     1140
gatggcgtgt acaccggcct gagcaccaga aaccaggaaa cctacgagac actgaagcac     1200
gagaagcccc cccag                                                         1215

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<210> 3
<211> 41
<212> PRT
<213> Homo sapiens

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<400> 3
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Leu Lys Ile Gln Val Arg Lys Ala Ala Ile Thr Ser Tyr Glu Lys Ser
1           5           10           15

```

```

Asp Gly Val Tyr Thr Gly Leu Ser Thr Arg Asn Gln Glu Thr Tyr Glu
          20           25           30

```

```

Thr Leu Lys His Glu Lys Pro Pro Gln
      35           40

```

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<210> 4
<211> 123
<212> DNA
<213> Homo sapiens

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<400> 4
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ctgaagatcc aggtccgaaa ggccgccatc accagctacg agaagtctga tggcgtgtac      60
accggcctga gcaccagaaa ccaggaaacc tacgagacac tgaagcacga gaagcccccc     120
cag                                                         123

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<210> 5
 <211> 64
 <212> PRT
 <213> Homo sapiens

<400> 5

Leu Ser Asn Ser Ile Met Tyr Phe Ser His Phe Val Pro Val Phe Leu
 1 5 10 15

Pro Ala Lys Pro Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr Pro Ala
 20 25 30

Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala Cys Arg
 35 40 45

Pro Ala Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe Ala Cys
 50 55 60

<210> 6
 <211> 195
 <212> DNA
 <213> Homo sapiens

<400> 6

gcgctgagca acagcatcat gtacttcagc cacttcgtgc ctgtgttcct gcctgccaag 60
 cctacaacaa caccagcccc tagacctcca acccctgccc ctacaattgc ctctcagcct 120
 ctgtctctga ggcccgaagc ttgttagacct gctgctggcg gagctgtgca caccagagga 180
 ctggatttcg cctgc 195

<210> 7
 <211> 28
 <212> PRT
 <213> Homo sapiens

<400> 7

Phe Trp Val Leu Val Val Val Gly Gly Val Leu Ala Cys Tyr Ser Leu
 1 5 10 15

Leu Val Thr Val Ala Phe Ile Ile Phe Trp Val Arg

20

25

<210> 8
 <211> 84
 <212> DNA
 <213> Homo sapiens

<400> 8
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 gccttcatca tcttttgggt ccga 84

<210> 9
 <211> 133
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> CD8-CD28-FceRIgamma

<400> 9

Leu Ser Asn Ser Ile Met Tyr Phe Ser His Phe Val Pro Val Phe Leu
 1 5 10 15

Pro Ala Lys Pro Thr Thr Thr Pro Ala Pro Arg Pro Pro Thr Pro Ala
 20 25 30

Pro Thr Ile Ala Ser Gln Pro Leu Ser Leu Arg Pro Glu Ala Cys Arg
 35 40 45

Pro Ala Ala Gly Gly Ala Val His Thr Arg Gly Leu Asp Phe Ala Cys
 50 55 60

Phe Trp Val Leu Val Val Val Gly Gly Val Leu Ala Cys Tyr Ser Leu
 65 70 75 80

Leu Val Thr Val Ala Phe Ile Ile Phe Trp Val Arg Leu Lys Ile Gln
 85 90 95

Val Arg Lys Ala Ala Ile Thr Ser Tyr Glu Lys Ser Asp Gly Val Tyr
 100 105 110

Thr Gly Leu Ser Thr Arg Asn Gln Glu Thr Tyr Glu Thr Leu Lys His
115 120 125

Glu Lys Pro Pro Gln
130

<210> 10
<211> 399
<212> DNA
<213> Artificial Sequence

<220>
<223> CD8-CD28-FceRIgamma (nucleic acid sequence)

<400> 10
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acaacaacac cagcccctag acctccaacc cctgccccta caattgcctc tcagcctctg 120
tctctgaggc ccgaagcttg tagacctgct gctggcggag ctgtgcacac cagaggactg 180
gatttcgcct gcttttgggt gctgggtggc gtgggcggag tgctggcttg ttatttctctg 240
ctggtcaccg tggccttcat catcttttgg gtccgactga agatccaggt ccgaaaggcc 300
gccatcacca gctacgagaa gtctgatggc gtgtacaccg gcctgagcac cagaaaccag 360
gaaacctacg agacactgaa gcacgagaag cccccccag 399

<210> 11
<211> 254
<212> PRT
<213> Homo sapiens

<400> 11

Met Trp Gln Leu Leu Leu Pro Thr Ala Leu Leu Leu Val Ser Ala
1 5 10 15

Gly Met Arg Thr Glu Asp Leu Pro Lys Ala Val Val Phe Leu Glu Pro
20 25 30

Gln Trp Tyr Arg Val Leu Glu Lys Asp Ser Val Thr Leu Lys Cys Gln
35 40 45

Gly Ala Tyr Ser Pro Glu Asp Asn Ser Thr Gln Trp Phe His Asn Glu

50

55

60

Ser Leu Ile Ser Ser Gln Ala Ser Ser Tyr Phe Ile Asp Ala Ala Thr
 65 70 75 80

Val Asp Asp Ser Gly Glu Tyr Arg Cys Gln Thr Asn Leu Ser Thr Leu
 85 90 95

Ser Asp Pro Val Gln Leu Glu Val His Ile Gly Trp Leu Leu Leu Gln
 100 105 110

Ala Pro Arg Trp Val Phe Lys Glu Glu Asp Pro Ile His Leu Arg Cys
 115 120 125

His Ser Trp Lys Asn Thr Ala Leu His Lys Val Thr Tyr Leu Gln Asn
 130 135 140

Gly Lys Gly Arg Lys Tyr Phe His His Asn Ser Asp Phe Tyr Ile Pro
 145 150 155 160

Lys Ala Thr Leu Lys Asp Ser Gly Ser Tyr Phe Cys Arg Gly Leu Phe
 165 170 175

Gly Ser Lys Asn Val Ser Ser Glu Thr Val Asn Ile Thr Ile Thr Gln
 180 185 190

Gly Leu Ala Val Ser Thr Ile Ser Ser Phe Phe Pro Pro Gly Tyr Gln
 195 200 205

Val Ser Phe Cys Leu Val Met Val Leu Leu Phe Ala Val Asp Thr Gly
 210 215 220

Leu Tyr Phe Ser Val Lys Thr Asn Ile Arg Ser Ser Thr Arg Asp Trp
 225 230 235 240

Lys Asp His Lys Phe Lys Trp Arg Lys Asp Pro Gln Asp Lys
 245 250

<210> 12

<211> 765
 <212> DNA
 <213> Homo sapiens

<400> 12
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 gaagatctcc caaaggctgt ggtgttcctg gagcctcaat ggtacagggt gctcgagaag 120
 gacagtgtga ctctgaagtg ccaggagagcc tactcccctg aggacaattc cacacagtgg 180
 tttcacaatg agagcctcat ctcaagccag gcctcgagct acttcattga cgctgccaca 240
 gtcgacgaca gtggagagta caggtgccag acaaacctct ccaccctcag tgaccgggtg 300
 cagctagaag tccatatcgg ctggctgttg ctccaggccc ctcggtgggt gttcaaggag 360
 gaagacccta ttcacctgag gtgtcacagc tggaagaaca ctgctctgca taaggtcaca 420
 tatttacaga atggcaaagg caggaagtat tttcatcata attctgactt ctacattcca 480
 aaagccacac tcaaagacag cggctcctac ttctgcaggg ggcttttttg gagtaaaaat 540
 gtgtcttcag agactgtgaa catcaccatc actcaagggt tggcagtgtc aaccatctca 600
 tcattctttc cacctgggta ccaagtctct ttctgcttgg tgatgggtact cttttttgca 660
 gtggacacag gactatatatt ctctgtgaag acaaacattc gaagctcaac aagagactgg 720
 aaggaccata aatttaaagt gagaaaggac cctcaagaca aatga 765

<210> 13
 <211> 236
 <212> PRT
 <213> Homo sapiens

<400> 13

Arg Thr Glu Asp Leu Pro Lys Ala Val Val Phe Leu Glu Pro Gln Trp
 1 5 10 15

Tyr Arg Val Leu Glu Lys Asp Ser Val Thr Leu Lys Cys Gln Gly Ala
 20 25 30

Tyr Ser Pro Glu Asp Asn Ser Thr Gln Trp Phe His Asn Glu Ser Leu
 35 40 45

Ile Ser Ser Gln Ala Ser Ser Tyr Phe Ile Asp Ala Ala Thr Val Asp

50

55

60

Asp Ser Gly Glu Tyr Arg Cys Gln Thr Asn Leu Ser Thr Leu Ser Asp
 65 70 75 80

Pro Val Gln Leu Glu Val His Ile Gly Trp Leu Leu Leu Gln Ala Pro
 85 90 95

Arg Trp Val Phe Lys Glu Glu Asp Pro Ile His Leu Arg Cys His Ser
 100 105 110

Trp Lys Asn Thr Ala Leu His Lys Val Thr Tyr Leu Gln Asn Gly Lys
 115 120 125

Gly Arg Lys Tyr Phe His His Asn Ser Asp Phe Tyr Ile Pro Lys Ala
 130 135 140

Thr Leu Lys Asp Ser Gly Ser Tyr Phe Cys Arg Gly Leu Val Gly Ser
 145 150 155 160

Lys Asn Val Ser Ser Glu Thr Val Asn Ile Thr Ile Thr Gln Gly Leu
 165 170 175

Ala Val Ser Thr Ile Ser Ser Phe Phe Pro Pro Gly Tyr Gln Val Ser
 180 185 190

Phe Cys Leu Val Met Val Leu Leu Phe Ala Val Asp Thr Gly Leu Tyr
 195 200 205

Phe Ser Val Lys Thr Asn Ile Arg Ser Ser Thr Arg Asp Trp Lys Asp
 210 215 220

His Lys Phe Lys Trp Arg Lys Asp Pro Gln Asp Lys
 225 230 235

<210> 14

<211> 765

<212> DNA

<213> Homo sapiens

104077_0012PCT_ST25.txt

<400> 14

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gacagcgtga ccctgaagtg ccagggcgcc tacagccccg aggacaatag caccagtggt      180
ttccacaacg agagcctgat cagcagccag gccagcagct acttcatcga cgccgccacc      240
gtggacgaca gcggcgagta tagatgccag accaacctga gcaccctgag cgaccccggt      300
cagctggaag tgcacatcgg atggctgctg ctgcaggccc ccagatgggt gttcaaagaa      360
gaggaccca tccacctgag atgccactct tggaagaaca ccgccctgca caaagtgacc      420
tacctgcaga acggcaaggg cagaaagtac ttccaccaca acagcgactt ctacatcccc      480
aaggccaccc tgaaggactc cggctcctac ttctgcagag gcctcgtggg cagcaagaac      540
gtgtccagcg agacagtgaa catcaccatc acccagggcc tggccgtgtc taccatcagc      600
agctttttcc caccggcta ccaggtgtcc ttctgcctcg tgatgggtgct gctgttcgcc      660
gtggacaccg gcctgtactt cagcgtgaaa acaaacatca gaagcagcac ccgggactgg      720
aaggaccaca agttcaagtg gcggaaggac cccagggaca agtga                        765

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<210> 15

<211> 41

<212> PRT

<213> Homo sapiens

<400> 15

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Leu Lys Ile Gln Val Arg Lys Ala Ala Ile Thr Ser Tyr Glu Lys Ser
1           5           10           15

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```

Asp Gly Val Tyr Thr Gly Leu Ser Thr Arg Asn Gln Glu Thr Tyr Glu
          20           25           30

```

```

Thr Leu Lys His Glu Lys Pro Pro Gln
    35           40

```

<210> 16

<211> 123

<212> DNA

<213> Homo sapiens

<400> 16
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 accggcctga gcaccagaaa ccaggaaacc tacgagacac tgaagcacga gaagcccccc 120
 cag 123

<210> 17
 <211> 113
 <212> PRT
 <213> Homo sapiens

<400> 17

Arg Val Lys Phe Ser Arg Ser Ala Asp Ala Pro Ala Tyr Gln Gln Gly
 1 5 10 15

Gln Asn Gln Leu Tyr Asn Glu Leu Asn Leu Gly Arg Arg Glu Glu Tyr
 20 25 30

Asp Val Leu Asp Lys Arg Arg Gly Arg Asp Pro Glu Met Gly Gly Lys
 35 40 45

Pro Gln Arg Arg Lys Asn Pro Gln Glu Gly Leu Tyr Asn Glu Leu Gln
 50 55 60

Lys Asp Lys Met Ala Glu Ala Tyr Ser Glu Ile Gly Met Lys Gly Glu
 65 70 75 80

Arg Arg Arg Gly Lys Gly His Asp Gly Leu Tyr Gln Gly Leu Ser Thr
 85 90 95

Ala Thr Lys Asp Thr Tyr Asp Ala Leu His Met Gln Ala Leu Pro Pro
 100 105 110

Arg

<210> 18
 <211> 339
 <212> DNA
 <213> Homo sapiens

104077_0012PCT_ST25.txt

<400> 18
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gaccctgaga tgggggggaaa gccgcagaga aggaagaacc ctcaggaagg cctgtacaat 180
gaactgcaga aagataagat ggcggaggcc tacagtgaga ttgggatgaa aggcgagcgc 240
cggaggggca aggggcacga tggcctttac cagggtctca gtacagccac caaggacacc 300
tacgacgccc ttcacatgca ggccctgccc cctcgctaa 339

<210> 19
<211> 28
<212> PRT
<213> Homo sapiens

<400> 19
Phe Trp Val Leu Val Val Val Gly Gly Val Leu Ala Cys Tyr Ser Leu
1 5 10 15

Leu Val Thr Val Ala Phe Ile Ile Phe Trp Val Arg
20 25

<210> 20
<211> 84
<212> DNA
<213> Homo sapiens

<400> 20
ttttgggtgc tgggtggtcgt gggcggagtg ctggcttggt attctctgct ggtcaccgtg 60
gccttcatca tcttttgggt ccga 84

<210> 21
<211> 250
<212> PRT
<213> Artificial Sequence

<220>
<223> anti-B7-H4 scFv portion

<400> 21
Ala Gln Pro Ala Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val
1 5 10 15

104077_0012PCT_ST25.txt

Gln Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr
20 25 30

Phe Asn Ser Tyr Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly
35 40 45

Leu Glu Trp Val Ser Ala Ile Ser Gly Asn Gly Gly Ser Thr Arg Tyr
50 55 60

Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys
65 70 75 80

Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala
85 90 95

Val Tyr Tyr Cys Ala Arg Asp Arg Phe Arg Lys Val His Gly Phe Asp
100 105 110

Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Gly Gly Gly Gly
115 120 125

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Asp
130 135 140

Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly Asp
145 150 155 160

Arg Val Thr Ile Thr Cys Gln Ala Ser Gln Asp Ile Ser Asn Tyr Leu
165 170 175

Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr
180 185 190

Asp Ala Ser Asn Leu Glu Thr Gly Val Pro Ser Arg Phe Ser Gly Ser
195 200 205

Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro Glu
210 215 220

Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Asp Ala Thr Phe Pro Leu Thr
225 230 235 240

Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
245 250

<210> 22
<211> 738
<212> DNA
<213> Artificial Sequence

<220>
<223> anti-B7-H4 scFv portion

<400> 22
gaagttcagc ttgtagaatc tggaggtgga ttggttcaac ctggtggctc tcttcgcctg 60
agttgtgcag cctctggttt tactttcaat agttacgcta tgcattgggt tcgtcaggct 120
cctgggaaag gcctggaatg ggtttcagct attagtggta atggaggtag tactcgttac 180
gcagacagtg tgaaaggtcg cttcaccatc agccgtgata attctaagaa cactttgtac 240
ctgcaaata actccttgcg cgcagaagac acggctgtgt actattgtgc ccgtgatcgc 300
tttcggaagg ttcattggtt cgatgtatgg ggacaaggta ccctggtaac ggtttctagc 360
ggaggtggtg ggagtgggtg aggcggctcg ggtggagggt gttcaggagg aggcggagat 420
atccaaatga ctcaatctcc tagttcactg tcagcctctg ttggtgatcg cgtgaccatt 480
acctgccaag ctagccagga tattagcaac tacttgaact ggtatcagca gaagcctggc 540
aaagcccaa agctgttgat ctacgatgca agtaacttgg aaactggcgt cccaagccgc 600
ttctctggat ctggttcagg caccgacttc actttcacta tcagcagcct gcagcctgaa 660
gatatcgcaa cctactattg ccagcaggat gctacttttc ctttgacttt cggccaaggc 720
accaaggtgg agatcaag 738

<210> 23
<211> 153
<212> PRT
<213> Homo sapiens

<400> 23

104077_0012PCT_ST25.txt

Met Tyr Arg Met Gln Leu Leu Ser Cys Ile Ala Leu Ser Leu Ala Leu
1 5 10 15

Val Thr Asn Ser Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu
20 25 30

Gln Leu Glu His Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile
35 40 45

Asn Asn Tyr Lys Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe
50 55 60

Tyr Met Pro Lys Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu
65 70 75 80

Glu Glu Leu Lys Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys
85 90 95

Asn Phe His Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile
100 105 110

Val Leu Glu Leu Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala
115 120 125

Asp Glu Thr Ala Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe
130 135 140

Cys Gln Ser Ile Ile Ser Thr Leu Thr
145 150

<210> 24
<211> 459
<212> DNA
<213> Homo sapiens

<400> 24
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gccctacca gcagcagcac caagaaaacc cagctgcagc tggaacatct gctgctggac 120
ctgcagatga tcctgaacgg catcaacaac tacaagaacc ccaagctgac ccggatgctg 180

104077_0012PCT_ST25.txt

accttcaagt tctacatgcc caagaaggcc accgaactga aacatctgca gtgcctggaa 240
gaggaactga agcccctgga agaagtgctg aacctggccc agagcaagaa cttccacctg 300
aggcccaggg acctgatcag caacatcaac gtgatcgtgc tggaactgaa aggcagcgag 360
acaaccttca tgtgcgagta cgccgacgag acagctacca tcgtggaatt tctgaaccgg 420
tggatcacct tctgccagag catcatcagc accctgacc 459

<210> 25
<211> 160
<212> PRT
<213> Artificial Sequence

<220>
<223> erIL-2

<400> 25

Met Tyr Arg Met Gln Leu Leu Ser Cys Ile Ala Leu Ser Leu Ala Leu
1 5 10 15

Val Thr Asn Ser Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu
20 25 30

Gln Leu Glu His Leu Leu Leu Asp Leu Gln Met Ile Leu Asn Gly Ile
35 40 45

Asn Asn Tyr Lys Asn Pro Lys Leu Thr Arg Met Leu Thr Phe Lys Phe
50 55 60

Tyr Met Pro Lys Lys Ala Thr Glu Leu Lys His Leu Gln Cys Leu Glu
65 70 75 80

Glu Glu Leu Lys Pro Leu Glu Glu Val Leu Asn Leu Ala Gln Ser Lys
85 90 95

Asn Phe His Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile Asn Val Ile
100 105 110

Val Leu Glu Leu Lys Gly Ser Glu Thr Thr Phe Met Cys Glu Tyr Ala
115 120 125

Asp Glu Thr Ala Thr Ile Val Glu Phe Leu Asn Arg Trp Ile Thr Phe
130 135 140

Cys Gln Ser Ile Ile Ser Thr Leu Thr Gly Ser Glu Lys Asp Glu Leu
145 150 155 160

<210> 26
<211> 480
<212> DNA
<213> Artificial Sequence

<220>
<223> erIL-2 (nucleic acid sequence)

<400> 26
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gccctacca gcagcagcac caagaaaacc cagctgcagc tggaacatct gctgctggac 120
ctgcagatga tcctgaacgg catcaacaac tacaagaacc ccaagctgac ccggatgctg 180
accttcaagt tctacatgcc caagaaggcc accgaactga aacatctgca gtgcctggaa 240
gaggaactga agcccctgga agaagtgtctg aacctggccc agagcaagaa cttccacctg 300
aggcccaggg acctgatcag caacatcaac gtgatcgtgc tggaactgaa aggcagcgag 360
acaaccttca tgtgcgagta cgccgacgag acagctacca tcgtggaatt tctgaaccgg 420
tggatcacct tctgccagag catcatcagc accctgaccg gctccgagaa ggacgagctg 480

<210> 27
<211> 169
<212> PRT
<213> Artificial Sequence

<220>
<223> erIL-15

<400> 27

Met Arg Ile Ser Lys Pro His Leu Arg Ser Ile Ser Ile Gln Cys Tyr
1 5 10 15

Leu Cys Leu Leu Leu Asn Ser His Phe Leu Thr Glu Ala Gly Ile His
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Val Phe Ile Leu Gly Cys Phe Ser Ala Gly Leu Pro Lys Thr Glu Ala
35 40 45

Asn Trp Val Asn Val Ile Ser Asp Leu Lys Lys Ile Glu Asp Leu Ile
50 55 60

Gln Ser Met His Ile Asp Ala Thr Leu Tyr Thr Glu Ser Asp Val His
65 70 75 80

Pro Ser Cys Lys Val Thr Ala Met Lys Cys Phe Leu Leu Glu Leu Gln
85 90 95

Val Ile Ser Leu Glu Ser Gly Asp Ala Ser Ile His Asp Thr Val Glu
100 105 110

Asn Leu Ile Ile Leu Ala Asn Asn Ser Leu Ser Ser Asn Gly Asn Val
115 120 125

Thr Glu Ser Gly Cys Lys Glu Cys Glu Glu Leu Glu Glu Lys Asn Ile
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Lys Glu Phe Leu Gln Ser Phe Val His Ile Val Gln Met Phe Ile Asn
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Thr Ser Gly Ser Glu Lys Asp Glu Leu
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<210> 28
<211> 510
<212> DNA
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<220>
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<210> 29
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> 1st generation CAR with CD3 zeta signaling domain

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