Figure 1

Parental AFP TCR TRAV12-2*02/TRAJ41*01/TRAC alpha chain amino acid extracellular sequence (SEQ ID No: 2)

```
                  10                  20
                  *                   *
Q K E V E Q N S G P L S V P E G A I A S L N C T Y S D

    30                  40                  50
    *                   *                   *
R G S Q S F F W Y R Q Y S G K S P E L I M S I Y S N G

          60                  70                  80
          *                   *                   *
D K E D G R F T A Q L N K A S Q Y V S L L I R D S Q P

                90                  100
                *                   *
S D S A T Y L C A V N S D S G Y A L N F G K G T S L L

 110                 120                 130
  *                   *                   *
V T P H I Q N P D P A V Y Q L R D S K S S D K S V C L

       140                 150                 160
        *                   *                   *
F T D F D S Q T N V S Q S K D S D V Y I T D K T V L D

             170                 180
              *                   *
M R S M D F K S N S A V A W S N K S D F A C A N A F N

190                 200
*                   *
N S I I P E D T F F P S P E S S
```

Figure 2

Parental AFP TCR TRBV9*01/TRBD2/TRBJ2-7*01/TRBC2 beta chain amino acid extracellular sequence (SEQ ID No: 3)

```
                  10                  20
                  *                   *
D S G V T Q T P K H L I T A T G Q R V T L R C S P R S

    30                  40                  50
    *                   *                   *
G D L S V Y W Y Q Q S L D Q G L Q F L I Q Y Y N G E E

          60                  70                  80
          *                   *                   *
R A K G N I L E R F S A Q Q F P D L H S E L N L S S L

                90                  100
                *                   *
E L G D S A L Y F C A S S L G G E S E Q Y F G P G T R

 110                 120                 130
  *                   *                   *
L T V T E D L K N V F P P E V A V F E P S E A E I S H

       140                 150                 160
        *                   *                   *
T Q K A T L V C L A T G F Y P D H V E L S W W V N G K

            170                 180
             *                   *
E V H S G V S T D P Q P L K E Q P A L N D S R Y C L S

190                 200                 210
*                   *                   *
S R L R V S A T F W Q N P R N H F R C Q V Q F Y G L S

     220                 230                 240
      *                   *                   *
     E N D E W T Q D R A K P V T Q I V S A E A W G R A D
```

Figure 3

Reference TCR alpha chain – parental AFP-specific TCR alpha chain extracellular amino acid sequence, with cysteine (bold and underlined) substituted for T159 (i.e. T48 of TRAC) (SEQ ID No: 4)

```
                  10                  20
                  *                   *
Q K E V E Q N S G P L S V P E G A I A S L N C T Y S D

    30                  40                  50
    *                   *                   *
R G S Q S F F W Y R Q Y S G K S P E L I M S I Y S N G

          60                  70                  80
          *                   *                   *
D K E D G R F T A Q L N K A S Q Y V S L L I R D S Q P

                90                  100
                *                   *
S D S A T Y L C A V N S D S G Y A L N F G K G T S L L

 110                 120                 130
  *                   *                   *
V T P H I Q N P D P A V Y Q L R D S K S S D K S V C L

       140                 150                 160
        *                   *                   *
F T D F D S Q T N V S Q S K D S D V Y I T D K C V L D

             170                 180
              *                   *
M R S M D F K S N S A V A W S N K S D F A C A N A F N

190                 200
*                   *
N S I I P E D T F F P S P E S S
```

Figure 4

Reference TCR beta chain – Parental AFP-specific TCR beta chain extracellular amino acid sequence, with cysteine (bold and underlined) substituted for S168 (i.e. S57 of TRBC2) and with A187 substituted for C187 and D201 substituted for N201 (SEQ ID No: 5)

```
                  10                  20
                  *                   *
D S G V T Q T P K H L I T A T G Q R V T L R C S P R S

    30                  40                  50
    *                   *                   *
G D L S V Y W Y Q Q S L D Q G L Q F L I Q Y Y N G E E

          60                  70                  80
          *                   *                   *
R A K G N I L E R F S A Q Q F P D L H S E L N L S S L

                90                  100
                *                   *
E L G D S A L Y F C A S S L G G E S E Q Y F G P G T R

 110                 120                 130
  *                   *                   *
L T V T E D L K N V F P P E V A V F E P S E A E I S H

       140                 150                 160
        *                   *                   *
T Q K A T L V C L A T G F Y P D H V E L S W W V N G K

            170                 180
             *                   *
E V H S G V C T D P Q P L K E Q P A L N D S R Y A L S

190                 200                 210
*                   *                   *
S R L R V S A T F W Q D P R N H F R C Q V Q F Y G L S

     220                 230                 240
      *                   *                   *
E N D E W T Q D R A K P V T Q I V S A E A W G R A D
```

Figure 5

Alpha chain amino acid sequence (SEQ ID Nos: 6-20)

ADB 327 (SEQ ID No: 6)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSQ**A**FFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNSDSGYALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

ADB 329 (SEQ ID No: 7)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSQSFFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNSDS**S**YALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

ADB 330 (SEQ ID No: 8)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSQSFFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNSDSG**V**ALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

ADB 331 (SEQ ID No: 9)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSQ**A**FFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNSDSG**V**ALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

ADB 328 (SEQ ID No: 10)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSQSFFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNS**Q**SGYALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

ADB 352 (SEQ ID No: 11)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSQSFFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNS**Q**SGY**S**LNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

ADB 350 (SEQ ID No: 12)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSQSFFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNS**Q**S**S**YALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

ADB 332 (SEQ ID No: 13)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSQ**A**FFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNS**Q**SGYALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

Figure 5 continued

ADB 351 (SEQ ID No: 14)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSQSFFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNSQSGVALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

ADB 349 (SEQ ID No: 15)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSQSFFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNSQNGYALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

ADB 353 (SEQ ID No: 16)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSFSFFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNSDSGYALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

ADB 326 (SEQ ID No: 17)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSYSFFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNSDSGYALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

ADB 333 (SEQ ID No: 18)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSYSFFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNSDSSYALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

ADB 334 (SEQ ID No: 19)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSYSFFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNSDSGVALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

ADB 335 (SEQ ID No: 20)
QKEVEQNSGPLSVPEGAIASLNCTYSDRGSYSFFWYRQYSGKSPELIMSIYSNGDKEDGRFTAQL
NKASQYVSLLIRDSQPSDSATYLCAVNSQSGYALNFGKGTSLLVTPHIQNPDPAVYQLRDSKSSDK
SVCLFTDFDSQTNVSQSKDSDVYITDKTVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDT
FFPSPESS

Figure 6

Reference TCR alpha chain DNA sequence (SEQ ID No: 21)

caaaaagaagttgagcagaattctggacccctcagtgttccagagggagccattgcctctctcaactgcactt
acagtgaccgaggttcccagtccttcttctggtacagacaatattctgggaaaagccctgagttgataatgtc
catatactccaatggtgacaaagaagatggaaggtttacagcacagctcaataaagccagccagtatgtttct
ctgctcatcagagactcccagcccagtgattcagccacctacctctgtgccgtgaatagtgattccgggtatg
cactcaacttcggcaaaggcacctcgctgttggtcacaccccatatccagaaccctgaccctgccgtgtacca
gctgagagactctaagtcgagtgacaagtctgtctgcctattcaccgattttgattctcaaacaaatgtgtca
caaagtaaggattctgatgtgtatatcacagacaaa**tgt**gtgctagacatgaggtctatggacttcaagagca
acagtgctgtggcctggagcaacaaatctgactttgcatgtgcaaacgccttcaacaacagcattattccaga
agacaccttcttccccagcccagaaagttcc

Reference TCR beta chain DNA sequence (SEQ ID No: 22)

gattctggagtcacacaaaccccaaagcacctgatcacagcaactggacagcgagtgacgctgagatgctccc
ctaggtctggagacctctctgtgtactggtaccaacagagcctggaccagggcctccagttcctcattcagta
ttataatggagaagagagagcaaaaggaaacattcttgaacgattctccgcacaacagttccctgacttgcac
tctgaactaaacctgagctctctggagctgggggactcagctttgtatttctgtgccagcagcctcgggggggg
aatctgagcagtacttcgggccgggcaccaggctcacggtcacagaggacctgaaaaacgtgttcccacccga
ggtcgctgtgtttgagccatcagaagcagagatctcccacacccaaaaggccacactggtgtgcctggccacc
ggtttctaccccgaccacgtggagctgagctggtgggtgaatgggaaggaggtgcacagtggggtc**tgc**acag
acccgcagcccctcaaggagcagcccgccctcaatgactccagatacgctctgagcagccgcctgagggtctc
ggccaccttctggcaggaccccgcaaccacttccgctgtcaagtccagttctacgggctctcggagaatgac
gagtggacccaggatagggccaaacccgtcacccagatcgtcagcgccgaggcctggggtagagcagac

Figure 7

Parental AFP TCR alpha chain-2A-beta chain DNA sequence with porcine teschovirus-1 2A sequence (bold and underlined) (SEQ ID No: 23) Restriction enzyme sites are underlined

gctagccgccaccatgatgaagtccctgcgggtgctgctggtcatcctgtggctgcagctgtcctgggtctgg
tcccagcagaaagaggtggagcagaacagcggccctctgagcgtgcccgagggcgctatcgccagcctgaact
gcacctacagcgacagaggcagccagagcttcttctggtacagacagtacagcggcaagagccccgagctgat
catgagcatctacagcaacggcgacaaagaggacggccggttcaccgcccagctgaacaaggccagccagtac
gtgtccctgctgatccgggacagccagcccagcgacagcgccacctacctgtgcgccgtgaacagcgactccg
gctacgccctgaacttcggcaagggcaccagcctgctggtgacaccccacattcagaaccccgaccccgccgt
gtaccagctgcgggacagcaagagcagcgacaagagcgtgtgcctgttcaccgacttcgacagccagaccaac
gtgtcccagagcaaggacagcgacgtgtacatcaccgacaagaccgtgctggacatgcggagcatggacttca
agagcaacagcgccgtggcctggtccaacaagagcgacttcgcctgcgccaacgccttcaacaacagcatcat
ccccgaggacacatttttcccaagccccgagagcagctgcgacgtcaaactggtggagaagtccttcgagaca
gacaccaacctgaacttccagaacctgagcgtgatcggcttcagaatcctgctgctgaaggtggccggcttca
atctgctgatgaccctgcggctgtggtccagcggcagcagagccaagagaagcggatccggc**gccaccaactt**
cagcctgctgaagcaggccggcgacgtggaggaaaaccctggccctaggatgggcttccggctgctgtgctgc
gtggccttctgcctgctgggagccggccctgtggatagcggcgtgacccagacccccaagcacctgatcaccg
ccaccggccagagagtgaccctgcgctgcagccctagaagcggcgacctgtccgtgtactggtatcagcagag
cctggaccagggactgcagttcctcatccagtactacaacggcgaggaacgggccaagggcaacatcctggaa
agattcagcgcccagcagttccccgacctgcacagcgagctgaacctgagcagcctggaactgggcgactccg
ccctgtacttctgcgccagcagcctgggcggcgagagcgaacagtacttcggccctggcacccggctgacggt
aaccgaggacctgaagaacgtgttccccccagaggtggccgtgttcgagccctctgaggccgagatcagccac
acccagaaagccaccctggtctgcctggccaccggcttctaccccgaccacgtggaactgtcttggtgggtga
acggcaaagaggtgcacagcggcgtcagcaccgaccctcagcccctgaaagagcagcccgccctgaacgacag
ccggtactgcctgagcagcagactgcgggtgtccgccaccttctggcagaaccccccggaaccacttcagatgc
caggtgcagttctacggcctgagcgagaacgacgagtggacccaggaccgggccaagcctgtgacccagatcg
tgtctgccgaagcatgggggcgcgccgattgcggcttcacaagcgagagctaccagcagggcgtgctgagcgc
caccatcctgtacgagatcctgctgggcaaggccaccctgtacgccgtgctggtgtccgctctggtgctgatg
gccatggtgaaacggaaggacagccggggctaataagtcgac

Figure 8

Parental AFP TCR alpha chain-2A-beta chain amino acid sequence with porcine teschovirus-1 2A sequence (bold and underlined) (SEQ ID No: 24)

```
                  10                  20                  30
                  *                   *                   *
M M K S L R V L L V I L W L Q L S W V W S Q Q K E V E Q N S G P L S
          40                  50                  60
          *                   *                   *
V P E G A I A S L N C T Y S D R G S Q S F F W Y R Q Y S G K S P E L
  70                  80                  90                  100
  *                   *                   *                   *
I M S I Y S N G D K E D G R F T A Q L N K A S Q Y V S L L I R D S Q
            110                 120                 130
            *                   *                   *
P S D S A T Y L C A V N S D S G Y A L N F G K G T S L L V T P H I Q
     140                 150                 160                 170
     *                   *                   *                   *
N P D P A V Y Q L R D S K S S D K S V C L F T D F D S Q T N V S Q S
                  180                 190                 200
                  *                   *                   *
K D S D V Y I T D K T V L D M R S M D F K S N S A V A W S N K S D F
         210                 220                 230
         *                   *                   *
A C A N A F N N S I I P E D T F F P S P E S S C D V K L V E K S F E
 240                 250                 260                 270
 *                   *                   *                   *
T D T N L N F Q N L S V I G F R I L L L K V A G F N L L M T L R L W
            280                 290                 300
            *                   *                   *
S S G S R A K R S G S G A T N F S L L K Q A G D V E E N P G P R M G
     310                 320                 330                 340
     *                   *                   *                   *
F R L L C C V A F C L L G A G P V D S G V T Q T P K H L I T A T G Q
                  350                 360                 370
                  *                   *                   *
R V T L R C S P R S G D L S V Y W Y Q Q S L D Q G L Q F L I Q Y Y N
```

Figure 8 continued

```
         380                 390                 400
          *                   *                   *
G E E R A K G N I L E R F S A Q Q F P D L H S E L N L S S L E L G D
 410                 420                 430                 440
  *                   *                   *                   *
S A L Y F C A S S L G G E S E Q Y F G P G T R L T V T E D L K N V F
            450                 460                 470
             *                   *                   *
P P E V A V F E P S E A E I S H T Q K A T L V C L A T G F Y P D H V
     480                 490                 500                 510
      *                   *                   *                   *
E L S W W V N G K E V H S G V S T D P Q P L K E Q P A L N D S R Y C
                520                 530                 540
                 *                   *                   *
L S S R L R V S A T F W Q N P R N H F R C Q V Q F Y G L S E N D E W
         550                 560                 570
          *                   *                   *
T Q D R A K P V T Q I V S A E A W G R A D C G F T S E S Y Q Q G V L
 580                 590                 600                 610
  *                   *                   *                   *
S A T I L Y E I L L G K A T L Y A V L V S A L V L M A M V K R K D S


R G
```

Figure 9

Activation of AFP TCR engineered T cells (IFNγ production)

