SEQUENCE LISTING

<110> TRANSGENE SA

<120> Personalized vaccine

<130> B374744PCTD38479

<150> EP 17305760.5
<151> 2017-06-21

<150> EP 18305496.4
<151> 2018-04-23

<160> 70

<170> PatentIn version 3.5

<210> 1
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> FCU1 peptide

<400> 1

Cys Ser Lys Glu Gly Ile Glu Lys Tyr His Ala Ala Phe Pro Glu Val
1 5 10 15

Arg Ile Val Thr Gly Ala Leu Asp Arg Gly Leu
20 25

<210> 2
<211> 27
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<213> artificial sequence

<220>
<223> peptide obtained from beta galatosidase antigen

<400> 2

Gly Gly Ala Asp Thr Thr Ala Thr Asp Ile Ile Cys Pro Met Tyr Ala
1 5 10 15

Arg Val Asp Glu Asp Gln Pro Phe Pro Ala Val
20 25

<210> 3
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> peptide obtained from HPV-16 E1 antigen

<400> 3

Tyr Asp Asn Asp Ile Val Asp Asp Ser Glu Ile Ala Tyr Lys Tyr Ala
1 5 10 15

Gln Leu Ala Asp Thr Asn Ser Asn Ala Ser Ala
20 25

<210> 4
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> peptide obtained from HPV-16 E7 antigen

<400> 4

Gly Pro Ala Gly Gln Ala Glu Pro Asp Arg Ala His Tyr Asn Ile Val
1 5 10 15

Thr Phe Cys Cys Lys Cys Asp Ser Thr Leu Arg
20 25

<210> 5
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> peptide obtained from MUC1 antigen

<400> 5

Tyr Glu Lys Val Ser Ala Gly Asn Gly Gly Ser Ser Leu Ser Tyr Thr
1 5 10 15

Asn Pro Ala Val Ala Ala Thr Ser Ala Asn Leu
20 25

<210> 6
<211> 8
<212> PRT
<213> artificial sequence

<220>
<223> Flag tag

<400> 6

Asp Tyr Lys Asp Asp Asp Asp Lys
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<210> 7
<211> 204
<212> PRT
<213> artificial sequence

<220>
<223> fusion of 5 peptides expressed by MVATG19022

<400> 7

Met Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Cys Ser Lys Glu Gly
1 5 10 15

Ile Glu Lys Tyr His Ala Ala Phe Pro Glu Val Arg Ile Val Thr Gly
20 25 30

Ala Leu Asp Arg Gly Leu Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser
35 40 45

Gly Gly Ala Asp Thr Thr Ala Thr Asp Ile Ile Cys Pro Met Tyr Ala
50 55 60

Arg Val Asp Glu Asp Gln Pro Phe Pro Ala Val Gly Ser Gly Ser Gly
65 70 75 80

Ser Gly Ser Gly Ser Tyr Asp Asn Asp Ile Val Asp Asp Ser Glu Ile
85 90 95

Ala Tyr Lys Tyr Ala Gln Leu Ala Asp Thr Asn Ser Asn Ala Ser Ala
100 105 110

Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Gly Pro Ala Gly Gln Ala
115 120 125

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Glu Pro Asp Arg Ala His Tyr Asn Ile Val Thr Phe Cys Cys Lys Cys
    130                 135                 140


Asp Ser Thr Leu Arg Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Tyr
145                 150                 155                 160


Glu Lys Val Ser Ala Gly Asn Gly Gly Ser Ser Leu Ser Tyr Thr Asn
                165                 170                 175


Pro Ala Val Ala Ala Thr Ser Ala Asn Leu Gly Ser Gly Ser Gly Ser
            180                 185                 190


Gly Ser Gly Ser Asp Tyr Lys Asp Asp Asp Asp Lys
        195                 200
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<210> 8
<211> 112
<212> DNA
<213> artificial sequence

<220>
<223> fragment of vaccinia promoter p11k7.5

<400> 8
ataaaaatat agtagaattt cattttgttt ttttctatgc tataaatagg atccgataaa 60

gtgaaaaata attctaattt attgcacggt aaggaagtag aatcataaag aa 112

<210> 9
<211> 23
<212> PRT
<213> artificial sequence

<220>
<223> fragment of rabbies glycoprotein (signal peptide)

<400> 9

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Met Val Pro Gln Ala Leu Leu Phe Val Pro Leu Leu Val Phe Pro Leu
1               5                   10                  15


Cys Phe Gly Lys Phe Pro Ile
            20
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<210> 10
<211> 226
<212> PRT
<213> artificial sequence

<220>
<223> fusion of 5 peptides encoded by MVATG19023 (+ signal peptide)

<400> 10

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Met Val Pro Gln Ala Leu Leu Phe Val Pro Leu Leu Val Phe Pro Leu
1               5                  10                  15


Cys Phe Gly Lys Phe Pro Ile Gly Ser Gly Ser Gly Ser Gly Ser Gly
            20                  25                  30


Ser Cys Ser Lys Glu Gly Ile Glu Lys Tyr His Ala Ala Phe Pro Glu
        35                  40                  45


Val Arg Ile Val Thr Gly Ala Leu Asp Arg Gly Leu Gly Ser Gly Ser
    50                  55                  60


Gly Ser Gly Ser Gly Ser Gly Gly Ala Asp Thr Thr Ala Thr Asp Ile
65                  70                  75                  80


Ile Cys Pro Met Tyr Ala Arg Val Asp Glu Asp Gln Pro Phe Pro Ala
                85                  90                  95


Val Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Tyr Asp Asn Asp Ile
            100                 105                 110


Val Asp Asp Ser Glu Ile Ala Tyr Lys Tyr Ala Gln Leu Ala Asp Thr
        115                 120                 125


Asn Ser Asn Ala Ser Ala Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser
    130                 135                 140


Gly Pro Ala Gly Gln Ala Glu Pro Asp Arg Ala His Tyr Asn Ile Val
145                 150                 155                 160


Thr Phe Cys Cys Lys Cys Asp Ser Thr Leu Arg Gly Ser Gly Ser Gly
                165                 170                 175
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Ser Gly Ser Gly Ser Tyr Glu Lys Val Ser Ala Gly Asn Gly Gly Ser
180 185 190

Ser Leu Ser Tyr Thr Asn Pro Ala Val Ala Ala Thr Ser Ala Asn Leu
195 200 205

Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Asp Tyr Lys Asp Asp Asp
210 215 220

Asp Lys
225

<210> 11
<211> 10
<212> PRT
<213> artificial sequence

<220>
<223> cMYC tag

<400> 11

Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
1 5 10

<210> 12
<211> 204
<212> PRT
<213> artificial sequence

<220>
<223> fusion of 5 CT26 neopeptides (pentatope 1)

<400> 12

Met Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Tyr Arg Gly Ala Asn
1 5 10 15

Leu His Leu Glu Glu Thr Leu Ala Gly Phe Trp Ala Arg Leu Leu Glu
20 25 30

Arg Leu Phe Lys Gln Leu Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser
35 40 45

Gly Tyr Ile Ser Arg Val Thr Ala Gly Lys Asp Ser Tyr Ile Ala Leu
50 55 60

```
Val Asp Lys Asn Ile Met Gly Tyr Ile Ala Ser Gly Ser Gly Ser Gly
65                  70                  75                  80

Ser Gly Ser Gly Ser Ala Gly Thr Gln Cys Glu Tyr Trp Ala Ser Arg
                85                  90                  95

Ala Leu Asp Ser Glu His Ser Ile Gly Ser Met Ile Gln Leu Pro Gln
            100                 105                 110

Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Glu Gly Asp Pro Cys Leu
        115                 120                 125

Arg Ser Ser Asp Cys Ile Asp Glu Phe Cys Cys Ala Arg His Phe Trp
    130                 135                 140

Thr Lys Ile Cys Lys Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Val
145                 150                 155                 160

Thr Ser Ile Pro Ser Val Ser Asn Ala Leu Asn Trp Lys Glu Phe Ser
                165                 170                 175

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

Gly Ser Gly Ser Asp Tyr Lys Asp Asp Asp Asp Lys
        195                 200
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<210> 13
<211> 206
<212> PRT
<213> artificial sequence

<220>
<223> fusion of 5 CT26 neopeptides (pentatope 2) encoded by MVATG19030

<400> 13

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Met Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Pro Leu Leu Pro Phe
1               5                   10                  15

Tyr Pro Pro Asp Glu Ala Leu Glu Ile Gly Leu Glu Leu Asn Ser Ser
            20                  25                  30
```

```
Ala Leu Pro Pro Thr Glu Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser
        35                  40                  45

Val Ile Leu Pro Gln Ala Pro Ser Gly Pro Ser Tyr Ala Thr Tyr Leu
    50                  55                  60

Gln Pro Ala Gln Ala Gln Met Leu Thr Pro Pro Gly Ser Gly Ser Gly
65                  70                  75                  80

Ser Gly Ser Gly Ser Asp Lys Pro Leu Arg Arg Asn Asn Ser Tyr Thr
                85                  90                  95

Ser Tyr Ile Met Ala Ile Cys Gly Met Pro Leu Asp Ser Phe Arg Ala
            100                 105                 110

Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Glu Val Ile Gln Thr Ser
        115                 120                 125

Lys Tyr Tyr Met Arg Asp Val Ile Ala Ile Glu Ser Ala Trp Leu Leu
    130                 135                 140

Glu Leu Ala Pro His Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Glu
145                 150                 155                 160

His Ile His Arg Ala Gly Gly Leu Phe Val Ala Asp Ala Ile Gln Val
                165                 170                 175

Gly Phe Gly Arg Ile Gly Lys His Phe Trp Gly Ser Gly Ser Gly Ser
            180                 185                 190

Gly Ser Gly Ser Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
        195                 200                 205
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<210> 14
<211> 114
<212> DNA
<213> artificial sequence

<220>
<223> fragment of vaccinia promoter pH5R

<400> 14
tttattctat acttaaaaaa tgaaaataaa tacaaaggtt cttgagggtt gtgttaaatt 60

gaaagcgaga aataatcata aattatttca ttatcgcgat atccgttaag tttg 114

<210> 15
<211> 28
<212> PRT
<213> artificial sequence

<220>
<223> fragment of measles F glycoprotein (signal peptide)

<400> 15

Met Gly Leu Lys Val Asn Val Ser Ala Ile Phe Met Ala Val Leu Leu
1 5 10 15

Thr Leu Gln Thr Pro Thr Gly Gln Ile His Trp Gly
20 25

<210> 16
<211> 226
<212> PRT
<213> artificial sequence

<220>
<223> fusion of 5 CT26 neopeptides encoded by MVATG19038 (pentatope 1)

<400> 16

Met Val Pro Gln Ala Leu Leu Phe Val Pro Leu Leu Val Phe Pro Leu
1 5 10 15

Cys Phe Gly Lys Phe Pro Ile Gly Ser Gly Ser Gly Ser Gly Ser Gly
20 25 30

Ser Tyr Arg Gly Ala Asn Leu His Leu Glu Glu Thr Leu Ala Gly Phe
35 40 45

Trp Ala Arg Leu Leu Glu Arg Leu Phe Lys Gln Leu Gly Ser Gly Ser
50 55 60

Gly Ser Gly Ser Gly Ser Gly Tyr Ile Ser Arg Val Thr Ala Gly Lys
65 70 75 80

```
Asp Ser Tyr Ile Ala Leu Val Asp Lys Asn Ile Met Gly Tyr Ile Ala
                85                  90                  95

Ser Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Ala Gly Thr Gln Cys
            100                 105                 110

Glu Tyr Trp Ala Ser Arg Ala Leu Asp Ser Glu His Ser Ile Gly Ser
        115                 120                 125

Met Ile Gln Leu Pro Gln Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser
    130                 135                 140

Glu Gly Asp Pro Cys Leu Arg Ser Ser Asp Cys Ile Asp Glu Phe Cys
145                 150                 155                 160

Cys Ala Arg His Phe Trp Thr Lys Ile Cys Lys Gly Ser Gly Ser Gly
                165                 170                 175

Ser Gly Ser Gly Ser Val Thr Ser Ile Pro Ser Val Ser Asn Ala Leu
            180                 185                 190

Asn Trp Lys Glu Phe Ser Phe Ile Gln Ser Thr Leu Gly Tyr Val Ala
        195                 200                 205

Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Asp Tyr Lys Asp Asp Asp
    210                 215                 220

Asp Lys
225
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<210> 17
<211> 232
<212> PRT
<213> artificial sequence

<220>
<223> fusion of 5 CT26 neopeptides encoded by MVATG19038 (pentatope 2)

<400> 17

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Met Gly Leu Lys Val Asn Val Ser Ala Ile Phe Met Ala Val Leu Leu
1               5                   10                  15
```

```
Thr Leu Gln Thr Pro Thr Gly Gln Ile His Trp Gly Ser Gly Ser Gly
            20                  25                  30

Ser Gly Ser Gly Ser Pro Leu Leu Pro Phe Tyr Pro Pro Asp Glu Ala
        35                  40                  45

Leu Glu Ile Gly Leu Glu Leu Asn Ser Ser Ala Leu Pro Pro Thr Glu
    50                  55                  60

Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Val Ile Leu Pro Gln Ala
65                  70                  75                  80

Pro Ser Gly Pro Ser Tyr Ala Thr Tyr Leu Gln Pro Ala Gln Ala Gln
                85                  90                  95

Met Leu Thr Pro Pro Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Asp
            100                 105                 110

Lys Pro Leu Arg Arg Asn Asn Ser Tyr Thr Ser Tyr Ile Met Ala Ile
        115                 120                 125

Cys Gly Met Pro Leu Asp Ser Phe Arg Ala Gly Ser Gly Ser Gly Ser
    130                 135                 140

Gly Ser Gly Ser Glu Val Ile Gln Thr Ser Lys Tyr Tyr Met Arg Asp
145                 150                 155                 160

Val Ile Ala Ile Glu Ser Ala Trp Leu Leu Glu Leu Ala Pro His Gly
                165                 170                 175

Ser Gly Ser Gly Ser Gly Ser Gly Ser Glu His Ile His Arg Ala Gly
            180                 185                 190

Gly Leu Phe Val Ala Asp Ala Ile Gln Val Gly Phe Gly Arg Ile Gly
        195                 200                 205

Lys His Phe Trp Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Glu Gln
    210                 215                 220

Lys Leu Ile Ser Glu Glu Asp Leu
225                 230
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<210> 18
<211> 9
<212> PRT
<213> artificial sequence

<220>
<223> HA tag

<400> 18

Tyr Pro Tyr Asp Val Pro Asp Tyr Ala
1 5

<210> 19
<211> 11
<212> PRT
<213> artificial sequence

<220>
<223> HSV tag

<400> 19

Gln Pro Glu Leu Ala Pro Glu Asp Pro Glu Asp
1 5 10

<210> 20
<211> 11
<212> PRT
<213> artificial sequence

<220>
<223> VSV tag

<400> 20

Tyr Thr Asp Ile Glu Met Asn Arg Leu Gly Lys
1 5 10

<210> 21
<211> 100
<212> DNA
<213> artificial sequence

<220>
<223> fragment of vaccinia pB2R promoter

<400> 21
tatattatta agtgtggtgt ttggtcgatg taaaattttt gtcgataaaa attaaaaaat 60

aacttaattt attattgatc tcgtgtgtac aaccgaaatc 100

<210> 22
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> CT26 peptide 1

<400> 22

Tyr Arg Gly Ala Asn Leu His Leu Glu Glu Thr Leu Ala Gly Phe Trp
1 5 10 15

Ala Arg Leu Leu Glu Arg Leu Phe Lys Gln Leu
20 25

<210> 23
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> CT26 peptide 2

<400> 23

Gly Tyr Ile Ser Arg Val Thr Ala Gly Lys Asp Ser Tyr Ile Ala Leu
1 5 10 15

Val Asp Lys Asn Ile Met Gly Tyr Ile Ala Ser
20 25

<210> 24
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> CT26 peptide 3

<400> 24

Ala Gly Thr Gln Cys Glu Tyr Trp Ala Ser Arg Ala Leu Asp Ser Glu
1 5 10 15

His Ser Ile Gly Ser Met Ile Gln Leu Pro Gln
20 25

<210> 25
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> CT26 neopeptide 4

<400> 25

Glu Gly Asp Pro Cys Leu Arg Ser Ser Asp Cys Ile Asp Glu Phe Cys
1 5 10 15

Cys Ala Arg His Phe Trp Thr Lys Ile Cys Lys
20 25

<210> 26
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> CT26 neopeptide 5

<400> 26

Val Thr Ser Ile Pro Ser Val Ser Asn Ala Leu Asn Trp Lys Glu Phe
1 5 10 15

Ser Phe Ile Gln Ser Thr Leu Gly Tyr Val Ala
20 25

<210> 27
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> CT26 neopeptide 6

<400> 27

Pro Leu Leu Pro Phe Tyr Pro Pro Asp Glu Ala Leu Glu Ile Gly Leu
1 5 10 15

Glu Leu Asn Ser Ser Ala Leu Pro Pro Thr Glu
20 25

<210> 28
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> CT26 neopeptide 7

<400> 28

Val Ile Leu Pro Gln Ala Pro Ser Gly Pro Ser Tyr Ala Thr Tyr Leu
1 5 10 15

Gln Pro Ala Gln Ala Gln Met Leu Thr Pro Pro
20 25

<210> 29
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> CT26 neopeptide 8

<400> 29

Asp Lys Pro Leu Arg Arg Asn Asn Ser Tyr Thr Ser Tyr Ile Met Ala
1 5 10 15

Ile Cys Gly Met Pro Leu Asp Ser Phe Arg Ala
20 25

<210> 30
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> CT26 neopeptide 9

<400> 30

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

Glu Ser Ala Trp Leu Leu Glu Leu Ala Pro His
20 25

<210> 31
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> CT26 neopeptide 10

<400> 31

Glu His Ile His Arg Ala Gly Gly Leu Phe Val Ala Asp Ala Ile Gln
1 5 10 15

Val Gly Phe Gly Arg Ile Gly Lys His Phe Trp
20 25

<210> 32
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> non mutated CT26 peptide 1

<400> 32

Tyr Arg Gly Ala Asn Leu His Leu Glu Glu Thr Leu Ala Glu Phe Trp
1 5 10 15

Ala Arg Leu Leu Glu Arg Leu Phe Lys Gln Leu
20 25

<210> 33
<211> 27
<212> PRT
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<220>
<223> non mutated CT26 peptide 2

<400> 33

Gly Tyr Ile Ser Arg Val Thr Ala Gly Lys Asp Ser Tyr Leu Ala Leu
1 5 10 15

Val Asp Lys Asn Ile Met Gly Tyr Ile Ala Ser
20 25

<210> 34
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> non mutated CT26 peptide 3

<400> 34

Ala Gly Thr Gln Cys Glu Tyr Trp Ala Ser Arg Ala Leu Gly Ser Glu
1 5 10 15

His Ser Ile Gly Ser Met Ile Gln Leu Pro Gln
20 25

<210> 35
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> non mutated CT26 peptide 4

<400> 35

Glu Gly Asp Pro Cys Leu Arg Ser Ser Asp Cys Ile Asp Gly Phe Cys
1 5 10 15

Cys Ala Arg His Phe Trp Thr Lys Ile Cys Lys
20 25

<210> 36
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> non mutated CT26 peptide 5

<400> 36

Val Thr Ser Ile Pro Ser Val Ser Asn Ala Leu Asn Trp Arg Glu Phe
1 5 10 15

Ser Phe Ile Gln Ser Thr Leu Gly Tyr Val Ala
20 25

<210> 37
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> non mutated CT26 peptide 6

<400> 37

Pro Leu Leu Pro Phe Tyr Pro Pro Asp Glu Ala Leu Glu Thr Gly Leu
1 5 10 15

Glu Leu Asn Ser Ser Ala Leu Pro Pro Thr Glu
20 25

<210> 38
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> non mutated CT26 peptide 7

<400> 38

Val Ile Leu Pro Gln Ala Pro Ser Gly Pro Ser Tyr Ala Ile Tyr Leu
1 5 10 15

Gln Pro Ala Gln Ala Gln Met Leu Thr Pro Pro
20 25

<210> 39
<211> 27
<212> PRT
<213> artficial sequence

<400> 39

Asp Lys Pro Leu Arg Arg Asn Asn Ser Tyr Thr Ser Tyr Thr Met Ala
1 5 10 15

Ile Cys Gly Met Pro Leu Asp Ser Phe Arg Ala
20 25

<210> 40
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> non mutated CT26 peptide 9

<400> 40

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

Glu Ser Ala Trp Leu Leu Glu Leu Ala Pro His
20 25

<210> 41
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> non mutated CT26 peptide 10

<400> 41

Glu His Ile His Arg Ala Gly Gly Leu Phe Val Ala Asp Glu Ile Gln
1 5 10 15

Val Gly Phe Gly Arg Ile Gly Lys His Phe Trp
20 25

<210> 42
<211> 9
<212> PRT
<213> artificial sequence

<220>
<223> CD8 CT26 epitope 7M1

<400> 42

Pro Ser Tyr Ala Thr Tyr Leu Gln Pro
1 5

<210> 43
<211> 9
<212> PRT

<213> artificial sequence

<220>
<223> CD8 CT26 epitope 7M2

<400> 43

Tyr Ala Thr Tyr Leu Gln Pro Ala Gln
1 5

<210> 44
<211> 9
<212> PRT
<213> artificial sequence

<220>
<223> CD8 CT26 epitope 7M3

<400> 44

Thr Tyr Leu Gln Pro Ala Gln Ala Gln
1 5

<210> 45
<211> 9
<212> PRT
<213> artificial sequence

<220>
<223> CD8 CT26 epitope 2M

<400> 45

Ile Ala Leu Val Asp Lys Asn Ile Met
1 5

<210> 46
<211> 9
<212> PRT
<213> artificial sequence

<220>
<223> CD8 CT26 epitope 7WT1

<400> 46

Pro Ser Tyr Ala Ile Tyr Leu Gln Pro
1 5

<210> 47

<211> 9
<212> PRT
<213> artificial sequence

<220>
<223> CD8 CT26 epitope 7WT2

<400> 47

Tyr Ala Ile Tyr Leu Gln Pro Ala Gln
1 5

<210> 48
<211> 9
<212> PRT
<213> artificial sequence

<220>
<223> CD8 CT26 epitope 7WT3

<400> 48

Ile Tyr Leu Gln Pro Ala Gln Ala Gln
1 5

<210> 49
<211> 9
<212> PRT
<213> artificial sequence

<220>
<223> CD8 CTé- epitope 2 WT

<400> 49

Leu Ala Leu Val Asp Lys Asn Ile Met
1 5

<210> 50
<211> 8
<212> PRT
<213> artificial sequence

<220>
<223> stimulating peptide

<400> 50

Ile Ala Tyr Lys Tyr Ala Gln Leu
1 5

<210> 51
<211> 8
<212> PRT
<213> artificial sequence

<220>
<223> stimulating peptide

<400> 51

Ile Cys Pro Met Tyr Ala Arg Val
1 5

<210> 52
<211> 9
<212> PRT
<213> artificial sequence

<220>
<223> stimulating peptide

<400> 52

Arg Ala His Tyr Asn Ile Val Thr Phe
1 5

<210> 53
<211> 15
<212> PRT
<213> artificial sequence

<220>
<223> stimulating peptide

<400> 53

Leu Ser Tyr Thr Asn Pro Ala Val Ala Ala Thr Ser Ala Asn Leu
1 5 10 15

<210> 54
<211> 15
<212> PRT
<213> artificial sequence

<220>
<223> stimulating peptide

<400> 54

Glu Lys Tyr His Ala Ala Phe Pro Glu Val Arg Ile Val Thr Gly

1 5 10 15

<210> 55
<211> 8
<212> PRT
<213> artificial sequence

<220>
<223> stimulating peptide

<400> 55

Thr Ser Tyr Lys Phe Glu Ser Val
1 5

<210> 56
<211> 9
<212> PRT
<213> artificial sequence

<220>
<223> irrelevant peptide

<400> 56

Lys Asn Gly Glu Asn Ala Gln Ala Ile
1 5

<210> 57
<211> 15
<212> PRT
<213> artificial sequence

<220>
<223> irrelevant peptide

<400> 57

Gly Ile Cys Leu Met Leu Phe Ile Leu Ile Lys Arg Ser Arg His
1 5 10 15

<210> 58
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> example of a lung adenocarcinoma neopeptide which dispays negative hydrobobicity and hydropathy scores

<400> 58

Gly Gln Ser Leu Pro Met Thr His Ser Leu Lys Leu Ser Lys Thr Asn
1 5 10 15

Arg Thr Leu Phe Leu Leu Gly Val Thr Lys Tyr
20 25

<210> 59
<211> 27
<212> PRT
<213> artificial sequence

<220>
<223> Example of a lung adenocarcinoma neopeptide which dispaly positive hydrophobicity and hydropathy scores

<400> 59

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

Arg Ser Val Gly Ala Ser Arg His Gln Gly Leu
20 25

<210> 60
<211> 270
<212> PRT
<213> artificial sequence

<220>
<223> fusion 1 of ten neopeptides encoded by pTG19247

<400> 60

Lys Glu His Gly Thr His Gln Gln Leu Leu Ala Gln Lys Val Ile Tyr
1 5 10 15

Phe Ser Met Val Ser Val Gln Ala Gly Thr Lys Ala Trp Glu Ser Trp
20 25 30

Arg Ser Glu Val Gly Lys Gln Leu Met Pro Leu Tyr Glu Glu Tyr Val
35 40 45

Val Leu Lys Asn Glu Met Asp Val Ser Lys Glu Asn Glu Asn Ser Met
50 55 60

```
Val Pro Gln Arg Ala Pro Val Gly Ser Leu Ser Val Lys Asn Lys Ala
65                  70                  75                  80

His Gln Met Lys Ala Arg Leu Thr Gln Glu Leu Gln Gln Ala Asn Asn
                85                  90                  95

Met His Asn Val Leu Gln Ala Glu Leu Asp Lys Leu His Leu His Tyr
            100                 105                 110

Pro Ile Glu Arg Gly Leu Val Thr Gly Cys Asp Asp Met Glu Lys Leu
        115                 120                 125

Trp Lys His Leu Phe Glu Arg Ala Val Pro Tyr Met Ala Lys Phe Val
    130                 135                 140

Ile Phe Ala Lys Ile Asn Asp Pro Arg Glu Gly Arg Leu Arg Cys Tyr
145                 150                 155                 160

Cys Met Lys Thr Val Val Val Met Leu Gln Asn Val Val Pro Ala Lys
                165                 170                 175

Val Ser Leu Val Cys Val Val Lys Pro Asp Glu Phe Trp Ser Gly Val
            180                 185                 190

Lys Val Ser Val Tyr Ala Val Pro Asp Lys Met Asn Gln Ala Asp Tyr
        195                 200                 205

Ala Leu Asp Ala Ala Val Thr Leu Trp Asn Asn Gly Arg Asn His Leu
    210                 215                 220

Ile Phe Asn Leu Tyr Phe Gly Thr Trp Pro Asp Tyr Thr Glu Asp Val
225                 230                 235                 240

Gly Phe Asp Ile Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu Ala
                245                 250                 255

His Ile Tyr Trp Asp Asp Asp Lys Arg Tyr Ser Pro Ser Leu
            260                 265                 270
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<210> 61

<211> 267
<212> PRT
<213> artificial sequence

<220>
<223> fusion 2 of 10 neopeptides encoded by pTG19247

<400> 61

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Gly Gln Ser Leu Pro Met Thr His Ser Leu Lys Leu Ser Lys Thr Asn
1               5                   10                  15


Arg Thr Leu Phe Leu Leu Gly Val Thr Lys Tyr Gly Leu Met Gly Ile
            20                  25                  30


Val Val Gly Thr Val Phe Ile Ile Arg Gly Leu Arg Ser Val Gly Ala
        35                  40                  45


Ser Arg His Gln Gly Leu Trp Tyr Val Arg Met Asn Arg Arg Arg Leu
    50                  55                  60


Lys Gly Glu Thr Gly Met Glu Asp Cys Val Met Ala Leu Glu Thr Leu
65                  70                  75                  80


Phe Thr Ala Ile Pro Leu Glu Ile Phe Ile Val Thr Met Glu Asn Asp
                85                  90                  95


Phe Pro Gly Gly Val Ile Gly Lys Ile His Ala Thr Gly Arg Gly Arg
            100                 105                 110


Ser Lys Leu Lys Ser Gly Ile Gly Ala Leu Val Leu Pro Gly Val Ser
        115                 120                 125


Thr Ala Asp Ile Ser Ser Asn His Gln Arg Glu Asn Ser Gly His Arg
    130                 135                 140


Arg Asp Gln Ile Thr Glu Lys Asp Ala Ala Leu Cys Val Leu Ile Asp
145                 150                 155                 160


Glu Met His Asn Tyr Met Tyr Trp Tyr Arg Gln Asp Pro Gly Met Val
                165                 170                 175


Leu Lys Leu Ile Tyr Tyr Ser Val Gly Ala Gly Ile Thr Gly Trp Met
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180 185 190

Tyr Gly Thr Val Gln Arg Thr Gly Arg Thr Arg Met Leu Pro Ala Asn
195 200 205

Tyr Val Glu Ala Ile Glu Glu Trp Glu Cys Leu Asp Ser Ala Gln Gln
210 215 220

Arg Leu His Arg Asp Val Met Leu Glu Asn Tyr Gly Asn Leu Phe Ser
225 230 235 240

Leu Phe Thr Val Ser Pro Thr Leu Tyr Phe Leu His Ser Val Ser Leu
245 250 255

Pro Ala Leu Asp Leu Lys Pro Gly Glu Gly Ala
260 265

<210> 62
<211> 270
<212> PRT
<213> artificial organism

<220>
<223> fusion 3 of 10 neopeptides encoded by pTG19247

<400> 62

Val Val Gly Trp Arg Ser Gly Val Glu Lys Asp Leu Asp Lys Val Leu
1 5 10 15

Gln Thr His Ser Val Phe Val Asn Val Ser Lys Lys Gly Ile Arg Thr
20 25 30

Leu Leu Phe Ala Leu Met Met Ser Phe Pro Ala Leu Phe Asn Ile Gly
35 40 45

Leu Leu Leu Phe Leu Val Glu Ala Thr Asn Ala Ser Val Phe Lys Tyr
50 55 60

Tyr Ile His Gly Leu Ser Asp Leu Ile Asp Cys Cys Asp Leu Gly Tyr
65 70 75 80

His Ser Ile Phe Tyr Leu Leu Lys Ile Ala Asn Phe Ser Asn Leu Ile

85 90 95

Phe Leu His Leu Lys Arg Arg Val Lys Ser Val Ile Val His His Arg
100 105 110

Ile Val Gly Cys Ser Leu Ala Val Ile Cys Gly Val Leu Tyr Gly Ser
115 120 125

Thr Phe Val Pro Ile Ile Tyr Phe Leu Val Ile Ala Leu Lys Asn Ala
130 135 140

Val Glu Ile Tyr Val Trp Ala Pro Lys Pro Tyr His Lys Phe Met Ala
145 150 155 160

Phe Lys Pro Gly Leu Asp Arg Glu Gln Leu Tyr Trp Glu Leu Ser Lys
165 170 175

Leu Thr His Ser Ile Thr Glu Leu Gly Pro Tyr Thr Leu Leu Leu Gln
180 185 190

Ile Ser Asn Trp Phe Ile Asn Ala Arg Arg Cys Ile Leu Pro Asp Met
195 200 205

Leu Gln Gln Arg Arg Asn Asp Pro Thr Ile Ser Leu Ser Gly Cys Ala
210 215 220

Val Gln Met Phe Leu Ser Leu Ala Met Gly Thr Thr Glu Cys Val Leu
225 230 235 240

Leu Gly Met Gln Ile Leu Ser Lys Leu Leu Leu Asp Leu Ser Cys Glu
245 250 255

Phe Ser Leu Leu Lys Ser Glu Cys His Arg Val Lys Met Gln
260 265 270

<210> 63
<211> 267
<212> PRT
<213> artificial sequence

<220>
<223> no TM fusion 2 with inversion of neopeptides 1 and 2 and 7 and 8

<400> 63

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

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

Met Thr His Ser Leu Lys Leu Ser Lys Thr Asn Arg Thr Leu Phe Leu
        35                  40                  45

Leu Gly Val Thr Lys Tyr Trp Tyr Val Arg Met Asn Arg Arg Arg Leu
    50                  55                  60

Lys Gly Glu Thr Gly Met Glu Asp Cys Val Met Ala Leu Glu Thr Leu
65                  70                  75                  80

Phe Thr Ala Ile Pro Leu Glu Ile Phe Ile Val Thr Met Glu Asn Asp
                85                  90                  95

Phe Pro Gly Gly Val Ile Gly Lys Ile His Ala Thr Gly Arg Gly Arg
            100                 105                 110

Ser Lys Leu Lys Ser Gly Ile Gly Ala Leu Val Leu Pro Gly Val Ser
        115                 120                 125

Thr Ala Asp Ile Ser Ser Asn His Gln Arg Glu Asn Ser Gly His Arg
    130                 135                 140

Arg Asp Gln Ile Thr Glu Lys Asp Ala Ala Leu Cys Val Leu Ile Asp
145                 150                 155                 160

Glu Met Gly Trp Met Tyr Gly Thr Val Gln Arg Thr Gly Arg Thr Arg
                165                 170                 175

Met Leu Pro Ala Asn Tyr Val Glu Ala Ile His Asn Tyr Met Tyr Trp
            180                 185                 190

Tyr Arg Gln Asp Pro Gly Met Val Leu Lys Leu Ile Tyr Tyr Ser Val
        195                 200                 205
```

```
Gly Ala Gly Ile Thr Glu Glu Trp Glu Cys Leu Asp Ser Ala Gln Gln
    210                 215                 220


Arg Leu His Arg Asp Val Met Leu Glu Asn Tyr Gly Asn Leu Phe Ser
225                 230                 235                 240


Leu Phe Thr Val Ser Pro Thr Leu Tyr Phe Leu His Ser Val Ser Leu
                245                 250                 255


Pro Ala Leu Asp Leu Lys Pro Gly Glu Gly Ala
            260                 265


<210>  64
<211>  189
<212>  PRT
<213>  artificial sequence

<220>
<223>  no TM fusion 3 by suppression of neopeptides 2, 4 and 5

<400>  64

Val Val Gly Trp Arg Ser Gly Val Glu Lys Asp Leu Asp Lys Val Leu
1               5                   10                  15


Gln Thr His Ser Val Phe Val Asn Val Ser Lys Glu Ala Thr Asn Ala
            20                  25                  30


Ser Val Phe Lys Tyr Tyr Ile His Gly Leu Ser Asp Leu Ile Asp Cys
        35                  40                  45


Cys Asp Leu Gly Tyr His Phe Leu Val Ile Ala Leu Lys Asn Ala Val
    50                  55                  60


Glu Ile Tyr Val Trp Ala Pro Lys Pro Tyr His Lys Phe Met Ala Phe
65                  70                  75                  80


Lys Pro Gly Leu Asp Arg Glu Gln Leu Tyr Trp Glu Leu Ser Lys Leu
                85                  90                  95


Thr His Ser Ile Thr Glu Leu Gly Pro Tyr Thr Leu Leu Leu Gln Ile
            100                 105                 110
```

```
Ser Asn Trp Phe Ile Asn Ala Arg Arg Cys Ile Leu Pro Asp Met Leu
        115                 120                 125


Gln Gln Arg Arg Asn Asp Pro Thr Ile Ser Leu Ser Gly Cys Ala Val
    130                 135                 140


Gln Met Phe Leu Ser Leu Ala Met Gly Thr Thr Glu Cys Val Leu Leu
145                 150                 155                 160


Gly Met Gln Ile Leu Ser Lys Leu Leu Leu Asp Leu Ser Cys Glu Phe
                165                 170                 175


Ser Leu Leu Lys Ser Glu Cys His Arg Val Lys Met Gln
            180                 185


<210>  65
<211>  270
<212>  PRT
<213>  artificial sequence

<220>
<223>  fusion 3 encoded by pTG19290

<400>  65

Ser Ser Thr Ile Met Asp Val Asp Ser Thr Ile Ser Ser Trp Arg Ser
1               5                   10                  15


Thr Pro Ala Met Met Asn Gly Gln Gly Ser Thr Lys Ser Lys Lys Val
            20                  25                  30


Ser Asp Ile Lys Glu Glu Val Leu Ser Ala Ala Cys His Pro Val Gln
        35                  40                  45


His Ser Lys Val Glu Tyr Tyr His Ile Glu Val Met Lys Lys Lys Met
    50                  55                  60


Tyr Ile Phe Trp Gly Lys Met Ser Arg Arg Thr Leu Leu Pro Ile Pro
65                  70                  75                  80


Thr Ser Trp Tyr Leu Glu Asn Ile Tyr Pro Asp Ser Gln Ile Thr Arg
                85                  90                  95
```

```
Arg Tyr Tyr Ser Leu Gly Glu Ile Arg Asn Val Glu Ser Pro Phe Asn
            100                 105                 110

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

Asn Phe Met Val Ile Asn Ser Asp Tyr Glu Leu Ala Glu Val His Lys
    130                 135                 140

Ala Leu Leu Asp Asn Lys Asn Lys Val Leu Glu Val Lys Lys Pro Pro
145                 150                 155                 160

Arg Phe Glu Lys Gly Pro Leu Pro Gly Glu Asp Trp Thr Ile Phe Lys
                165                 170                 175

Tyr Asn His Ser Thr Tyr Gln Pro Val Leu Leu Thr Glu Asp Arg Trp
            180                 185                 190

Val Arg Asn Gln Ala Asn Leu Asp Lys Glu His Val Pro Leu Leu Lys
        195                 200                 205

Ile Glu Glu Pro Pro Ser Thr Ala Leu Asp Thr Glu Glu Glu Glu Asp
    210                 215                 220

Asp Thr Ile His Met Trp Asn Ala Ile Met Thr Phe Tyr Ser Ala Leu
225                 230                 235                 240

Ile Asp Leu Ser Thr Val Glu Lys His Cys Gly Lys Val Pro Tyr Pro
                245                 250                 255

Leu Ser Tyr Val Pro Ala Val Leu Ser Glu Leu Thr Asp Gln
            260                 265                 270
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<210> 66
<211> 5
<212> PRT
<213> artificial sequence

<220>
<223> linker 5aa

<400> 66

Gly Ser Gly Ser Gly
1 5

<210> 67
<211> 5
<212> PRT
<213> artificial sequence

<220>
<223> linker of 5aa

<400> 67

Ser Gly Ser Gly Ser
1 5

<210> 68
<211> 10
<212> PRT
<213> artificial sequence

<220>
<223> linker of 10aa

<400> 68

Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser
1 5 10

<210> 69
<211> 5
<212> PRT
<213> artificial sequence

<220>
<223> linker of 5aa

<400> 69

Gly Ser Thr Ser Gly
1 5

<210> 70
<211> 5
<212> PRT
<213> artificial sequence

<220>
<223> linker of 5 aa

<400> 70

Ser Gly Thr Gly Ser
1 5