SEQUENCE LISTING

<110> Crucell Holland B.V.
Radosevic, Katarina
Widjojoatmodjo, Myra
Custers, Jerome
Vellinga, Jort

<120> Vaccine against RSV

<130> 0200 EP P00 PRI

<160> 2

<170> PatentIn version 3.3

<210> 1
<211> 574
<212> PRT
<213> respiratory syncytial virus

<220>
<221> RSV F protein (A2 strain)
<222> (1)..(574)

<400> 1

```
Met Glu Leu Leu Ile Leu Lys Ala Asn Ala Ile Thr Thr Ile Leu Thr
1               5                  10                  15

Ala Val Thr Phe Cys Phe Ala Ser Gly Gln Asn Ile Thr Glu Glu Phe
            20                  25                  30

Tyr Gln Ser Thr Cys Ser Ala Val Ser Lys Gly Tyr Leu Ser Ala Leu
        35                  40                  45

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

Lys Lys Asn Lys Cys Asn Gly Thr Asp Ala Lys Ile Lys Leu Ile Lys
65                  70                  75                  80

Gln Glu Leu Asp Lys Tyr Lys Asn Ala Val Thr Glu Leu Gln Leu Leu
                85                  90                  95

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

Arg Phe Met Asn Tyr Thr Leu Asn Asn Ala Lys Lys Thr Asn Val Thr
        115                 120                 125

Leu Ser Lys Lys Arg Lys Arg Arg Phe Leu Gly Phe Leu Leu Gly Val
    130                 135                 140

Gly Ser Ala Ile Ala Ser Gly Val Ala Val Ser Lys Val Leu His Leu
145                 150                 155                 160
```

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

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

Leu Asp Leu Lys Asn Tyr Ile Asp Lys Gln Leu Leu Pro Ile Val Asn
        195                 200                 205

Lys Gln Ser Cys Ser Ile Ser Asn Ile Glu Thr Val Ile Glu Phe Gln
    210                 215                 220

Gln Lys Asn Asn Arg Leu Leu Glu Ile Thr Arg Glu Phe Ser Val Asn
225                 230                 235                 240

Ala Gly Val Thr Thr Pro Val Ser Thr Tyr Met Leu Thr Asn Ser Glu
                245                 250                 255

Leu Leu Ser Leu Ile Asn Asp Met Pro Ile Thr Asn Asp Gln Lys Lys
            260                 265                 270

Leu Met Ser Asn Asn Val Gln Ile Val Arg Gln Gln Ser Tyr Ser Ile
        275                 280                 285

Met Ser Ile Ile Lys Glu Glu Val Leu Ala Tyr Val Val Gln Leu Pro
    290                 295                 300

Leu Tyr Gly Val Ile Asp Thr Pro Cys Trp Lys Leu His Thr Ser Pro
305                 310                 315                 320

Leu Cys Thr Thr Asn Thr Lys Glu Gly Ser Asn Ile Cys Leu Thr Arg
                325                 330                 335

Thr Asp Arg Gly Trp Tyr Cys Asp Asn Ala Gly Ser Val Ser Phe Phe
            340                 345                 350

Pro Gln Ala Glu Thr Cys Lys Val Gln Ser Asn Arg Val Phe Cys Asp
        355                 360                 365

Thr Met Asn Ser Leu Thr Leu Pro Ser Glu Val Asn Leu Cys Asn Val
    370                 375                 380

Asp Ile Phe Asn Pro Lys Tyr Asp Cys Lys Ile Met Thr Ser Lys Thr
385                 390                 395                 400

Asp Val Ser Ser Ser Val Ile Thr Ser Leu Gly Ala Ile Val Ser Cys
                405                 410                 415

Tyr Gly Lys Thr Lys Cys Thr Ala Ser Asn Lys Asn Arg Gly Ile Ile
            420                 425                 430
```

eolf-seql

Lys Thr Phe Ser Asn Gly Cys Asp Tyr Val Ser Asn Lys Gly Val Asp
435 440 445

Thr Val Ser Val Gly Asn Thr Leu Tyr Tyr Val Asn Lys Gln Glu Gly
450 455 460

Lys Ser Leu Tyr Val Lys Gly Glu Pro Ile Ile Asn Phe Tyr Asp Pro
465 470 475 480

Leu Val Phe Pro Ser Asp Glu Phe Asp Ala Ser Ile Ser Gln Val Asn
485 490 495

Glu Lys Ile Asn Gln Ser Leu Ala Phe Ile Arg Lys Ser Asp Glu Leu
500 505 510

Leu His Asn Val Asn Ala Val Lys Ser Thr Thr Asn Ile Met Ile Thr
515 520 525

Thr Ile Ile Ile Val Ile Ile Val Ile Leu Leu Ser Leu Ile Ala Val
530 535 540

Gly Leu Leu Leu Tyr Cys Lys Ala Arg Ser Thr Pro Val Thr Leu Ser
545 550 555 560

Lys Asp Gln Leu Ser Gly Ile Asn Asn Ile Ala Phe Ser Asn
565 570

<210> 2
<211> 1722
<212> DNA
<213> respiratory syncytial virus

<220>
<221> codon optimized sequence encoding RSV F protein (A2 strain)
<222> (1)..(1722)

<400> 2
atggaactgc tgatcctgaa ggccaacgcc atcaccacca tcctgaccgc cgtgaccttc 60

tgcttcgcca gcggccagaa catcaccgag gaattctacc agagcacctg tagcgccgtg 120

tccaagggct acctgagcgc cctgcggacc ggctggtaca ccagcgtgat caccatcgag 180

ctgagcaaca tcaaaaagaa caagtgcaac ggcaccgacg ccaaaatcaa gctgatcaag 240

caggaactgg acaagtacaa gaacgccgtg accgagctgc agctgctgat gcagagcacc 300

cccgccacca acaaccgggc cagacgggag ctgccccggt tcatgaacta caccctgaac 360

aacgccaaaa agaccaacgt gaccctgagc aagaagcgga agcggcggtt cctgggcttc 420

ctgctgggcg tgggcagcgc cattgctagc ggagtggctg tgtctaaggt gctgcacctg 480

gaaggcgaag tgaacaagat caagtccgcc ctgctgagca ccaacaaggc cgtggtgtcc 540

ctgagcaacg gcgtgtccgt gctgaccagc aaggtgctgg atctgaagaa ctacatcgac 600

aagcagctgc tgcccatcgt gaacaagcag agctgcagca tcagcaacat cgagacagtg 660

atcgagttcc agcagaagaa caaccggctg ctggaaatca cccgcgagtt cagcgtgaac 720

gccggcgtga ccacccccgt gtccacctac atgctgacca acagcgagct gctgagcctg 780

atcaacgaca tgcccatcac caacgaccag aaaaagctga tgagcaacaa cgtgcagatc 840

gtgcggcagc agagctactc catcatgtcc atcatcaaag aagaggtgct ggcctacgtg 900

gtgcagctgc ccctgtacgg cgtgatcgac acccccctgct ggaagctgca caccagcccc 960

ctgtgcacca ccaacaccaa agagggcagc aacatctgcc tgacccggac cgaccggggc 1020

tggtactgcg ataatgccgg cagcgtgtca ttctttccac aagccgagac atgcaaggtg 1080

cagagcaacc gggtgttctg cgacaccatg aacagcctga ccctgcccag cgaggtgaac 1140

ctgtgcaacg tggacatctt caaccctaag tacgactgca agatcatgac ctccaagacc 1200

gacgtgtcca gctccgtgat cacctccctg ggcgccatcg tgtcctgcta cggcaagacc 1260

aagtgcaccg ccagcaacaa gaaccggggc atcatcaaga ccttcagcaa cggctgcgac 1320

tacgtgtcca acaagggcgt ggacaccgtg tccgtgggca acaccctgta ctacgtgaac 1380

aaacaggaag gcaagagcct gtacgtgaag ggcgagccca tcatcaactt ctacgacccc 1440