SEQUENCE LISTING

<110> Life Science Inkubator Betriebs GmbH & Co. KG

<120> A novel drug delivery system based on JCV-VLP

<130> 54 311 K

<160> 5

<170> PatentIn version 3.3

<210> 1
<211> 354
<212> PRT
<213> JC polyoma virus

<220>
<221> MISC_FEATURE
<222> (1)..(354)
<223> capsid protein VP1

<220>
<221> MISC_FEATURE
<222> (10)..(10)
<223> Xaa is Pro or Arg

<400> 1

```
Met Ala Pro Thr Lys Arg Lys Gly Glu Xaa Lys Asp Pro Val Gln Val
1               5                  10                  15

Pro Lys Leu Leu Ile Arg Gly Gly Val Glu Val Leu Glu Val Lys Thr
            20                  25                  30

Gly Val Asp Ser Ile Thr Glu Val Glu Cys Phe Leu Thr Pro Glu Met
        35                  40                  45

Gly Asp Pro Asp Glu His Leu Arg Gly Phe Ser Lys Ser Ile Ser Ile
    50                  55                  60

Ser Asp Thr Phe Glu Ser Asp Ser Pro Asn Arg Asp Met Leu Pro Cys
65                  70                  75                  80

Tyr Ser Val Ala Arg Ile Pro Leu Pro Asn Leu Asn Glu Asp Leu Thr
                85                  90                  95

Cys Gly Asn Ile Leu Met Trp Glu Ala Val Thr Leu Lys Thr Glu Val
            100                 105                 110

Ile Gly Val Thr Ser Leu Met Asn Val His Ser Asn Gly Gln Ala Thr
        115                 120                 125

His Asp Asn Gly Ala Gly Lys Pro Val Gln Gly Thr Ser Phe His Phe
    130                 135                 140

Phe Ser Val Gly Gly Glu Ala Leu Glu Leu Gln Gly Val Val Phe Asn
145                 150                 155                 160
```

```
Tyr Arg Thr Lys Tyr Pro Asp Gly Thr Ile Phe Pro Lys Asn Ala Thr
                165                 170                 175

Val Gln Ser Gln Val Met Asn Thr Glu His Lys Ala Tyr Leu Asp Lys
            180                 185                 190

Asn Lys Ala Tyr Pro Val Glu Cys Trp Val Pro Asp Pro Thr Arg Asn
        195                 200                 205

Glu Asn Thr Arg Tyr Phe Gly Thr Leu Thr Gly Gly Glu Asn Val Pro
    210                 215                 220

Pro Val Leu His Ile Thr Asn Thr Ala Thr Thr Val Leu Leu Asp Glu
225                 230                 235                 240

Phe Gly Val Gly Pro Leu Cys Lys Gly Asp Asn Leu Tyr Leu Ser Ala
                245                 250                 255

Val Asp Val Cys Gly Met Phe Thr Asn Arg Ser Gly Ser Gln Gln Trp
            260                 265                 270

Arg Gly Leu Ser Arg Tyr Phe Lys Val Gln Leu Arg Lys Arg Arg Val
        275                 280                 285

Lys Asn Pro Tyr Pro Ile Ser Phe Leu Leu Thr Asp Leu Ile Asn Arg
    290                 295                 300

Arg Thr Pro Arg Val Asp Gly Gln Pro Met Tyr Gly Met Asp Ala Gln
305                 310                 315                 320

Val Glu Glu Val Arg Val Phe Glu Gly Thr Glu Glu Leu Pro Gly Asp
                325                 330                 335

Pro Asp Met Met Arg Tyr Val Asp Lys Tyr Gly Gln Leu Gln Thr Lys
            340                 345                 350

Met Leu
```

<210> 2
<211> 1065
<212> DNA
<213> JC virus

<220>
<221> MISC_FEATURE
<222> (1)..(1065)
<223> capsid protein VP1

<400> 2

```
atggctccca ccaagcgcaa gggcgagcsc aaggaycccg tgcaagtgcc caagctgctg     60

atccgtggtg gtgtcgaggt gctggaagtc aagaccggcg tggactccat taccgaggtg    120
```

gagtgcttcc tcacccccga gatgggtgac cctgacgagc acctgagggg cttctccaag 180

tccatctcca tctccgacac cttcgagtcc gactccccca accgtgacat gctgccctgc 240

tactccgtgg ctcgtatccc cctgcccaac ctgaacgagg acctgacttg cggcaacatc 300

ctgatgtggg aggctgtgac cctcaagacc gaggtcatcg gcgtgacttc cctgatgaac 360

gtgcactcca acggccaggc tacccacgac aacggtgctg gcaagcccgt gcagggaacc 420

tccttccact tcttctccgt gggtggcgag gctctggaac tccagggcgt ggtgttcaac 480

taccgtacca agtaccccga cggcaccatc ttccccaaga acgctactgt gcagtcccaa 540

gtgatgaaca ccgagcacaa ggcttacctg gacaagaaca aggcctaccc cgtggagtgc 600

tgggtgcccg accccacccg taacgagaac acccgttact tcggcaccct gaccggtgga 660

gagaacgtgc cccccgtgct gcacatcacc aacaccgcta ccaccgtgct gctggacgag 720

ttcggtgtcg gtcccctgtg caagggcgac aacctgtacc tgtccgctgt ggacgtgtgc 780

ggcatgttca ccaaccgttc cggttcccag cagtggcgtg gcctgtcccg ctacttcaag 840

gtgcagctgc gcaagcgtcg tgtgaagaac ccctacccta tctccttcct gctgaccgac 900

ctgatcaacc gtcgtacccc tcgtgtggac ggccagccca tgtacggcat ggacgctcag 960

gtggaagagg tccgcgtgtt cgagggcacc gaggaattgc ccggcgaccc cgacatgatg 1020

cgttacgtgg acaagtacgg ccagctccag accaagatgc tgtaa 1065

<210> 3
<211> 344
<212> PRT
<213> JC virus

<220>
<221> MISC_FEATURE
<222> (1)..(344)
<223> capsid protein VP2

<400> 3

Met Gly Ala Ala Leu Ala Leu Leu Gly Asp Leu Val Ala Thr Val Ser
1 5 10 15

Glu Ala Ala Ala Ala Thr Gly Phe Ser Val Ala Glu Ile Ala Ala Gly
20 25 30

Glu Ala Ala Ala Thr Ile Glu Val Glu Ile Ala Ser Leu Ala Thr Val
35 40 45

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

Pro Glu Thr Tyr Ala Val Ile Thr Gly Ala Pro Gly Ala Val Ala Gly
65 70 75 80

Phe Ala Ala Leu Val Gln Thr Val Thr Gly Gly Ser Ala Ile Ala Gln
85 90 95

```
Leu Gly Tyr Arg Phe Phe Ala Asp Trp Asp His Lys Val Ser Thr Val
            100                 105                 110

Gly Leu Phe Gln Gln Pro Ala Met Ala Leu Gln Leu Phe Asn Pro Glu
        115                 120                 125

Asp Tyr Tyr Asp Ile Leu Phe Pro Gly Val Asn Ala Phe Val Asn Asn
    130                 135                 140

Ile His Tyr Leu Asp Pro Arg His Trp Gly Pro Ser Leu Phe Ser Thr
145                 150                 155                 160

Ile Ser Gln Ala Phe Trp Asn Leu Val Arg Asp Asp Leu Pro Ser Leu
                165                 170                 175

Thr Ser Gln Glu Ile Gln Arg Arg Thr Gln Lys Leu Phe Val Glu Thr
            180                 185                 190

Leu Ala Arg Phe Leu Glu Glu Thr Thr Trp Ala Ile Val Asn Ser Pro
        195                 200                 205

Val Asn Leu Tyr Asn Tyr Ile Ser Asp Tyr Tyr Ser Arg Leu Ser Pro
    210                 215                 220

Val Arg Pro Ser Met Val Arg Gln Val Ala Gln Arg Glu Gly Thr Tyr
225                 230                 235                 240

Ile Ser Phe Gly His Ser Tyr Thr Gln Ser Ile Asp Asn Ala Asp Ser
                245                 250                 255

Ile Gln Glu Val Thr Gln Arg Leu Asp Leu Lys Asn Pro Asn Val Gln
            260                 265                 270

Ser Gly Glu Phe Ile Glu Lys Ser Phe Ala Pro Gly Gly Ala Asn Gln
        275                 280                 285

Arg Ser Ala Pro Gln Trp Met Leu Pro Leu Leu Leu Gly Leu Tyr Gly
    290                 295                 300

Thr Val Thr Pro Ala Leu Glu Ala Tyr Glu Asp Gly Pro Asn Lys Lys
305                 310                 315                 320

Lys Arg Arg Lys Glu Gly Pro Arg Ala Ser Ser Lys Thr Ser Tyr Lys
                325                 330                 335

Arg Arg Ser Arg Ser Ser Arg Ser
            340
```

<210> 4
<211> 1032
<212> DNA

<213> JC virus

<220>
<221> MISC_FEATURE
<222> (1)..(1032)
<223> capsid protein VP2

<400> 4
atgggtgccg cacttgcact tttgggggac ctagttgcta ctgtttctga ggctgctgct 60

gccacaggat tttcagtagc tgaaattgct gctggagagg ctgctgctac tatagaagtt 120

gaaattgcat cccttgctac tgtagagggg attacaagta cctctgaggc tatagctgca 180

ataggcctta ctcctgaaac atatgctgta attactggag ctccgggggc tgtagctggg 240

tttgctgcat tggttcaaac tgtaactggt ggtagtgcta ttgctcagtt gggatataga 300

ttttttgctg actgggatca taaagtttca acagttgggc tttttcagca gccagctatg 360

gctttacagt tatttaatcc agaagactac tatgatattt tatttcctgg agtgaatgcc 420

tttgttaaca atattcacta tttagatcct agacattggg gcccttcttt gttctccaca 480

atctcccagg ctttttggaa tcttgttaga gatgatttgc catctttaac atctcaggaa 540

attcaaagaa gaacccaaaa actatttgtt gaaactttag caaggttttt ggaagaaact 600

acttgggcaa tagttaattc accagttaac ttatataatt atatttcaga ctattattct 660

agattgtctc cagttaggcc ctctatggta aggcaggttg cccaaaggga gggaacctat 720

atttcctttg gccactcata cacccaaagt atagataatg cagacagcat tcaagaagtt 780

acccaaaggc tagatttaaa aaacccaaat gtgcaatctg gtgaatttat agagaaaagt 840

tttgcaccag gaggtgcaaa tcaaagatct gctcctcaat ggatgttgcc tttacttta 900

gggttgtacg ggactgtaac acctgctctt gaagcatatg aagatggccc caacaaaaag 960

aaaaggagaa aggaaggacc ccgtgcaagt tccaaaactt cttataagag gaggagtaga 1020

agttctagaa gt 1032

<210> 5
<211> 8
<212> PRT
<213> Artificial

<220>
<223> nuclear localization signal

<400> 5

Cys Pro Gly Ala Ala Pro Lys Lys
1 5