

SEQUENCE LISTING

<110> TRANSGENE SA
 <120> Poxviral oncolytic vectors
 <130> Oncolytic VV
 <160> 18
 <170> PatentIn version 3.4
 <210> 1
 <211> 373
 <212> PRT
 <213> artificial
 <220>
 <223> derived from *Saccharomyces cerevisiae*
 <400> 1

Met Val Thr Gly Gly Met Ala Ser Lys Trp Asp Gln Lys Gly Met Asp
 1 5 10 15

Ile Ala Tyr Glu Glu Ala Ala Leu Gly Tyr Lys Glu Gly Gly Val Pro
 20 25 30

Ile Gly Gly Cys Leu Ile Asn Asn Lys Asp Gly Ser Val Leu Gly Arg
 35 40 45

Gly His Asn Met Arg Phe Gln Lys Gly Ser Ala Thr Leu His Gly Glu
 50 55 60

Ile Ser Thr Leu Glu Asn Cys Gly Arg Leu Glu Gly Lys Val Tyr Lys
 65 70 75 80

Asp Thr Thr Leu Tyr Thr Thr Leu Ser Pro Cys Asp Met Cys Thr Gly
 85 90 95

Ala Ile Ile Met Tyr Gly Ile Pro Arg Cys Val Val Gly Glu Asn Val
 100 105 110

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

Val Val Val Val Asp Asp Glu Arg Cys Lys Lys Ile Met Lys Gln Phe
 130 135 140

Ile Asp Glu Arg Pro Gln Asp Trp Phe Glu Asp Ile Gly Glu Ala Ser
 145 150 155 160

Glu Pro Phe Lys Asn Val Tyr Leu Leu Pro Gln Thr Asn Gln Leu Leu

165

170

175

Gly Leu Tyr Thr Ile Ile Arg Asn Lys Asn Thr Thr Arg Pro Asp Phe
 180 185 190

Ile Phe Tyr Ser Asp Arg Ile Ile Arg Leu Leu Val Glu Glu Gly Leu
 195 200 205

Asn His Leu Pro Val Gln Lys Gln Ile Val Glu Thr Asp Thr Asn Glu
 210 215 220

Asn Phe Glu Gly Val Ser Phe Met Gly Lys Ile Cys Gly Val Ser Ile
 225 230 235 240

Val Arg Ala Gly Glu Ser Met Glu Gln Gly Leu Arg Asp Cys Cys Arg
 245 250 255

Ser Val Arg Ile Gly Lys Ile Leu Ile Gln Arg Asp Glu Glu Thr Ala
 260 265 270

Leu Pro Lys Leu Phe Tyr Glu Lys Leu Pro Glu Asp Ile Ser Glu Arg
 275 280 285

Tyr Val Phe Leu Leu Asp Pro Met Leu Ala Thr Gly Gly Ser Ala Ile
 290 295 300

Met Ala Thr Glu Val Leu Ile Lys Arg Gly Val Lys Pro Glu Arg Ile
 305 310 315 320

Tyr Phe Leu Asn Leu Ile Cys Ser Lys Glu Gly Ile Glu Lys Tyr His
 325 330 335

Ala Ala Phe Pro Glu Val Arg Ile Val Thr Gly Ala Leu Asp Arg Gly
 340 345 350

Leu Asp Glu Asn Lys Tyr Leu Val Pro Gly Leu Gly Asp Phe Gly Asp
 355 360 365

Arg Tyr Tyr Cys Val
 370

<210> 2

<211> 373

<212> PRT

<213> artificial

<220>

<223> derived from *Saccharomyces cerevisiae*

<400> 2

Met Val Thr Gly Gly Met Ala Ser Lys Trp Asp Gln Lys Gly Met Asp
 1 5 10 15

Ile Ala Tyr Glu Glu Ala Ala Leu Gly Tyr Lys Glu Gly Gly Val Pro
 20 25 30

Ile Gly Gly Cys Leu Ile Asn Asn Lys Asp Gly Ser Val Leu Gly Arg
 35 40 45

Gly His Asn Met Arg Phe Gln Lys Gly Ser Ala Thr Leu His Gly Glu
 50 55 60

Ile Ser Thr Leu Glu Asn Cys Gly Arg Leu Glu Gly Lys Val Tyr Lys
 65 70 75 80

Asp Thr Thr Leu Tyr Thr Thr Leu Ser Pro Cys Asp Met Cys Thr Gly
 85 90 95

Ala Ile Ile Met Tyr Gly Ile Pro Arg Cys Val Val Gly Glu Asn Val
 100 105 110

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

Val Val Val Val Asp Asp Glu Arg Cys Lys Lys Ile Met Lys Gln Phe
 130 135 140

Ile Asp Glu Arg Pro Gln Asp Trp Phe Glu Asp Ile Gly Glu Ala Ser
 145 150 155 160

Glu Pro Phe Lys Asn Val Tyr Leu Leu Pro Gln Thr Asn Gln Leu Leu
 165 170 175

Gly Leu Tyr Thr Ile Ile Ser Asn Lys Asn Thr Thr Arg Pro Asp Phe
 180 185 190

Ile Phe Tyr Ser Asp Arg Ile Ile Arg Leu Leu Val Glu Glu Gly Leu
 195 200 205

Asn His Leu Pro Val Gln Lys Gln Ile Val Glu Thr Asp Thr Asn Glu
 210 215 220

Asn Phe Glu Gly Val Ser Phe Met Gly Lys Ile Cys Gly Val Ser Ile
 225 230 235 240

Val Arg Ala Gly Glu Ser Met Glu Gln Gly Leu Arg Asp Cys Cys Arg
245 250 255

Ser Val Arg Ile Gly Lys Ile Leu Ile Gln Arg Asp Glu Glu Thr Ala
260 265 270

Leu Pro Lys Leu Phe Tyr Glu Lys Leu Pro Glu Asp Ile Ser Glu Arg
275 280 285

Tyr Val Phe Leu Leu Asp Pro Met Leu Ala Thr Gly Gly Ser Ala Ile
290 295 300

Met Ala Thr Glu Val Leu Ile Lys Arg Gly Val Lys Pro Glu Arg Ile
305 310 315 320

Tyr Phe Leu Asn Leu Ile Cys Ser Lys Glu Gly Ile Glu Lys Tyr His
325 330 335

Ala Ala Phe Pro Glu Val Arg Ile Val Thr Gly Ala Leu Asp Arg Gly
340 345 350

Leu Asp Glu Asn Lys Tyr Leu Val Pro Gly Leu Gly Asp Phe Gly Asp
355 360 365

Arg Tyr Tyr Cys Val
370

 $\langle 210 \rangle$ 3

<211> 644

<212> PRT

<213> artificial

$\langle 220 \rangle$

<223> derived from Escherichia Coli

<400> 3

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

Gly Glu Glu Gly Leu Trp Gln Ile His Leu Gln Asp Gly Lys Ile Ser
20 25 30

Ala Ile Asp Ala Gln Ser Gly Val Met Pro Ile Thr Glu Asn Ser Leu
35 40 45

Asp Ala Glu Gln Gly Leu Val Ile Pro Pro Phe Val Glu Pro His Ile
50 55 60

His Leu Asp Thr Thr Gln Thr Ala Gly Gln Pro Asn Trp Asn Gln Ser
65 70 75 80

Gly Thr Leu Phe Glu Gly Ile Glu Arg Trp Ala Glu Arg Lys Ala Leu
85 90 95

Leu Thr His Asp Asp Val Lys Gln Arg Ala Trp Gln Thr Leu Lys Trp
100 105 110

Gln Ile Ala Asn Gly Ile Gln His Val Arg Thr His Val Asp Val Ser
115 120 125

Asp Ala Thr Leu Thr Ala Leu Lys Ala Met Leu Glu Val Lys Gln Glu
130 135 140

Val Ala Pro Trp Ile Asp Leu Gln Ile Val Ala Phe Pro Gln Glu Gly
145 150 155 160

Ile Leu Ser Tyr Pro Asn Gly Glu Ala Leu Leu Glu Glu Ala Leu Arg
165 170 175

Leu Gly Ala Asp Val Val Gly Ala Ile Pro His Phe Glu Phe Thr Arg
180 185 190

Glu Tyr Gly Val Glu Ser Leu His Lys Thr Phe Ala Leu Ala Gln Lys
195 200 205

Tyr Asp Arg Leu Ile Asp Val His Cys Asp Glu Ile Asp Asp Glu Gln
210 215 220

Ser Arg Phe Val Glu Thr Val Ala Ala Leu Ala His His Glu Gly Met
225 230 235 240

Gly Ala Arg Val Thr Ala Ser His Thr Thr Ala Met His Ser Tyr Asn
245 250 255

Gly Ala Tyr Thr Ser Arg Leu Phe Arg Leu Leu Lys Met Ser Gly Ile
260 265 270

Asn Phe Val Ala Asn Pro Leu Val Asn Ile His Leu Gln Gly Arg Phe
275 280 285

Asp Thr Tyr Pro Lys Arg Arg Gly Ile Thr Arg Val Lys Glu Met Leu
290 295 300

Glu Ser Gly Ile Asn Val Cys Phe Gly His Asp Asp Val Phe Asp Pro

305		310		315		320
Trp Tyr Pro Leu Gly Thr Ala Asn Met Leu Gln Val Leu His Met Gly	325		330		335	
Leu His Val Cys Gln Leu Met Gly Tyr Gly Gln Ile Asn Asp Gly Leu	340		345		350	
Asn Leu Ile Thr His His Ser Ala Arg Thr Leu Asn Leu Gln Asp Tyr	355		360		365	
Gly Ile Ala Ala Gly Asn Ser Ala Asn Leu Ile Ile Leu Pro Ala Glu	370		375		380	
Asn Gly Phe Asp Ala Leu Arg Arg Gln Val Pro Val Arg Tyr Ser Val	385		390		395	400
Arg Gly Gly Lys Val Ile Ala Ser Thr Gln Pro Ala Gln Thr Thr Val	405		410		415	
Tyr Leu Glu Gln Pro Glu Ala Ile Asp Tyr Lys Arg Ile Ser Gly Ala	420		425		430	
Asn Gly Val Met Ala Lys Ile Val Glu Val Lys His Pro Leu Val Lys	435		440		445	
His Lys Leu Gly Leu Met Arg Glu Gln Asp Ile Ser Thr Lys Arg Phe	450		455		460	
Arg Glu Leu Ala Ser Glu Val Gly Ser Leu Leu Thr Tyr Glu Ala Thr	465		470		475	480
Ala Asp Leu Glu Thr Glu Lys Val Thr Ile Glu Gly Trp Asn Gly Pro	485		490		495	
Val Glu Ile Asp Gln Ile Lys Gly Lys Lys Ile Thr Val Val Pro Ile	500		505		510	
Leu Arg Ala Gly Leu Gly Met Met Asp Gly Val Leu Glu Asn Val Pro	515		520		525	
Ser Ala Arg Ile Ser Val Val Gly Met Tyr Arg Asn Glu Glu Thr Leu	530		535		540	
Glu Pro Val Pro Tyr Phe Gln Lys Leu Val Ser Asn Ile Asp Glu Arg	545		550		555	560

Met Ala Leu Ile Val Asp Pro Met Leu Ala Thr Gly Gly Ser Val Ile
 565 570 575

Ala Thr Ile Asp Leu Leu Lys Lys Ala Gly Cys Ser Ser Ile Lys Val
 580 585 590

Leu Val Leu Val Ala Ala Pro Glu Gly Ile Ala Ala Leu Glu Lys Ala
 595 600 605

His Pro Asp Val Glu Leu Tyr Thr Ala Ser Ile Asp Gln Gly Leu Asn
 610 615 620

Glu His Gly Tyr Ile Ile Pro Gly Leu Gly Asp Ala Gly Asp Lys Ile
 625 630 635 640

Phe Gly Thr Lys

<210> 4
 <211> 158
 <212> PRT
 <213> *Saccharomyces cerevisiae*

<400> 4

Met Val Thr Gly Gly Met Ala Ser Lys Trp Asp Gln Lys Gly Met Asp
 1 5 10 15

Ile Ala Tyr Glu Glu Ala Ala Leu Gly Tyr Lys Glu Gly Gly Val Pro
 20 25 30

Ile Gly Gly Cys Leu Ile Asn Asn Lys Asp Gly Ser Val Leu Gly Arg
 35 40 45

Gly His Asn Met Arg Phe Gln Lys Gly Ser Ala Thr Leu His Gly Glu
 50 55 60

Ile Ser Thr Leu Glu Asn Cys Gly Arg Leu Glu Gly Lys Val Tyr Lys
 65 70 75 80

Asp Thr Thr Leu Tyr Thr Thr Leu Ser Pro Cys Asp Met Cys Thr Gly
 85 90 95

Ala Ile Ile Met Tyr Gly Ile Pro Arg Cys Val Val Gly Glu Asn Val
 100 105 110

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

Val Val Val Val Asp Asp Glu Arg Cys Lys Lys Ile Met Lys Gln Phe
 130 135 140

Ile Asp Glu Arg Pro Gln Asp Trp Phe Glu Asp Ile Gly Glu
 145 150 155

<210> 5
 <211> 150
 <212> PRT
 <213> Candida albicans

<400> 5

Met Ala Phe Asp Asp Lys Lys Gly Leu Gln Val Ala Leu Asp Gln Ala
 1 5 10 15

Lys Lys Ser Tyr Ser Glu Gly Gly Ile Pro Ile Gly Ser Cys Ile Ile
 20 25 30

Ser Ser Asp Asp Thr Val Leu Gly Gln Gly His Asn Glu Arg Ile Gln
 35 40 45

Lys His Ser Ala Ile Leu His Gly Glu Met Ser Ala Leu Glu Asn Ala
 50 55 60

Gly Arg Leu Pro Gly Lys Thr Tyr Lys Asp Cys Thr Ile Tyr Thr Thr
 65 70 75 80

Leu Ser Pro Cys Ser Met Cys Thr Gly Ala Ile Leu Leu Tyr Gly Phe
 85 90 95

Lys Arg Val Val Met Gly Glu Asn Val Asn Phe Leu Gly Asn Glu Lys
 100 105 110

Leu Leu Ile Glu Asn Gly Val Glu Val Val Asn Leu Asn Asp Gln Glu
 115 120 125

Cys Ile Asp Leu Met Ala Lys Phe Ile Lys Glu Lys Pro Gln Asp Trp
 130 135 140

Asn Glu Asp Ile Gly Glu
 145 150

<210> 6
 <211> 432
 <212> PRT
 <213> Escherichia coli

<400> 6

Met Trp Arg Leu Thr Val Ser Asn Asn Ala Leu Gln Thr Ile Ile Asn

1	5	10	15
Ala Gln Leu Pro Gly Lys Glu Gly Leu Trp Gln Ile His Leu His Asp	20	25	30
Gly Lys Ile Ser Ala Ile Asp Ala Gln Ser Gly Val Met Pro Val Thr	35	40	45
Glu Asn Ser Leu Asp Ala Glu Gln Gly Leu Val Leu Pro Pro Phe Val	50	55	60
Glu Pro His Ile His Leu Asp Thr Thr Gln Thr Ala Gly Gln Pro Asn	65	70	75
Trp Asn Gln Ser Gly Thr Leu Phe Glu Gly Ile Glu Arg Trp Ala Glu	85	90	95
Arg Lys Ala Leu Leu Thr His Asp Asp Val Lys Gln Arg Ala Trp Gln	100	105	110
Thr Leu Lys Trp Gln Ile Ala Asn Gly Ile Gln His Val Arg Thr His	115	120	125
Val Asp Val Ser Asp Ala Thr Leu Thr Ala Leu Lys Ala Met Leu Glu	130	135	140
Val Lys Gln Glu Val Ala Pro Trp Ile Asp Leu Gln Ile Val Ala Phe	145	150	155
Pro Gln Glu Gly Ile Leu Ser Tyr Pro Asn Gly Glu Ala Leu Leu Glu	165	170	175
Glu Ala Leu Arg Leu Gly Ala Asp Val Val Gly Ala Ile Pro His Phe	180	185	190
Glu Phe Thr Arg Glu Tyr Gly Val Glu Ser Leu His Lys Thr Phe Ala	195	200	205
Leu Ala Gln Lys Tyr Asp Arg Leu Ile Asp Val His Cys Asp Glu Ile	210	215	220
Asp Asp Glu Gln Ser Arg Phe Val Glu Thr Val Ala Ala Leu Ala His	225	230	235
Arg Glu Gly Met Gly Ala Arg Val Thr Ala Ser His Thr Thr Ala Met	245	250	255

His Ser Tyr Asn Gly Ala Tyr Thr Ser Arg Leu Phe Arg Leu Leu Lys
 260 265 270

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

Gln Gly Arg Phe Asp Thr Tyr Pro Lys Arg Arg Gly Ile Thr Arg Val
 290 295 300

Lys Glu Met Leu Glu Ser Gly Ile Asn Val Cys Phe Gly His Asp Asp
 305 310 315 320

Val Phe Asp Pro Trp Tyr Pro Leu Gly Thr Ala Asn Met Leu Gln Val
 325 330 335

Leu His Met Gly Leu His Val Cys Gln Leu Met Gly Tyr Gly Gln Ile
 340 345 350

Asn Asp Gly Leu Asn Leu Ile Thr His His Ser Ala Arg Thr Leu Asn
 355 360 365

Leu Gln Asp Tyr Gly Ile Ala Ala Gly Asn Ser Ala Asn Leu Ile Ile
 370 375 380

Leu Pro Ala Glu Asn Gly Phe Asp Ala Leu Arg Arg Gln Val Pro Val
 385 390 395 400

Arg Tyr Ser Val Arg Gly Gly Lys Val Ile Ala Ser Thr Gln Pro Ala
 405 410 415

Gln Thr Thr Val Tyr Leu Glu Gln Pro Glu Ala Ile Asp Tyr Lys Arg
 420 425 430

<210> 7
 <211> 30
 <212> DNA
 <213> artificial

<220>
 <223> oligonucleotide

<400> 7
 tcccccggt taaccactgc atgatgtaca

30

<210> 8
 <211> 30
 <212> DNA
 <213> artificial

<220>
 <223> oligonucleotides

<400> 8
 gccgagctcg aggtagccgt ttgtaattct 30

<210> 9
 <211> 24
 <212> DNA
 <213> artificial

<220>
 <223> oligonucleotides

<400> 9
 gcctggccat aactccaggc cggt 24

<210> 10
 <211> 30
 <212> DNA
 <213> artificial

<220>
 <223> oligonucleotides

<400> 10
 gcccagctga tcgagccgta acgattttca 30

<210> 11
 <211> 30
 <212> DNA
 <213> artificial

<220>
 <223> oligonucleotides

<400> 11
 gccgcatgca tccttgaaca ccaataaccga 30

<210> 12
 <211> 29
 <212> DNA
 <213> artificial

<220>
 <223> oligonucleotide

<400> 12
 gctctagaga ggtagccgtt tgtaattctg 29

<210> 13
 <211> 30
 <212> DNA
 <213> artificial

<220>
 <223> oligonucleotide

<400> 13
 gcgcgatcct ttggtacagt ctagtatcca 30

<210> 14
 <211> 30
 <212> DNA
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 <220>
 <223> oligonucleotide

 <400> 14
 tcccccgggg tataacagat gcagtatcca 30

<210> 15
 <211> 30
 <212> DNA
 <213> artificial

 <220>
 <223> oligonucleotide

 <400> 15
 gccagctgt tcaatggcca tctgaaatcc 30

<210> 16
 <211> 29
 <212> DNA
 <213> artificial

 <220>
 <223> oligonucleotide

 <400> 16
 gaagatctag tatcgcatct aaaagatgg 29

<210> 17
 <211> 30
 <212> DNA
 <213> artificial

 <220>
 <223> oligonucleotide

 <400> 17
 gccgagctca cccacacgtt tttcgaaaaa 30

<210> 18
 <211> 30
 <212> DNA
 <213> artificial

 <220>
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 <400> 18
 gccgcatgct tataacagat gcagtatcaa 30