

P88354PC00_sequence_listing 746002
SEQUENCE LISTING

<110> National University of Ireland Maynooth

<120> Pharmaceutical Composition

<130> P88354PC00

<150> S2008/0418

<151> 2008-05-26

<160> 19

<170> PatentIn version 3.5

<210> 1

<211> 678

<212> DNA

<213> Artificial sequence

<220>

<223> Chemically synthesised, codon-optimised form of Pellino gene from
Melanoplus sanguinipes Entomopoxvirus (MSEPV) with myc tag

<400> 1

atggacaagg tctacaagtt cggctcgttg accaacctca actccggcaa catctacaac	60
ttgatctaca acaagaacta cacgttcacg atcggccgca actcgaagtg cgacatcttc	120
atcaacgaca agaagatcag caacatcgcg tgcattcatca agtgcgacta cgagaagaag	180
aagtgtttca tctacggcgg ctgctcgaac tcgaagaagt acttgacttt cgacaacaac	240
gacggcttgc tgcagaacgg catcttcacg aagttcccga acttgagagt gatggacttg	300
tcgatcaacg gcaacatcta catcttgcgc tcgaacatca agttgaactt gatcaacgag	360
ttgatcgaca cgacgtcatc cgacatcagc ggcaacatct acatctggag gtcgatcgac	420
gtgaagctga acaacaagat ctgcaactac tcgatgtgca cgagcacgaa gtacgagtac	480
atgttctaca agtgcggcca caagatcaac aagaagaccg cgaccttctg gaagaagacc	540
aagatgttgt gcaacgacat ctacacgaac aagtacaagt tgatcaacat ctgcccgttc	600
tgcttcaacg agtcgttcac catcaactac tccttctact gcaaggagca gaagctcatc	660
tcggaggagg acctgtaa	678

<210> 2

<211> 645

<212> DNA

<213> Artificial sequence

<220>

<223> Chemically synthesised, codon-optimised form of Pellino gene from
MSEPV (without myc tag)

<400> 2

atggacaagg tctacaagtt cggctcgttg accaacctca actccggcaa catctacaac	60
ttgatctaca acaagaacta cacgttcacg atcggccgca actcgaagtg cgacatcttc	120
atcaacgaca agaagatcag caacatcgcg tgcattcatca agtgcgacta cgagaagaag	180
aagtgtttca tctacggcgg ctgctcgaac tcgaagaagt acttgacttt cgacaacaac	240

P88354PC00_sequence_listing 746002

gacggcttgc tgcagaacgg catcttcatc aagttcccga acttggagtg gatggacttg	300
tcgatcaacg gcaacatcta catcttgccg tcgaacatca agttgaactt gatcaacgag	360
ttgatcgaca cgacgctcat cgacatcagc ggcaacatct acatctggag gtcgatcgac	420
gtgaagctga acaacaagat ctgcaactac tcgatgtgca cgagcacgaa gtacgagtac	480
atgtttctaca agtgcgcca caagatcaac aagaagaccg cgaccttctg gaagaagacc	540
aagatgttgt gcaacgacat ctacacgaac aagtacaagt tgatcaacat ctgcccgttc	600
tgcttcaacg agtcgttcat catcaactac tccttctact gcaag	645

<210> 3
 <211> 525
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Chemically synthesised, codon-optimised form of Pellino gene from MSEPV with C-terminal removed and with myc tag

<400> 3	
atggacaagg tctacaagtt cggctcgttg accaacctca actccggcaa catctacaac	60
ttgatctaca acaagaacta caggttcacg atcgcccgca actcgaagtg cgacatcttc	120
atcaacgaca agaagatcag caacatcgcg tgcattcatca agtgcgacta cgagaagaag	180
aagtgttca tctacggcgg ctgctcgaac tcgaagaagt acttgactt cgacaacaac	240
gacggcttgc tgcagaacgg catcttcatc aagttcccga acttggagtg gatggacttg	300
tcgatcaacg gcaacatcta catcttgccg tcgaacatca agttgaactt gatcaacgag	360
ttgatcgaca cgacgctcat cgacatcagc ggcaacatct acatctggag gtcgatcgac	420
gtgaagctga acaacaagat ctgcaactac tcgatgtgca cgagcacgaa gtacgagtac	480
atgtttctaca aggagcagaa gtcattctcg gaggaggacc tgtaa	525

<210> 4
 <211> 492
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Chemically synthesised, codon-optimised form of Pellino gene from MSEPV with C-terminal removed (without myc tag)

<400> 4	
atggacaagg tctacaagtt cggctcgttg accaacctca actccggcaa catctacaac	60
ttgatctaca acaagaacta caggttcacg atcgcccgca actcgaagtg cgacatcttc	120
atcaacgaca agaagatcag caacatcgcg tgcattcatca agtgcgacta cgagaagaag	180
aagtgttca tctacggcgg ctgctcgaac tcgaagaagt acttgactt cgacaacaac	240
gacggcttgc tgcagaacgg catcttcatc aagttcccga acttggagtg gatggacttg	300
tcgatcaacg gcaacatcta catcttgccg tcgaacatca agttgaactt gatcaacgag	360
ttgatcgaca cgacgctcat cgacatcagc ggcaacatct acatctggag gtcgatcgac	420

P88354PC00_sequence_listing 746002
 gtgaagctga acaacaagat ctgcaactac tcgatgtgca cgagcacgaa gtacgagtac 480
 atgtttctaca ag 492

<210> 5
 <211> 225
 <212> PRT
 <213> Melanoplus sanguinipes Entomopoxvirus

<400> 5

Met Asp Lys Val Tyr Lys Phe Gly Ser Leu Thr Asn Leu Asn Ser Gly
 1 5 10 15

Asn Ile Tyr Asn Leu Ile Tyr Asn Lys Asn Tyr Thr Phe Thr Ile Gly
 20 25 30

Arg Asn Ser Lys Cys Asp Ile Phe Ile Asn Asp Lys Lys Ile Ser Asn
 35 40 45

Ile Ala Cys Ile Ile Lys Cys Asp Tyr Glu Lys Lys Lys Cys Phe Ile
 50 55 60

Tyr Gly Gly Cys Ser Asn Ser Lys Lys Tyr Leu Tyr Phe Asp Asn Asn
 65 70 75 80

Asp Gly Leu Leu Gln Asn Gly Ile Phe Ile Lys Phe Pro Asn Leu Glu
 85 90 95

Trp Met Asp Leu Ser Ile Asn Gly Asn Ile Tyr Ile Leu Arg Ser Asn
 100 105 110

Ile Lys Leu Asn Leu Ile Asn Glu Leu Ile Asp Thr Thr Leu Ile Asp
 115 120 125

Ile Ser Gly Asn Ile Tyr Ile Trp Arg Ser Ile Asp Val Lys Leu Asn
 130 135 140

Asn Lys Ile Cys Asn Tyr Ser Met Cys Thr Ser Thr Lys Tyr Glu Tyr
 145 150 155 160

Met Phe Tyr Lys Cys Gly His Lys Ile Asn Lys Lys Thr Ala Thr Phe
 165 170 175

Trp Lys Lys Thr Lys Met Leu Cys Asn Asp Ile Tyr Thr Asn Lys Tyr
 180 185 190

Lys Leu Ile Asn Ile Cys Pro Phe Cys Phe Asn Glu Ser Phe Ile Ile
 195 200 205

Asn Tyr Ser Phe Tyr Cys Lys Glu Gln Lys Leu Ile Ser Glu Glu Asp
 210 215 220

P88354PC00_sequence_listing 746002

Leu
225

<210> 6
<211> 215
<212> PRT
<213> Melanoplus sanguinipes Entomopoxvirus

<400> 6

Met Asp Lys Val Tyr Lys Phe Gly Ser Leu Thr Asn Leu Asn Ser Gly
1 5 10 15

Asn Ile Tyr Asn Leu Ile Tyr Asn Lys Asn Tyr Thr Phe Thr Ile Gly
20 25 30

Arg Asn Ser Lys Cys Asp Ile Phe Ile Asn Asp Lys Lys Ile Ser Asn
35 40 45

Ile Ala Cys Ile Ile Lys Cys Asp Tyr Glu Lys Lys Lys Cys Phe Ile
50 55 60

Tyr Gly Gly Cys Ser Asn Ser Lys Lys Tyr Leu Tyr Phe Asp Asn Asn
65 70 75 80

Asp Gly Leu Leu Gln Asn Gly Ile Phe Ile Lys Phe Pro Asn Leu Glu
85 90 95

Trp Met Asp Leu Ser Ile Asn Gly Asn Ile Tyr Ile Leu Arg Ser Asn
100 105 110

Ile Lys Leu Asn Leu Ile Asn Glu Leu Ile Asp Thr Thr Leu Ile Asp
115 120 125

Ile Ser Gly Asn Ile Tyr Ile Trp Arg Ser Ile Asp Val Lys Leu Asn
130 135 140

Asn Lys Ile Cys Asn Tyr Ser Met Cys Thr Ser Thr Lys Tyr Glu Tyr
145 150 155 160

Met Phe Tyr Lys Cys Gly His Lys Ile Asn Lys Lys Thr Ala Thr Phe
165 170 175

Trp Lys Lys Thr Lys Met Leu Cys Asn Asp Ile Tyr Thr Asn Lys Tyr
180 185 190

Lys Leu Ile Asn Ile Cys Pro Phe Cys Phe Asn Glu Ser Phe Ile Ile
195 200 205

Asn Tyr Ser Phe Tyr Cys Lys
210 215

<210> 7

P88354PC00_sequence_listing 746002

<211> 174
 <212> PRT
 <213> Melanoplus sanguinipes Entomopoxvirus

<400> 7

Met Asp Lys Val Tyr Lys Phe Gly Ser Leu Thr Asn Leu Asn Ser Gly
 1 5 10 15

Asn Ile Tyr Asn Leu Ile Tyr Asn Lys Asn Tyr Thr Phe Thr Ile Gly
 20 25 30

Arg Asn Ser Lys Cys Asp Ile Phe Ile Asn Asp Lys Lys Ile Ser Asn
 35 40 45

Ile Ala Cys Ile Ile Lys Cys Asp Tyr Glu Lys Lys Lys Cys Phe Ile
 50 55 60

Tyr Gly Gly Cys Ser Asn Ser Lys Lys Tyr Leu Tyr Phe Asp Asn Asn
 65 70 75 80

Asp Gly Leu Leu Gln Asn Gly Ile Phe Ile Lys Phe Pro Asn Leu Glu
 85 90 95

Trp Met Asp Leu Ser Ile Asn Gly Asn Ile Tyr Ile Leu Arg Ser Asn
 100 105 110

Ile Lys Leu Asn Leu Ile Asn Glu Leu Ile Asp Thr Thr Leu Ile Asp
 115 120 125

Ile Ser Gly Asn Ile Tyr Ile Trp Arg Ser Ile Asp Val Lys Leu Asn
 130 135 140

Asn Lys Ile Cys Asn Tyr Ser Met Cys Thr Ser Thr Lys Tyr Glu Tyr
 145 150 155 160

Met Phe Tyr Lys Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu
 165 170

<210> 8
 <211> 164
 <212> PRT
 <213> Melanoplus sanguinipes Entomopoxvirus

<400> 8

Met Asp Lys Val Tyr Lys Phe Gly Ser Leu Thr Asn Leu Asn Ser Gly
 1 5 10 15

Asn Ile Tyr Asn Leu Ile Tyr Asn Lys Asn Tyr Thr Phe Thr Ile Gly
 20 25 30

Arg Asn Ser Lys Cys Asp Ile Phe Ile Asn Asp Lys Lys Ile Ser Asn
 35 40 45

P88354PC00_sequence_listing 746002

Ile Ala Cys Ile Ile Lys Cys Asp Tyr Glu Lys Lys Lys Cys Phe Ile
50 55 60

Tyr Gly Gly Cys Ser Asn Ser Lys Lys Tyr Leu Tyr Phe Asp Asn Asn
65 70 75 80

Asp Gly Leu Leu Gln Asn Gly Ile Phe Ile Lys Phe Pro Asn Leu Glu
85 90 95

Trp Met Asp Leu Ser Ile Asn Gly Asn Ile Tyr Ile Leu Arg Ser Asn
100 105 110

Ile Lys Leu Asn Leu Ile Asn Glu Leu Ile Asp Thr Thr Leu Ile Asp
115 120 125

Ile Ser Gly Asn Ile Tyr Ile Trp Arg Ser Ile Asp Val Lys Leu Asn
130 135 140

Asn Lys Ile Cys Asn Tyr Ser Met Cys Thr Ser Thr Lys Tyr Glu Tyr
145 150 155 160

Met Phe Tyr Lys

<210> 9
<211> 32
<212> DNA
<213> Artificial sequence

<220>
<223> primer (forward)

<400> 9
cgggatccgc caccatggac aaggtctaca ag

32

<210> 10
<211> 87
<212> DNA
<213> Artificial sequence

<220>
<223> primer (reverse)

<400> 10
ggaattcctt acaggtcctc ctccgagatg agcttctgct cctttagaa catgtactcg
tacttcgtgc tcgtgcacat cgagtag

60

87

<210> 11
<211> 153
<212> DNA
<213> Artificial sequence

<220>
<223> C-terminal region of codon-optimised form of Pellino gene from
MSEPV

P88354PC00_sequence_listing 746002

<400> 11
 tgcggccaca agatcaacaa gaagaccgcg accttctgga agaagaccaa gatgttgtgc 60
 aacgacatct acacgaacaa gtacaagttg atcaacatct gcccgttctg cttcaacgag 120
 tcgttcatca tcaactactc cttctactgc aag 153

<210> 12
 <211> 51
 <212> PRT
 <213> Melanoplus sanguinipes Entomopoxvirus

<400> 12
 Cys Gly His Lys Ile Asn Lys Lys Thr Ala Thr Phe Trp Lys Lys Thr
 1 5 10 15
 Lys Met Leu Cys Asn Asp Ile Tyr Thr Asn Lys Tyr Lys Leu Ile Asn
 20 25 30
 Ile Cys Pro Phe Cys Phe Asn Glu Ser Phe Ile Ile Asn Tyr Ser Phe
 35 40 45
 Tyr Cys Lys
 50

<210> 13
 <211> 113
 <212> PRT
 <213> Homo sapiens

<400> 13
 Ala Phe Pro Ser Met Lys Arg Lys Asp Val Val Asp Glu Lys Gln Pro
 1 5 10 15
 Trp Val Tyr Leu Asn Cys Gly His Val His Gly Tyr His Asn Trp Gly
 20 25 30
 Asn Lys Glu Glu Arg Asp Gly Lys Asp Arg Glu Cys Pro Asn Cys Arg
 35 40 45
 Ser Val Gly Pro Tyr Val Pro Leu Trp Leu Gly Cys Glu Ala Gly Phe
 50 55 60
 Tyr Val Asp Ala Gly Pro Pro Thr His Ala Phe Ser Pro Cys Gly His
 65 70 75 80
 Val Cys Ser Glu Lys Thr Thr Ala Tyr Trp Ser Gln Ile Pro Leu Pro
 85 90 95
 His Gly Thr His Thr Phe His Ala Ala Cys Pro Phe Cys Ala His Gln
 100 105 110
 Leu

P88354PC00_sequence_listing 746002

<210> 14
 <211> 113
 <212> PRT
 <213> Homo sapiens

<400> 14

Ala Phe Pro Ser Ile Asn Arg Lys Glu Val Val Glu Glu Lys Gln Pro
 1 5 10 15

Trp Ala Tyr Leu Ser Cys Gly His Val His Gly Tyr His Asn Trp Gly
 20 25 30

His Arg Ser Asp Thr Glu Ala Asn Glu Arg Glu Cys Pro Met Cys Arg
 35 40 45

Thr Val Gly Pro Tyr Val Pro Leu Trp Leu Gly Cys Glu Ala Gly Phe
 50 55 60

Tyr Val Asp Ala Gly Pro Pro Thr His Ala Phe Thr Pro Cys Gly His
 65 70 75 80

Val Cys Ser Glu Lys Ser Ala Lys Tyr Trp Ser Gln Ile Pro Leu Pro
 85 90 95

His Gly Thr His Ala Phe His Ala Ala Cys Pro Phe Cys Ala Thr Gln
 100 105 110

Leu

<210> 15
 <211> 114
 <212> PRT
 <213> Homo sapiens

<400> 15

Ala Phe Pro Ser Pro Ala Arg Gly Arg Thr Ala Pro Asp Lys Gln Gln
 1 5 10 15

Pro Trp Val Tyr Val Arg Cys Gly His Val His Gly Tyr His Gly Trp
 20 25 30

Gly Cys Arg Arg Glu Arg Gly Pro Gln Glu Arg Glu Cys Pro Leu Cys
 35 40 45

Arg Leu Val Gly Pro Tyr Val Pro Leu Trp Leu Gly Gln Glu Ala Gly
 50 55 60

Leu Cys Leu Asp Pro Gly Pro Pro Ser His Ala Phe Ala Pro Cys Gly
 65 70 75 80

P88354PC00_sequence_listing 746002

His Val Cys Ser Glu Lys Thr Ala Arg Tyr Trp Ala Gln Thr Pro Leu
85 90 95

Pro His Gly Thr His Ala Phe His Ala Ala Cys Pro Phe Cys Gly Ala
100 105 110

Trp Leu

<210> 16
<211> 114
<212> PRT
<213> Homo sapiens

<400> 16

Ala Phe Pro Ser Pro Ala Arg Gly Arg Thr Ala Pro Asp Lys Gln Gln
1 5 10 15

Pro Trp Val Tyr Val Arg Cys Gly His Val His Gly Tyr His Gly Trp
20 25 30

Gly Cys Arg Arg Glu Arg Gly Pro Gln Glu Arg Glu Cys Pro Leu Cys
35 40 45

Arg Leu Val Gly Pro Tyr Val Pro Leu Trp Leu Gly Gln Glu Ala Gly
50 55 60

Leu Cys Leu Asp Pro Gly Pro Pro Ser His Ala Phe Ala Pro Cys Gly
65 70 75 80

His Val Cys Ser Glu Lys Thr Ala Arg Tyr Trp Ala Gln Thr Pro Leu
85 90 95

Pro His Gly Thr His Ala Phe His Ala Ala Cys Pro Phe Cys Gly Ala
100 105 110

Trp Leu

<210> 17
<211> 110
<212> PRT
<213> Drosophila melanogaster

<400> 17

Val Ile Pro Arg Lys Val Asn Ile Gly Asp Gln Val Asn Gln Pro Tyr
1 5 10 15

Val Tyr Leu Asn Cys Gly His Val Gln Gly His His Asp Trp Gly Gln
20 25 30

Asp Glu Asn Thr Gly Ala Arg Arg Cys Pro Met Cys Leu Glu Leu Gly
35 40 45

P88354PC00_sequence_listing 746002

Pro Val Val Thr Leu Cys Met Gly Leu Glu Pro Ala Phe Tyr Val Asp
50 55 60

Val Gly Ala Pro Thr Tyr Ala Phe Asn Pro Cys Gly His Met Ala Thr
65 70 75 80

Glu Lys Thr Val Lys Tyr Trp Ala Asn Val Glu Ile Pro His Gly Thr
85 90 95

Asn Gly Phe Gln Ala Val Cys Pro Phe Cys Ala Thr Pro Leu
100 105 110

<210> 18
<211> 115
<212> PRT
<213> Caenorhabditis elegans

<400> 18

Val Ile Pro Lys Lys Arg Asn Gly Arg Gln Ile Asn Arg Arg Gln Pro
1 5 10 15

Tyr Val Tyr Leu Gln Cys Gly His Val Gln Gly Arg His Glu Trp Gly
20 25 30

Val Gln Glu Asn Ser Gly Gln Arg Ser Gly Lys Cys Pro Ile Cys Leu
35 40 45

Val Glu Ser Glu Arg Ile Val Gln Leu Ser Met Gly Met Glu Pro Ser
50 55 60

Phe His Leu Asp Ser Gly Val Leu Asp His Thr Phe Asn Pro Cys Gly
65 70 75 80

His Met Ala Ser Ser Lys Gln Thr Val Leu Tyr Trp Ser Arg Ile Pro
85 90 95

Leu Pro Gln Gly Thr Cys Arg Tyr Asp Pro Val Cys Pro Phe Cys Tyr
100 105 110

Gln Leu Leu
115

<210> 19
<211> 57
<212> PRT
<213> Melanoplus sanguinipes Entomopoxvirus

<400> 19

Ile Cys Asn Tyr Ser Met Cys Thr Ser Thr Lys Tyr Glu Tyr Met Phe
1 5 10 15

P88354PC00_sequence_listing 746002

Tyr Lys Cys Gly His Lys Ile Met Lys Lys Thr Ala Thr Phe Trp Lys
 20 25 30

Lys Thr Lys Met Leu Cys Asn Asp Ile Tyr Thr Asn Lys Tyr Lys Leu
 35 40 45

Ile Asn Ile Cys Pro Phe Cys Phe Asn
 50 55