

SEQUENCE LISTING

<110> INSTITUT NATIONAL DE LA SANTE ET DE LA RECHERCHE MEDICALE
(INSERM)

<120> Use of inhibitors of sirtuins and/or ampk for the
preparation of a medicament for the treatment of
polyalanine diseases.

<130> D25579

<150> EP 07301130.6

<151> 2007-06-19

<160> 19

<170> PatentIn version 3.3

<210> 1

<211> 3107

<212> DNA

<213> homo sapiens

<400> 1

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 <213> Artificial sequence

<220>
 <223> Forward primer used for amplification of PABPN1 sequence
 with 10 alanines

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<210> 3
 <211> 39
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Reward primer used for amplification of PABPN1 sequence
 with 13 alanines

<400> 3
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<210> 4
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 <213> Artificial sequence

<220>
 <223> Forward primer used for amplification of PABPN1 sequence
 with 0 alanine

<400> 4
 cggaattca tgggggctgc gg 22

<210> 5
 <211> 21
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<220>
 <223> Forward primer for amplification of PABPN1

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<210> 6
 <211> 22
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Reward primer for amplification of PABPN1

<400> 6

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22

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<220>
<223> Forward primer for amplification of col-1

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21

<210> 8
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<220>
<223> Reward primer for amplification of col-1

<400> 8
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<210> 9
<211> 747
<212> PRT
<213> homo sapiens
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<220>
<223> SIRT1

<400> 9

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Leu	Arg	Lys 35	Arg	Pro	Arg	Arg	Asp 40	Gly	Pro	Gly	Leu	Glu 45	Arg	Ser	Pro
Gly	Glu	Pro	Gly	Gly	Ala	Ala 55	Pro	Glu	Arg	Glu	Val 60	Pro	Ala	Ala	Ala
Arg 65	Gly	Cys	Pro	Gly	Ala 70	Ala	Ala	Ala	Ala	Leu 75	Trp	Arg	Glu	Ala	Glu 80
Ala	Glu	Ala	Ala	Ala 85	Ala	Gly	Gly	Glu	Gln 90	Glu	Ala	Gln	Ala	Thr 95	Ala
Ala	Ala	Gly	Glu 100	Gly	Asp	Asn	Gly	Pro 105	Gly	Leu	Gln	Gly	Pro 110	Ser	Arg
Glu	Pro	Pro 115	Leu	Ala	Asp	Asn	Leu 120	Tyr	Asp	Glu	Asp	Asp 125	Asp	Asp	Glu
Gly	Glu	Glu	Glu	Glu	Glu	Ala 135	Ala	Ala	Ala	Ala	Ile 140	Gly	Tyr	Arg	Asp
Asn 145	Leu	Leu	Phe	Gly	Asp 150	Glu	Ile	Ile	Thr	Asn 155	Gly	Phe	His	Ser	Cys 160
Glu	Ser	Asp	Glu	Glu 165	Asp	Arg	Ala	Ser	His 170	Ala	Ser	Ser	Ser	Asp 175	Trp
Thr	Pro	Arg	Pro 180	Arg	Ile	Gly	Pro	Tyr 185	Thr	Phe	Val	Gln	Gln 190	His	Leu
Met	Ile	Gly 195	Thr	Asp	Pro	Arg	Thr 200	Ile	Leu	Lys	Asp	Leu 205	Leu	Pro	Glu
Thr	Ile 210	Pro	Pro	Pro	Glu	Leu 215	Asp	Asp	Met	Thr	Leu 220	Trp	Gln	Ile	Val
Ile 225	Asn	Ile	Leu	Ser	Glu 230	Pro	Pro	Lys	Arg	Lys 235	Lys	Arg	Lys	Asp	Ile 240
Asn	Thr	Ile	Glu	Asp 245	Ala	Val	Lys	Leu	Leu 250	Gln	Glu	Cys	Lys	Lys 255	Ile

PhoenixTemp33343.tmp.txt

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Ile Val Leu Thr Gly Ala Gly Val Ser Val Ser Cys Gly Ile Pro Asp
260
Phe Arg Ser Arg Asp Gly Ile Tyr Ala Arg Leu Ala Val Asp Phe Pro
275
Asp Leu Pro Asp Pro Gln Ala Met Phe Asp Ile Glu Tyr Phe Arg Lys
290
Asp Pro Arg Pro Phe Phe Lys Phe Ala Lys Glu Ile Tyr Pro Gly Gln
305
Phe Gln Pro Ser Leu Cys His Lys Phe Ile Ala Leu Ser Asp Lys Glu
325
Gly Lys Leu Leu Arg Asn Tyr Thr Gln Asn Ile Asp Thr Leu Glu Gln
340
Val Ala Gly Ile Gln Arg Ile Ile Gln Cys His Gly Ser Phe Ala Thr
355
Ala Ser Cys Leu Ile Cys Lys Tyr Lys Val Asp Cys Glu Ala Val Arg
370
Gly Asp Ile Phe Asn Gln Val Val Pro Arg Cys Pro Arg Cys Pro Ala
385
Asp Glu Pro Leu Ala Ile Met Lys Pro Glu Ile Val Phe Phe Gly Glu
405
Asn Leu Pro Glu Gln Phe His Arg Ala Met Lys Tyr Asp Lys Asp Glu
420
Val Asp Leu Leu Ile Val Ile Gly Ser Ser Leu Lys Val Arg Pro Val
435
Ala Leu Ile Pro Ser Ser Ile Pro His Glu Val Pro Gln Ile Leu Ile
450
Asn Arg Glu Pro Leu Pro His Leu His Phe Asp Val Glu Leu Leu Gly
465
Asp Cys Asp Val Ile Ile Asn Glu Leu Cys His Arg Leu Gly Gly Glu
485
Tyr Ala Lys Leu Cys Cys Asn Pro Val Lys Leu Ser Glu Ile Thr Glu
500
Lys Pro Pro Arg Thr Gln Lys Glu Leu Ala Tyr Leu Ser Glu Leu Pro
515
Pro Thr Pro Leu His Val Ser Glu Asp Ser Ser Ser Pro Glu Arg Thr
530
Ser Pro Pro Asp Ser Ser Val Ile Val Thr Leu Leu Asp Gln Ala Ala
545
Lys Ser Asn Asp Asp Leu Asp Val Ser Glu Ser Lys Gly Cys Met Glu
565
Glu Lys Pro Gln Glu Val Gln Thr Ser Arg Asn Val Glu Ser Ile Ala
580
Glu Gln Met Glu Asn Pro Asp Leu Lys Asn Val Gly Ser Ser Thr Gly
595
Glu Lys Asn Glu Arg Thr Ser Val Ala Gly Thr Val Arg Lys Cys Trp
610
Pro Asn Arg Val Ala Lys Glu Gln Ile Ser Arg Arg Leu Asp Gly Asn
625
Gln Tyr Leu Phe Leu Pro Pro Asn Arg Tyr Ile Phe His Gly Ala Glu
645
Val Tyr Ser Asp Ser Glu Asp Asp Val Leu Ser Ser Ser Ser Cys Gly
660
Ser Asn Ser Asp Ser Gly Thr Cys Gln Ser Pro Ser Leu Glu Glu Pro
675
Met Glu Asp Glu Ser Glu Ile Glu Glu Phe Tyr Asn Gly Leu Glu Asp
690
Glu Pro Asp Val Pro Glu Arg Ala Gly Gly Ala Gly Phe Gly Thr Asp
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Gly Asp Asp Gln Glu Ala Ile Asn Glu Ala Ile Ser Val Lys Gln Glu
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Val Thr Asp Met Asn Tyr Pro Ser Asn Lys Ser
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745

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<210> 10
 <211> 352
 <212> PRT
 <213> homo sapiens

<220>

<223> SIRT2

<400> 10

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20      25      30
Tyr Met Gln Ser Glu Arg Cys Arg Arg Val Ile Cys Leu Val Gly Ala
35      40      45
Gly Ile Ser Thr Ser Ala Gly Ile Pro Asp Phe Arg Ser Pro Ser Thr
50      55      60
Gly Leu Tyr Asp Asn Leu Glu Lys Tyr His Leu Pro Tyr Pro Glu Ala
65      70      75      80
Ile Phe Glu Ile Ser Tyr Phe Lys Lys His Pro Glu Pro Phe Phe Ala
85      90      95
Leu Ala Lys Glu Leu Tyr Pro Gly Gln Phe Lys Pro Thr Ile Cys His
100     105     110
Tyr Phe Met Arg Leu Leu Lys Asp Lys Gly Leu Leu Leu Arg Cys Tyr
115     120     125
Thr Gln Asn Ile Asp Thr Leu Glu Arg Ile Ala Gly Leu Glu Gln Glu
130     135     140
Asp Leu Val Glu Ala His Gly Thr Phe Tyr Thr Ser His Cys Val Ser
145     150     155     160
Ala Ser Cys Arg His Glu Tyr Pro Leu Ser Trp Met Lys Glu Lys Ile
165     170     175
Phe Ser Glu Val Thr Pro Lys Cys Glu Asp Cys Gln Ser Leu Val Lys
180     185     190
Pro Asp Ile Val Phe Phe Gly Glu Ser Leu Pro Ala Arg Phe Phe Ser
195     200     205
Cys Met Gln Ser Asp Phe Leu Lys Val Asp Leu Leu Leu Val Met Gly
210     215     220
Thr Ser Leu Gln Val Gln Pro Phe Ala Ser Leu Ile Ser Lys Ala Pro
225     230     235     240
Leu Ser Thr Pro Arg Leu Leu Ile Asn Lys Glu Lys Ala Gly Gln Ser
245     250     255
Asp Pro Phe Leu Gly Met Ile Met Gly Leu Gly Gly Gly Met Asp Phe
260     265     270
Asp Ser Lys Lys Ala Tyr Arg Asp Val Ala Trp Leu Gly Glu Cys Asp
275     280     285
Gln Gly Cys Leu Ala Leu Ala Glu Leu Leu Gly Trp Lys Lys Glu Leu
290     295     300
Glu Asp Leu Val Arg Arg Glu His Ala Ser Ile Asp Ala Gln Ser Gly
305     310     315     320
Ala Gly Val Pro Asn Pro Ser Thr Ser Ala Ser Pro Lys Lys Ser Pro
325     330     335
Pro Pro Ala Lys Asp Glu Ala Arg Thr Thr Glu Arg Glu Lys Pro Gln
340     345     350

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<210> 11

<211> 399

<212> PRT

<213> homo sapiens

<220>

<223> SIRT3

<400> 11

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20      25      30
Ala Cys Gly Cys Arg Leu Val Leu Gly Gly Arg Asp Asp Val Ser Ala
35      40      45
Gly Leu Arg Gly Ser His Gly Ala Arg Gly Glu Pro Leu Asp Pro Ala
50      55      60
Arg Pro Leu Gln Arg Pro Pro Arg Pro Glu Val Pro Arg Ala Phe Arg

```

PhoenixTemp33343.tmp.txt

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65      70      75      80
Arg Gln Pro Arg Ala Ala Pro Ser Phe Phe Ser Ser Ile Lys
85      90      95
Gly Gly Arg Arg Ser Ile Ser Phe Ser Val Gly Ala Ser Ser Val Val
100
Gly Ser Gly Gly Ser Ser Asp Lys Gly Lys Leu Ser Leu Gln Asp Val
115
Ala Glu Leu Ile Arg Ala Arg Ala Cys Gln Arg Val Val Met Val
130
Gly Ala Gly Ile Ser Thr Pro Ser Gly Ile Pro Asp Phe Arg Ser Pro
145
Gly Ser Gly Leu Tyr Ser Asn Leu Gln Gln Tyr Asp Leu Pro Tyr Pro
165
Glu Ala Ile Phe Glu Leu Pro Phe Phe Phe His Asn Pro Lys Pro Phe
180
Phe Thr Leu Ala Lys Glu Leu Tyr Pro Gly Asn Tyr Lys Pro Asn Val
195
Thr His Tyr Phe Leu Arg Leu His Asp Lys Gly Leu Leu Leu Arg
210
Leu Tyr Thr Gln Asn Ile Asp Gly Leu Glu Arg Val Ser Gly Ile Pro
225
Ala Ser Lys Leu Val Glu Ala His Gly Thr Phe Ala Ser Ala Thr Cys
245
Thr Val Cys Gln Arg Pro Phe Pro Gly Glu Asp Ile Arg Ala Asp Val
260
Met Ala Asp Arg Val Pro Arg Cys Pro Val Cys Thr Gly Val Val Lys
275
Pro Asp Ile Val Phe Phe Gly Glu Pro Leu Pro Gln Arg Phe Leu Leu
290
His Val Val Asp Phe Pro Met Ala Asp Leu Leu Ile Leu Gly Thr
305
Ser Leu Glu Val Glu Pro Phe Ala Ser Leu Thr Glu Ala Val Arg Ser
325
Ser Val Pro Arg Leu Leu Ile Asn Arg Asp Leu Val Gly Pro Leu Ala
340
Trp His Pro Arg Ser Arg Asp Val Ala Gln Leu Gly Asp Val Val His
355
Gly Val Glu Ser Leu Val Glu Leu Leu Gly Trp Thr Glu Glu Met Arg
370
Asp Leu Val Gln Arg Glu Thr Gly Lys Leu Asp Gly Pro Asp Lys
385      390      395

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<210> 12
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 <212> PRT
 <213> homo sapiens

<220>
 <223> SIRT4

<400> 12

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Met Lys Met Ser Phe Ala Leu Thr Phe Arg Ser Ala Lys Gly Arg Trp
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20
Val Pro Ala Ser Pro Pro Leu Asp Pro Glu Lys Val Lys Glu Leu Gln
35
Arg Phe Ile Thr Leu Ser Lys Arg Leu Leu Val Met Thr Gly Ala Gly
50
Ile Ser Thr Glu Ser Gly Ile Pro Asp Tyr Arg Ser Glu Lys Val Gly
65
Leu Tyr Ala Arg Thr Asp Arg Arg Pro Ile Gln His Gly Asp Phe Val
85
Arg Ser Ala Pro Ile Arg Gln Arg Tyr Trp Ala Arg Asn Phe Val Gly
100
Trp Pro Gln Phe Ser Ser His Gln Pro Asn Pro Ala His Trp Ala Leu
115      120      125

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PhoenixTemp33343.tmp.txt

Ser Thr Trp Glu Lys Leu Gly Lys Leu Tyr Trp Leu Val Thr Gln Asn
 130 135 140
 Val Asp Ala Leu His Thr Lys Ala Gly Ser Arg Arg Leu Thr Glu Leu
 145 150 155 160
 His Gly Cys Met Asp Arg Val Leu Cys Leu Asp Cys Gly Glu Gln Thr
 165 170 175
 Pro Arg Gly Val Leu Gln Glu Arg Phe Gln Val Leu Asn Pro Thr Trp
 180 185 190
 Ser Ala Glu Ala His Gly Leu Ala Pro Asp Gly Asp Val Phe Leu Ser
 195 200 205
 Glu Glu Gln Val Arg Ser Phe Gln Val Pro Thr Cys Val Gln Cys Gly
 210 215 220
 Gly His Leu Lys Pro Asp Val Val Phe Phe Gly Asp Thr Val Asn Pro
 225 230 235 240
 Asp Lys Val Asp Phe Val His Lys Arg Val Lys Glu Ala Asp Ser Leu
 245 250 255
 Leu Val Val Gly Ser Ser Leu Gln Val Tyr Ser Gly Tyr Arg Phe Ile
 260 265 270
 Leu Thr Ala Trp Glu Lys Lys Leu Pro Ile Ala Ile Leu Asn Ile Gly
 275 280 285
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 Gly Glu Leu Leu Pro Leu Ile Asp Pro Cys
 305 310

<210> 13
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 <212> PRT
 <213> homo sapiens

<220>
 <223> SIRT5

<400> 13

Met Arg Pro Leu Gln Ile Val Pro Ser Arg Leu Ile Ser Gln Leu Tyr
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 Cys Gly Leu Lys Pro Pro Ala Ser Thr Arg Asn Gln Ile Cys Leu Lys
 20 25 30
 Met Ala Arg Pro Ser Ser Ser Met Ala Asp Phe Arg Lys Phe Ala
 35 40 45
 Lys Ala Lys His Ile Val Ile Ile Ser Gly Ala Gly Val Ser Ala Glu
 50 55 60
 Ser Gly Val Pro Thr Phe Arg Gly Ala Gly Tyr Trp Arg Lys Trp
 65 70 75 80
 Gln Ala Gln Asp Leu Ala Thr Pro Leu Ala Phe Ala His Asn Pro Ser
 85 90 95
 Arg Val Trp Glu Phe Tyr His Tyr Arg Arg Glu Val Met Gly Ser Lys
 100 105 110
 Glu Pro Asn Ala Gly His Arg Ala Ile Ala Glu Cys Glu Thr Arg Leu
 115 120 125
 Gly Lys Gln Gly Arg Arg Val Val Val Ile Thr Gln Asn Ile Asp Glu
 130 135 140
 Leu His Arg Lys Ala Gly Thr Lys Asn Leu Leu Glu Ile His Gly Ser
 145 150 155 160
 Leu Phe Lys Thr Arg Cys Thr Ser Cys Gly Val Val Ala Glu Asn Tyr
 165 170 175
 Lys Ser Pro Ile Cys Pro Ala Leu Ser Gly Lys Gly Ala Pro Glu Pro
 180 185 190
 Gly Thr Gln Asp Ala Ser Ile Pro Val Glu Lys Leu Pro Arg Cys Glu
 195 200 205
 Glu Ala Gly Cys Gly Gly Leu Arg Pro His Val Val Trp Phe Gly
 210 215 220
 Glu Asn Leu Asp Pro Ala Ile Leu Glu Glu Val Asp Arg Glu Leu Ala
 225 230 235 240
 His Cys Asp Leu Cys Leu Val Val Gly Thr Ser Ser Val Val Tyr Pro
 245 250 255
 Ala Ala Met Phe Ala Pro Gln Val Ala Ala Arg Gly Val Pro Val Ala

PhoenixTemp33343.tmp.txt

260
 Glu Phe Asn Thr Glu Thr Thr Pro Ala Thr Asn Arg Phe Arg Phe His
 275
 Phe Gln Gly Pro Cys Gly Thr Thr Leu Pro Glu Ala Leu Ala Cys His
 290
 Glu Asn Glu Thr Val Ser
 305 310

<210> 14
 <211> 355
 <212> PRT
 <213> homo sapiens

<220>
 <223> SIRT6

<400> 14

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 Lys Cys Gly Leu Pro Glu Ile Phe Asp Pro Pro Glu Glu Leu Glu Arg
 20 25 30
 Lys Val Trp Glu Leu Ala Arg Leu Val Arg Gln Ser Ser Val Val
 35 40 45
 Phe His Thr Gly Ala Gly Ile Ser Thr Ala Ser Gly Ile Pro Asp Phe
 50 55 60
 Arg Gly Pro His Gly Val Trp Thr Met Glu Glu Arg Gly Leu Ala Pro
 65 70 75 80
 Lys Phe Asp Thr Thr Phe Glu Ser Ala Arg Pro Thr Gln Thr His Met
 85 90 95
 Ala Leu Val Gln Leu Glu Arg Val Gly Leu Leu Arg Phe Leu Val Ser
 100 105 110
 Gln Asn Val Asp Gly Leu His Val Arg Ser Gly Phe Pro Arg Asp Lys
 115 120 125
 Leu Ala Glu Leu His Gly Asn Met Phe Val Glu Glu Cys Ala Lys Cys
 130 135 140
 Lys Thr Gln Tyr Val Arg Asp Thr Val Val Gly Thr Met Gly Leu Lys
 145 150 155 160
 Ala Thr Gly Arg Leu Cys Thr Val Ala Lys Ala Arg Gly Leu Arg Ala
 165 170 175
 Cys Arg Gly Glu Leu Arg Asp Thr Ile Leu Asp Trp Glu Asp Ser Leu
 180 185 190
 Pro Asp Arg Asp Leu Ala Leu Ala Asp Glu Ala Ser Arg Asn Ala Asp
 195 200 205
 Leu Ser Ile Thr Leu Gly Thr Ser Leu Gln Ile Arg Pro Ser Gly Asn
 210 215 220
 Leu Pro Leu Ala Thr Lys Arg Arg Gly Gly Arg Leu Val Ile Val Asn
 225 230 235 240
 Leu Gln Pro Thr Lys His Asp Arg His Ala Asp Leu Arg Ile His Gly
 245 250 255
 Tyr Val Asp Glu Val Met Thr Arg Leu Met Lys His Leu Gly Leu Glu
 260 265 270
 Ile Pro Ala Trp Asp Gly Pro Arg Val Leu Glu Arg Ala Leu Pro Pro
 275 280 285
 Leu Pro Arg Pro Pro Thr Lys Leu Glu Pro Lys Glu Glu Ser Pro
 290 295 300
 Thr Arg Ile Asn Gly Ser Ile Pro Ala Gly Pro Lys Gln Glu Pro Cys
 305 310 315 320
 Ala Gln His Asn Gly Ser Glu Pro Ala Ser Pro Lys Arg Glu Arg Pro
 325 330 335
 Thr Ser Pro Ala Pro His Arg Pro Pro Lys Arg Val Lys Ala Lys Ala
 340 345 350
 Val Pro Ser
 355

<210> 15
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<212> PRT
 <213> homo sapiens

<220>
 <223> SIRT7

<400> 15

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Ser Arg Ile Leu Arg Lys Ala Ala Glu Arg Ser Ala Glu Glu Gly
35      40      45
Arg Leu Leu Ala Glu Ser Ala Asp Leu Val Thr Glu Leu Gln Gly Arg
50      55      60
Ser Arg Arg Arg Glu Gly Leu Lys Arg Arg Gln Glu Glu Val Cys Asp
65      70      75      80
Asp Pro Glu Glu Leu Arg Gly Lys Val Arg Glu Leu Ala Ser Ala Val
85      90      95
Arg Asn Ala Lys Tyr Leu Val Val Tyr Thr Gly Ala Gly Ile Ser Thr
100     105
Ala Ala Ser Ile Pro Asp Tyr Arg Gly Pro Asn Gly Val Trp Thr Leu
115     120     125
Leu Gln Lys Gly Arg Ser Val Ser Ala Ala Asp Leu Ser Glu Ala Glu
130     135     140
Pro Thr Leu Thr His Met Ser Ile Thr Arg Leu His Glu Gln Lys Leu
145     150     155     160
Val Gln His Val Val Ser Gln Asn Cys Asp Gly Leu His Leu Arg Ser
165     170     175
Gly Leu Pro Arg Thr Ala Ile Ser Glu Leu His Gly Asn Met Tyr Ile
180     185     190
Glu Val Cys Thr Ser Cys Val Pro Asn Arg Glu Tyr Val Arg Val Phe
195     200     205
Asp Val Thr Glu Arg Thr Ala Leu His Arg His Gln Thr Gly Arg Thr
210     215     220
Cys His Lys Cys Gly Thr Gln Leu Arg Asp Thr Ile Val His Phe Gly
225     230     235     240
Glu Arg Gly Thr Leu Gly Gln Pro Leu Asn Trp Glu Ala Ala Thr Glu
245     250     255
Ala Ala Ser Arg Ala Asp Thr Ile Leu Cys Leu Gly Ser Ser Leu Lys
260     265     270
Val Leu Lys Lys Tyr Pro Arg Leu Trp Cys Met Thr Lys Pro Pro Ser
275     280     285
Arg Arg Pro Lys Leu Tyr Ile Val Asn Leu Gln Trp Thr Pro Lys Asp
290     295     300
Asp Trp Ala Ala Leu Lys Leu His Gly Lys Cys Asp Asp Val Met Arg
305     310     315     320
Leu Leu Met Ala Glu Leu Gly Leu Glu Ile Pro Ala Tyr Ser Arg Trp
325     330     335
Gln Asp Pro Ile Phe Ser Leu Ala Thr Pro Leu Arg Ala Gly Glu Glu
340     345     350
Gly Ser His Ser Arg Lys Ser Leu Cys Arg Ser Arg Glu Glu Ala Pro
355     360     365
Pro Gly Asp Arg Gly Ala Pro Leu Ser Ser Ala Pro Ile Leu Gly Gly
370     375     380
Trp Phe Gly Arg Gly Cys Thr Lys Arg Thr Lys Arg Lys Lys Val Thr
385     390     395     400

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<210> 16
 <211> 21
 <212> RNA
 <213> Artificial sequence

<220>
 <223> siRNA

<400> 16

acuuugcugu aaccuguat t

21

<210> 17
 <211> 21
 <212> RNA
 <213> Artificial sequence

<220>
 <223> siRNA

<400> 17
 ttugaaacga cauugggaca u

21

<210> 18
 <211> 306
 <212> PRT
 <213> homo sapiens

<400> 18

Met Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Gly Ala Ala Gly Gly
 1 5 10 15
 Arg Gly Ser Gly Pro Gly Arg Arg Arg His Leu Val Pro Gly Ala Gly
 20 25 30
 Gly Glu Ala Gly Glu Gly Ala Pro Gly Gly Ala Gly Asp Tyr Gly Asn
 35 40 45
 Gly Leu Glu Ser Glu Glu Leu Glu Pro Glu Glu Leu Leu Glu Pro
 50 55 60
 Glu Pro Glu Pro Glu Pro Glu Glu Glu Pro Pro Arg Pro Arg Ala Pro
 65 70 75 80
 Pro Gly Ala Pro Gly Pro Gly Pro Gly Ser Gly Ala Pro Gly Ser Gln
 85 90 95
 Glu Glu Glu Glu Glu Pro Gly Leu Val Glu Gly Asp Pro Gly Asp Gly
 100 105 110
 Ala Ile Glu Asp Pro Glu Leu Glu Ala Ile Lys Ala Arg Val Arg Glu
 115 120 125
 Met Glu Glu Glu Ala Glu Lys Leu Lys Glu Leu Gln Asn Glu Val Glu
 130 135 140
 Lys Gln Met Asn Met Ser Pro Pro Gly Asn Ala Gly Pro Val Ile
 145 150 155 160
 Met Ser Ile Glu Glu Lys Met Glu Ala Asp Ala Arg Ser Ile Tyr Val
 165 170 175
 Gly Asn Val Asp Tyr Gly Ala Thr Ala Glu Glu Leu Glu Ala His Phe
 180 185 190
 His Gly Cys Gly Ser Val Asn Arg Val Thr Ile Leu Cys Asp Lys Phe
 195 200 205
 Ser Gly His Pro Lys Gly Phe Ala Tyr Ile Glu Phe Ser Asp Lys Glu
 210 215 220
 Ser Val Arg Thr Ser Leu Ala Leu Asp Glu Ser Leu Phe Arg Gly Arg
 225 230 235 240
 Gln Ile Lys Val Ile Pro Lys Arg Thr Asn Arg Pro Gly Ile Ser Thr
 245 250 255
 Thr Asp Arg Gly Phe Pro Arg Ala Arg Tyr Arg Ala Arg Thr Thr Asn
 260 265 270
 Tyr Asn Ser Ser Arg Ser Arg Phe Tyr Ser Gly Phe Asn Ser Arg Pro
 275 280 285
 Arg Gly Arg Val Tyr Arg Gly Arg Ala Arg Ala Thr Ser Trp Tyr Ser
 290 295 300
 Pro Tyr
 305

<210> 19
 <211> 307
 <212> PRT
 <213> homo sapiens

<220>

<221> VARIANT

<222> (12)..(13)

<223> Possible insertion of (Ala)n with n=1, 2, 3, 4, 5, 6

<400> 19

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Met Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Gly Ala Ala Gly
1      5      10      15
Gly Arg Gly Ser Gly Pro Gly Arg Arg Arg His Leu Val Pro Gly Ala
20      25      30
Gly Gly Glu Ala Gly Glu Gly Ala Pro Gly Gly Ala Gly Asp Tyr Gly
35      40      45
Asn Gly Leu Glu Ser Glu Glu Leu Glu Pro Glu Glu Leu Leu Leu Glu
50      55      60
Pro Glu Pro Glu Pro Glu Pro Glu Glu Glu Pro Pro Arg Pro Arg Ala
65      70      75      80
Pro Pro Gly Ala Pro Gly Pro Gly Pro Gly Ser Gly Ala Pro Gly Ser
85      90      95
Gln Glu Glu Glu Glu Glu Pro Gly Leu Val Glu Gly Asp Pro Gly Asp
100     105
Gly Ala Ile Glu Asp Pro Glu Leu Glu Ala Ile Lys Ala Arg Val Arg
115     120     125
Glu Met Glu Glu Ala Glu Lys Leu Lys Glu Leu Gln Asn Glu Val
130     135     140
Glu Lys Gln Met Asn Met Ser Pro Pro Pro Gly Asn Ala Gly Pro Val
145     150     155     160
Ile Met Ser Ile Glu Lys Met Glu Ala Asp Ala Arg Ser Ile Tyr
165     170     175
Val Gly Asn Val Asp Tyr Gly Ala Thr Ala Glu Glu Leu Glu Ala His
180     185     190
Phe His Gly Cys Gly Ser Val Asn Arg Val Thr Ile Leu Cys Asp Lys
195     200     205
Phe Ser Gly His Pro Lys Gly Phe Ala Tyr Ile Glu Phe Ser Asp Lys
210     215     220
Glu Ser Val Arg Thr Ser Leu Ala Leu Asp Glu Ser Leu Phe Arg Gly
225     230     235     240
Arg Gln Ile Lys Val Ile Pro Lys Arg Thr Asn Arg Pro Gly Ile Ser
245     250     255
Thr Thr Asp Arg Gly Phe Pro Arg Ala Arg Tyr Arg Ala Arg Thr Thr
260     265     270
Asn Tyr Asn Ser Ser Arg Ser Arg Phe Tyr Ser Gly Phe Asn Ser Arg
275     280     285
Pro Arg Gly Arg Val Tyr Arg Gly Arg Ala Arg Ala Thr Ser Trp Tyr
290     295     300
Ser Pro Tyr
305

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