

序列表

<110> 北京大学

<120> MG53突变体及其制备方法和用途

<130> 066467-8001W001

<160> 154

<170> PatentIn version 3.5

<210> 1

<211> 477

<212> PRT

<213> 智人

<400> 1

Met Ser Ala Ala Pro Gly Leu Leu His Gln Glu Leu Ser Cys Pro Leu
1 5 10 15

Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

Phe Cys Arg Ala Cys Leu Gly Arg Val Ala Gly Glu Pro Ala Ala Asp
35 40 45

Gly Thr Val Leu Cys Pro Cys Cys Gln Ala Pro Thr Arg Pro Gln Ala
50 55 60

Leu Ser Thr Asn Leu Gln Leu Ala Arg Leu Val Glu Gly Leu Ala Gln
65 70 75 80

Val Pro Gln Gly His Cys Glu Glu His Leu Asp Pro Leu Ser Ile Tyr
85 90 95

Cys Glu Gln Asp Arg Ala Leu Val Cys Gly Val Cys Ala Ser Leu Gly
100 105 110

Ser His Arg Gly His Arg Leu Leu Pro Ala Ala Glu Ala His Ala Arg
115 120 125

Leu Lys Thr Gln Leu Pro Gln Gln Lys Leu Gln Leu Gln Glu Ala Cys
130 135 140

Met Arg Lys Glu Lys Ser Val Ala Val Leu Glu His Gln Leu Val Glu

145 150 155 160 序列表

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly

序列表

370

375

380

Leu Arg Glu Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
385 390 395 400

Arg Ala Leu Arg Ser Pro Glu Arg Arg Pro Thr Arg Ile Gly Leu Tyr
405 410 415

Leu Ser Phe Gly Asp Gly Val Leu Ser Phe Tyr Asp Ala Ser Asp Ala
420 425 430

Asp Ala Leu Val Pro Leu Phe Ala Phe His Glu Arg Leu Pro Arg Pro
435 440 445

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
450 455 460

Gln Pro Leu Leu Leu Val Gly Pro Glu Gly Ala Glu Ala
465 470 475

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Met Ser Ala Ala Pro Gly Leu Leu Arg Gln Glu Leu Ser Cys Pro Leu
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Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

Phe Cys Arg Ala Cys Leu Ile Arg Val Ala Gly Glu Pro Ala Ala Asp
35 40 45

Gly Thr Val Ala Cys Pro Cys Cys Gln Ala Pro Thr Arg Pro Gln Ala
50 55 60

Leu Ser Thr Asn Leu Gln Leu Ser Arg Leu Val Glu Gly Leu Ala Gln
65 70 75 80

Val Pro Gln Gly His Cys Glu Glu His Leu Asp Pro Leu Ser Ile Tyr
85 90 95

序列表

Cys Glu Gln Asp Arg Thr Leu Val Cys Gly Val Cys Ala Ser Leu Gly
100 105 110

Ser His Arg Gly His Arg Leu Leu Pro Ala Ala Glu Ala Gln Ala Arg
115 120 125

Leu Lys Thr Gln Leu Pro Gln Gln Lys Met Gln Leu Gln Glu Ala Cys
130 135 140

Met Arg Lys Glu Lys Thr Val Ala Val Leu Glu His Gln Leu Val Glu
145 150 155 160

Val Glu Glu Thr Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
165 170 175

Gly Lys Met Arg Met Phe Leu Ala Ala Leu Glu Ser Ser Leu Asp Arg
180 185 190

Glu Ala Glu Arg Val Arg Gly Asp Ala Gly Val Ala Leu Arg Arg Glu
195 200 205

Leu Ser Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
210 215 220

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
225 230 235 240

Phe Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ser Glu Ser Pro
245 250 255

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Val Ile Ser Asp Asp Phe
260 265 270

Lys Phe Gln Val Trp Lys Lys Met Phe Arg Ala Leu Met Pro Ala Leu
275 280 285

Glu Glu Leu Thr Phe Asp Pro Ser Ser Ala His Pro Ser Leu Val Val
290 295 300

Ser Ser Ser Gly Arg Arg Val Glu Cys Ser Asp Gln Lys Ala Pro Pro
305 310 315 320

序列表

Ala Gly Glu Asp Thr Arg Gln Phe Asp Lys Ala Val Ala Val Val Ala
325 330 335

Gln Gln Leu Leu Ser Gln Gly Glu His Tyr Trp Glu Val Glu Val Gly
340 345 350

Asp Lys Pro Arg Trp Ala Leu Gly Val Met Ala Ala Asp Ala Ser Arg
355 360 365

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
370 375 380

Leu Arg Asp Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
385 390 395 400

Arg Ala Leu Arg Thr Pro Glu Arg Pro Pro Ala Arg Ile Gly Leu Tyr
405 410 415

Leu Ser Phe Ala Asp Gly Val Leu Ala Phe Tyr Asp Ala Ser Asn Pro
420 425 430

Asp Val Leu Thr Pro Ile Phe Ser Phe His Glu Arg Leu Pro Gly Pro
435 440 445

Val Tyr Pro Ile Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
450 455 460

Gln Pro Leu Leu Leu Val Gly Pro Glu Gln Glu Gln Ala
465 470 475

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<213> 大鼠

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Met Ser Thr Ala Pro Gly Leu Leu Arg Gln Glu Leu Ser Cys Pro Leu
1 5 10 15

Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

序列表

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

序列表

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Val Ile Ser Asp Asp Phe
260 265 270

Lys Phe Gln Val Trp Lys Lys Met Phe Arg Ala Leu Met Pro Glu Leu
275 280 285

Glu Glu Leu Thr Phe Asp Pro Ser Ser Ala His Pro Ser Leu Val Val
290 295 300

Ser Ala Ser Gly Arg Arg Val Glu Cys Ser Glu Gln Lys Ala Pro Pro
305 310 315 320

Ala Gly Glu Asp Thr Cys Gln Phe Asp Lys Thr Val Ala Val Val Ala
325 330 335

Lys Gln Leu Leu Ser Gln Gly Glu His Tyr Trp Glu Val Glu Val Gly
340 345 350

Asp Lys Pro Arg Trp Ala Leu Gly Val Met Ala Ala Asp Ala Ser Arg
355 360 365

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
370 375 380

Leu Arg Asp Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
385 390 395 400

Arg Ala Leu Arg Thr Pro Glu Arg Pro Pro Ala Arg Ile Gly Leu Tyr
405 410 415

Leu Ser Phe Ala Asp Gly Val Leu Thr Phe Tyr Asp Ala Ser Asn Thr
420 425 430

Asp Ala Leu Thr Pro Leu Phe Ser Phe His Glu Arg Leu Pro Gly Pro
435 440 445

Val Tyr Pro Met Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ser
450 455 460

Gln Pro Leu Leu Leu Val Gly Pro Asp Ser Glu Gln Ala
465 470 475

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Met Ser Ala Ala Pro Gly Leu Leu His Gln Glu Leu Ser Cys Pro Leu
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Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

Phe Cys Arg Ala Cys Leu Gly Arg Val Ala Gly Glu Pro Ala Ala Asp
35 40 45

Gly Thr Val Leu Cys Pro Cys Cys Gln Ala Pro Thr Arg Pro Gln Ala
50 55 60

Leu Ser Thr Asn Leu Gln Leu Ala Arg Leu Val Glu Gly Leu Ala Gln
65 70 75 80

Val Pro Gln Gly His Cys Glu Glu His Leu Asp Pro Leu Ser Ile Tyr
85 90 95

Cys Glu Gln Asp Arg Ala Leu Val Cys Gly Val Cys Ala Ser Leu Gly
100 105 110

Ser His Arg Gly His Arg Leu Leu Pro Ala Ala Glu Ala His Ala Arg
115 120 125

Leu Lys Thr Gln Leu Pro Gln Gln Lys Leu Gln Leu Gln Glu Ala Cys
130 135 140

Met Arg Lys Glu Lys Ser Val Ala Val Leu Glu His Gln Leu Val Glu
145 150 155 160

Val Glu Glu Thr Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
165 170 175

Gly Lys Met Arg Val Phe Leu Ala Ala Leu Glu Gly Ser Leu Asp Arg
180 185 190

序列表

Glu Ala Glu Arg Val Arg Gly Glu Ala Gly Val Ala Leu Arg Arg Glu
195 200 205

Leu Gly Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
210 215 220

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
225 230 235 240

Tyr Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ala Glu Ser Pro
245 250 255

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Ile Ile Ser Asp Asp Phe
260 265 270

Lys Phe Gln Val Trp Arg Lys Met Phe Arg Ala Leu Met Pro Ala Leu
275 280 285

Glu Glu Leu Thr Phe Asp Pro Ser Ser Ala His Pro Ser Leu Val Val
290 295 300

Ser Ser Ser Gly Arg Arg Val Glu Cys Ser Glu Gln Lys Ala Pro Pro
305 310 315 320

Ala Gly Glu Asp Pro Arg Gln Phe Asp Lys Ala Val Ala Val Val Ala
325 330 335

His Gln Gln Leu Ser Glu Gly Glu His Tyr Trp Glu Val Glu Val Gly
340 345 350

Asp Lys Pro Arg Trp Ala Leu Gly Val Ile Ala Ala Glu Gly Pro Arg
355 360 365

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
370 375 380

Leu Arg Glu Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
385 390 395 400

Arg Ala Leu Arg Ser Pro Glu Arg Arg Pro Thr Arg Ile Gly Leu Tyr
405 410 415

序列表

Leu Ser Phe Gly Asp Gly Val Leu Ser Phe Tyr Asp Ala Ser Asp Ala
420 425 430

Asp Ala Leu Val Pro Leu Phe Ala Phe His Glu Arg Leu Pro Gly Pro
435 440 445

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ser
450 455 460

Gln Pro Leu Leu Leu Val Gly Ser Glu Gly Ala Glu Ala
465 470 475

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Met Ser Ala Ala Pro Gly Leu Leu His Gln Glu Leu Ser Cys Pro Leu
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Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

Phe Cys Arg Ala Cys Leu Gly Arg Val Ala Gly Glu Pro Ala Ala Asp
35 40 45

Gly Thr Val Leu Cys Pro Ser Cys Gln Ala Pro Thr Arg Pro Gln Ala
50 55 60

Leu Ser Thr Asn Gln Gln Leu Ala Arg Leu Val Glu Gly Leu Ala Gln
65 70 75 80

Val Pro Gln Gly His Cys Glu Glu His Leu Asp Pro Leu Ser Ile Tyr
85 90 95

Cys Glu Gln Asp Arg Val Leu Val Cys Gly Val Cys Ala Ser Leu Gly
100 105 110

Ser His Arg Gly His Arg Leu Leu Pro Ala Ala Glu Ala His Ala Arg
115 120 125

Leu Lys Thr Gln Leu Pro Gln Gln Lys Leu Gln Leu Gln Glu Ala Cys

序列表

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140

Met Arg Lys Glu Lys Ser Val Gly Val Leu Glu Gln Gln Leu Val Glu
145 150 155 160

Val Glu Glu Thr Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
165 170 175

Gly Lys Met Arg Leu Phe Leu Ala Ala Leu Glu Gly Ser Leu Asp Arg
180 185 190

Glu Ala Glu Arg Val Arg Gly Glu Ala Gly Val Ala Leu Arg Arg Glu
195 200 205

Leu Gly Ser Leu Lys Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
210 215 220

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
225 230 235 240

Tyr Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ala Glu Ser Pro
245 250 255

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Val Ile Ser Asp Asp Phe
260 265 270

Lys Phe Gln Val Trp Arg Lys Met Phe Arg Ala Leu Met Pro Ala Met
275 280 285

Gln Glu Leu Thr Phe Asp Pro Ser Thr Ala His Pro Ser Leu Val Leu
290 295 300

Ser Ala Ser Gly Arg Arg Val Glu Cys Ser Glu Gln Lys Ala Pro Pro
305 310 315 320

Ala Gly Glu Asp Pro Arg Gln Phe Asp Lys Ala Val Ala Val Val Thr
325 330 335

His Gln Leu Leu Ser Glu Gly Glu His Tyr Trp Glu Val Glu Val Gly
340 345 350

Asp Lys Pro Arg Trp Ala Leu Gly Val Ile Gly Ala Gln Ala Gly Arg

序列表

355

360

365

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
370 375 380

Leu Arg Glu Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
385 390 395 400

Arg Ala Leu Arg Thr Pro Glu Arg Arg Pro Ser Arg Ile Gly Ile Tyr
405 410 415

Leu Ser Phe Ala Asp Gly Val Leu Ser Phe Tyr Asp Ala Ser Asp Ala
420 425 430

Asp Ala Leu Glu Leu Leu Phe Ala Phe His Glu Arg Leu Pro Gly Pro
435 440 445

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
450 455 460

Gln Pro Leu Leu Leu Val Gly Pro Asp Ser Gly Gly Glu Ala
465 470 475

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<213> 狗

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Met Ser Ala Ala Pro Gly Leu Leu His Gln Glu Leu Ser Cys Pro Leu
1 5 10 15

Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

Phe Cys Arg Ala Cys Leu Ser Arg Val Ala Gly Glu Pro Ala Ala Asp
35 40 45

Gly Thr Val Pro Cys Pro Cys Cys Gln Ala Leu Thr Arg Pro Gln Ala
50 55 60

Leu Ser Thr Asn Gln Gln Leu Ala Arg Leu Val Glu Gly Leu Ala Gln
65 70 75 80

序列表

Val Pro Gln Gly His Cys Glu Glu His Leu Asp Pro Leu Ser Ile Tyr
85 90 95

Cys Glu Gln Asp Arg Ala Leu Val Cys Gly Val Cys Ala Ser Leu Gly
100 105 110

Ser His Arg Gly His Arg Leu Leu Pro Ala Ala Glu Ala His Ala Arg
115 120 125

Leu Lys Thr Gln Leu Pro Gln Gln Lys Leu Gln Leu Gln Glu Ala Cys
130 135 140

Met Arg Lys Glu Lys Ser Val Ala Leu Leu Glu His Gln Leu Met Glu
145 150 155 160

Val Glu Glu Met Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
165 170 175

Gly Lys Met Arg Val Phe Leu Ala Ala Leu Glu Gly Ser Leu Asp Arg
180 185 190

Glu Ala Glu Arg Val Arg Gly Glu Ala Gly Val Ala Leu Arg Arg Glu
195 200 205

Leu Gly Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
210 215 220

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
225 230 235 240

Tyr Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ala Glu Ser Pro
245 250 255

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Val Ile Ser Asp Asp Phe
260 265 270

Lys Phe Gln Val Trp Arg Lys Met Phe Arg Ala Leu Met Pro Val Thr
275 280 285

Lys Glu Leu Thr Phe Asp Pro Ser Ser Ala His Pro Ser Leu Val Leu
290 295 300

序列表

Ser Pro Ser Gly Arg Arg Val Glu Cys Ser Asp Gln Lys Ala Pro Pro
305 310 315 320

Ala Gly Glu Asp Pro Cys Gln Phe Asp Lys Ala Val Ala Val Val Ala
325 330 335

Gln Gln Val Leu Ser Asp Gly Glu His Tyr Trp Glu Val Gln Val Gly
340 345 350

Glu Lys Pro Arg Trp Ala Leu Gly Val Ile Ala Ala Gln Ala Ser Arg
355 360 365

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
370 375 380

Leu Arg Asp Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
385 390 395 400

Arg Ala Leu Arg Thr Pro Glu Arg Arg Pro Thr Arg Ile Gly Ile Tyr
405 410 415

Leu Ser Phe Gly Asp Gly Val Leu Ser Phe Tyr Asp Ala Ser Asp Pro
420 425 430

Asp Ala Leu Glu Leu Leu Phe Ala Phe His Glu Arg Leu Pro Gly Pro
435 440 445

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
450 455 460

Gln Pro Leu Leu Leu Val Gly Pro Asp Gly Glu Glu Ala
465 470 475

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<213> 人工序列

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<223> 人MG53 S255A突变体的氨基酸序列

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Met Ser Ala Ala Pro Gly Leu Leu His Gln Glu Leu Ser Cys Pro Leu
1 5 10 15

Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

Phe Cys Arg Ala Cys Leu Gly Arg Val Ala Gly Glu Pro Ala Ala Asp
35 40 45

Gly Thr Val Leu Cys Pro Cys Cys Gln Ala Pro Thr Arg Pro Gln Ala
50 55 60

Leu Ser Thr Asn Leu Gln Leu Ala Arg Leu Val Glu Gly Leu Ala Gln
65 70 75 80

Val Pro Gln Gly His Cys Glu Glu His Leu Asp Pro Leu Ser Ile Tyr
85 90 95

Cys Glu Gln Asp Arg Ala Leu Val Cys Gly Val Cys Ala Ser Leu Gly
100 105 110

Ser His Arg Gly His Arg Leu Leu Pro Ala Ala Glu Ala His Ala Arg
115 120 125

Leu Lys Thr Gln Leu Pro Gln Gln Lys Leu Gln Leu Gln Glu Ala Cys
130 135 140

Met Arg Lys Glu Lys Ser Val Ala Val Leu Glu His Gln Leu Val Glu
145 150 155 160

Val Glu Glu Thr Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
165 170 175

Gly Lys Met Arg Val Phe Leu Ala Ala Leu Glu Gly Ser Leu Asp Arg
180 185 190

Glu Ala Glu Arg Val Arg Gly Glu Ala Gly Val Ala Leu Arg Arg Glu
195 200 205

Leu Gly Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
210 215 220

序列表

Val 225	Leu	Glu	Glu	Val	Ala 230	Asp	Lys	Pro	Gln	Thr 235	Glu	Phe	Leu	Met	Lys 240
Tyr	Cys	Leu	Val	Thr 245	Ser	Arg	Leu	Gln	Lys 250	Ile	Leu	Ala	Glu	Ala	Pro 255
Pro	Pro	Ala	Arg 260	Leu	Asp	Ile	Gln	Leu 265	Pro	Ile	Ile	Ser	Asp	Asp	Phe 270
Lys	Phe	Gln 275	Val	Trp	Arg	Lys	Met 280	Phe	Arg	Ala	Leu	Met 285	Pro	Ala	Leu
Glu 290	Glu	Leu	Thr	Phe	Asp	Pro 295	Ser	Ser	Ala	His	Pro 300	Ser	Leu	Val	Val
Ser 305	Ser	Ser	Gly	Arg	Arg 310	Val	Glu	Cys	Ser	Glu 315	Gln	Lys	Ala	Pro	Pro 320
Ala	Gly	Glu	Asp	Pro 325	Arg	Gln	Phe	Asp	Lys 330	Ala	Val	Ala	Val	Val	Ala 335
His	Gln	Gln 340	Leu	Ser	Glu	Gly	Glu	His 345	Tyr	Trp	Glu	Val	Asp 350	Val	Gly
Asp	Lys	Pro 355	Arg	Trp	Ala	Leu	Gly 360	Val	Ile	Ala	Ala	Glu 365	Ala	Pro	Arg
Arg	Gly 370	Arg	Leu	His	Ala	Val 375	Pro	Ser	Gln	Gly	Leu 380	Trp	Leu	Leu	Gly
Leu 385	Arg	Glu	Gly	Lys	Ile	Leu	Glu	Ala	His	Val 395	Glu	Ala	Lys	Glu	Pro 400
Arg	Ala	Leu	Arg	Ser 405	Pro	Glu	Arg	Arg	Pro 410	Thr	Arg	Ile	Gly	Leu	Tyr 415
Leu	Ser	Phe	Gly 420	Asp	Gly	Val	Leu	Ser	Phe	Tyr	Asp	Ala	Ser 430	Asp	Ala
Asp	Ala	Leu 435	Val	Pro	Leu	Phe	Ala	Phe	His	Glu	Arg	Leu 445	Pro	Arg	Pro

序列表

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
450 455 460

Gln Pro Leu Leu Leu Val Gly Pro Glu Gly Ala Glu Ala
465 470 475

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<213> 人工序列

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<223> 小鼠MG53 S255A突变体的氨基酸序列

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Met Ser Ala Ala Pro Gly Leu Leu Arg Gln Glu Leu Ser Cys Pro Leu
1 5 10 15

Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

Phe Cys Arg Ala Cys Leu Ile Arg Val Ala Gly Glu Pro Ala Ala Asp
35 40 45

Gly Thr Val Ala Cys Pro Cys Cys Gln Ala Pro Thr Arg Pro Gln Ala
50 55 60

Leu Ser Thr Asn Leu Gln Leu Ser Arg Leu Val Glu Gly Leu Ala Gln
65 70 75 80

Val Pro Gln Gly His Cys Glu Glu His Leu Asp Pro Leu Ser Ile Tyr
85 90 95

Cys Glu Gln Asp Arg Thr Leu Val Cys Gly Val Cys Ala Ser Leu Gly
100 105 110

Ser His Arg Gly His Arg Leu Leu Pro Ala Ala Glu Ala Gln Ala Arg
115 120 125

Leu Lys Thr Gln Leu Pro Gln Gln Lys Met Gln Leu Gln Glu Ala Cys
130 135 140

Met Arg Lys Glu Lys Thr Val Ala Val Leu Glu His Gln Leu Val Glu
145 150 155 160

序列表

Val Glu Glu Thr Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
165 170 175

Gly Lys Met Arg Met Phe Leu Ala Ala Leu Glu Ser Ser Leu Asp Arg
180 185 190

Glu Ala Glu Arg Val Arg Gly Asp Ala Gly Val Ala Leu Arg Arg Glu
195 200 205

Leu Ser Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
210 215 220

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
225 230 235 240

Phe Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ser Glu Ala Pro
245 250 255

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Val Ile Ser Asp Asp Phe
260 265 270

Lys Phe Gln Val Trp Lys Lys Met Phe Arg Ala Leu Met Pro Ala Leu
275 280 285

Glu Glu Leu Thr Phe Asp Pro Ser Ser Ala His Pro Ser Leu Val Val
290 295 300

Ser Ser Ser Gly Arg Arg Val Glu Cys Ser Asp Gln Lys Ala Pro Pro
305 310 315 320

Ala Gly Glu Asp Thr Arg Gln Phe Asp Lys Ala Val Ala Val Val Ala
325 330 335

Gln Gln Leu Leu Ser Gln Gly Glu His Tyr Trp Glu Val Glu Val Gly
340 345 350

Asp Lys Pro Arg Trp Ala Leu Gly Val Met Ala Ala Asp Ala Ser Arg
355 360 365

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
370 375 380

序列表

Leu Arg Asp Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
385 390 395 400

Arg Ala Leu Arg Thr Pro Glu Arg Pro Pro Ala Arg Ile Gly Leu Tyr
405 410 415

Leu Ser Phe Ala Asp Gly Val Leu Ala Phe Tyr Asp Ala Ser Asn Pro
420 425 430

Asp Val Leu Thr Pro Ile Phe Ser Phe His Glu Arg Leu Pro Gly Pro
435 440 445

Val Tyr Pro Ile Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
450 455 460

Gln Pro Leu Leu Leu Val Gly Pro Glu Gln Glu Gln Ala
465 470 475

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<212> PRT
<213> 人工序列

<220>
<223> 大鼠MG53 S255A突变体的氨基酸序列

<400> 9

Met Ser Thr Ala Pro Gly Leu Leu Arg Gln Glu Leu Ser Cys Pro Leu
1 5 10 15

Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

Phe Cys Arg Ala Cys Leu Ile Arg Val Ala Gly Glu Pro Ala Asp Asp
35 40 45

Gly Thr Val Ala Cys Pro Cys Cys Gln Ala Ser Thr Arg Pro Gln Ala
50 55 60

Leu Ser Thr Asn Leu Gln Leu Ala Arg Leu Val Glu Gly Leu Ala Gln
65 70 75 80

序列表

Val	Pro	Gln	Gly	His	Cys	Glu	Glu	His	Leu	Asp	Pro	Leu	Ser	Ile	Tyr	85	90	95	
Cys	Glu	Gln	Asp	Arg	Thr	Leu	Val	Cys	Gly	Val	Cys	Ala	Ser	Leu	Gly	100	105	110	
Ser	His	Arg	Gly	His	Arg	Leu	Leu	Pro	Ala	Ala	Glu	Ala	His	Ala	Arg	115	120	125	
Leu	Lys	Thr	Gln	Leu	Pro	Gln	Gln	Lys	Ala	Gln	Leu	Gln	Glu	Ala	Cys	130	135	140	
Met	Arg	Lys	Glu	Lys	Ser	Val	Ala	Val	Leu	Glu	His	Gln	Leu	Val	Glu	145	150	155	160
Val	Glu	Glu	Thr	Val	Arg	Gln	Phe	Arg	Gly	Ala	Val	Gly	Glu	Gln	Leu	165	170	175	
Gly	Lys	Met	Arg	Met	Phe	Leu	Ala	Ala	Leu	Glu	Ser	Ser	Leu	Asp	Arg	180	185	190	
Glu	Ala	Glu	Arg	Val	Arg	Gly	Glu	Ala	Gly	Val	Ala	Leu	Arg	Arg	Glu	195	200	205	
Leu	Ser	Ser	Leu	Asn	Ser	Tyr	Leu	Glu	Gln	Leu	Arg	Gln	Met	Glu	Lys	210	215	220	
Val	Leu	Glu	Glu	Val	Ala	Asp	Lys	Pro	Gln	Thr	Glu	Phe	Leu	Met	Lys	225	230	235	240
Phe	Cys	Leu	Val	Thr	Ser	Arg	Leu	Gln	Lys	Ile	Leu	Ser	Glu	Ala	Pro	245	250	255	
Pro	Pro	Ala	Arg	Leu	Asp	Ile	Gln	Leu	Pro	Val	Ile	Ser	Asp	Asp	Phe	260	265	270	
Lys	Phe	Gln	Val	Trp	Lys	Lys	Met	Phe	Arg	Ala	Leu	Met	Pro	Glu	Leu	275	280	285	
Glu	Glu	Leu	Thr	Phe	Asp	Pro	Ser	Ser	Ala	His	Pro	Ser	Leu	Val	Val	290	295	300	

序列表

Ser Ala Ser Gly Arg Arg Val Glu Cys Ser Glu Gln Lys Ala Pro Pro
305 310 315 320

Ala Gly Glu Asp Thr Cys Gln Phe Asp Lys Thr Val Ala Val Val Ala
325 330 335

Lys Gln Leu Leu Ser Gln Gly Glu His Tyr Trp Glu Val Glu Val Gly
340 345 350

Asp Lys Pro Arg Trp Ala Leu Gly Val Met Ala Ala Asp Ala Ser Arg
355 360 365

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
370 375 380

Leu Arg Asp Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
385 390 395 400

Arg Ala Leu Arg Thr Pro Glu Arg Pro Pro Ala Arg Ile Gly Leu Tyr
405 410 415

Leu Ser Phe Ala Asp Gly Val Leu Thr Phe Tyr Asp Ala Ser Asn Thr
420 425 430

Asp Ala Leu Thr Pro Leu Phe Ser Phe His Glu Arg Leu Pro Gly Pro
435 440 445

Val Tyr Pro Met Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ser
450 455 460

Gln Pro Leu Leu Leu Val Gly Pro Asp Ser Glu Gln Ala
465 470 475

<210> 10
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<220>
<223> 猴子MG53 S255A突变体的氨基酸序列

<400> 10

Met Ser Ala Ala Pro Gly Leu Leu His Gln Glu Leu Ser Cys Pro Leu
1 5 10 15

序列表

Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

Phe Cys Arg Ala Cys Leu Gly Arg Val Ala Gly Glu Pro Ala Ala Asp
35 40 45

Gly Thr Val Leu Cys Pro Cys Cys Gln Ala Pro Thr Arg Pro Gln Ala
50 55 60

Leu Ser Thr Asn Leu Gln Leu Ala Arg Leu Val Glu Gly Leu Ala Gln
65 70 75 80

Val Pro Gln Gly His Cys Glu Glu His Leu Asp Pro Leu Ser Ile Tyr
85 90 95

Cys Glu Gln Asp Arg Ala Leu Val Cys Gly Val Cys Ala Ser Leu Gly
100 105 110

Ser His Arg Gly His Arg Leu Leu Pro Ala Ala Glu Ala His Ala Arg
115 120 125

Leu Lys Thr Gln Leu Pro Gln Gln Lys Leu Gln Leu Gln Glu Ala Cys
130 135 140

Met Arg Lys Glu Lys Ser Val Ala Val Leu Glu His Gln Leu Val Glu
145 150 155 160

Val Glu Glu Thr Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
165 170 175

Gly Lys Met Arg Val Phe Leu Ala Ala Leu Glu Gly Ser Leu Asp Arg
180 185 190

Glu Ala Glu Arg Val Arg Gly Glu Ala Gly Val Ala Leu Arg Arg Glu
195 200 205

Leu Gly Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
210 215 220

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
225 230 235 240

序列表

Tyr Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ala Glu Ala Pro
245 250 255

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Ile Ile Ser Asp Asp Phe
260 265 270

Lys Phe Gln Val Trp Arg Lys Met Phe Arg Ala Leu Met Pro Ala Leu
275 280 285

Glu Glu Leu Thr Phe Asp Pro Ser Ser Ala His Pro Ser Leu Val Val
290 295 300

Ser Ser Ser Gly Arg Arg Val Glu Cys Ser Glu Gln Lys Ala Pro Pro
305 310 315 320

Ala Gly Glu Asp Pro Arg Gln Phe Asp Lys Ala Val Ala Val Val Ala
325 330 335

His Gln Gln Leu Ser Glu Gly Glu His Tyr Trp Glu Val Glu Val Gly
340 345 350

Asp Lys Pro Arg Trp Ala Leu Gly Val Ile Ala Ala Glu Gly Pro Arg
355 360 365

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
370 375 380

Leu Arg Glu Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
385 390 395 400

Arg Ala Leu Arg Ser Pro Glu Arg Arg Pro Thr Arg Ile Gly Leu Tyr
405 410 415

Leu Ser Phe Gly Asp Gly Val Leu Ser Phe Tyr Asp Ala Ser Asp Ala
420 425 430

Asp Ala Leu Val Pro Leu Phe Ala Phe His Glu Arg Leu Pro Gly Pro
435 440 445

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ser
450 455 460

序列表

Gln Pro Leu Leu Leu Val Gly Ser Glu Gly Ala Glu Ala
465 470 475

<210> 11
<211> 478
<212> PRT
<213> 人工序列

<220>
<223> 猪MG53 S255A突变体的氨基酸序列

<400> 11

Met Ser Ala Ala Pro Gly Leu Leu His Gln Glu Leu Ser Cys Pro Leu
1 5 10 15

Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

Phe Cys Arg Ala Cys Leu Gly Arg Val Ala Gly Glu Pro Ala Ala Asp
35 40 45

Gly Thr Val Leu Cys Pro Ser Cys Gln Ala Pro Thr Arg Pro Gln Ala
50 55 60

Leu Ser Thr Asn Gln Gln Leu Ala Arg Leu Val Glu Gly Leu Ala Gln
65 70 75 80

Val Pro Gln Gly His Cys Glu Glu His Leu Asp Pro Leu Ser Ile Tyr
85 90 95

Cys Glu Gln Asp Arg Val Leu Val Cys Gly Val Cys Ala Ser Leu Gly
100 105 110

Ser His Arg Gly His Arg Leu Leu Pro Ala Ala Glu Ala His Ala Arg
115 120 125

Leu Lys Thr Gln Leu Pro Gln Gln Lys Leu Gln Leu Gln Glu Ala Cys
130 135 140

Met Arg Lys Glu Lys Ser Val Gly Val Leu Glu Gln Gln Leu Val Glu
145 150 155 160

序列表

Val	Glu	Glu	Thr	Val	Arg	Gln	Phe	Arg	Gly	Ala	Val	Gly	Glu	Gln	Leu	165	170	175
Gly	Lys	Met	Arg	Leu	Phe	Leu	Ala	Ala	Leu	Glu	Gly	Ser	Leu	Asp	Arg	180	185	190
Glu	Ala	Glu	Arg	Val	Arg	Gly	Glu	Ala	Gly	Val	Ala	Leu	Arg	Arg	Glu	195	200	205
Leu	Gly	Ser	Leu	Lys	Ser	Tyr	Leu	Glu	Gln	Leu	Arg	Gln	Met	Glu	Lys	210	215	220
Val	Leu	Glu	Glu	Val	Ala	Asp	Lys	Pro	Gln	Thr	Glu	Phe	Leu	Met	Lys	225	230	235
Tyr	Cys	Leu	Val	Thr	Ser	Arg	Leu	Gln	Lys	Ile	Leu	Ala	Glu	Ala	Pro	245	250	255
Pro	Pro	Ala	Arg	Leu	Asp	Ile	Gln	Leu	Pro	Val	Ile	Ser	Asp	Asp	Phe	260	265	270
Lys	Phe	Gln	Val	Trp	Arg	Lys	Met	Phe	Arg	Ala	Leu	Met	Pro	Ala	Met	275	280	285
Gln	Glu	Leu	Thr	Phe	Asp	Pro	Ser	Thr	Ala	His	Pro	Ser	Leu	Val	Leu	290	295	300
Ser	Ala	Ser	Gly	Arg	Arg	Val	Glu	Cys	Ser	Glu	Gln	Lys	Ala	Pro	Pro	305	310	315
Ala	Gly	Glu	Asp	Pro	Arg	Gln	Phe	Asp	Lys	Ala	Val	Ala	Val	Val	Thr	325	330	335
His	Gln	Leu	Leu	Ser	Glu	Gly	Glu	His	Tyr	Trp	Glu	Val	Glu	Val	Gly	340	345	350
Asp	Lys	Pro	Arg	Trp	Ala	Leu	Gly	Val	Ile	Gly	Ala	Gln	Ala	Gly	Arg	355	360	365
Arg	Gly	Arg	Leu	His	Ala	Val	Pro	Ser	Gln	Gly	Leu	Trp	Leu	Leu	Gly	370	375	380

序列表

Leu Arg Glu Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
385 390 395 400

Arg Ala Leu Arg Thr Pro Glu Arg Arg Pro Ser Arg Ile Gly Ile Tyr
405 410 415

Leu Ser Phe Ala Asp Gly Val Leu Ser Phe Tyr Asp Ala Ser Asp Ala
420 425 430

Asp Ala Leu Glu Leu Leu Phe Ala Phe His Glu Arg Leu Pro Gly Pro
435 440 445

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
450 455 460

Gln Pro Leu Leu Leu Val Gly Pro Asp Ser Gly Gly Glu Ala
465 470 475

<210> 12
<211> 477
<212> PRT
<213> 人工序列

<220>
<223> 狗MG53 S255A突变体的氨基酸序列

<400> 12

Met Ser Ala Ala Pro Gly Leu Leu His Gln Glu Leu Ser Cys Pro Leu
1 5 10 15

Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

Phe Cys Arg Ala Cys Leu Ser Arg Val Ala Gly Glu Pro Ala Ala Asp
35 40 45

Gly Thr Val Pro Cys Pro Cys Cys Gln Ala Leu Thr Arg Pro Gln Ala
50 55 60

Leu Ser Thr Asn Gln Gln Leu Ala Arg Leu Val Glu Gly Leu Ala Gln
65 70 75 80

Val Pro Gln Gly His Cys Glu Glu His Leu Asp Pro Leu Ser Ile Tyr
85 90 95

序列表

Cys Glu Gln Asp Arg Ala Leu Val Cys Gly Val Cys Ala Ser Leu Gly
100 105 110

Ser His Arg Gly His Arg Leu Leu Pro Ala Ala Glu Ala His Ala Arg
115 120 125

Leu Lys Thr Gln Leu Pro Gln Gln Lys Leu Gln Leu Gln Glu Ala Cys
130 135 140

Met Arg Lys Glu Lys Ser Val Ala Leu Leu Glu His Gln Leu Met Glu
145 150 155 160

Val Glu Glu Met Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
165 170 175

Gly Lys Met Arg Val Phe Leu Ala Ala Leu Glu Gly Ser Leu Asp Arg
180 185 190

Glu Ala Glu Arg Val Arg Gly Glu Ala Gly Val Ala Leu Arg Arg Glu
195 200 205

Leu Gly Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
210 215 220

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
225 230 235 240

Tyr Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ala Glu Ala Pro
245 250 255

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Val Ile Ser Asp Asp Phe
260 265 270

Lys Phe Gln Val Trp Arg Lys Met Phe Arg Ala Leu Met Pro Val Thr
275 280 285

Lys Glu Leu Thr Phe Asp Pro Ser Ser Ala His Pro Ser Leu Val Leu
290 295 300

Ser Pro Ser Gly Arg Arg Val Glu Cys Ser Asp Gln Lys Ala Pro Pro
305 310 315 320

序列表

Ala Gly Glu Asp Pro Cys Gln Phe Asp Lys Ala Val Ala Val Val Ala
325 330 335

Gln Gln Val Leu Ser Asp Gly Glu His Tyr Trp Glu Val Gln Val Gly
340 345 350

Glu Lys Pro Arg Trp Ala Leu Gly Val Ile Ala Ala Gln Ala Ser Arg
355 360 365

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
370 375 380

Leu Arg Asp Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
385 390 395 400

Arg Ala Leu Arg Thr Pro Glu Arg Arg Pro Thr Arg Ile Gly Ile Tyr
405 410 415

Leu Ser Phe Gly Asp Gly Val Leu Ser Phe Tyr Asp Ala Ser Asp Pro
420 425 430

Asp Ala Leu Glu Leu Leu Phe Ala Phe His Glu Arg Leu Pro Gly Pro
435 440 445

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
450 455 460

Gln Pro Leu Leu Leu Val Gly Pro Asp Gly Glu Glu Ala
465 470 475

<210> 13
<211> 1434
<212> DNA
<213> 人工序列

<220>
<223> 人MG53 S255A突变体的编码序列

<400> 13
atgtcggctg cgcccggcct cctgcaccag gagctgtcct gcccgtgtg cctgcagctg 60
ttcgacgcgc ccgtgacagc cgagtgcggc cacagtttct gccgcgcctg cctagccgcg 120
gtggccgggg agccggcggc ggatggcacc gttctctgcc cctgctgcca ggcccccaag 180

序列表

cggccgcagg cactcagcac caacctgcag ctggcgcgcc tgggtggaggg gctggcccag	240
gtgccgcagg gccactgcga ggagcacctg gacccgctga gcatctactg cgagcaggac	300
cgcgcgctgg tgtgcggagt gtgcgcctca ctcggtcgc accgcggtca tcgcctcctg	360
cctgccgccc aggcccacgc acgcctcaag acacagctgc cacagcagaa actgcagctg	420
caggaggcat gcatgcgcaa ggagaagagt gtggctgtgc tggagcatca gctgggtggag	480
gtggaggaga cagtgcgtca gttccggggg gccgtggggg agcagctggg caagatgcgg	540
gtgttcctgg ctgcaactgga gggctccttg gaccgcgagg cagagcgtgt acgggggtgag	600
gcaggggtcg ccttgcgccc ggagctgggg agcctgaact cttacctgga gcagctgcgg	660
cagatggaga aggtcctgga ggaggtggcg gacaagccgc agactgagtt cctcatgaaa	720
tactgcctgg tgaccagcag gctgcagaag atcctggcag aggtccccc acccgcccgt	780
ctggacatcc agctgccaat tatctcagat gacttcaaat tccaggtgtg gaggaagatg	840
ttccgggctc tgatgccagc gctggaggag ctgacctttg acccgagctc tgcgcacccc	900
agcctgggtg tgtcttctc tggccgccc gtggagtgt cggagcagaa ggccgcccgc	960
gccggggagg acccgcgcca gttcgacaag gcggtggcgg tgggtggcgca ccagcagctc	1020
tccgagggcg agcactactg ggaggtggat gttggcgaca agccgcgctg ggcgctgggc	1080
tgatcgcgg ccgaggcccc ccgccgccc cgcctgcacg cgggtgccctc gcagggcctg	1140
tggctgctgg ggctgcgca gggcaagatc ctggaggcac acgtggagge caaggagccg	1200
cgcgctctgc gcagccccga gaggcggccc acgcgcattg gcctttacct gagcttcggc	1260
gacggcgctc tctccttcta cgatgccagc gacgccagc cgtcgtgccc gctttttgcc	1320
ttccacgagc gcctgcccag gcccgtgtac cctttcttcg acgtgtgctg gcacgacaag	1380
ggcaagaatg cccagccgct gctgctcgtg ggtcccgaag gcgccgagge ctga	1434

<210> 14
 <211> 1434
 <212> DNA
 <213> 人工序列

<220>
 <223> 小鼠MG53 S255A突变体的编码序列

<400> 14	
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ttcgatgcgc cagtgcggc tgagtgtggc cacagtttct gccgtgcctg cctgateccg	120

序列表

gtggcagggg agcctgctgc ggacggcaca gttgcctgtc cctgtttgtca ggcacctaca	180
cggccgcagg ctctaagcac taacctccag ttgtcacgcc ttgtggaggg ttggcgcaa	240
gtgccccaaag gccactgcga ggaacacctg gatccactga gcattacttg cgagcaggac	300
cgcacacttg tgtgtgggtgt gtgtgcctcg ctcggttctc accgttgtca tcgtctcctg	360
cctgccgctg aagcccaagc acgcctcaag acacagcttc cacagcagaa gatgcagctg	420
caggaggcat gcatgcgcaa ggagaagact gtagcgggtgc tggagcatca gctgggtggag	480
gtggaggaga cagtgcgcca gttccgggga gctgtcgggg agcagctggg gaagatgcgg	540
atgttcctgg ctgccctaga aagtctcttg gaccgtgaag cagaaagggt tcgggggtgat	600
gctgggggttg ccttgcgtcg ggagctgtca agcctgaact cttacctaga gcaactgagg	660
cagatggaga aggtgctgga ggaggtggct gacaagccac agacagaatt cctcatgaaa	720
ttctgcctgg taaccagcag gctgcagaag atcctgtcag aggcaccacc accggcaagg	780
ctagatatcc agctgcctgt catctcagat gacttcaaat tccaggtgtg gaagaagatg	840
ttccgggctc tgatgccagc gctggaggaa ctgacttttg accccagctc tgcgcacccg	900
agcctgggtg tgctctctc ttggtcgccga gtggagtgtc cagaccagaa ggcgccgcca	960
gcgggagaag acacgcgtca gttcgacaag gcagtagcgg tgggtggcgca gcagctgctg	1020
tcacagggcg agcactattg ggaggtggag gtgggcgaca aaccacgtg ggccctggga	1080
tgatggcgcg ctgacgttc ccgccgtggc cggctgcacg cgggtgccctc acaggggctg	1140
tggctgctgg gtctgcgca tggcaagatc ctggaggcgc acgtggaggc caaggagccg	1200
cgggcactgc gcacccaga gaggcctccg gcgcgcattg gcctctacct aagcttcgca	1260
gatggcgctc ttgctttcta tgatgcgagc aaccccgacg tacttacgcc aatcttttct	1320
ttccacgagc gtctgcccgg gccggtgtac cccatctttg acgtgtgctg gcacgacaag	1380
ggcaagaatg cccagcccct gctgcttgtg gggccggagc aggaacaggc ctga	1434

<210> 15
 <211> 1434
 <212> DNA
 <213> 人工序列

<220>
 <223> 大鼠MG53 S255A突变体的编码序列

<400> 15
 atgtcgactg caccaggcct ttgtcgccag gaactgtctt gcccgtgtg cttgcagctg 60

序列表

ttcgatgcac cagtgaccgc tgagtgtggc cacagtttct gccgtgcctg cctgatccgt	120
gtggcagggg agcctgccga cgatggcacg gttgcctgtc cctgttgtca ggcatctact	180
cggccacagg cgctaagcac taacctccag ttggcacgcc ttgtggaggg tttggcacia	240
gtgccccaaag gccactgcga ggaacacctg gatccactga gcatctactg cgagcaggac	300
cgcacacttg tgtgtgggtg gtgtgcctct ctcggttcac accgttgtca ccgtcttctg	360
cctgccgcag aagcccatgc acgtctcaag acacagcttc cacaacagaa ggcccagctg	420
caggaggcat gcatgcgcaa ggagaagagt gtagcagtc tggagcatca gctgggtggag	480
gtggaggaga ccgtgcgtca gttccgggga gctgttgggg agcagctggg gaagatgcgg	540
atgttcctgg ctgccctaga aagtcttttg gaccgtgaag cagaaagggt tcgaggtgag	600
gcaggggttg ccttgcggcg ggagctgtca agcctgaact cttacctgga gcaactgagg	660
cagatggaga aggtgctgga ggaggtggct gacaagccac agacagaatt cctcatgaaa	720
ttctgcctgg tgaccagcag gctgcagaag attctgtcag aggcaccacc cccagcaagg	780
ctagatatcc agctgcctgt catctcagat gacttcaaat tccaggtgtg gaagaagatg	840
ttccgggctc tgatgccaga gttggaggaa ctgacttttg acccagctc tgcgcacccg	900
agcctgggtg tgtccgctc tggtcgccga gtggagtgt cggagcagaa ggcgccgcca	960
gcaggagaag acacgtgcc agttcgacaag acggtagcgg tagtggcgaa gcagctgctg	1020
tcacaggggg agcactactg ggaggtggag gtgggcgaca agccacgctg ggccctgggt	1080
tgatggcggt ctgacgttc ccgtcgtggc cgcctgcacg cgggtgccctc acaggggctg	1140
tggttgctcg gcctgcgca tggcaagatc ctggaggcac acgtggagge caaggagcca	1200
cgggcactgc gcaccccaga gaggccacca gcgcgcattg gcctctacct aagctttgca	1260
gatggcgtcc tgactttcta tgatgcaagc aacaccgacg cgtttacacc gctcttttct	1320
tttcatgagc gtctgcctgg gccggtgtac cccatgtttg acgtgtgctg gcacgacaag	1380
ggcaagaatt ctacgccgt gttgctcgtg gggccagaca gtgagcagge ctga	1434

<210> 16
 <211> 1434
 <212> DNA
 <213> 人工序列

<220>
 <223> 猴子MG53 S255A突变体的编码序列

序列表

<400> 16

atgtcggctg cgccgggcct cctgcaccag gagctgtcct gcccgtgtg cctgcagctg	60
ttcgacgcgc ccgtgacagc cgagtgcggc cacagtttct gtcgcgcctg cctgggcccgc	120
gtggccgggg aaccggcggc ggatggcacc gttctctgcc cctgctgtca ggccccacg	180
cggccgcagg cactcagcac caacctgcag ctggcgcgcc tgggtggagg gctggcccag	240
gtgccgcagg gccactgcga ggagcacctg gaccgcgtga gcctctactg tgagcaggac	300
cgcgcgctgg tgtgcggagt gtgcgcctca ctggctcgc accgcgttca tcgcctgctg	360
cccgcgcgcg agggccacgc acgcctcaag acgcagctgc cacagcagaa actgcagctg	420
caggaggcat gcatgcgcaa ggagaagagt gtagctgtgc tggagcatca gttggtggaa	480
gtggaggaga cagtgcgtca gttccggggg gccgtggggg agcagctggg caagatgcgg	540
gtgttcctgg ctgcactgga gggctccttg gaccgtgagg cagagcgtgt gcggggtgag	600
gcaggggtcg ccttgcgcgc ggagctgggg agcctgaact cttacctgga gcagctgcgg	660
cagatggaga aggtgctgga ggaggtggcc gacaagccgc agactgagtt cctaataaaa	720
tactgcctgg tgaccagcag gctgcagaag atcctggcag aggtccccc acccgcccgt	780
ctggacatcc agctgccaat catctcagat gacttcaaat tccaggtgtg gaggaagatg	840
ttccgggctc tgatgccagc gctggaggag ctgacctttg acccgagctc tgcgcacccc	900
agcctgggtg tgtcttctc cgcccgccgc gtggagtgtc cggagcagaa ggcccgccgc	960
gcggggggagg acccgcgcca gtccgacaag gcggtagcgg tgggtggcgca ccagcagctc	1020
tccgagggcg aacactactg ggaggtggag gtggcgacaa agccgcgctg ggcgctgggt	1080
tgatcgcgg ccgaggggccc ccgtcgcggg cgcctgcacg cgggtgccctc gcagggcctg	1140
tggctgctgg ggctgcgtga gggcaagatc ctggaggctc acgtggaggc caaggagccg	1200
cgcgctctgc gcagccccga gcggcgcccc acgcgcacgc gcctctacct gagcttcggc	1260
gacggcgtcc tctcttctta cgatgccagc gacgccagc cgtctgtgcc gctttttgcc	1320
ttccacgagc gcctgcctgg gcccgtgtac cctttcttcg acgtgtgctg gcacgacaag	1380
ggcaagaact cccagccgct gctgctcgtg gggtccgaag gcgccgaagc ctga	1434

<210> 17

<211> 1437

<212> DNA

<213> 人工序列

<220>

序列表

<223> 猪MG53 S255A突变体的编码序列

<400> 17

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ttcgatgcgc cggtgacggc tgagtgcggc cacagcttct gccgcgcctg cctgggcccgc      120
gtggcagggg agccagccgc ggatggcacg gtgctctgcc ccagctgcca ggcacccacg      180
cggccgcagg cgctcagcac caaccagcag ctggcgcgcc tgggtggagg gctggcgcac      240
gtgccgcagg gccactgcga ggagcaccta gaccgcctca gcatctactg cgagcaggac      300
cgcgtgctcg tgtgcggcgt ctgcgcctcg ctgggttcgc accgcggcca ccgcctgctg      360
cccgccggcg aagcccatgc gcgccttaag acgcagctcc cgcagcagaa gctgcagctg      420
caggaggcgt gtatgcggaa ggagaagagc gtgggtgtgc tggagcaaca actggtggaa      480
gtggaggaga cgggtgcgtca gttccggggg gcagtggggg agcagctggg caagatgcgg      540
ttgttcctgg ctgcaactgga gggctccttg gaccgagaag cagagcgtgt gcgggggtgag      600
gcgggggtcg ccttgcggag ggagctgggg agcctgaagt cttacttgga gcagctgcgg      660
cagatggaga aggtgctgga ggaggtggca gacaagcccc agaccgagtt cctcatgaaa      720
tactgcctgg tgaccagcag gctgcagaag atcctggcag aggcgcccc acctgccccg      780
ctggacattc agctgcctgt catctcagac gacttcaaat tccaggtgtg gagaaagatg      840
ttccggggccc tgatgccagc gatgcaggag ctgacctttg accccagcac ggcccacccg      900
agcctggtgc tgtcggcctc gggccgccc gcgtgagtgct cggagcagaa ggccgcccgc      960
gccggagagg acccgcgcca gttcgacaag gcggtggcgg tggtagcga ccagctgctg      1020
tcggaaggcg agcactactg ggaggtggag gtgggcgaca agccacgctg ggcgctgggc      1080
tgatcgggg cccaggccgg tcgcccggc cggtgcacg cegtgcctc gcaggcctc      1140
tggtgctcg ggctgcgca gggcaagatc ctggaggctc acgtcgaggc caaggagccg      1200
cgcgccctgc gcaccccgga gaggcggccg tcgcgcctcg ggatctacct gagcttcgcg      1260
gatggcgtcc tctcgttcta cgacccagc gacgccagc cgttgagct gctcttcgcc      1320
ttccacgaac gcctgccggg ccccggtgtac cctttcttcg acgtgtgctg gcacgacaag      1380
ggcaagaacg ctacgccgt cctgctggtg gggcccgaca gcggcgggga ggccctga      1437

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<210> 18

<211> 1434

<212> DNA

<213> 人工序列

序列表

<220>

<223> 狗MG53 S255A突变体的编码序列

<400> 18

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gtggctgggg agccggcggc ggacggcacc gtgccctgcc cgtgctgcca ggcactcacg      180
cggccacagg cgctcagcac caaccagcag ctggcgcgcc tgggtggaggg gctggcgcag      240
gtgccgcagg gccactgcga ggagcaccta gaccgcctca gcatctactg cgagcaggat      300
cgagcgctcg tgtgcggcgt gtgcgcctcg ctgggctcgc accgcggcca ccgcctgctg      360
cccgccgccg aagcccacgc gcgcctcaag acacagctgc cacagcagaa actgcagctg      420
caggaggcat gtatgcgcaa ggagaagagt gtggctctgc tggagcatca gctcatggaa      480
gtggaggaga tggtagctca gttccggggg gctgtagggg agcagctggg caagatgcgg      540
gtgttcctgg ctgcactgga gggctccttg gaccgtgagg cagagcgcgt gcggggagag      600
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cagatggaga aggtgctgga ggaggtggcc gacaagccac agactgagtt cctcatgaaa      720
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<212> DNA

<213> 大鼠

序列表

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序列表

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<220>
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序列表

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序列表

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<213>	人工序列	
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<223>	狗MG53 S255W突变体的反向引物	
<400>	130	
	tccaaacggg caggcggtgg ccattctgcc aggatct	37
<210>	131	
<211>	37	
<212>	DNA	
<213>	人工序列	
<220>		
<223>	狗MG53 S255Q突变体的正向引物	
<400>	131	
	aagatcctgg cagaacaacc accgcctgcc cgtttgg	37
<210>	132	
<211>	37	
<212>	DNA	
<213>	人工序列	
<220>		
<223>	狗MG53 S255Q突变体的反向引物	
<400>	132	
	ccaaacgggc aggcggtggt tgttctgcca ggatctt	37

序列表

<210>	133	
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<212>	DNA	
<213>	人工序列	
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<223>	狗MG53 S255Y突变体的正向引物	
<400>	133	
	agatcctggc agaatatcca ccgcctgccc gtttgga	37
<210>	134	
<211>	37	
<212>	DNA	
<213>	人工序列	
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<223>	狗MG53 S255Y突变体的反向引物	
<400>	134	
	tccaaacggg caggcggtgg atattctgcc aggatct	37
<210>	135	
<211>	38	
<212>	DNA	
<213>	人工序列	
<220>		
<223>	狗MG53 S255D突变体的正向引物	
<400>	135	
	aagatcctgg cagaagatcc accgcctgcc cgtttgga	38
<210>	136	
<211>	38	
<212>	DNA	
<213>	人工序列	
<220>		
<223>	狗MG53 S255D突变体的反向引物	
<400>	136	
	tccaaacggg caggcggtgg atcttctgcc aggatctt	38
<210>	137	
<211>	37	
<212>	DNA	
<213>	人工序列	
<220>		
<223>	狗MG53 S255R突变体的正向引物	

序列表

<400> 137
aagatcctgg cagaacgacc accgcctgcc cgttttgg 37

<210> 138
<211> 37
<212> DNA
<213> 人工序列

<220>
<223> 狗MG53 S255R突变体的反向引物

<400> 138
ccaaacgggc aggcggtggt cgttctgcca ggatctt 37

<210> 139
<211> 477
<212> PRT
<213> 智人

<400> 139

Met Ser Ala Ala Pro Gly Leu Leu His Gln Glu Leu Ser Cys Pro Leu
1 5 10 15

Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

Phe Cys Arg Ala Cys Leu Gly Arg Val Ala Gly Glu Pro Ala Ala Asp
35 40 45

Gly Thr Val Leu Cys Pro Cys Cys Gln Ala Pro Thr Arg Pro Gln Ala
50 55 60

Leu Ser Thr Asn Leu Gln Leu Ala Arg Leu Val Glu Gly Leu Ala Gln
65 70 75 80

Val Pro Gln Gly His Cys Glu Glu His Leu Asp Pro Leu Ser Ile Tyr
85 90 95

Cys Glu Gln Asp Arg Ala Leu Val Cys Gly Val Cys Ala Ser Leu Gly
100 105 110

Ser His Arg Gly His Arg Leu Leu Pro Ala Ala Glu Ala His Ala Arg
115 120 125

Leu Lys Thr Gln Leu Pro Gln Gln Lys Leu Gln Leu Gln Glu Ala Cys

序列表

130

135

140

Met Arg Lys Glu Lys Ser Val Ala Val Leu Glu His Gln Leu Val Glu
145 150 155 160

Val Glu Glu Thr Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
165 170 175

Gly Lys Met Arg Val Phe Leu Ala Ala Leu Glu Gly Ser Leu Asp Cys
180 185 190

Glu Ala Glu Arg Val Arg Gly Glu Ala Gly Val Ala Leu Arg Arg Glu
195 200 205

Leu Gly Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
210 215 220

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
225 230 235 240

Tyr Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ala Glu Ser Pro
245 250 255

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Ile Ile Ser Asp Asp Phe
260 265 270

Lys Phe Gln Val Trp Arg Lys Met Phe Arg Ala Leu Met Pro Ala Leu
275 280 285

Glu Glu Leu Thr Phe Asp Pro Ser Ser Ala His Pro Ser Leu Val Val
290 295 300

Ser Ser Ser Gly Arg Arg Val Glu Cys Ser Glu Gln Lys Ala Pro Pro
305 310 315 320

Ala Gly Glu Asp Pro Arg Gln Phe Asp Lys Ala Val Ala Val Val Ala
325 330 335

His Gln Gln Leu Ser Glu Gly Glu His Tyr Trp Glu Val Asp Val Gly
340 345 350

Asp Lys Pro Arg Trp Ala Leu Gly Val Ile Ala Ala Glu Ala Pro Arg

序列表

355

360

365

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
370 375 380

Leu Arg Glu Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
385 390 395 400

Arg Ala Leu Arg Ser Pro Glu Arg Arg Pro Thr Arg Ile Gly Leu Tyr
405 410 415

Leu Ser Phe Gly Asp Gly Val Leu Ser Phe Tyr Asp Ala Ser Asp Ala
420 425 430

Asp Ala Leu Val Pro Leu Phe Ala Phe His Glu Arg Leu Pro Arg Pro
435 440 445

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
450 455 460

Gln Pro Leu Leu Leu Val Gly Pro Glu Gly Ala Glu Ala
465 470 475

<210> 140

<211> 333

<212> PRT

<213> 智人

<400> 140

Met Arg Lys Glu Lys Ser Val Ala Val Leu Glu His Gln Leu Val Glu
1 5 10 15

Val Glu Glu Thr Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
20 25 30

Gly Lys Met Arg Val Phe Leu Ala Ala Leu Glu Gly Ser Leu Asp Arg
35 40 45

Glu Ala Glu Arg Val Arg Gly Glu Ala Gly Val Ala Leu Arg Arg Glu
50 55 60

Leu Gly Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
65 70 75 80

序列表

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
85 90 95

Tyr Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ala Glu Ser Pro
100 105 110

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Ile Ile Ser Asp Asp Phe
115 120 125

Lys Phe Gln Val Trp Arg Lys Met Phe Arg Ala Leu Met Pro Ala Leu
130 135 140

Glu Glu Leu Thr Phe Asp Pro Ser Ser Ala His Pro Ser Leu Val Val
145 150 155 160

Ser Ser Ser Gly Arg Arg Val Glu Cys Ser Glu Gln Lys Ala Pro Pro
165 170 175

Ala Gly Glu Asp Pro Arg Gln Phe Asp Lys Ala Val Ala Val Val Ala
180 185 190

His Gln Gln Leu Ser Glu Gly Glu His Tyr Trp Glu Val Asp Val Gly
195 200 205

Asp Lys Pro Arg Trp Ala Leu Gly Val Ile Ala Ala Glu Ala Pro Arg
210 215 220

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
225 230 235 240

Leu Arg Glu Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
245 250 255

Arg Ala Leu Arg Ser Pro Glu Arg Arg Pro Thr Arg Ile Gly Leu Tyr
260 265 270

Leu Ser Phe Gly Asp Gly Val Leu Ser Phe Tyr Asp Ala Ser Asp Ala
275 280 285

Asp Ala Leu Val Pro Leu Phe Ala Phe His Glu Arg Leu Pro Arg Pro
290 295 300

序列表

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
305 310 315 320

Gln Pro Leu Leu Leu Val Gly Pro Glu Gly Ala Glu Ala
325 330

<210> 141
<211> 333
<212> PRT
<213> 智人

<400> 141

Met Arg Lys Glu Lys Ser Val Ala Val Leu Glu His Gln Leu Val Glu
1 5 10 15

Val Glu Glu Thr Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
20 25 30

Gly Lys Met Arg Val Phe Leu Ala Ala Leu Glu Gly Ser Leu Asp Arg
35 40 45

Glu Ala Glu Arg Val Arg Gly Glu Ala Gly Val Ala Leu Arg Arg Glu
50 55 60

Leu Gly Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
65 70 75 80

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
85 90 95

Tyr Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ala Glu Ser Pro
100 105 110

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Ile Ile Ser Asp Asp Phe
115 120 125

Lys Phe Gln Val Trp Arg Lys Met Phe Arg Ala Leu Met Pro Ala Leu
130 135 140

Glu Glu Leu Thr Phe Asp Pro Ser Ser Ala His Pro Ser Leu Val Val
145 150 155 160

序列表

Ser Ser Ser Gly Arg Arg Val Glu Cys Ser Gly Gln Lys Ala Pro Pro
165 170 175

Ala Gly Glu Asp Pro Arg Gln Phe Asp Lys Ala Val Ala Val Val Ala
180 185 190

His Gln Gln Leu Ser Glu Gly Glu His Tyr Trp Glu Val Asp Val Gly
195 200 205

Asp Lys Pro Arg Trp Ala Leu Gly Val Ile Ala Ala Glu Ala Pro Arg
210 215 220

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
225 230 235 240

Leu Arg Glu Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
245 250 255

Arg Ala Leu Arg Ser Pro Glu Arg Arg Pro Thr Arg Ile Gly Leu Tyr
260 265 270

Leu Ser Phe Gly Asp Gly Val Leu Ser Phe Tyr Asp Ala Ser Asp Ala
275 280 285

Asp Ala Leu Val Pro Leu Phe Ala Phe His Glu Arg Leu Pro Arg Pro
290 295 300

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
305 310 315 320

Gln Pro Leu Leu Leu Val Gly Pro Glu Gly Ala Glu Ala
325 330

<210> 142
<211> 269
<212> PRT
<213> 智人

<400> 142

Met Ser Ala Ala Pro Gly Leu Leu His Gln Glu Leu Ser Cys Pro Leu
1 5 10 15

序列表

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

序列表

Tyr Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ala Glu Ser Pro
245 250 255

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Ile Ile Ser
260 265

<210> 143
<211> 1434
<212> DNA
<213> 智人

<400> 143
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ttcgacgcgc ccgtgacagc cgagtgcggc cacagtttct gccgcgcctg cctaggccgc 120
gtggccgggg agccggcggc ggatggcacc gttctctgcc cctgctgcca ggccccacg 180
cggccgcagg cactcagcac caacctgcag ctggcgcgcc tgggtggaggg gctggcccag 240
gtgccgcagg gccactgcga ggagcacctg gaccgcgtga gcattctactg cgagcaggac 300
cgcgcgctgg tgtgcggagt gtgcgcctca ctgggctcgc accgcgggtca tcgcctcctg 360
cctgccgccg aggcccacgc acgcctcaag acacagctgc cacagcagaa actgcagctg 420
caggaggcat gcatgcgtaa ggagaagagt gtggctgtgc tggagcatca gctgggtggag 480
gtggaggaga cagtgcgtca gttccggggg gccgtggggg agcagctggg caagatgcgg 540
gtgttcctgg ctgcaactgga gggctccttg gactgcgagg cagagcgtgt acgggggtgag 600
gcaggggtcg ccttgcgccg ggagctgggg agcctgaact cttacctgga gcagctgcgg 660
cagatggaga aggtcctgga ggaggtggcg gacaagccgc agactgagtt cctcatgaaa 720
tactgcctgg tgaccagcag gctgcagaag atcctggcag agtctccccc acccgccctg 780
ctggacatcc agctgccaat tatctcagat gacttcaaat tccaggtgtg gaggaagatg 840
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agcctgggtg tgtcttcctc tggccgccgc gtggagtgtc cggagcagaa ggccgccgcc 960
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tgatcgcgg ccgaggcccc ccgcccggg cgctgcacg cgggtgccctc gcagggcctg 1140
tggctgtctg ggctgcgcga gggcaagatc ctggaggcac acgtggaggc caaggagccg 1200
cgcgctctgc gcagccccga gaggcggccc acgcgcattg gcctttacct gagcttcggc 1260

序列表

gacggcgctcc tctccttcta cgatgccagc gacgccgacg cgctcgtgcc gctttttgcc 1320
 ttccacgagc gctgcccag gcccggttac cccttcttcg acgtgtgctg gcacgacaag 1380
 ggcaagaatg cccagccgct gctgctcgtg ggtcccgaag gcgccgaggc ctga 1434

<210> 144
 <211> 1002
 <212> DNA
 <213> 智人

<400> 144
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 gtgcgtcagt tccgggggggc cgtggggggag cagctgggca agatgcccgtt gttccttgct 120
 gcactggagg gtccttggga ccgcgaggca gagcgtgtac ggggtgaggc aggggtcgcc 180
 ttgcgccggg agctggggag cctgaactct tacctggagc agctgcggca gatggagaag 240
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 ctgccaatta tctcagatga cttcaaattc caggtgtgga ggaagatgtt ccgggctctg 420
 atgccagcgc tggaggagct gacctttgac ccgagctctg cgcacccgag cctggttggtg 480
 tcttctctg gccgccgct ggagtgtctg gagcagaagg cgcgccggc cggggaggac 540
 ccgcgccagt tcgacaaggc ggtggcggtg gtggcgccacc agcagctctc cgagggcgag 600
 cactactggg aggtggatgt tggcgacaag ccgcgctggg cgctgggcgt gatecgggcc 660
 gagggcccc gccgcgggcg cctgcacgcg gtgccctcgc agggcctgtg gctgctgggg 720
 ctgcgcgagg gcaagatcct ggaggcacac gtggaggcca aggagccgcg cgtctctgcg 780
 agccccgaga ggcggccac gcgcattggc ctttacctga gcttcggcga cggcgctctc 840
 tctttctacg atgccagcga cgcgcacgcg ctctgtccgc tttttgcctt ccacgagcgc 900
 ctgcccaggc ccgtgtacct cttcttcgac gtgtgctggc acgacaaggg caagaatgcc 960
 cagccgtgc tgcctgtggg tcccgaaggc gccgaggcct ga 1002

<210> 145
 <211> 1002
 <212> DNA
 <213> 智人

<400> 145
 atgcgtaagg agaagagtgt ggctgtgctg gagcatcagc tgggtggaggt ggaggagaca 60

序列表

gtgcgtcagt tccgggggggc cgtggggggag cagctgggca agatgcgggt gttccttgct	120
gcactggagg gtccttgga ccgcgaggca gagcgtgtac ggggtgaggc aggggtcgcc	180
ttgcgccggg agctggggag cctgaactct tacctggagc agctgcggca gatggagaag	240
gtcctggagg aggtggcgga caagccgcag actgagttcc tcatgaaata ctgccttggtg	300
accagcaggc tgcagaagat cctggcagag tctccccac ccgccgtct ggacatccag	360
ctgccaatta tctcagatga cttcaaattc caggtgtgga ggaagatgtt ccgggctctg	420
atgccagcgc tggaggagct gacctttgac ccgagctctg cgcacccgag cctggttggtg	480
tcttcctctg gccgccggt ggagtgtctg gggcagaagg ccgcccggc cggggaggac	540
ccgcgccagt tcgacaaggc ggtggcggtg gtggcgcacc agcagctctc cgaggcgag	600
cactactggg aggtggatgt tggcgacaag ccgcgctggg cgctgggct gatcgcgcc	660
gaggcccccc gccgcgggcg cctgcacgcg gtgccctcgc agggcctgtg gctgctgggg	720
ctgcgcgagg gcaagatcct ggaggcacac gtggaggcca aggagccgcg cgctctgcgc	780
agccccgaga ggcggccac gcgcattggc ctttacctga gcttcggcga cggcgctctc	840
tccttctacg atgccagcga cgcgcacgcg ctggtgccgc tttttgcctt ccacgagcgc	900
ctgcccaggc ccgtgtaccc cttcttcgac gtgtgctggc acgacaaggg caagaatgcc	960
cagccgtgc tgctcgtggg tcccgaaggc gccgaggcct ga	1002

<210> 146
 <211> 810
 <212> DNA
 <213> 智人

<400> 146	
atgtcggctg cgcccgccct cctgcaccag gagctgtcct gcccgctgtg cctgcagctg	60
ttcgacgcgc ccgtgacagc cgagtgcggc cacagtttct gccgcgctg cctagggcgc	120
gtggccgggg agccggcggc ggatggcacc gttctctgcc cctgctgcca ggccccacg	180
cggccgcagg cactcagcac caacctgcag ctggcgcgcc tgggtggagg gctggcccag	240
gtgccgcagg gccactgcga ggagcacctg gacccgctga gcattctact cgagcaggac	300
cgcgcgctgg tgtgcggagt gtgcgctca ctcggctcgc acccggtca tgcctcctg	360
cctgccgccg agggccacgc acgcctcaag acacagctgc cacagcagaa actgcagctg	420
caggaggcat gcatgcgtaa ggagaagagt gtggctgtgc tggagcatca gctggtggag	480
gtggaggaga cagtgcgtca gttccggggg gccgtggggg agcagctggg caagatgcgg	540

序列表

```
gtgttcctgg ctgcactgga gggctccttg gaccgcgagg cagagcgtgt acggggtgag      600
gcaggggtcg ccttgcgccg ggagctgggg agcctgaact cttacctgga gcagctgcgg      660
cagatggaga aggtcctgga ggaggtggcg gacaagccgc agactgagtt cctcatgaaa      720
tactgcctgg tgaccagcag gctgcagaag atcctggcag agtctcccc acccgcccg      780
ctggacatcc agctgccaat tatctcctga      810
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<210> 147
<211> 477
<212> PRT
<213> 人工序列

<220>
<223> 人MG53亚型 S255A突变体的氨基酸序列

<400> 147

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Met Ser Ala Ala Pro Gly Leu Leu His Gln Glu Leu Ser Cys Pro Leu
1           5           10           15
```

```
Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
          20           25           30
```

```
Phe Cys Arg Ala Cys Leu Gly Arg Val Ala Gly Glu Pro Ala Ala Asp
          35           40           45
```

```
Gly Thr Val Leu Cys Pro Cys Cys Gln Ala Pro Thr Arg Pro Gln Ala
          50           55           60
```

```
Leu Ser Thr Asn Leu Gln Leu Ala Arg Leu Val Glu Gly Leu Ala Gln
65           70           75           80
```

```
Val Pro Gln Gly His Cys Glu Glu His Leu Asp Pro Leu Ser Ile Tyr
          85           90           95
```

```
Cys Glu Gln Asp Arg Ala Leu Val Cys Gly Val Cys Ala Ser Leu Gly
          100          105          110
```

```
Ser His Arg Gly His Arg Leu Leu Pro Ala Ala Glu Ala His Ala Arg
          115          120          125
```

```
Leu Lys Thr Gln Leu Pro Gln Gln Lys Leu Gln Leu Gln Glu Ala Cys
          130          135          140
```

序列表

Met Arg Lys Glu Lys Ser Val Ala Val Leu Glu His Gln Leu Val Glu
145 150 155 160

Val Glu Glu Thr Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
165 170 175

Gly Lys Met Arg Val Phe Leu Ala Ala Leu Glu Gly Ser Leu Asp Cys
180 185 190

Glu Ala Glu Arg Val Arg Gly Glu Ala Gly Val Ala Leu Arg Arg Glu
195 200 205

Leu Gly Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
210 215 220

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
225 230 235 240

Tyr Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ala Glu Ala Pro
245 250 255

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Ile Ile Ser Asp Asp Phe
260 265 270

Lys Phe Gln Val Trp Arg Lys Met Phe Arg Ala Leu Met Pro Ala Leu
275 280 285

Glu Glu Leu Thr Phe Asp Pro Ser Ser Ala His Pro Ser Leu Val Val
290 295 300

Ser Ser Ser Gly Arg Arg Val Glu Cys Ser Glu Gln Lys Ala Pro Pro
305 310 315 320

Ala Gly Glu Asp Pro Arg Gln Phe Asp Lys Ala Val Ala Val Val Ala
325 330 335

His Gln Gln Leu Ser Glu Gly Glu His Tyr Trp Glu Val Asp Val Gly
340 345 350

Asp Lys Pro Arg Trp Ala Leu Gly Val Ile Ala Ala Glu Ala Pro Arg
355 360 365

序列表

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
370 375 380

Leu Arg Glu Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
385 390 395 400

Arg Ala Leu Arg Ser Pro Glu Arg Arg Pro Thr Arg Ile Gly Leu Tyr
405 410 415

Leu Ser Phe Gly Asp Gly Val Leu Ser Phe Tyr Asp Ala Ser Asp Ala
420 425 430

Asp Ala Leu Val Pro Leu Phe Ala Phe His Glu Arg Leu Pro Arg Pro
435 440 445

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
450 455 460

Gln Pro Leu Leu Leu Val Gly Pro Glu Gly Ala Glu Ala
465 470 475

<210> 148
<211> 333
<212> PRT
<213> 人工序列

<220>
<223> 人MG53亚型 S255A突变体的氨基酸序列

<400> 148

Met Arg Lys Glu Lys Ser Val Ala Val Leu Glu His Gln Leu Val Glu
1 5 10 15

Val Glu Glu Thr Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
20 25 30

Gly Lys Met Arg Val Phe Leu Ala Ala Leu Glu Gly Ser Leu Asp Arg
35 40 45

Glu Ala Glu Arg Val Arg Gly Glu Ala Gly Val Ala Leu Arg Arg Glu
50 55 60

序列表

Leu Gly Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
65 70 75 80

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
85 90 95

Tyr Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ala Glu Ala Pro
100 105 110

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Ile Ile Ser Asp Asp Phe
115 120 125

Lys Phe Gln Val Trp Arg Lys Met Phe Arg Ala Leu Met Pro Ala Leu
130 135 140

Glu Glu Leu Thr Phe Asp Pro Ser Ser Ala His Pro Ser Leu Val Val
145 150 155 160

Ser Ser Ser Gly Arg Arg Val Glu Cys Ser Glu Gln Lys Ala Pro Pro
165 170 175

Ala Gly Glu Asp Pro Arg Gln Phe Asp Lys Ala Val Ala Val Val Ala
180 185 190

His Gln Gln Leu Ser Glu Gly Glu His Tyr Trp Glu Val Asp Val Gly
195 200 205

Asp Lys Pro Arg Trp Ala Leu Gly Val Ile Ala Ala Glu Ala Pro Arg
210 215 220

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
225 230 235 240

Leu Arg Glu Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
245 250 255

Arg Ala Leu Arg Ser Pro Glu Arg Arg Pro Thr Arg Ile Gly Leu Tyr
260 265 270

Leu Ser Phe Gly Asp Gly Val Leu Ser Phe Tyr Asp Ala Ser Asp Ala
275 280 285

序列表

Asp Ala Leu Val Pro Leu Phe Ala Phe His Glu Arg Leu Pro Arg Pro
290 295 300

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
305 310 315 320

Gln Pro Leu Leu Leu Val Gly Pro Glu Gly Ala Glu Ala
325 330

<210> 149
<211> 333
<212> PRT
<213> 人工序列

<220>
<223> 人MG53亚型 S255A突变体的氨基酸序列

<400> 149

Met Arg Lys Glu Lys Ser Val Ala Val Leu Glu His Gln Leu Val Glu
1 5 10 15

Val Glu Glu Thr Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
20 25 30

Gly Lys Met Arg Val Phe Leu Ala Ala Leu Glu Gly Ser Leu Asp Arg
35 40 45

Glu Ala Glu Arg Val Arg Gly Glu Ala Gly Val Ala Leu Arg Arg Glu
50 55 60

Leu Gly Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
65 70 75 80

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
85 90 95

Tyr Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ala Glu Ala Pro
100 105 110

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Ile Ile Ser Asp Asp Phe
115 120 125

Lys Phe Gln Val Trp Arg Lys Met Phe Arg Ala Leu Met Pro Ala Leu
130 135 140

序列表

Glu Glu Leu Thr Phe Asp Pro Ser Ser Ala His Pro Ser Leu Val Val
145 150 155 160

Ser Ser Ser Gly Arg Arg Val Glu Cys Ser Gly Gln Lys Ala Pro Pro
165 170 175

Ala Gly Glu Asp Pro Arg Gln Phe Asp Lys Ala Val Ala Val Val Ala
180 185 190

His Gln Gln Leu Ser Glu Gly Glu His Tyr Trp Glu Val Asp Val Gly
195 200 205

Asp Lys Pro Arg Trp Ala Leu Gly Val Ile Ala Ala Glu Ala Pro Arg
210 215 220

Arg Gly Arg Leu His Ala Val Pro Ser Gln Gly Leu Trp Leu Leu Gly
225 230 235 240

Leu Arg Glu Gly Lys Ile Leu Glu Ala His Val Glu Ala Lys Glu Pro
245 250 255

Arg Ala Leu Arg Ser Pro Glu Arg Arg Pro Thr Arg Ile Gly Leu Tyr
260 265 270

Leu Ser Phe Gly Asp Gly Val Leu Ser Phe Tyr Asp Ala Ser Asp Ala
275 280 285

Asp Ala Leu Val Pro Leu Phe Ala Phe His Glu Arg Leu Pro Arg Pro
290 295 300

Val Tyr Pro Phe Phe Asp Val Cys Trp His Asp Lys Gly Lys Asn Ala
305 310 315 320

Gln Pro Leu Leu Leu Val Gly Pro Glu Gly Ala Glu Ala
325 330

<210> 150
<211> 269
<212> PRT
<213> 人工序列

<220>

序列表

<223> 人MG53亚型 S255A突变体的氨基酸序列

<400> 150

Met Ser Ala Ala Pro Gly Leu Leu His Gln Glu Leu Ser Cys Pro Leu
1 5 10 15

Cys Leu Gln Leu Phe Asp Ala Pro Val Thr Ala Glu Cys Gly His Ser
20 25 30

Phe Cys Arg Ala Cys Leu Gly Arg Val Ala Gly Glu Pro Ala Ala Asp
35 40 45

Gly Thr Val Leu Cys Pro Cys Cys Gln Ala Pro Thr Arg Pro Gln Ala
50 55 60

Leu Ser Thr Asn Leu Gln Leu Ala Arg Leu Val Glu Gly Leu Ala Gln
65 70 75 80

Val Pro Gln Gly His Cys Glu Glu His Leu Asp Pro Leu Ser Ile Tyr
85 90 95

Cys Glu Gln Asp Arg Ala Leu Val Cys Gly Val Cys Ala Ser Leu Gly
100 105 110

Ser His Arg Gly His Arg Leu Leu Pro Ala Ala Glu Ala His Ala Arg
115 120 125

Leu Lys Thr Gln Leu Pro Gln Gln Lys Leu Gln Leu Gln Glu Ala Cys
130 135 140

Met Arg Lys Glu Lys Ser Val Ala Val Leu Glu His Gln Leu Val Glu
145 150 155 160

Val Glu Glu Thr Val Arg Gln Phe Arg Gly Ala Val Gly Glu Gln Leu
165 170 175

Gly Lys Met Arg Val Phe Leu Ala Ala Leu Glu Gly Ser Leu Asp Arg
180 185 190

Glu Ala Glu Arg Val Arg Gly Glu Ala Gly Val Ala Leu Arg Arg Glu
195 200 205

序列表

Leu Gly Ser Leu Asn Ser Tyr Leu Glu Gln Leu Arg Gln Met Glu Lys
210 215 220

Val Leu Glu Glu Val Ala Asp Lys Pro Gln Thr Glu Phe Leu Met Lys
225 230 235 240

Tyr Cys Leu Val Thr Ser Arg Leu Gln Lys Ile Leu Ala Glu Ala Pro
245 250 255

Pro Pro Ala Arg Leu Asp Ile Gln Leu Pro Ile Ile Ser
260 265

<210> 151
<211> 1434
<212> DNA
<213> 人工序列

<220>
<223> 人MG53亚型 S255A突变体的编码核酸序列

<400> 151
atgtcggctg cgccccgcct cctgcaccag gagctgtcct gcccgctgtg cctgcagctg 60
ttcgacgcgc ccgtgacagc cgagtgcggc cacagtttct gccgcgcctg cctaggccgc 120
gtggccgggg agccggcggc ggatggcacc gttctctgcc cctgctgcca ggccccacg 180
cggccgcagg cactcagcac caacctgcag ctggcgcgcc tgggtggaggg gctggcccag 240
gtgccgcagg gccactgcga ggagcacctg gaccgcgtga gcattactg cgagcaggac 300
cgcgcgctgg tgtgcggagt gtgcgcctca ctcggtcgc acccggtca tcgctcctg 360
cctgccgccg aggccacgc acgctcaag acacagctgc cacagcagaa actgcagctg 420
caggaggcat gcatgcgtaa ggagaagagt gtggctgtgc tggagcatca gctggtggag 480
gtggaggaga cagtgcgtca gttccggggg gccgtggggg agcagctggg caagatgcgg 540
gtgttcttgg ctgcactgga gggctccttg gactgcgagg cagagcgtgt acggggtgag 600
gcaggggtcg cttgcgccg ggagctgggg agcctgaact cttacctgga gcagctgcgg 660
cagatggaga aggtcctgga ggaggtggcg gacaagccgc agactgagtt cctcatgaaa 720
tactgcctgg tgaccagcag gctgcagaag atcctggcag aggtccccc acccgcccg 780
ctggacatcc agctgccaat tatctcagat gacttcaaat tccaggtgtg gaggaagatg 840
ttccgggctc tgatgccagc gctggaggag ctgacctttg acccgagctc tgcgcacccg 900
agcctggtgg tgtcttcctc tggccgccgc gtggagtgtc cggagcagaa ggccgcccg 960

序列表

gccggggagg acccgcgcca gttcgacaag gcggtggcgg tggtagcgca ccagcagctc	1020
tccgagggcg agcactactg ggaggtggat gttggcgaca agccgcgctg ggcgctgggc	1080
gtgatcgcgg ccgaggcccc ccgccgcggg cgcctgcacg cggtagccctc gcagggcctg	1140
tggctgctgg ggctgcgcga gggcaagatc ctggaggcac acgtggaggc caaggagccg	1200
cgcgctctgc gcagccccga gaggcggccc acgcgcattg gcctttacct gagcttcggc	1260
gacggcgctc tctccttcta cgatgccagc gacgccgacg cgctcgtgcc gctttttgcc	1320
ttccacgagc gctgcccag gcccggtgtac cccttcttcg acgtgtgctg gcacgacaag	1380
ggcaagaatg cccagccgct gctgctcgtg ggtcccgaag gcgccgaggc ctga	1434

<210> 152
 <211> 1002
 <212> DNA
 <213> 人工序列

<220>
 <223> 人MG53亚型 S255A突变体的编码核酸序列

<400> 152 atgcgcaagg agaagagtgt ggctgtgctg gagcatcagc tggtaggagt ggaggagaca	60
gtgcgtcagt tccggggggc cgtggggggag cagctgggca agatgcgggt gttcctggct	120
gcactggagg gtccttggga ccgcgaggca gagcgtgtac ggggtgaggc aggggtcgcc	180
ttgcgccggg agctggggag cctgaactct tacctggagc agctgcggca gatggagaag	240
gtcctggagg aggtggcgga caagccgcag actgagttcc tcatgaaata ctgcctgggtg	300
accagcaggc tgcagaagat cctggcagag gctccccac ccgccgtct ggacatecag	360
ctgccaatta tctcagatga cttcaaattc caggtgtgga ggaagatgtt ccgggctctg	420
atgccagcgc tggaggagct gacctttgac ccgagctctg cgcacccgag cctggtgggtg	480
tcttctctg gccgccgct ggagtgtctg gagcagaagg cgcgccggc cggggaggac	540
ccgcgccagt tcgacaaggc ggtggcggtg gtggcgcacc agcagctctc cgaggcgag	600
cactactggg aggtggatgt tggcgacaag ccgcgctggg cgtggggcgt gatcgcggcc	660
gaggcccccc gccgcgggcg cctgcacgcg gtgccctcgc agggcctgtg gctgctgggg	720
ctgcgcgagg gcaagatcct ggaggcacac gtggaggcca aggagccgcg cgctctgcgc	780
agccccgaga ggcggcccac gcgcattggc ctttacctga gcttcggcga cgcgctctc	840
tccttctacg atgccagcga cgcgcacgcg ctctgtccgc tttttgcctt ccacgagcgc	900

序列表

ctgcccaggc ccgtgtaccc cttcttcgac gtgtgctggc acgacaaggg caagaatgcc 960
cagccgctgc tgctcgtggg tcccgaaggc gccgaggcct ga 1002

<210> 153
<211> 1002
<212> DNA
<213> 人工序列

<220>
<223> 人MG53亚型 S255A突变体的编码核酸序列

<400> 153
atgcgtaagg agaagagtgt ggctgtgctg gagcatcagc tgggtggaggt ggaggagaca 60
gtgcgtcagt tccgggggggc cgtggggggag cagctgggca agatgcgggt gticcctggct 120
gcactggagg gctccttgga ccgcgaggca gagcgtgtac ggggtgaggc aggggtcgcc 180
ttgcgccggg agctggggag cctgaactct tacctggagc agctgcggca gatggagaag 240
gtcctggagg aggtggcgga caagccgcag actgagttcc tcatgaaata ctgcctgggtg 300
accagcaggc tgcagaagat cctggcagag gctccccac ccgccgtct ggacatccag 360
ctgccaatta tctcagatga cttcaaattc caggtgtgga ggaagatgtt ccgggctctg 420
atgccagcgc tggaggagct gacctttgac ccgagctctg cgcacccgag cctgggtgggtg 480
tcttcctctg gccgccgct ggagtgtctg gggcagaagg cgcgccggc cggggaggac 540
ccgcgccagt tcgacaaggc ggtggcggtg gtggcgcacc agcagctctc cgagggcgag 600
cactactggg aggtggatgt tggcgacaag ccgcgctggg cgttgggctg gatcgcggcc 660
gaggcccccc gccgcgggag cctgcacgag gtgccctcgc agggcctgtg gctgctgggg 720
ctgcgcgagg gcaagatcct ggaggcacac gtggaggcca aggagccgag cgtctctgcgc 780
agccccgaga ggcgggccac gcgcattggc ctttacctga gcttcggcga cggcgctctc 840
tcctttctacg atgccagcga cgcgcacgag ctctgtccgc tttttgcctt ccacgagcgc 900
ctgcccaggc ccgtgtaccc cttcttcgac gtgtgctggc acgacaaggg caagaatgcc 960
cagccgctgc tgctcgtggg tcccgaaggc gccgaggcct ga 1002

<210> 154
<211> 810
<212> DNA
<213> 人工序列

<220>

序列表

<223> 人MG53亚型 S255A突变体的编码核酸序列

<400> 154

atgtcggctg cgcccggcct cctgcaccag gagctgtcct gcccgctgtg cctgcagctg	60
ttcgacgcgc ccgtgacagc cgagtgcggc cacagtttct gccgcgctg cctaggccgc	120
gtggccgggg agccggcggc ggatggcacc gtctctgtcc cctgctgcca ggccccacg	180
cggccgcagg cactcagcac caacctgcag ctggcgcgcc tgggtggagg gctggcccag	240
gtgccgcagg gccactgcga ggagcacctg gaccgcgtga gcattactg cgagcaggac	300
cgcgcgctgg tgtgcggagt gtgcgctca ctgggtctgc acccggtca tgcctctg	360
cctgccgccg agggccacgc acgcctcaag acacagctgc cacagcagaa actgcagctg	420
caggaggcat gcatgcgtaa ggagaagagt gtggctgtgc tggagcatca gctggtggag	480
gtggaggaga cagtgcgtca gttccggggg gccgtggggg agcagctggg caagatgcgg	540
gtgttcctgg ctgcaactga gggctccttg gaccgcgagg cagagcgtgt acggggtgag	600
gcaggggtcg ccttgcgccg ggagctgggg agcctgaact cttaacctga gcagctgcgg	660
cagatggaga aggtcctgga ggaggtggcg gacaagccgc agactgagti cctcatgaaa	720
tactgcctgg tgaccagcag gctgcagaag atcctggcag aggtcctccc acccgccgt	780
ctggacatcc agctgccaat tatctctga	810