

English translation of corrected sequence listing
Sequence Listing

<110> PEKING UNIVERSITY
<120> MG53 Mutants, Methods of Making the Same, and Uses Thereof
<130> 066467-8001W001
<160> 154
<170> PatentIn version 3.5
<210> 1
<211> 477
<212> PRT
<213> Homo sapiens
<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

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
1/70

English translation of corrected sequence listing

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
 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
 2/70

465 English translation of corrected sequence listing 470 475

<210> 2
 <211> 477
 <212> PRT
 <213> Mus musculus

<400> 2

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

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

English translation of corrected sequence listing

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

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

<210> 3
<211> 477
<212> PRT
<213> Rattus norvegicus

<400> 3

English translation of corrected sequence listing

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

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

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

English translation of corrected sequence listing

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

<210> 4

<211> 477

<212> PRT

<213> Macaca fascicularis

<400> 4

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

English translation of corrected sequence listing
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

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

English translation of corrected sequence listing
 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

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

<210> 5
 <211> 478
 <212> PRT
 <213> Sus scrofa

<400> 5

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
 8/70

65 English translation of corrected sequence listing 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

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
9/70

English translation of corrected sequence listing

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
 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> 6
 <211> 477
 <212> PRT
 <213> Canis lupus familiaris

<400> 6

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

English translation of corrected sequence listing

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

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

English translation of corrected sequence listing

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> 7

<211> 477

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence of human MG53 S255A mutant

<400> 7

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

English translation of corrected sequence listing
 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

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

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

English translation of corrected sequence listing
 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> 8
 <211> 477
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Amino acid sequence of mouse MG53 S255A mutant

<400> 8

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

English translation of corrected sequence listing

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

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

English translation of corrected sequence listing

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

<210> 9
<211> 477
<212> PRT
<213> Artificial Sequence

<220>
<223> Amino acid sequence of rat MG53 S255A mutant

<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

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

English translation of corrected sequence listing

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

English translation of corrected sequence listing
 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
 <211> 477
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Amino acid sequence of monkey MG53 S255A mutant

<400> 10

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

English translation of corrected sequence listing

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

English translation of corrected sequence listing

<210> 11
 <211> 478
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Amino acid sequence of swine MG53 S255A mutant

<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

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

English translation of corrected sequence listing
 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 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
 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

<210> 12
 <211> 477
 <212> PRT
 <213> Artificial Sequence

English translation of corrected sequence listing

<220>

<223> Amino acid sequence of dog MG53 S255A mutant

<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

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

English translation of corrected sequence listing

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

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> Artificial Sequence

<220>
<223> Encoding sequence of human MG53 S255A mutant

<400> 13
atgtcggctg cgcccgccct cctgcaccag gagctgtcct gcccgctgtg cctgcagctg

English translation of corrected sequence listing

ttcgacgcgc ccgtagacagc cgagtgcggc cacagtttct gccgcgcctg cctaggccgc	120
gtggccgggg agccggcggc ggatggcacc gttctctgcc cctgctgcca ggccccacg	180
cggccgcagg cactcagcac caacctgcag ctggcgcgcc tggtagggg gctggcccag	240
gtgccgcagg gccactgcga ggagcacctg gacccgctga gcatctactg cgagcaggac	300
cgcgcgctgg tgtgcggagt gtgcgcctca ctcggctcgc accgcggtca tcgcctcctg	360
cctgccgccg agggccacgc acgcctcaag acacagctgc cacagcagaa actgcagctg	420
caggaggcat gcatgcgcaa ggagaagagt gtggctgtgc tggagcatca gctggtggag	480
gtggaggaga cagtgcgtca gttccggggg gccgtggggg agcagctggg caagatgcgg	540
gtgttcctgg ctgactgga gggctccttg gaccgcgagg cagagcgtgt acggggtgag	600
gcaggggtcg ccttgcccg ggagctgggg agcctgaact cttacctgga gcagctgcgg	660
cagatggaga aggtcctgga ggaggtggcg gacaagccgc agactgagtt cctcatgaaa	720
tactgcctgg tgaccagcag gctgcagaag atcctggcag aggtcctccc acccgccgt	780
ctggacatcc agctgccaat tatctcagat gacttcaaat tccaggtgtg gaggaagatg	840
ttccgggctc tgatgccagc gctggaggag ctgaccttg acccgagctc tgcgcacccg	900
agcctgggtg tgtcttcctc tggccgccgc gtggagtgtc cggagcagaa ggcgccgccg	960
gccggggagg acccgcgcca gttcgacaag gcggtggcgg tggtaggcga ccagcagctc	1020
tccgagggcg agcactactg ggaggtggat gttggcgaca agccgcgctg ggcgtgggc	1080
gtgatcgcg ccgaggcccc ccgccgggg cgctgcacg cggtagcctc gcagggcctg	1140
tggctgctgg ggctgcgcga gggcaagatc ctggaggcac acgtggaggc caaggagccg	1200
cgcgctctgc gcagccccga gaggcgcccc acgcgcattg gcctttacct gagcttcggc	1260
gacggcgctc tctccttcta cgatgccagc gacgccgacg cgctcgtgcc gctttttgcc	1320
ttccacgagc gcctgcccag gcccgtgtac cccttcttcg acgtgtgctg gcacgacaag	1380
ggcaagaatg cccagccgct gctgctcgtg ggtcccgaag gcgccgaggc ctga	1434

<210> 14
 <211> 1434
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Encoding sequence of mouse MG53 S255A mutant

<400> 14	
atgtcggctg caccggcct tctgcgtcag gaactgtcct gccactgtg cttgcagctg	60
ttcgatgcgc cagtgcggc tgagtgtggc cacagtttct gccgtgcctg cctgatccgg	120
gtggcagggg agcctgctgc ggacggcaca gttgcctgtc cctgttgtca ggcacctaca	180
cggccgcagg ctctaagcac taacctccag ttgtcacgcc ttgtggaggg ttggcgcaa	240
gtgccccaa ggcactgcga ggaacacctg gatccactga gcatctactg cgagcaggac	300
cgcacacttg tgtgtggtgt gtgtgcctcg ctcggttctc accgtgggtca tcgtctcctg	360

English translation of corrected sequence listing

cctgccgctg aagcccaagc acgcctcaag acacagcttc cacagcagaa gatgcagctg	420
caggaggcat gcatgcgcaa ggagaagact gtagcgggtgc tggagcatca gctggtggag	480
gtggaggaga cagtgcgcca gttccgggga gctgtcgggg agcagctggg gaagatgcgg	540
atgttccttg ctgccctaga aagttctctg gaccgtgaag cagaaagggg tcgggggtgat	600
gctgggggtt ccttgcgtcg ggagctgtca agcctgaact cttacctaga gcaactgagg	660
cagatggaga aggtgctgga ggaggtggct gacaagccac agacagaatt cctcatgaaa	720
ttctgccttg taaccagcag gctgcagaag atcctgtcag aggcaccacc accggcaagg	780
ctagatatcc agctgcctgt catctcagat gacttcaa at tccaggtgtg gaagaagatg	840
ttccgggctc tgatgccagc gctggaggaa ctgacttttg accccagctc tgcgcacccg	900
agcctggtgg tgcctcctc tggtcgccga gtggagtgtc cagaccagaa ggcgccgcca	960
gcgggagaag acacgcgtca gttcgacaag gcagtagcgg tggtagcgca gcagctgctg	1020
tcacagggcg agcactattg ggaggtggag gtgggcgaca aaccacgctg ggccctggga	1080
gtgatggcgg ctgacgcttc ccgccgtggc cggtgcacg cggtgccctc acaggggctg	1140
tggctgctgg gtctgcgcga tggcaagatc ctggaggcgc acgtggaggc caaggagccg	1200
cgggcactgc gcaccccaga gaggcctccg gcgcgcattg gcctctacct aagcttcgca	1260
gatggcgtcc tggctttcta 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> Artificial sequence

<220>
 <223> Encoding sequence of rat MG53 S255A mutant

<400> 15	
atgtcagctg caccaggcct tttgcgccag gaactgtctt gcccgtgtg cttgcagctg	60
ttcgtatcac cagtgaccgc tgagtgtggc cacagtttct gccgtgcctg cctgatccgt	120
gtggcagggg agcctgccga cgatggcacg gttgcctgtc cctgttgtca ggcacttact	180
cggccacagg cgctaagcac taacctccag ttggcacgcc ttgtggaggg tttggcacia	240
gtgccccaa gccactgcga ggaacacctg gatccactga gcatctactg cgagcaggac	300
cgcacacttg tgtgtggtgt gtgtgcctct ctcggttcac accgtggtca ccgtcttctg	360
cctgccgagc aagcccatgc acgtctcaag acacagcttc cacaacagaa ggcccagctg	420
caggaggcat gcatgcgcaa ggagaagagt gtagcagtc tggagcatca gctggtggag	480
gtggaggaga ccgtgcgtca gttccgggga gctgttgggg agcagctggg gaagatgcgg	540
atgttccttg ctgccctaga aagttctttg gaccgtgaag cagaaagggg tcgaggtgag	600
gcagggggtt ccttgcggcg ggagctgtca agcctgaact cttacctgga gcaactgagg	660

English translation of corrected sequence listing

cagatggaga aggtgctgga ggaggtggct gacaagccac agacagaatt cctcatgaaa	720
ttctgcctgg tgaccagcag gctgcagaag attctgtcag aggcaccacc cccagcaagg	780
ctagatatcc agctgcctgt catctcagat gacttcaaatt tccaggtgtg gaagaagatg	840
ttccgggctc tgatgccaga gttggaggaa ctgacttttg accccagctc tgcgcacccg	900
agcctggtgg tgtccgcctc tggtcgccga gtggagtgtc cggagcagaa ggcgccgcca	960
gcaggagaag acacgtgccg gttcgacaag acggtagcgg tagtggcgaa gcagctgctg	1020
tcacaggggg agcactactg ggaggtggag gtgggcgaca agccacgctg ggccctgggt	1080
gtgatggcgg ctgacgcttc ccgtcgtggc cgctgcacg cggtgccctc acaggggctg	1140
tggttgctcg gcctgcgca tggcaagatc ctggaggcac acgtggaggc caaggagcca	1200
cgggcactgc gcacccaga gaggccacca gcgcgattg gcctctacct aagctttgca	1260
gatggcgtcc tgactttcta tgatgcaagc aacaccgacg cgcttacacc gctcttttct	1320
tttcatgagc gtctgcctgg gccggtgtac cccatgtttg acgtgtgctg gcacgacaag	1380
ggcaagaatt ctcagccgct gttgctcgtg gggccagaca gtgagcaggc ctga	1434

<210> 16
<211> 1434

<212> DNA

<213> Artificial Sequence

<220>

<223> Encoding sequence of monkey MG53 S255A mutant

<400> 16

atgtcggctg cgccgggcct cctgcaccag gagctgtcct gcccgtgtg cctgcagctg	60
ttcgacgcgc ccgtgacagc cgagtgcggc cacagtttct gtcgcgcctg cctgggccgc	120
gtggccgggg aaccggcggc ggatggcacc gttctctgcc cctgctgtca ggccccacg	180
cggccgcagg cactcagcac caacctgcag ctggcgcgcc tggtaggggg gctggcccag	240
gtgccgcagg gccactgcga ggagcacctg gaccgctga gcatctactg tgagcaggac	300
cgcgcgctgg tgtgcggagt gtgcgcctca ctcggtcgc accgcggtca tcgcctgctg	360
cccgcgcggc agggccacgc acgcctcaag acgcagctgc cacagcagaa actgcagctg	420
caggaggcat gcatgcgcaa ggagaagagt gtagctgtgc tggagcatca gttggtggaa	480
gtggaggaga cagtgcgtca gttccggggg gccgtggggg agcagctggg caagatgcgg	540
gtgttcctgg ctgcaactga gggctccttg gaccgtgagg cagagcgtgt gcgggggtgag	600
gcaggggtcg ccttgcgccg ggagctgggg agcctgaact cttacctgga gcagctgcgg	660
cagatggaga aggtgctgga ggaggtggcc gacaagccgc agactgagtt cctaataaaa	720
tactgcctgg tgaccagcag gctgcagaag atcctggcag aggtcctccc accgcccgt	780
ctggacatcc agctgccaat catctcagat gacttcaaatt tccaggtgtg gaggaagatg	840
ttccgggctc tgatgccagc gctggaggag ctgacctttg acccgagctc tgcgcacccc	900
agcctggtgg tgtcttcctc cggccgcccgc gtggagtgtc cggagcagaa ggcgccgccc	960

English translation of corrected sequence listing

gcgggggagg acccgcgcca gttcgacaag gcggtagcgg tgggtggcgca ccagcagctc	1020
tccgagggcg aacactactg ggaggtggag gtggggcgaca agccgcgctg ggcgctgggt	1080
gtgatcgcgg ccgagggggcc ccgtcgcggg cgcctgcacg cggtgccctc gcagggcctg	1140
tggctgctgg ggctgcgtga gggcaagatc ctggaggctc acgtggaggc caaggagccg	1200
cgcgctctgc gcagccccga gcggcgggccc acgcgcatcg gcctctacct gagcttcggc	1260
gacggcgctc tctccttcta cgatgccagc gacgccgacg cgctcgtgcc gctttttgcc	1320
ttccacgagc gcctgcctgg gcccggtgtac cccttcttcg acgtgtgctg gcacgacaag	1380
ggcaagaact ccagccgct gctgctcgtg gggccgaag gcgccgaagc ctga	1434

<210> 17

<211> 1437

<212> DNA

<213> Artificial Sequence

<220>

<223> Encoding sequence of swine MG53 S255A mutant

<400> 17

atgtcagctg cgcccgccct cctgcaccag gagctgtcct gtccgctgtg cctgcagctg	60
ttcgatgcgc cggtagcggc tgagtgcggc cacagcttct gccgcgcctg cctgggccgc	120
gtggcagggg agccagccgc ggatggcacg gtgctctgcc ccagctgcca ggcacccacg	180
cggccgcagg cgctcagcac caaccagcag ctggcgcgcc tgggtggagg gctggcgag	240
gtgccgcagg gccactgcga ggagcaccta gaccgctca gcatctactg cgagcaggac	300
cgcggtgctg tgtgcggcgt ctgcgcctcg ctgggttcgc accgcggcca ccgcctgctg	360
cccgcgccc aagcccatgc ggccttaag acgcagctcc cgagcagaa gctgcagctg	420
caggaggcgt gtatgcggaa ggagaagagc gtgggtgtgc tggagcaaca actggtggaa	480
gtggaggaga cggtagcgtca gttccggggg gcagtggggg agcagctggg caagatgcgg	540
ttgttcctgg ctgactgga gggctccttg gaccgagaag cagagcgtgt gcggggtgag	600
gcgggggtcg ccttgcgagg ggagctgggg agcctgaagt cttacttgga gcagctgcgg	660
cagatggaga aggtgctgga ggaggtggca gacaagcccc agaccgagtt cctcatgaaa	720
tactgcctgg tgaccagcag gctgcagaag atcctggcag aggcgcccc acctgcccgc	780
ctggacattc agctgcctgt catctcagac gacttcaaatt tccaggtgtg gagaaagatg	840
ttccggggccc tgatgccagc gatgcaggag ctgacctttg accccagcac ggcccacccg	900
agcctggtgc tgcggcctc gggccgccc gtggagtgtc cgagcagaa ggcgcccgcg	960
gccggagagg acccgcgcca gttcgacaag gcggtggcgg tggtagcgca ccagctgctg	1020
tcggaaggcg agcactactg ggaggtggag gtggggcgaca agccacgctg ggcgctgggc	1080
gtgatcgggg ccagggccgg tcgccgggc cggctgcacg ccgtgccctc gcagggcctc	1140
tggctgctcg ggctgcgcga gggcaagatc ctggaggctc acgtcgaggc caaggagccg	1200
cgcgccctgc gcaccccgga gaggcgccg tcgcgcatcg ggatctacct gagcttcgcg	1260

English translation of corrected sequence listing

gatggcgctcc tctcgttcta cgacgccagc gacgccgacg cgctggagct gctcttcgcc	1320
ttccacgaac gcctgccggg ccccggtgtac cccttcttcg acgtgtgctg gcacgacaag	1380
ggcaagaacg ctcagccgct cctgctggtg gggcccgaca gcggcgggga ggcctga	1437

<210> 18
 <211> 1434
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Encoding sequence of dog MG53 S255A mutant

<400> 18	
atgtcggccg cgccgggcct cctgcaccag gagctgtcct gcccgtcttg cctgcagctg	60
tttgacgcgc cggtgaccgc cgagtgcggc cacagtttct gccgcgcctg cctgagccgc	120
gtggctgggg agccggcggc ggacggcacc gtgccctgcc cgtgctgcca ggcactcacg	180
cggccacagg cgctcagcac caaccagcag ctggcgcgcc tggaggagg gctggcgag	240
gtgccgcagg gccactgcga ggagcaccta gaccgcctca gcatctactg cgagcaggat	300
cgagcgctcg tgtgcggcgt gtgcgcctcg ctggctcgc accgcggcca ccgcctgctg	360
cccgcgccg aagccacgc gcgcctcaag acacagctgc cacagcagaa actgcagctg	420
caggaggcat gtatgcgcaa ggagaagagt gtggctctgc tggagcatca gctcatggaa	480
gtggaggaga tggcgctca gttccggggg gctgtagggg agcagctggg caagatgcgg	540
gtgttccttg ctgcactgga gggctccttg gaccgtgagg cagagcgctg gcggggagag	600
gcaggggttg ccctgcggcg ggagctgggg agcctgaact cttacctgga gcagttgcgt	660
cagatggaga aggtgctgga ggaggtggcc gacaagccac agactgagtt cctcatgaaa	720
tactgccttg tgaccagcag gctacagaag atcctggcag aagcaccacc gcctgcccgt	780
ttggacatcc agctgcctgt catctcagat gacttcaa atccaggtgtg gaggaagatg	840
ttccgggctc tgatgccagt tacaaggag ctgacctttg acccgagctc tgcgcacccg	900
agcctggtgc tgtctccctc cggtcgccgc gtggagtgtc cggaccagaa ggcgccgccg	960
gccggggagg atccgtgccca gttcgacaag gccgtggcgg tggaggcgca gcagggtgctg	1020
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gtgatcgcg cccaggccag ccgccgggc cggctgcacg ccgtcccctc gcagggcctc	1140
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gacggagtcc tctcttttta tgatgccagt gaccccgacg ccctcgagct gctctttgcc	1320
ttccacgagc gcctgcccgg gcccggtgtac cccttcttcg acgtatgctg gcacgacaag	1380
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<210> 19
 <211> 1434

English translation of corrected sequence listing

<212> DNA

<213> Homo sapiens

<400> 19

atgtcggctg cgcccggcct cctgcaccag gagctgtcct gcccgtgtg cctgcagctg	60
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gtggccgggg agccggcggc ggatggcacc gttctctgcc cctgctgcca ggccccacg	180
cggccgcagg cactcagcac caacctgcag ctggcgcgcc tggaggagg gctggcccag	240
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cgcgcgctgg tgtgcggagt gtgcgcctca ctcggtcgc accgcggtca tcgcctcctg	360
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caggaggcat gcatgcgcaa ggagaagagt gtggctgtgc tggagcatca gctggtggag	480
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ttccacgagc gcctgcccag gcccggtgtac cccttcttcg acgtgtgctg gcacgacaag	1380
ggcaagaatg cccagccgct gctgctcgtg ggtcccgaag gcgccgaggc ctga	1434

<210> 20

<211> 1434

<212> DNA

<213> Mus musculus

<400> 20

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gtggcagggg agcctgctgc ggacggcaca gttgcctgtc cctgttgtca ggcacctaca	180
cggccgcagg ctctaagcac taacctccag ttgtcacgcc ttgtggaggg tttggcgcaa	240
gtgcccgaag gccactgcga ggaacacctg gatccactga gcatctactg cgagcaggac	300

English translation of corrected sequence listing

cgcacacttg tgtgtggtgt gtgtgcctcg ctcggttctc accgtggtca tcgtctcctg	360
cctgccgctg aagcccaagc acgcctcaag acacagcttc cacagcagaa gatgcagctg	420
caggaggcat gcatgcgcaa ggagaagact gtagcgggtc tggagcatca gctggtggag	480
gtggaggaga cagtgcgcca gttccgggga gctgtcgggg agcagctggg gaagatgcgg	540
atgttccttg ctgccctaga aagttctctg gaccgtgaag cagaaagggg tcggggtgat	600
gctgggggtt ccttgcgctg ggagctgtca agcctgaact cttacctaga gcaactgagg	660
cagatggaga aggtgctgga ggaggtggct gacaagccac agacagaatt cctcatgaaa	720
ttctgccttg taaccagcag gctgcagaag atcctgtcag agtcaccacc accggcaagg	780
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agcctggttg tgtcctctc tggtcgccga gtggagtgtc cagaccagaa ggcgccgcca	960
gcggggagaag acacgcgtca gttcgacaag gcagtagcgg tggtagcgca gcagctgctg	1020
tcacaggggc agcactattg ggaggtggag gtggcgaca aaccacgctg ggccctggga	1080
gtgatggcgg ctgacgttc ccgccgtggc cggctgcacg cggtgccctc acaggggctg	1140
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cgggcactgc gcacccaga gaggcctccg gcgcgcattg gcctctacct aagcttcgca	1260
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ggcaagaatg cccagcccct gctgcttgtg gggccggagc aggaacaggc ctga	1434

<210> 21
 <211> 1434
 <212> DNA
 <213> Rattus norvegicus

<400> 21	
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gtggcagggg agcctgccga cgatggcacg gttgcctgtc cctgttgtca ggcactact	180
cggccacagg cgctaagcac taacctccag ttggcacgcc ttgtggaggg tttggcacia	240
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cgcacacttg tgtgtggtgt gtgtgcctct ctcggttcac accgtggtca ccgtcttctg	360
cctgccgcag aagcccatgc acgtctcaag acacagcttc cacaacagaa ggcccagctg	420
caggaggcat gcatgcgcaa ggagaagagt gtagcagctc tggagcatca gctggtggag	480
gtggaggaga ccgtgcgtca gttccgggga gctgttgggg agcagctggg gaagatgcgg	540
atgttccttg ctgccctaga aagttctttg gaccgtgaag cagaaagggg tcgaggtgat	600
gcaggggttg ccttgcgggc ggagctgtca agcctgaact cttacctgga gcaactgagg	660

English translation of corrected sequence listing

cagatggaga aggtgctgga ggaggtggct gacaagccac agacagaatt cctcatgaaa	720
ttctgcctgg tgaccagcag gctgcagaag attctgtcag agtcaccacc cccagcaagg	780
ctagatatcc agctgctgt catctcagat gacttcaaat tccaggtgtg gaagaagatg	840
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gcaggagaag acacgtgcc a gttcgacaag acggtagcgg tagtggcgaa gcagctgctg	1020
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gtgatggcgg ctgacgcttc ccgtcgtggc cgcctgcacg cggcgcctc acaggggctg	1140
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cgggcactgc gcacccaga gaggccacca gcgcgcattg gcctctacct aagctttgca	1260
gatggcgtcc tgactttcta tgatgcaagc aacaccgacg cgcttacacc gctcttttct	1320
tttcatgagc gtctgcctgg gccgggtgtac cccatgtttg acgtgtgctg gcacgacaag	1380
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<210> 22
 <211> 1434
 <212> DNA
 <213> *Macaca fascicularis*

<400> 22	
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cccgcgcgg agggccacgc acgcctcaag acgcagctgc cacagcagaa actgcagctg	420
caggaggcat gcatgcgcaa ggagaagagt gtagctgtgc tggagcatca gttggtggaa	480
gtggaggaga cagtgcgtca gttccggggg gccgtggggg agcagctggg caagatgcgg	540
gtgttcctgg ctgactgga gggctccttg gaccgtgagg cagagcgtgt gcggggtgag	600
gcaggggtcg ccttgcgccg ggagctgggg agcctgaact cttacctgga gcagctgcgg	660
cagatggaga aggtgctgga ggaggtggcc gacaagccgc agactgagtt cctaataaaa	720
tactgcctgg tgaccagcag gctgcagaag atcctggcag agtctcccc acccgccgt	780
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agcctggtgg tgtcttcctc cggccgccgc gtggagtgtc cggagcagaa ggcgccgccg	960
gcgggggagg acccgccgcca gttcgacaag gcggtagcgg tggaggcgca ccagcagctc	1020
tccgagggcg aacactactg ggaggtggag gtgggcgaca agccgcgctg ggcgctgggt	1080

English translation of corrected sequence listing

gtgatcgcg	ccgaggggccc	ccgtcgcg	cgctgcacg	cggtgccctc	gcagggcctg	1140
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cgcgctctgc	gcagccccga	ggggcgggcc	acgcgcatcg	gcctctacct	gagcttcggc	1260
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ttccacgagc	gcctgcctgg	gcccgtgtac	cccttcttcg	acgtgtgctg	gcacgacaag	1380
ggcaagaact	cccagccgct	gctgctcgtg	gggtccgaag	gcgccgaagc	ctga	1434

<210> 23
 <211> 1437
 <212> DNA
 <213> Sus scrofa

<400> 23	
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gtggcagggg	agccagccgc ggatggcacg gtgctctgcc ccagctgcca ggcacccacg 180
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cgcgccctgc	gcacccccga gaggcgggcg tcgcgcatcg ggatctacct gagcttcgcg 1260
gatggcgctc	tctcgttcta cgacgccagc gacgccgacg cgctggagct gctcttcgcc 1320
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ggcaagaacg	ctcagccgct cctgctggtg gggcccgaca gcggcgggga ggcctga 1437

English translation of corrected sequence listing

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<210> 24
<211> 1434
<212> DNA
<213> Canis lupus familiaris

<400> 24
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tttgacgcgc cggtgaccgc cgagtgcggc cacagtttct gccgcgcctg cctgagccgc      120
gtggctgggg agccggcggc ggacggcacc gtgccctgcc cgtgctgcca ggcactcacg      180
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gtgccgcagg gccactgcga ggagcaccta gacccgctca gcatctactg cgagcaggat      300
cgagcgctcg tgtgcggcgt gtgcgcctcg ctgggctcgc accgcggcca ccgcctgctg      360
cccgcgcccg aagcccacgc gcgcctcaag acacagctgc cacagcagaa actgcagctg      420
caggaggcat gtatgcgcaa ggagaagagt gtggctctgc tggagcatca gctcatggaa      480
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gcaggggttg ccctgcggcg ggagctgggg agcctgaact cttacctgga gcagttgcgt      660
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<210> 25
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of human MG53 S255A mutant

<400> 25
tgcagaagat cctggcagag gctccccac ccg      33

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English translation of corrected sequence listing

<210> 26
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Reverse primer of human MG53 S255A mutant

 <400> 26
 tccagacggg cgggtggggg agcctctgcc agg 33

 <210> 27
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Forward primer of human MG53 S255G mutant

 <400> 27
 tgcagaagat cctggcagag ggtccccac ccg 33

 <210> 28
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Reverse primer of human MG53 S255G mutant

 <400> 28
 tccagacggg cgggtggggg accctctgcc agg 33

 <210> 29
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Forward primer of human MG53 S255L mutant

 <400> 29
 tgcagaagat cctggcagag cttccccac ccg 33

 <210> 30
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Reverse primer of human MG53 S255L mutant

 <400> 30
 tccagacggg cgggtggggg aagctctgcc agg 33

 <210> 31
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Forward primer of human MG53 S255V mutant

English translation of corrected sequence listing

<400> 31
tgcagaagat cctggcagag gttccccac ccg 33

<210> 32
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of human MG53 S255V mutant

<400> 32
tccagacggg cgggtggggg aacctctgcc agg 33

<210> 33
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of human MG53 S255P mutant

<400> 33
tgcagaagat cctggcagag cttccccac ccg 33

<210> 34
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of human MG53 S255P mutant

<400> 34
tccagacggg cgggtggggg aggctctgcc agg 33

<210> 35
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of human MG53 S255F mutant

<400> 35
tgcagaagat cctggcagag tttccccac ccg 33

<210> 36
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of human MG53 S255F mutant

<400> 36
tccagacggg cgggtggggg aaactctgcc agg 33

<210> 37
<211> 33
<212> DNA
<213> Artificial Sequence

English translation of corrected sequence listing

<220>
 <223> Forward primer of human MG53 S255W mutant
 <400> 37
 tgcagaagat cctggcagag tggccccccac ccg 33

<210> 38
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Reverse primer of human MG53 S255W mutant
 <400> 38
 tccagacggg cgggtggggg ccactctgcc agg 33

<210> 39
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Forward primer of human MG53 S255Q mutant
 <400> 39
 tgcagaagat cctggcagag caacccccac ccg 33

<210> 40
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Reverse primer of human MG53 S255Q mutant
 <400> 40
 tccagacggg cgggtggggg ttgctctgcc agg 33

<210> 41
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Forward primer of human MG53 S255C mutant
 <400> 41
 tgcagaagat cctggcagag tgtccccac ccg 33

<210> 42
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Reverse primer of human MG53 S255C mutant
 <400> 42
 tccagacggg cgggtggggg acactctgcc agg 33

English translation of corrected sequence listing

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<210> 43
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of human MG53 S255Y mutant

<400> 43
tgcagaagat cctggcagag tatccccac ccg                                     33

<210> 44
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of human MG53 S255Y mutant

<400> 44
tccagacggg cgggtggggg atactctgcc agg                                     33

<210> 45
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of human MG53 S255D mutant

<400> 45
tgcagaagat cctggcagag gatccccac ccg                                     33

<210> 46
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of human MG53 S255D mutant

<400> 46
tccagacggg cgggtggggg ctactctgcc agg                                     33

<210> 47
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of human MG53 S255R mutant

<400> 47
tgcagaagat cctggcagag cgtccccac ccg                                     33

<210> 48
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of human MG53 S255R mutant

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English translation of corrected sequence listing

<400> 48
tccagacggg cgggtggggg acgctctgcc agg 33

<210> 49
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of human MG53 S211A mutant

<400> 49
ccttgcgccg ggagctgggg gccctgaact ctt 33

<210> 50
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of human MG53 S211A mutant

<400> 50
gctgctccag gtaagagttc agggcccca gctcc 35

<210> 51
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of human MG53 S214A mutant

<400> 51
gggagctggg gagcctgaac gcttacctgg agc 33

<210> 52
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of human MG53 S214A mutant

<400> 52
tgccgcagct gctccaggta agcgttcagg ctc 33

<210> 53
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of human MG53 S246A mutant

<400> 53
tgaaatactg cctggtgacc gccaggctgc aga 33

<210> 54
<211> 33
<212> DNA
<213> Artificial Sequence

English translation of corrected sequence listing

<220>
 <223> Reverse primer of human MG53 S246A mutant
 <400> 54
 gccaggatct tctgcagcct ggcggtcacc agg 33

<210> 55
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Forward primer of human MG53 S269A mutant
 <400> 55
 aggagctgac ctttgacccg gcctctgcgc acc 33

<210> 56
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Reverse primer of human MG53 S296A mutant
 <400> 56
 accaggctcg ggtgcgcaga ggccgggtca aag 33

<210> 57
 <211> 33
 <212> DNA
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<220>
 <223> Forward primer of human MG53 S297A mutant
 <400> 57
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<210> 58
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<220>
 <223> Reverse primer of human MG53 S297A mutant
 <400> 58
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<210> 59
 <211> 33
 <212> DNA
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<220>
 <223> Forward primer of mouse MG53 S255A mutant
 <400> 59
 tgcagaagat cctgtcagag gcaccaccac cgg 33

English translation of corrected sequence listing

<210> 60
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 <220>
 <223> Reverse primer of mouse MG53 S255A mutant

 <400> 60
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 <210> 61
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Forward primer of mouse MG53 S255G mutant

 <400> 61
 tgcagaagat cctgtcagag ggaccaccac cgg 33

 <210> 62
 <211> 33
 <212> DNA
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 <220>
 <223> Reverse primer of mouse MG53 S255G mutant

 <400> 62
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 <210> 63
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Forward primer of mouse MG53 S255L mutant

 <400> 63
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 <210> 64
 <211> 33
 <212> DNA
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 <220>
 <223> Reverse primer of mouse MG53 S255L mutant

 <400> 64
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 <210> 65
 <211> 33
 <212> DNA
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 <220>
 <223> Forward primer of mouse MG53 S255W mutant

English translation of corrected sequence listing

<400> 65
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<210> 66
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of mouse MG53 S255W mutant

<400> 66
tctagccttg ccggtggtgg ccactctgac agg 33

<210> 67
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of mouse MG53 S255Q mutant

<400> 67
tgcagaagat cctgtcagag caaccaccac cgg 33

<210> 68
<211> 33
<212> DNA
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<220>
<223> Reverse primer of mouse MG53 S255Q mutant

<400> 68
tctagccttg ccggtggtgg ttgctctgac agg 33

<210> 69
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of mouse MG53 S255Y mutant

<400> 69
tgcagaagat cctgtcagag tatccaccac cgg 33

<210> 70
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of mouse MG53 S255Y mutant

<400> 70
tctagccttg ccggtggtgg atactctgac agg 33

<210> 71
<211> 33
<212> DNA
<213> Artificial Sequence

English translation of corrected sequence listing

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<220>
<223> Forward primer of mouse MG53 S255D mutant

<400> 71
tgcagaagat cctgtcagag gatccaccac cgg
33

<210> 72
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of mouse MG53 S255D mutant

<400> 72
tctagccttg ccggtggtgg atcctctgac agg
33

<210> 73
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of mouse MG53 S255R mutant

<400> 73
tgcagaagat cctgtcagag cgaccaccac cgg
33

<210> 74
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of mouse MG53 S255R mutant

<400> 74
tctagccttg ccggtggtgg tcgctctgac agg
33

<210> 75
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of rat MG53 S255A mutant

<400> 75
tgcagaagat tctgtcagag gcaccacccc cag
33

<210> 76
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of rat MG53 S255A mutant

<400> 76
tctagccttg ctgggggtgg tgcctctgac aga
33

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English translation of corrected sequence listing

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<210> 77
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of rat MG53 S255G mutant

<400> 77
tgcagaagat tctgtcagag ggaccacccc cag 33

<210> 78
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of rat MG53 S255G mutant

<400> 78
tctagccttg ctgggggtgg tccctctgac aga 33

<210> 79
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of rat MG53 S255L mutant

<400> 79
tgcagaagat tctgtcagag ttaccacccc cag 33

<210> 80
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of rat MG53 S255L mutant

<400> 80
tctagccttg ctgggggtgg taactctgac aga 33

<210> 81
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of rat MG53 S255W mutant

<400> 81
tgcagaagat tctgtcagag tggccacccc cag 33

<210> 82
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of rat MG53 S255W mutant

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English translation of corrected sequence listing

<400> 82
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<210> 83
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of rat MG53 S255Q mutant

<400> 83
tgcagaagat tctgtcagag caaccacccc cag 33

<210> 84
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of rat MG53 S255Q mutant

<400> 84
tctagccttg ctgggggtgg ttgctctgac aga 33

<210> 85
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of rat MG53 S255Y mutant

<400> 85
tgcagaagat tctgtcagag tatccacccc cag 33

<210> 86
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of rat MG53 S255Y mutant

<400> 86
tctagccttg ctgggggtgg atactctgac aga 33

<210> 87
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of rat MG53 S255D mutant

<400> 87
tgcagaagat tctgtcagag gatccacccc cag 33

<210> 88
<211> 33
<212> DNA
<213> Artificial Sequence

English translation of corrected sequence listing

<220>
 <223> Reverse primer of rat MG53 S255D mutant
 <400> 88
 tctagccttg ctgggggtgg atcctctgac aga 33

<210> 89
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Forward primer of rat MG53 S255R mutant
 <400> 89
 tgcagaagat tctgtcagag cgaccacccc cag 33

<210> 90
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Reverse primer of rat MG53 S255R mutant
 <400> 90
 tctagccttg ctgggggtgg tcgctctgac aga 33

<210> 91
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Forward primer of monkey MG53 S255A mutant
 <400> 91
 aagatcctgg cagaggctcc cccacccgcc cgtctg 36

<210> 92
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Reverse primer of monkey MG53 S255A mutant
 <400> 92
 cagacgggcg ggtgggggag cctctgccag gatctt 36

<210> 93
 <211> 37
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Forward primer of monkey MG53 S255G mutant
 <400> 93
 aagatcctgg cagagggtcc cccacccgcc cgtctgg 37

English translation of corrected sequence listing

<210> 94
 <211> 37
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Reverse primer of monkey MG53 S255G mutant

 <400> 94
 ccagacgggc ggggtggggga ccctctgcca ggatctt 37

 <210> 95
 <211> 37
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Forward primer of monkey MG53 S255L mutant

 <400> 95
 agatcctggc agagttaccc ccacccgccc gtctgga 37

 <210> 96
 <211> 37
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Reverse primer of monkey MG53 S255L mutant

 <400> 96
 tccagacggg cgggtggggg taactctgcc aggatct 37

 <210> 97
 <211> 37
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Forward primer of monkey MG53 S255W mutant

 <400> 97
 agatcctggc agagtggccc ccacccgccc gtctgga 37

 <210> 98
 <211> 37
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Reverse primer of monkey MG53 S255W mutant

 <400> 98
 tccagacggg cgggtggggg ccactctgcc aggatct 37

 <210> 99
 <211> 38
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Forward primer of monkey MG53 S255Q mutant

English translation of corrected sequence listing

<400> 99
aagatcctgg cagagcaacc cccacccgcc cgtctgga 38

<210> 100
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of monkey MG53 S255Q mutant

<400> 100
tccagacggg cgggtggggg ttgctctgcc aggatctt 38

<210> 101
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of monkey MG53 S255Y mutant

<400> 101
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<210> 102
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of monkey MG53 S255Y mutant

<400> 102
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<210> 103
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of monkey MG53 S255D mutant

<400> 103
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<210> 104
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of monkey MG53 S255D mutant

<400> 104
ccagacgggc ggggtggggga tcctctgcca ggatctt 37

<210> 105
<211> 37
<212> DNA
<213> Artificial Sequence

English translation of corrected sequence listing

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<220>
<223> Forward primer of monkey MG53 S255R mutant

<400> 105
aagatcctgg cagagcgtcc cccacccgcc cgtctgg
37

<210> 106
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of monkey MG53 S255R mutant

<400> 106
ccagacgggc ggggtggggga cgctctgcca ggatctt
37

<210> 107
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer of swine MG53 S255A mutant

<400> 107
aagatcctgg cagaggcgcc cccacctgcc cgcctg
36

<210> 108
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of swine MG53 S255A mutant

<400> 108
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36

<210> 109
<211> 37
<212> DNA
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<220>
<223> Forward primer of swine MG53 S255G mutant

<400> 109
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37

<210> 110
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of swine MG53 S255G mutant

<400> 110
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37

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English translation of corrected sequence listing

<210> 111
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 <220>
 <223> Forward primer of swine MG53 S255L mutant
 <400> 111
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<210> 112
 <211> 36
 <212> DNA
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 <223> Reverse primer of swine MG53 S255L mutant
 <400> 112
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<210> 113
 <211> 36
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 <223> Forward primer of swine MG53 S255W mutant
 <400> 113
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<210> 114
 <211> 36
 <212> DNA
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 <223> Reverse primer of swine MG53 S255W mutant
 <400> 114
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<210> 115
 <211> 37
 <212> DNA
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 <220>
 <223> Forward primer of swine MG53 S255Q mutant
 <400> 115
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<210> 116
 <211> 37
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 <220>
 <223> Reverse primer of swine MG53 S255Q mutant

English translation of corrected sequence listing

<400> 116
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<210> 117
<211> 37
<212> DNA
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<220>
<223> Forward primer of swine MG53 S255Y mutant

<400> 117
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<210> 118
<211> 37
<212> DNA
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<220>
<223> Reverse primer of swine MG53 S255Y mutant

<400> 118
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<210> 119
<211> 38
<212> DNA
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<220>
<223> Forward primer of swine MG53 S255D mutant

<400> 119
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<210> 120
<211> 38
<212> DNA
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<220>
<223> Reverse primer of swine MG53 S255D mutant

<400> 120
tccaggcggg caggtggggg atcctctgcc aggatctt 38

<210> 121
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<220>
<223> Forward primer of swine MG53 S255R mutant

<400> 121
aagatcctgg cagagcggcc cccacctgcc cgcctgg 37

<210> 122
<211> 37
<212> DNA
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English translation of corrected sequence listing

<220>
 <223> Reverse primer of swine MG53 S255R mutant
 <400> 122
 ccaggcgggc aggtgggggc cgctctgcca ggatctt 37

<210> 123
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Forward primer of dog MG53 S255A mutant
 <400> 123
 aagatcctgg cagaagcacc accgcctgcc cgtttg 36

<210> 124
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Reverse primer of dog MG53 S255A mutant
 <400> 124
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<210> 125
 <211> 37
 <212> DNA
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<220>
 <223> Forward primer of dog MG53 S255G mutant
 <400> 125
 aagatcctgg cagaaggacc accgcctgcc cgtttgg 37

<210> 126
 <211> 37
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Reverse primer of dog MG53 S255G mutant
 <400> 126
 ccaaacgggc aggcggtggt ccttctgcca ggatctt 37

<210> 127
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Forward primer of dog MG53 S255L mutant
 <400> 127
 agatcctggc agaattacca ccgcctgccc gtttgg 36

English translation of corrected sequence listing

<210> 128
 <211> 36
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Reverse primer of dog MG53 S255L mutant

 <400> 128
 ccaaacgggc aggcggtggt aattctgcca ggatct 36

 <210> 129
 <211> 37
 <212> DNA
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 <400> 129
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 <210> 130
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 <400> 130
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 <210> 131
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 <212> DNA
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 <220>
 <223> Forward primer of dog MG53 S255Q mutant

 <400> 131
 aagatcctgg cagaacaacc accgcctgcc cgtttgg 37

 <210> 132
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 <212> DNA
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 <400> 132
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 <210> 133
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English translation of corrected sequence listing

<400> 133
agatcctggc agaatatcca ccgcctgccc gtttgga 37

<210> 134
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<400> 134
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<210> 135
<211> 38
<212> DNA
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<220>
<223> Forward primer of dog MG53 S255D mutant

<400> 135
aagatcctgg cagaagatcc accgcctgcc cgtttgga 38

<210> 136
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<212> DNA
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<400> 136
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<210> 137
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<220>
<223> Forward primer of dog MG53 S255R mutant

<400> 137
aagatcctgg cagaacgacc accgcctgcc cgtttgga 37

<210> 138
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer of dog MG53 S255R mutant

<400> 138
ccaaacggg aggcgggtgg cgttctgcca ggatctt 37

<210> 139
<211> 477
<212> PRT
<213> Homo sapiens

English translation of corrected sequence listing

<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
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

English translation of corrected sequence listing
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

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> Homo sapiens

<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

English translation of corrected sequence listing

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

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

English translation of corrected sequence listing

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> Homo sapiens

<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

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

English translation of corrected sequence listing

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> Homo sapiens

<400> 142

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

English translation of corrected sequence listing
 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

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> Homo sapiens

<400> 143
 atgtcggctg cgcccgccct cctgcaccag gagctgtcct gcccgctgtg cctgcagctg 60
 ttgacgcgc ccgtgacagc cgagtgcggc cacagtttct gccgcgcctg cctaggccgc 120
 gtggccgggg agccggcggc ggatggcacc gttctctgcc cctgctgcca ggccccacg 180
 cggccgcagg cactcagcac caacctgcag ctggcgcgcc tgggtggagg gctggcccag 240
 gtgccgcagg gccactgcga ggagcacctg gacccgctga gcatctactg cgagcaggac 300
 cgcgcgctgg tgtgcggagt gtgcgcctca ctcggctcgc accgcggtca tcgcctcctg 360
 cctgccgccg agggccacgc acgcctcaag acacagctgc cacagcagaa actgcagctg 420
 caggaggcat gcatgcgtaa ggagaagagt gtggctgtgc tggagcatca gctggtggag 480
 gtggaggaga cagtgcgtca gttccggggg gccgtggggg agcagctggg caagatgcgg 540
 gtgttcctgg ctgcactgga gggctccttg gactgcgagg cagagcgtgt acggggtgag 600
 gcagggggtcg ccttgcgccg ggagctgggg agcctgaact cttacctgga gcagctgcgg 660

English translation of corrected sequence listing

cagatggaga aggtcctgga ggaggtggcg gacaagccgc agactgagtt cctcatgaaa	720
tactgcctgg tgaccagcag gctgcagaag atcctggcag agtctccccc acccgcccgt	780
ctggacatcc agctgccaat tatctcagat gacttcaaat tccaggtgtg gaggaagatg	840
ttccgggctc tgatgccagc gctggaggag ctgacctttg acccgagctc tgcgcacccg	900
agcctggtgg tgtcttcctc tggccgccgc gtggagtgtc cggagcagaa ggcgccgccg	960
gccggggagg acccgcgcca gttcgacaag gcggtggcgg tggaggcgca ccagcagctc	1020
tccgagggcg agcactactg ggaggtggat gttggcgaca agccgcgctg ggcgctgggc	1080
gtgatcgcg cggaggcccc ccgccgggg cgctgcacg cggtgccctc gcagggcctg	1140
tggctgtctg ggctgcgca gggcaagatc ctggaggcac acgtggaggc caaggagccg	1200
cgcgctctgc gcagccccga gaggcggccc acgcgcattg gcctttacct gagcttcggc	1260
gacggcgtcc tctccttcta cgatgccagc gacgccgacg cgctcgtgcc gctttttgcc	1320
ttccacgagc gcctgcccag gcccgtgtac cccttcttcg acgtgtgctg gcacgacaag	1380
ggcaagaatg cccagccgct gctgctcgtg ggtcccgaag gcgccgaggc ctga	1434

<210> 144
 <211> 1002
 <212> DNA
 <213> Homo sapiens

<400> 144	
atgcgcaagg agaagagtgt ggctgtgctg gagcatcagc tggaggaggt ggaggagaca	60
gtgctcagtc tccggggggc cgtggggggag cagctgggca agatgcgggt gttcctggct	120
gcactggagg gctccttgga ccgcgaggca gagcgtgtac ggggtgaggc aggggtcgcc	180
ttgcgccggg agctggggag cctgaactct tacctggagc agctgcggca gatggagaag	240
gtcctggagg aggtggcgga caagccgcag actgagttcc tcatgaaata ctgcctggtg	300
accagcaggc tgcagaagat cctggcagag tctccccac ccgccgtct ggacatccag	360
ctgccaatta tctcagatga cttcaaattc cagggtgtga ggaagatgtt ccgggctctg	420
atgccagcgc tggaggagct gacctttgac ccgagctctg cgcacccgag cctggtgggtg	480
tcttcctctg gccgccgct ggagtgtctg gagcagaagg cgccgccggc cggggaggac	540
ccgcgccagt tcgacaaggc ggtggcggtg gtggcgacc agcagctctc cgaggcgag	600
cactactggg aggtggatgt tggcgacaag ccgcgctggg cgctgggctg gatcgcgcc	660
gaggcccccc gccgcgggag cctgcacgag gtgccctcgc agggcctgtg gctgctgggg	720
ctgcgcgagg gcaagatcct ggaggcacac gtggaggcca aggagccgcg cgctctgcgc	780
agccccgaga ggcggccac gcgcattggc ctttacctga gcttcggcga cggcgtcctc	840
tccttctacg atgccagcga cgccgacgag ctcgtgccgc tttttgcctt ccacgagcgc	900
ctgcccaggc ccgtgtaccc cttcttcgac gtgtgtggtg acgacaaggg caagaatgcc	960
cagccgctgc tgctcgtggg tcccgaaggc gccgaggcct ga	1002

English translation of corrected sequence listing

<210> 145
<211> 1002
<212> DNA
<213> Homo sapiens

<400> 145
atgcgtaagg agaagagtgt ggctgtgctg gagcatcagc tggaggaggt ggaggagaca 60
gtgcgtcagt tccggggggc cgtgggggag cagctgggca agatgcgggt gttcctggct 120
gcaactggagg gctccttggg ccgcgaggca gagcgtgtac ggggtgaggc aggggtcgcc 180
ttgcgccggg agctggggag cctgaactct tacctggagc agctgcggca gatggagaag 240
gtcctggagg aggtggcgga caagccgcag actgagttcc tcatgaaata ctgcctgggtg 300
accagcaggc tgcagaagat cctggcagag tctccccac ccgcccgtct ggacatccag 360
ctgccaatta tctcagatga cttcaaattc caggtgtgga ggaagatgtt ccgggctctg 420
atgccagcgc tggaggagct gacctttgac ccgagctctg cgcacccgag cctggtgggtg 480
tcttcctctg gccgccgct ggagtgtctg gggcagaagg cgcgccggc cggggaggac 540
ccgcgccagt tcgacaaggc ggtggcggtg gtggcgacc agcagctctc cgaggcgag 600
cactactggg aggtggatgt tggcgacaag ccgcgctggg cgctgggctg gatcgcgcc 660
gaggcccccc gccgcgggag cctgcacgcg gtgccctcgc agggcctgtg gctgctgggg 720
ctgcgcgagg gcaagatcct ggaggcacac gtggaggcca aggagccgcg cgctctgcgc 780
agccccgaga ggccggccac gcgcattggc cttacctga gcttcggcga cggcgtcctc 840
tccttctacg atgccagcga cgcgcacgcg ctctgtccgc tttttgcctt ccacgagcgc 900
ctgcccaggc ccgtgtaccc cttcttcgac gtgtgctggc acgacaaggg caagaatgcc 960
cagccgctgc tgctcgtggg tcccgaaggc gccgaggcct ga 1002

<210> 146
<211> 810
<212> DNA
<213> Homo sapiens

<400> 146
atgtcggctg cggccggcct cctgcaccag gagctgtcct gcccgctgtg cctgcagctg 60
ttcgacgcgc ccgtgacagc cgagtgcggc cacagtttct gccgcgcctg cctaggccgc 120
gtggccgggg agccggcggc ggatggcacc gttctctgcc cctgctgcca ggccccacg 180
cggccgcagg cactcagcac caacctgcag ctggcgccg tggaggagg gctggccag 240
gtgccgcagg gccactgcga ggagcacctg gaccgctga gcatctactg cgagcaggac 300
cgcgcgctgg tgtgcggagt gtgcgcctca ctcggtcgc accgcggtca tcgcctcctg 360
cctgccgccg agggccacgc acgcctcaag acacagctgc cacagcagaa actgcagctg 420
caggaggcat gcatgcgtaa ggagaagagt gtggctgtgc tggagcatca gctggtggag 480
gtggaggaga cagtgcgtca gttccggggg gccgtggggg agcagctggg caagatgcgg 540
gtgttcctgg ctgcactgga gggctccttg gaccgcgagg cagagcgtgt acggggtgag 600
gcaggggtcg ccttgcgccg ggagctgggg agcctgaact cttacctgga gcagctgcgg 660

English translation of corrected sequence listing

cagatggaga aggtcctgga ggaggtggcg gacaagccgc agactgagtt cctcatgaaa 720
tactgcctgg tgaccagcag gctgcagaag atcctggcag agtctcccc acccgcccg 780
ctggacatcc agctgccaat tatctcctga 810

<210> 147
<211> 477
<212> PRT
<213> Artificial Sequence

<220>
<223> Amino acid sequence of a human MG53 subtype S255A mutant
<400> 147

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 Cys
180 185 190

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

English translation of corrected sequence listing

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
 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

English translation of corrected sequence listing

<210> 148
 <211> 333
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Amino acid sequence of a human MG53 subtype S255A mutant
 <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

 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

English translation of corrected sequence listing
 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> 149

<211> 333

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence of a human MG53 subtype S255A mutant

<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

English translation of corrected sequence listing

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 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> Artificial Sequence

<220>

<223> Amino acid sequence of a human MG53 subtype S255A mutant

<400> 150

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

English translation of corrected sequence listing
 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

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> Artificial Sequence

English translation of corrected sequence listing

<220>

<223> Encoding nucleic acid sequence of a human MG53 subtype S255A mutant

<400> 151

atgtcggctg cgcccggcct cctgcaccag gagctgtcct gcccgtgtg cctgcagctg	60
ttcgacgcgc ccgtgacagc cgagtgcggc cacagtttct gccgcgcctg cctaggccgc	120
gtggccgggg agccggcggc ggatggcacc gttctctgcc cctgctgcca ggccccacg	180
cggccgcagg cactcagcac caacctgcag ctggcgcgcc tggaggagg gctggcccag	240
gtgccgcagg gccactgcga ggagcacctg gacccgtga gcatctactg cgagcaggac	300
cgcgcgctgg tgtgcggagt gtgcgcctca ctggctcgc accgcggtca tcgcctcctg	360
cctgccgccg agggccacgc acgcctcaag acacagctgc cacagcagaa actgcagctg	420
caggaggcat gcatgcgtaa ggagaagagt gtggctgtgc tggagcatca gctggaggag	480
gtggaggaga cagtgcgtca gttccggggg gccgtggggg agcagctggg caagatgcgg	540
gtgttcctgg ctgcactgga gggctccttg gactgcgagg cagagcgtgt acggggtgag	600
gcaggggtcg ccttgcgccg ggagctgggg agcctgaact cttacctgga gcagctgcgg	660
cagatggaga aggtcctgga ggaggtggcg gacaagccgc agactgagtt cctcatgaaa	720
tactgcctgg tgaccagcag gctgcagaag atcctggcag aggctcccc acccgccgt	780
ctggacatcc agctgccaat tatctcagat gacttcaaat tccaggtgtg gaggaagatg	840
ttccgggctc tgatgccagc gctggaggag ctgaccttg acccgagctc tgcgcacccg	900
agcctggtgg tgtcttcctc tggccgccgc gtggagtgtc cggagcagaa ggcgccgccg	960
gccggggagg acccgcgcca gttcgacaag gcggtggcgg tggaggcgca ccagcagctc	1020
tccgagggcg agcactactg ggaggtggat gttggcgaca agccgcgctg ggcgctgggc	1080
gtgatcgcg ccgaggcccc ccgccgcggg cgcctgcacg cggtgccctc gcagggcctg	1140
tggctgctgg ggctgcgcga gggcaagatc ctggaggcac acgtggaggc caaggagccg	1200
cgcgctctgc gcagccccga gaggcggccc acgcgcattg gcctttacct gagcttcggc	1260
gacggcgtcc tctccttcta cgatgccagc gacgccgacg cgctcgtgcc gctttttgcc	1320
ttccacgagc gcctgcccag gcccggtgtac cccttcttcg acgtgtgctg gcacgacaag	1380
ggcaagaatg cccagccgct gctgctcgtg ggtcccgaag gcgccgaggc ctga	1434

<210> 152

<211> 1002

<212> DNA

<213> Artificial Sequence

<220>

<223> Encoding nucleic acid sequence of a human MG53 subtype S255A mutant

<400> 152

atgcgcaagg agaagagtgt ggctgtgctg gagcatcagc tggaggaggt ggaggagaca	60
gtgcgtcagt tccggggggc cgtggggggag cagctgggca agatgcgggt gttcctggct	120
gcactggagg gtccttgga ccgcgaggca gagcgtgtac ggggtgaggc aggggtcgcc	180

English translation of corrected sequence listing

ttgcgccggg agctggggag cctgaactct tacctggagc agctgcggca gatggagaag	240
gtcctggagg aggtggcgga caagccgcag actgagttcc tcatgaaata ctgcctggtg	300
accagcaggc tgcagaagat cctggcagag gctccccac ccgcccgtct ggacatccag	360
ctgccaatTA tctcagatga cttcaaattc caggtgtgga ggaagatgtt ccgggctctg	420
atgccagcgc tggaggagct gacctttgac ccgagctctg cgcacccgag cctggtggtg	480
tcttcctctg gccgccgct ggagtgtctg gagcagaagg cgccgccggc cggggaggac	540
ccgcgccagt tcgacaaggc ggtggcggtg gtggcgacc agcagctctc cgagggcgag	600
cactactggg aggtggatgt tggcgacaag ccgcgctggg cgctgggctg 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 cgccgacgcg ctcgtgccgc tttttgcctt ccacgagcgc	900
ctgcccaggc ccgtgtaccc cttcttcgac gtgtgtggc acgacaagg caagaatgcc	960
cagccgctgc tgctgtggg tcccgaaggc gccgaggcct ga	1002

<210> 153

<211> 1002

<212> DNA

<213> Artificial Sequence

<220>

<223> Encoding nucleic acid sequence of a human MG53 subtype S255A mutant

<400> 153

atgcgtaagg agaagagtgt ggctgtgctg gagcatcagc tggaggaggt ggaggagaca	60
gtgcgtcagt tccggggggc cgtgggggag cagctgggca agatgcgggt gttcctggct	120
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English translation of corrected sequence listing

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<211> 810
<212> DNA
<213> Artificial Sequence

<220>
<223> Encoding nucleic acid sequence of a human MG53 subtype S255A mutant

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