

SEQUENCE LISTING

<110> Novartis Forschungsstiftung, Zweigniederlassung Friedrich
Miescher Institute for Biomedical Research

<120> Treating cancer by modulating MEX-3

<130> PAT053794

<160> 4

<170> PatentIn version 3.3

<210> 1

<211> 520

<212> PRT

<213> Homo sapiens

<400> 1

Met Pro Ser Leu Val Val Ser Gly Ile Met Glu Arg Asn Gly Gly Phe
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Gly Glu Leu Gly Cys Phe Gly Gly Ser Ala Lys Asp Arg Gly Leu Leu
20 25 30

Glu Asp Glu Arg Ala Leu Gln Leu Ala Leu Asp Gln Leu Cys Leu Leu
35 40 45

Gly Leu Gly Glu Pro Pro Ala Pro Thr Ala Gly Glu Asp Gly Gly Gly
50 55 60

Gly Gly Gly Gly Ala Pro Ala Gln Pro Ala Ala Pro Pro Gln Pro Ala
65 70 75 80

Pro Pro Pro Pro Pro Ala Ala Pro Pro Ala Ala Pro Thr Ala Ala Pro
85 90 95

Ala Ala Gln Thr Pro Gln Pro Pro Thr Ala Pro Lys Gly Ala Ser Asp
100 105 110

Ala Lys Leu Cys Ala Leu Tyr Lys Glu Ala Glu Leu Arg Leu Lys Gly
115 120 125

Ser Ser Asn Thr Thr Glu Cys Val Pro Val Pro Thr Ser Glu His Val
130 135 140

Ala Glu Ile Val Gly Arg Gln Gly Cys Lys Ile Lys Ala Leu Arg Ala

145				150				155				160			
Lys	Thr	Asn	Thr	Tyr 165	Ile	Lys	Thr	Pro	Val 170	Arg	Gly	Glu	Glu	Pro 175	Val
Phe	Met	Val	Thr 180	Gly	Arg	Arg	Glu	Asp 185	Val	Ala	Thr	Ala	Arg 190	Arg	Glu
Ile	Ile	Ser 195	Ala	Ala	Glu	His	Phe 200	Ser	Met	Ile	Arg	Ala 205	Ser	Arg	Asn
Lys	Ser 210	Gly	Ala	Ala	Phe	Gly 215	Val	Ala	Pro	Ala	Leu 220	Pro	Gly	Gln	Val
Thr 225	Ile	Arg	Val	Arg	Val 230	Pro	Tyr	Arg	Val	Val 235	Gly	Leu	Val	Val	Gly 240
Pro	Lys	Gly	Ala	Thr 245	Ile	Lys	Arg	Ile	Gln 250	Gln	Gln	Thr	Asn	Thr 255	Tyr
Ile	Ile	Thr	Pro 260	Ser	Arg	Asp	Arg	Asp 265	Pro	Val	Phe	Glu	Ile	Thr	Gly
Ala	Pro	Gly 275	Asn	Val	Glu	Arg	Ala 280	Arg	Glu	Glu	Ile	Glu 285	Thr	His	Ile
Ala	Val 290	Arg	Thr	Gly	Lys	Ile 295	Leu	Glu	Tyr	Asn	Asn 300	Glu	Asn	Asp	Phe
Leu 305	Ala	Gly	Ser	Pro	Asp 310	Ala	Ala	Ile	Asp	Ser 315	Arg	Tyr	Ser	Asp	Ala 320
Trp	Arg	Val	His	Gln 325	Pro	Gly	Cys	Lys	Pro 330	Leu	Ser	Thr	Phe	Arg 335	Gln
Asn	Ser	Leu	Gly 340	Cys	Ile	Gly	Glu	Cys 345	Gly	Val	Asp	Ser	Gly 350	Phe	Glu
Ala	Pro	Arg 355	Leu	Gly	Glu	Gln	Gly 360	Gly	Asp	Phe	Gly	Tyr 365	Gly	Gly	Tyr
Leu	Phe 370	Pro	Gly	Tyr	Gly	Val 375	Gly	Lys	Gln	Asp	Val 380	Tyr	Tyr	Gly	Val

Ala Glu Thr Ser Pro Pro Leu Trp Ala Gly Gln Glu Asn Ala Thr Pro
385 390 395 400

Thr Ser Val Leu Phe Ser Ser Ala Ser Ser Ser Ser Ser Ser Ala
405 410 415

Lys Ala Arg Ala Gly Pro Pro Gly Ala His Arg Ser Pro Ala Thr Ser
420 425 430

Ala Gly Pro Glu Leu Ala Gly Leu Pro Arg Arg Pro Pro Gly Glu Pro
435 440 445

Leu Gln Gly Phe Ser Lys Leu Gly Gly Gly Gly Leu Arg Ser Pro Gly
450 455 460

Gly Gly Arg Asp Cys Met Val Cys Phe Glu Ser Glu Val Thr Ala Ala
465 470 475 480

Leu Val Pro Cys Gly His Asn Leu Phe Cys Met Glu Cys Ala Val Arg
485 490 495

Ile Cys Glu Arg Thr Asp Pro Glu Cys Pro Val Cys His Ile Thr Ala
500 505 510

Thr Gln Ala Ile Arg Ile Phe Ser
515 520

<210> 2
<211> 569
<212> PRT
<213> Homo sapiens

<400> 2

Met Pro Ser Ser Leu Phe Ala Asp Leu Glu Arg Asn Gly Ser Gly Gly
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Gly Gly Gly Gly Ser Ser Gly Gly Gly Glu Thr Leu Asp Asp Gln Arg
20 25 30

Ala Leu Gln Leu Ala Leu Asp Gln Leu Ser Leu Leu Gly Leu Asp Ser
35 40 45

Asp Glu Gly Ala Ser Leu Tyr Asp Ser Glu Pro Arg Lys Lys Ser Val
50 55 60

Asn Met Thr Glu Cys Val Pro Val Pro Ser Ser Glu His Val Ala Glu
65 70 75 80

Ile Val Gly Arg Gln Gly Cys Lys Ile Lys Ala Leu Arg Ala Lys Thr
85 90 95

Asn Thr Tyr Ile Lys Thr Pro Val Arg Gly Glu Glu Pro Val Phe Val
100 105 110

Val Thr Gly Arg Lys Glu Asp Val Ala Met Ala Arg Arg Glu Ile Ile
115 120 125

Ser Ala Ala Glu His Phe Ser Met Ile Arg Ala Ser Arg Asn Lys Asn
130 135 140

Thr Ala Leu Asn Gly Ala Val Pro Gly Pro Pro Asn Leu Pro Gly Gln
145 150 155 160

Thr Thr Ile Gln Val Arg Val Pro Tyr Arg Val Val Gly Leu Val Val
165 170 175

Gly Pro Lys Gly Ala Thr Ile Lys Arg Ile Gln Gln Gln Thr His Thr
180 185 190

Tyr Ile Val Thr Pro Ser Arg Asp Lys Glu Pro Val Phe Glu Val Thr
195 200 205

Gly Met Pro Glu Asn Val Asp Arg Ala Arg Glu Glu Ile Glu Ala His
210 215 220

Ile Ala Leu Arg Thr Gly Gly Ile Ile Glu Leu Thr Asp Glu Asn Asp
225 230 235 240

Phe His Ala Asn Gly Thr Asp Val Gly Phe Asp Leu His His Gly Ser
245 250 255

Gly Gly Ser Gly Pro Gly Ser Leu Trp Ser Lys Pro Thr Pro Ser Ile
260 265 270

Thr Pro Thr Pro Gly Arg Lys Pro Phe Ser Ser Tyr Arg Asn Asp Ser

275							280						285			
Ser	Ser	Ser	Leu	Gly	Ser	Ala	Ser	Thr	Asp	Ser	Tyr	Phe	Gly	Gly	Gly	
290						295					300					
Thr	Ser	Ser	Ser	Ala	Ala	Ala	Thr	Gln	Arg	Leu	Ala	Asp	Tyr	Ser	Pro	
305					310					315					320	
Pro	Ser	Pro	Ala	Leu	Ser	Phe	Ala	His	Asn	Gly	Asn	Asn	Asn	Asn	Asn	
				325					330					335		
Gly	Asn	Gly	Tyr	Thr	Tyr	Thr	Ala	Gly	Gly	Glu	Ala	Ser	Val	Pro	Ser	
			340					345					350			
Pro	Asp	Gly	Cys	Pro	Glu	Leu	Gln	Pro	Thr	Phe	Asp	Pro	Ala	Pro	Ala	
		355					360					365				
Pro	Pro	Pro	Gly	Ala	Pro	Leu	Ile	Trp	Ala	Gln	Phe	Glu	Arg	Ser	Pro	
	370					375					380					
Gly	Gly	Gly	Pro	Ala	Ala	Pro	Val	Ser	Ser	Ser	Cys	Ser	Ser	Ser	Ala	
385					390					395					400	
Ser	Ser	Ser	Ala	Ser	Ser	Ser	Ser	Val	Val	Phe	Pro	Gly	Gly	Gly	Ala	
				405					410					415		
Ser	Ala	Pro	Ser	Asn	Ala	Asn	Leu	Gly	Leu	Leu	Val	His	Arg	Arg	Leu	
			420					425					430			
His	Pro	Gly	Thr	Ser	Cys	Pro	Arg	Leu	Ser	Pro	Pro	Leu	His	Met	Ala	
		435					440					445				
Pro	Gly	Ala	Gly	Glu	His	His	Leu	Ala	Arg	Arg	Val	Arg	Ser	Asp	Pro	
	450					455					460					
Gly	Gly	Gly	Gly	Leu	Ala	Tyr	Ala	Ala	Tyr	Ala	Asn	Gly	Leu	Gly	Ala	
465					470				475						480	
Gln	Leu	Pro	Gly	Leu	Gln	Pro	Ser	Asp	Thr	Ser	Gly	Ser	Ser	Ser	Ser	
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Ser	Ser	Ser	Ser	Ser	Ser	Ser	Ser	Ser	Ser	Ser	Ser	Gly	Leu	Arg	Arg	
			500					505					510			

Lys Gly Ser Arg Asp Cys Ser Val Cys Phe Glu Ser Glu Val Ile Ala
515 520 525

Ala Leu Val Pro Cys Gly His Asn Leu Phe Cys Met Glu Cys Ala Asn
530 535 540

Arg Ile Cys Glu Lys Ser Glu Pro Glu Cys Pro Val Cys His Thr Ala
545 550 555 560

Val Thr Gln Ala Ile Arg Ile Phe Ser
565

<210> 3
<211> 659
<212> PRT
<213> Homo sapiens

<400> 3

Met Pro Ser Gly Ser Ser Ala Ala Leu Ala Leu Ala Ala Ala Pro Ala
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Pro Leu Pro Gln Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Leu
20 25 30

Pro Pro Pro Ser Gly Gly Pro Glu Leu Glu Gly Asp Gly Leu Leu Leu
35 40 45

Arg Glu Arg Leu Ala Ala Leu Gly Leu Asp Asp Pro Ser Pro Ala Glu
50 55 60

Pro Gly Ala Pro Ala Leu Arg Ala Pro Ala Ala Ala Ala Gln Gly Gln
65 70 75 80

Ala Arg Arg Ala Ala Glu Leu Ser Pro Glu Glu Arg Ala Pro Pro Gly
85 90 95

Arg Pro Gly Ala Pro Glu Ala Ala Glu Leu Glu Leu Glu Glu Asp Glu
100 105 110

Glu Glu Gly Glu Glu Ala Glu Leu Asp Gly Asp Leu Leu Glu Glu Glu
115 120 125

Glu Leu Glu Glu Ala Glu Glu Glu Asp Arg Ser Ser Leu Leu Leu Leu
130 135 140

Ser Pro Pro Ala Ala Thr Ala Ser Gln Thr Gln Gln Ile Pro Gly Gly
145 150 155 160

Ser Leu Gly Ser Val Leu Leu Pro Ala Ala Arg Phe Asp Ala Arg Glu
165 170 175

Ala Ala Ala Ala Ala Ala Ala Ala Gly Val Leu Tyr Gly Gly Asp Asp
180 185 190

Ala Gln Gly Met Met Ala Ala Met Leu Ser His Ala Tyr Gly Pro Gly
195 200 205

Gly Cys Gly Ala Ala Ala Ala Ala Leu Asn Gly Glu Gln Ala Ala Leu
210 215 220

Leu Arg Arg Lys Ser Val Asn Thr Thr Glu Cys Val Pro Val Pro Ser
225 230 235 240

Ser Glu His Val Ala Glu Ile Val Gly Arg Gln Gly Cys Lys Ile Lys
245 250 255

Ala Leu Arg Ala Lys Thr Asn Thr Tyr Ile Lys Thr Pro Val Arg Gly
260 265 270

Glu Glu Pro Ile Phe Val Val Thr Gly Arg Lys Glu Asp Val Ala Met
275 280 285

Ala Lys Arg Glu Ile Leu Ser Ala Ala Glu His Phe Ser Met Ile Arg
290 295 300

Ala Ser Arg Asn Lys Asn Gly Pro Ala Leu Gly Gly Leu Ser Cys Ser
305 310 315 320

Pro Asn Leu Pro Gly Gln Thr Thr Val Gln Val Arg Val Pro Tyr Arg
325 330 335

Val Val Gly Leu Val Val Gly Pro Lys Gly Ala Thr Ile Lys Arg Ile
340 345 350

Gln Gln Gln Thr His Thr Tyr Ile Val Thr Pro Ser Arg Asp Lys Glu

355				360				365							
Pro	Val	Phe	Glu	Val	Thr	Gly	Met	Pro	Glu	Asn	Val	Asp	Arg	Ala	Arg
370						375				380					
Glu	Glu	Ile	Glu	Met	His	Ile	Ala	Met	Arg	Thr	Gly	Asn	Tyr	Ile	Glu
385				390						395				400	
Leu	Asn	Glu	Glu	Asn	Asp	Phe	His	Tyr	Asn	Gly	Thr	Asp	Val	Ser	Phe
				405				410						415	
Glu	Gly	Gly	Thr	Leu	Gly	Ser	Ala	Trp	Leu	Ser	Ser	Asn	Pro	Val	Pro
		420						425				430			
Pro	Ser	Arg	Ala	Arg	Met	Ile	Ser	Asn	Tyr	Arg	Asn	Asp	Ser	Ser	Ser
		435				440						445			
Ser	Leu	Gly	Ser	Gly	Ser	Thr	Asp	Ser	Tyr	Phe	Gly	Ser	Asn	Arg	Leu
450						455				460					
Ala	Asp	Phe	Ser	Pro	Thr	Ser	Pro	Phe	Ser	Thr	Gly	Asn	Phe	Trp	Phe
465				470						475				480	
Gly	Asp	Thr	Leu	Pro	Ser	Val	Gly	Ser	Glu	Asp	Leu	Ala	Val	Asp	Ser
				485				490						495	
Pro	Ala	Phe	Asp	Ser	Leu	Pro	Thr	Ser	Ala	Gln	Thr	Ile	Trp	Thr	Pro
		500						505				510			
Phe	Glu	Pro	Val	Asn	Pro	Leu	Ser	Gly	Phe	Gly	Ser	Asp	Pro	Ser	Gly
		515				520						525			
Asn	Met	Lys	Thr	Gln	Arg	Arg	Gly	Ser	Gln	Pro	Ser	Thr	Pro	Arg	Leu
530						535				540					
Ser	Pro	Thr	Phe	Pro	Glu	Ser	Ile	Glu	His	Pro	Leu	Ala	Arg	Arg	Val
545				550				555						560	
Arg	Ser	Asp	Pro	Pro	Ser	Thr	Gly	Asn	His	Val	Gly	Leu	Pro	Ile	Tyr
				565				570						575	
Ile	Pro	Ala	Phe	Ser	Asn	Gly	Thr	Asn	Ser	Tyr	Ser	Ser	Ser	Asn	Gly
		580						585				590			

Gly Ser Thr Ser Ser Ser Pro Pro Glu Ser Arg Arg Lys His Asp Cys
595 600 605

Val Ile Cys Phe Glu Asn Glu Val Ile Ala Ala Leu Val Pro Cys Gly
610 615 620

His Asn Leu Phe Cys Met Glu Cys Ala Asn Lys Ile Cys Glu Lys Arg
625 630 635 640

Thr Pro Ser Cys Pro Val Cys Gln Thr Ala Val Thr Gln Ala Ile Gln
645 650 655

Ile His Ser

<210> 4
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<212> PRT
<213> Homo sapiens

<400> 4

Met Pro Ser Ser Leu Gly Gln Pro Asp Gly Gly Gly Gly Gly Gly Gly
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Gly Gly Gly Gly Val Gly Ala Ala Gly Glu Asp Pro Gly Pro Gly Pro
20 25 30

Ala Pro Pro Pro Glu Gly Ala Gln Glu Ala Ala Pro Ala Pro Arg Pro
35 40 45

Pro Pro Glu Pro Asp Asp Ala Ala Ala Ala Leu Arg Leu Ala Leu Asp
50 55 60

Gln Leu Ser Ala Leu Gly Leu Gly Gly Ala Gly Asp Thr Asp Glu Glu
65 70 75 80

Gly Ala Ala Gly Asp Gly Ala Ala Ala Ala Gly Gly Ala Asp Gly Gly
85 90 95

Ala Ala Pro Glu Pro Val Pro Pro Asp Gly Pro Glu Ala Gly Ala Pro
100 105 110

Pro Thr Leu Ala Pro Ala Val Ala Pro Gly Ser Leu Pro Leu Leu Asp
115 120 125

Pro Asn Ala Ser Pro Pro Pro Pro Pro Pro Pro Arg Pro Ser Pro Pro
130 135 140

Asp Val Phe Ala Gly Phe Ala Pro His Pro Ala Ala Leu Gly Pro Pro
145 150 155 160

Thr Leu Leu Ala Asp Gln Met Ser Val Ile Gly Ser Arg Lys Lys Ser
165 170 175

Val Asn Met Thr Glu Cys Val Pro Val Pro Ser Ser Glu His Val Ala
180 185 190

Glu Ile Val Gly Arg Gln Gly Cys Lys Ile Lys Ala Leu Arg Ala Lys
195 200 205

Thr Asn Thr Tyr Ile Lys Thr Pro Val Arg Gly Glu Glu Pro Val Phe
210 215 220

Ile Val Thr Gly Arg Lys Glu Asp Val Glu Met Ala Lys Arg Glu Ile
225 230 235 240

Leu Ser Ala Ala Glu His Phe Ser Ile Ile Arg Ala Thr Arg Ser Lys
245 250 255

Ala Gly Gly Leu Pro Gly Ala Ala Gln Gly Pro Pro Asn Leu Pro Gly
260 265 270

Gln Thr Thr Ile Gln Val Arg Val Pro Tyr Arg Val Val Gly Leu Val
275 280 285

Val Gly Pro Lys Gly Ala Thr Ile Lys Arg Ile Gln Gln Arg Thr His
290 295 300

Thr Tyr Ile Val Thr Pro Gly Arg Asp Lys Glu Pro Val Phe Ala Val
305 310 315 320

Thr Gly Met Pro Glu Asn Val Asp Arg Ala Arg Glu Glu Ile Glu Ala
325 330 335

His Ile Thr Leu Arg Thr Gly Ala Phe Thr Asp Ala Gly Pro Asp Ser

340							345					350				
Asp	Phe	His	Ala	Asn	Gly	Thr	Asp	Val	Cys	Leu	Asp	Leu	Leu	Gly	Ala	
		355					360				365					
Ala	Ala	Ser	Leu	Trp	Ala	Lys	Thr	Pro	Asn	Gln	Gly	Arg	Arg	Pro	Pro	
370						375					380					
Thr	Ala	Thr	Ala	Gly	Leu	Arg	Gly	Asp	Thr	Ala	Leu	Gly	Ala	Pro	Ser	
385					390					395						
Ala	Pro	Glu	Ala	Phe	Tyr	Ala	Gly	Ser	Arg	Gly	Gly	Pro	Ser	Val	Pro	
				405					410					415		
Asp	Pro	Gly	Pro	Ala	Ser	Pro	Tyr	Ser	Gly	Ser	Gly	Asn	Gly	Gly	Phe	
			420					425					430			
Ala	Phe	Gly	Ala	Glu	Gly	Pro	Gly	Ala	Pro	Val	Gly	Thr	Ala	Ala	Pro	
		435					440					445				
Asp	Asp	Cys	Asp	Phe	Gly	Phe	Asp	Phe	Asp	Phe	Leu	Ala	Leu	Asp	Leu	
450						455					460					
Thr	Val	Pro	Ala	Ala	Ala	Thr	Ile	Trp	Ala	Pro	Phe	Glu	Arg	Ala	Ala	
465					470					475						
Pro	Leu	Pro	Ala	Phe	Ser	Gly	Cys	Ser	Thr	Val	Asn	Gly	Ala	Pro	Gly	
				485					490					495		
Pro	Pro	Ala	Ala	Gly	Ala	Arg	Arg	Ser	Ser	Gly	Ala	Gly	Thr	Pro	Arg	
			500					505					510			
His	Ser	Pro	Thr	Leu	Pro	Glu	Pro	Gly	Gly	Leu	Arg	Leu	Glu	Leu	Pro	
		515					520					525				
Leu	Ser	Arg	Arg	Gly	Ala	Pro	Asp	Pro	Val	Gly	Ala	Leu	Ser	Trp	Arg	
530						535					540					
Pro	Pro	Gln	Gly	Pro	Val	Ser	Phe	Pro	Gly	Gly	Ala	Ala	Phe	Ser	Thr	
545					550					555						
Ala	Thr	Ser	Leu	Pro	Ser	Ser	Pro	Ala	Ala	Ala	Ala	Cys	Ala	Pro	Leu	
				565					570					575		

Asp Ser Gly Ala Ser Glu Asn Ser Arg Lys Pro Pro Ser Ala Ser Ser
580 585 590

Ala Pro Ala Leu Ala Arg Glu Cys Val Val Cys Ala Glu Gly Glu Val
595 600 605

Met Ala Ala Leu Val Pro Cys Gly His Asn Leu Phe Cys Met Asp Cys
610 615 620

Ala Val Arg Ile Cys Gly Lys Ser Glu Pro Glu Cys Pro Ala Cys Arg
625 630 635 640

Thr Pro Ala Thr Gln Ala Ile His Ile Phe Ser
645 650