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<211> 80

<212> PRT

<213> Labrenzia sp. PHM005

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Val	Asp	Leu	Gly	Ala	Asn	Ser	Val	Asp	Arg	Met	Asp	Val	Ile	Thr	Leu
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 <213> Labrenzia sp. PHM005

<400> 4

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Arg	Phe	Glu	Asn	Leu	Leu	Ile	Arg	Gln	Lys	Ser	Ala	Ala	Leu	Pro	Tyr
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Ala	Leu	Ser	Gln	Ala	Glu	Arg	Asp	Gln	Ile	Glu	Leu	Leu	Ile	Thr	Cys
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Thr	Glu	Ser	Gly	Leu	Asp	Phe	Gly	Lys	Ser	Leu	Ser	Thr	Tyr	Ile	His
				85				90						95	
His	Tyr	Leu	Gly	Leu	Ser	Arg	Asn	Cys	Arg	Leu	Phe	Glu	Ile	Lys	Gln
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Ala	Cys	Tyr	Ser	Gly	Thr	Ala	Gly	Tyr	Gln	Met	Ala	Leu	Asn	Phe	Ile
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Leu	Ser	Gln	Thr	Ser	Pro	Gly	Ala	Lys	Ala	Leu	Val	Val	Ala	Thr	Asp
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Trp	Glu	Tyr	Phe	Glu	Pro	Ser	Gly	Gly	Ala	Gly	Ala	Val	Ala	Leu	Leu
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Val	Ser	Asp	Gln	Pro	Arg	Ile	Phe	Gln	Ser	Asp	Ile	Gly	Ala	Asn	Gly
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Thr	Tyr	Cys	Phe	Glu	Val	Met	Asp	Thr	Cys	Arg	Pro	Met	Pro	Asp	Ser
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Glu	Ala	Gly	Asp	Ser	Asp	Leu	Ser	Leu	Leu	Ser	Tyr	Leu	Asp	Cys	Cys
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Gln	Asp	Ser	Phe	Asn	Tyr	Leu	Ala	Phe	His	Thr	Pro	Phe	Gly	Gly	Met
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Val	Lys	Gly	Ala	His	Arg	His	Met	Met	Arg	Arg	Leu	Leu	Arg	Ser	Arg
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Arg	Leu	Cys	Gln	Arg	Ile	Gly	Asn	Ile	Met	Gly	Ala	Thr	Val	Leu	Leu
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Ser	Leu	Thr	Gly	Ala	Val	Leu	Tyr	Gly	Asp	Tyr	Arg	Thr	Pro	Gln	Arg
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Ile	Gly	Cys	Phe	Ser	Tyr	Gly	Ser	Gly	Cys	Ala	Ser	Glu	Phe	Tyr	Ser
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Gly	Val	Ser	Thr	Ala	Asp	Gly	Gln	Arg	Arg	Leu	Gln	Asp	Ala	Pro	Ile
			340					345					350		
Gln	Lys	Ala	Leu	Asp	Leu	Arg	His	Lys	Leu	Thr	Met	Pro	Gln	Tyr	Glu
	355						360					365			
Ala	Leu	Leu	Glu	Gly	Cys	Lys	Ala	Val	Pro	Phe	Gly	Thr	Arg	Asn	His
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Gln	Pro	Asp	Leu	Asp	Gln	Val	Pro	Asp	Met	Lys	Ser	Cys	Ile	Ala	Asp
385					390					395					400
Gln	Ser	Ala	Gln	Leu	Gly	Tyr	Gln	Arg	Leu	Phe	Leu	Lys	Glu	Ile	Lys
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<211> 1166

<212> PRT

<213> Labrenzia sp. PHM005

<400> 5

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		20					25					30			
Phe	Arg	Pro	Asp	Cys	Arg	Ala	Glu	Asp	Leu	Glu	Ala	Ser	Leu	Glu	Pro
	35					40					45				
Ala	Asp	Phe	Asn	Ile	Arg	Pro	Ala	Ala	Val	Asp	Asp	Ile	Asp	Thr	Leu
	50				55					60					
His	Met	Leu	Glu	Thr	Val	Cys	Trp	Pro	Lys	Glu	Leu	Gln	Thr	Pro	Thr
65				70					75					80	
Lys	Thr	Leu	Ala	Ser	Arg	Val	Ala	Ile	Asp	Pro	Asn	Gly	Gln	Leu	Val
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Leu	Thr	Leu	Asp	Gly	Ser	Pro	Cys	Gly	Val	Ile	Tyr	Ser	Gln	Arg	Ile
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Asn	Ser	Val	Glu	Ala	Leu	Thr	Ser	Ser	Asp	Met	Asp	Lys	Val	Asp	Ser
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Leu	Arg	Asp	Pro	Ser	Gly	Ser	Ile	Leu	His	Phe	Leu	Ala	Ile	Asn	Ile
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225				230					235						240

Thr	Tyr	Asp	Leu	Asn	Lys	Arg	Arg	Arg	Ser	His	Ala	Pro	Gln	Pro	Arg
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Cys	Leu	Gln	Ala	Glu	Cys	Gly	Ser	Thr	Leu	Thr	Ala	Ala	Gln	Leu	Phe
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Lys	His	Asn	Thr	Ala	Glu	Lys	Ile	Ile	Ala	Phe	Leu	His	Asn	Glu	Leu
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Cys	Pro	Ala	Asp	Gly	Gly	Ser	Asp	Gln	Ser	Val	Ala	Ile	Ile	Gly	Val
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Trp	Ser	Trp	Pro	Asp	Gly	Phe	Arg	Pro	Gln	Gly	Ala	Ala	Tyr	Gly	Gly
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625					630					635					640

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<212> PRT

<213> Labrenzia sp. PHM005

<400> 6

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Val	Phe	Ser	Ser	Ile	Ile	Ser	Leu	Glu	Gln	Pro	Gly	Gly	Phe	Gly	Gly
	50				55					60					
Tyr	Ala	Ala	Ser	Cys	Ala	Phe	Ala	Asp	Ala	Phe	Val	Arg	Gly	Leu	Asp
65				70					75					80	
Ser	Gln	Thr	Pro	Tyr	Pro	Val	Arg	Cys	Leu	Asn	Trp	Gly	His	Trp	Asp
			85					90					95		
Val	Gly	Val	Ala	Arg	Asn	Leu	Pro	Glu	Ala	Thr	Lys	Ile	Arg	Leu	Asp
		100					105					110			
Asn	Ala	Gly	Val	Val	Pro	Ile	Thr	Ala	Gln	Asp	Ala	Leu	Lys	His	Cys
	115					120					125				
Asp	Thr	Ala	Leu	Asn	Ala	Pro	Leu	Pro	Gln	Leu	Ala	Ile	Leu	Lys	Trp
	130				135					140					
Asn	Asp	Pro	Ala	Arg	His	Pro	Leu	Val	Asp	Ser	Gln	Val	His	Met	Arg
145				150					155					160	
Leu	Ser	Arg	Lys	Ala	Pro	Ala	Arg	Ser	Leu	Pro	Ala	Ala	Thr	Asn	Glu
			165				170						175		
Leu	Asn	Thr	Arg	Leu	Gln	Glu	Ile	Glu	Arg	His	Gly	Leu	Phe	Ala	His
		180					185					190			
Pro	Glu	Leu	Glu	Ala	Ala	Leu	Pro	Gly	Ala	Ile	Ala	Ala	Glu	Leu	Asp
	195					200					205				

Arg	His	Gly	Leu	Arg	Thr	Ser	Leu	Pro	Asp	Thr	Ala	Pro	Trp	Tyr	Leu
210						215					220				
Arg	Arg	Trp	His	Lys	Ala	Thr	Lys	Arg	Leu	Leu	Ala	Gln	Gly	Asn	Thr
225					230					235					240
Gly	Glu	Asn	Trp	Asp	Ala	Thr	Ala	Arg	Arg	Leu	Arg	Ala	Asp	Ala	Asp
				245					250					255	
Leu	Ala	Pro	Ala	Ile	Asn	Leu	Val	Thr	Ala	Cys	Leu	Ala	Arg	Leu	His
			260					265					270		
Glu	Val	Leu	Thr	Gly	Gln	Thr	Pro	Ala	Thr	Asp	Val	Leu	Phe	Pro	Gly
		275					280					285			
Ala	Ser	Leu	Asp	Leu	Leu	Glu	Pro	Val	Tyr	Arg	Gly	Thr	Ala	Ser	Ala
290						295					300				
Asp	Leu	Leu	Asn	Asp	Val	Leu	Ala	Asp	Thr	Leu	Ala	Glu	Thr	Leu	Arg
305					310					315					320
Ala	Asp	Leu	Arg	Asp	Gln	Pro	Glu	Asn	Thr	Ser	Leu	Arg	Val	Leu	Glu
				325					330					335	
Ile	Gly	Ala	Gly	Thr	Gly	Gly	Thr	Thr	Ala	Arg	Val	Leu	Pro	Cys	Leu
			340					345					350		
Ser	Glu	Leu	Ala	Gly	Gln	Ile	Glu	Thr	Tyr	Asp	Tyr	Thr	Asp	Leu	Ser
		355					360					365			
Arg	Ala	Phe	Leu	Gln	His	Ala	Gln	Gln	Ala	Phe	Ala	Pro	Ser	Ala	Pro
370						375				380					
Phe	Leu	Lys	Ser	Leu	Arg	Phe	Asp	Val	Glu	Lys	Ser	Pro	Glu	Ser	Gln
385					390					395					400
Gly	Leu	Gln	Pro	Gly	Ser	Tyr	Asp	Ala	Val	Leu	Ala	Thr	Asn	Val	Leu
				405					410					415	
His	Ala	Thr	Pro	Asp	Ile	Arg	Gln	Thr	Leu	Arg	His	Thr	His	Ala	Leu
			420					425					430		
Leu	Lys	Pro	Gly	Gly	Val	Leu	Leu	Leu	Asn	Glu	Ile	Val	Thr	Pro	Ser
		435					440					445			
Val	Phe	Ala	His	Ala	Thr	Phe	Gly	Leu	Leu	Glu	Gly	Trp	Trp	Lys	Ser
	450					455					460				
Cys	Asp	Pro	Gly	Leu	Arg	His	Pro	Asp	Thr	Pro	Leu	Leu	Ser	Ala	Glu
465					470					475					480
Ser	Trp	Glu	Lys	Leu	Leu	Leu	Ala	Asn	Gly	Phe	Thr	Ala	Val	Glu	Met
			485						490					495	
Leu	Leu	Asn	Ser	Ser	Thr	Ala	Leu	Gly	Gln	Gln	Val	Phe	Ala	Ala	Arg
		500						505					510		
Ser	Asp	Gly	Cys	Phe	Glu	Tyr	Arg	Lys	Ala	Glu	Ile	Asp	Thr	Thr	Arg
		515					520					525			
Arg	Gln	Pro	Glu	Thr	Leu	Glu	Pro	Arg	Ile	Leu	Lys	Asn	Thr	Val	Ser
						535					540				
Glu	Leu	Pro	Leu	Glu	Asp	Leu	Glu	Asn	Pro	Gln	Ala	Ala	Ala	Ala	Arg
545					550					555					560
Leu	Leu	Thr	Glu	Ile	Val	Ala	Ser	Ala	Leu	Gln	Ile	Thr	Glu	Asp	Gln
				565					570					575	
Leu	Asp	Pro	Trp	Thr	Pro	Leu	Gly	Asp	Tyr	Gly	Leu	Asp	Ser	Ile	Leu
			580					585					590		
Asn	Ala	Gln	Val	Thr	Ala	Arg	Leu	Arg	Glu	Leu	Val	Pro	Asp	Leu	Asp
		595					600					605			

Thr	Thr	Phe	Leu	Tyr	Gln	Tyr	Gln	Thr	Ile	Ala	Asp	Leu	Ser	Gln	Ala
610						615					620				
Leu	Val	Gln	Lys	His	Pro	Glu	Ala	Phe	Glu	Gln	Ile	Gly	His	Thr	Thr
625					630					635					640
Cys	Gly	Glu	Ala	Asp	Val	Ala	Ser	Pro	Ser	Thr	Val	Ser	Ala	Ser	Lys
				645					650					655	
Arg	Thr	Ala	Gly	Asn	Glu	Gln	Gln	Asp	Ile	Ala	Ile	Val	Gly	Met	Ser
			660					665					670		
Phe	Arg	Phe	Pro	Lys	Ala	Asp	Thr	Pro	Glu	Glu	Phe	Trp	Thr	Leu	Leu
		675				680					685				
Ser	Gln	Gly	Gln	Ser	Ala	Val	Thr	Glu	Ile	Pro	Pro	Asp	Arg	Trp	Gln
690					695					700					
Leu	Asp	Gly	Phe	Tyr	Glu	Ser	Asp	Pro	Asp	Lys	Ala	Val	Asp	Gly	Trp
705					710					715					720
Lys	Ser	Tyr	Ser	Lys	Trp	Gly	Ala	Phe	Leu	Glu	Arg	Val	Thr	Ala	Phe
				725					730					735	
Asp	Pro	Leu	Phe	Phe	Gly	Ile	Asn	Pro	Lys	Glu	Ala	Ala	Ala	Ile	Asp
			740					745					750		
Pro	Gln	Glu	Arg	Leu	Phe	Leu	Gln	Thr	Ala	Trp	Ala	Ala	Leu	Glu	Asp
		755					760						765		
Ala	Gly	Phe	Pro	Arg	Gln	Arg	Leu	Ala	Asp	Glu	Leu	Ala	Arg	Ser	Val
770					775					780					
Gly	Val	Phe	Val	Gly	Ile	Thr	Arg	Thr	Gly	Phe	Asp	Leu	Phe	Gly	Pro
785					790					795					800
Asp	Leu	Trp	Gln	Ala	Gly	Gln	Lys	Val	Tyr	Pro	His	Thr	Ser	Phe	Ser
			805						810					815	
Ser	Ala	Ala	Asn	Arg	Leu	Ser	Trp	Phe	Leu	Asp	Ala	Asp	Gly	Pro	Ser
			820					825					830		
Met	Pro	Val	Asp	Thr	Met	Cys	Ser	Ser	Ser	Leu	Thr	Ala	Leu	His	Gln
		835					840					845			
Ala	Cys	Ala	Ser	Leu	Lys	Thr	Gly	Glu	Cys	Arg	Leu	Ala	Ile	Ala	Gly
		850				855					860				
Gly	Val	Asn	Leu	Phe	Leu	His	Pro	Thr	Ser	Tyr	Ile	Gly	Leu	Ser	Ala
865					870					875					880
Met	Arg	Met	Leu	Ser	Pro	Asp	Gly	Arg	Cys	Ser	Ser	Phe	Gly	Ala	Gly
			885						890					895	
Gly	Asn	Gly	Phe	Val	Pro	Gly	Glu	Gly	Val	Ala	Ala	Leu	Val	Leu	Arg
			900					905					910		
Pro	Leu	Ala	Glu	Ala	Gln	Ala	Ala	Gly	Asp	Gln	Val	Ile	Gly	Val	Ile
		915					920					925			
Arg	Gly	Ser	Ala	Val	Asn	His	Gly	Gly	Arg	Thr	Asn	Gly	Phe	Thr	Val
					935						940				
Pro	Asn	Pro	Arg	Ala	Gln	Ser	Ser	Leu	Val	Arg	Glu	Ala	Met	Ser	Arg
945					950					955					960
Ala	Gly	Leu	Glu	Pro	Gly	Gln	Ile	Ser	Tyr	Leu	Glu	Ala	His	Gly	Thr
				965					970					975	
Gly	Thr	Glu	Met	Gly	Asp	Pro	Ile	Glu	Ile	Thr	Gly	Leu	Thr	Glu	Ala
			980					985					990		
Phe	Ala	Gly	Arg	Glu	Gln	Gly	Leu	Ala	Pro	Cys	Ala	Ile	Gly	Ser	Ile
		995					1000					1005			

Lys Thr Asn Ile Gly His Leu Glu Ala Thr Ala Gly Leu Ala Gly Val
 1010 1015 1020
 Ile Lys Val Leu Leu Gln Met Arg His Arg Gln Ile Val Pro Ser Leu
 1025 1030 1035 1040
 His Ser Ser Ser Leu Asn Pro Lys Ile Asp Phe Glu His Ala Pro Phe
 1045 1050 1055
 Arg Val Ala Gln Asp Leu Thr Pro Trp Ser Pro Ala Lys Gly Arg Arg
 1060 1065 1070
 Ile Ala Gly Val Ser Ser Phe Gly Ala Gly Gly Thr Asn Ala His Val
 1075 1080 1085
 Ile Leu Glu Glu Ala Pro Asp Ile Pro Glu Lys Ser Ala Thr Asp Pro
 1090 1095 1100
 Ala Pro Asn Glu Pro Ile Ala Leu Val Leu Ser Ala His Asp Glu Pro
 1105 1110 1115 1120
 Arg Leu Arg Ala Tyr Ala Ala Arg Leu Ala Lys Phe Leu Thr Ser Pro
 1125 1130 1135
 Asn Ala Pro Pro Leu Ala Leu Ala Ala Gln Ser Leu Gln Leu Gly Arg
 1140 1145 1150
 Glu Pro Met Arg His Arg Met Ala Ala Val Val Ser Asp Lys Ala Gln
 1155 1160 1165
 Ala Val Ala Val Leu Gln Ala Val Ala Glu Asn Arg Pro Leu Pro Asp
 1170 1175 1180
 Lys Thr Phe Leu Arg Asp Thr Arg Arg Tyr Lys Gly Gln Cys Pro Ser
 1185 1190 1195 1200
 Ser Val Glu Ser Glu Asp Leu Gly Glu Leu Thr Asp Ala Trp Ser Lys
 1205 1210 1215
 Gly Ser Lys Ile Asp Trp Ala Lys Leu His Gln Arg Arg Gln Thr Val
 1220 1225 1230
 Ser Leu Pro Thr Tyr Pro Phe Asp Glu Lys Pro Tyr Trp Phe Ala Asp
 1235 1240 1245
 Thr Ala Pro Val Gly Gly Pro Met Asp Val Pro Ser Ser Glu Asp Ala
 1250 1255 1260
 Phe Arg Glu Leu Lys Pro Ala Ser Arg Pro Ser Pro Val Arg Arg Thr
 1265 1270 1275 1280
 Leu Pro Arg Leu Asp Thr Ala Pro Ala Gln Phe Glu Pro His Arg Arg
 1285 1290 1295
 Ser Gln Lys Leu Arg Leu Ser Ser Leu Asn Pro Ala Ser Glu Thr Pro
 1300 1305 1310
 Pro Ala Glu Ile Glu Leu Asp Ile Asn Gly Ile Gly Arg Val Arg Leu
 1315 1320 1325
 Glu Pro Ala Ser Pro Pro Pro Asn Leu Ser Thr Gly Asn Ala Met Lys
 1330 1335 1340
 Val Leu Val Val Glu Gly Leu Gln His Trp Asn Gly Asp Arg Leu Gly
 1345 1350 1355 1360
 Leu Leu His Glu Leu Asp Gln Leu Ser Gln Pro Val Ile Leu Thr Val
 1365 1370 1375
 Ser Ala Ser Ser Leu Pro Pro Ile Pro Asp Thr Leu Leu Thr Ala Pro
 1380 1385 1390
 Ala Phe Glu Gln Ala Gln Glu Met Ala Asn Ala Thr Ala Arg Cys Pro
 1395 1400 1405

Ala	Ala	Thr	Leu	Ala	Thr	Leu	Lys	Asn	His	Ile	Arg	Asn	Gln	Pro	Ser
1410						1415					1420				
Trp	Pro	Asp	Ile	Ala	Gly	Ile	Pro	Ala	Glu	Trp	Met	Ala	Gly	Ser	Gly
1425					1430					1435					1440
Trp	Pro	Val	Ser	Ser	Pro	Glu	Pro	Ala	Pro	Ser	Gly	Gly	Ala	Ile	Pro
				1445					1450					1455	
Leu	Gln	Ser	Glu	Val	Val	Gln	Leu	His	Asp	Met	Gly	Gly	Gly	Val	Ala
			1460					1465					1470		
Gln	Ile	Thr	Met	Ala	Glu	Arg	Asp	Ala	Gln	Asn	Thr	Phe	Thr	Pro	Ala
		1475				1480					1485				
Phe	Val	Thr	Gly	Val	Leu	Glu	Ala	Phe	Asp	Lys	Val	Glu	Ser	Ser	Ala
	1490				1495					1500					
Ala	Phe	Lys	Val	Val	Val	Leu	Thr	Gly	Tyr	Glu	Ala	Tyr	Phe	Ala	Cys
1505				1510					1515						1520
Gly	Gly	Thr	Arg	Glu	Gly	Leu	Leu	Ala	Ile	Gln	Asn	Gly	Gln	Ala	Arg
			1525					1530						1535	
Phe	Thr	Asp	Glu	Gln	Ser	Tyr	Ala	Arg	Pro	Leu	Arg	Cys	Pro	Ile	Pro
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Val	Ile	Ala	Ala	Met	Gln	Gly	His	Gly	Ile	Gly	Ala	Gly	Trp	Ala	Met
		1555				1560						1565			
Gly	Leu	Tyr	Cys	Asp	Leu	Ala	Ile	Tyr	Ser	Glu	Glu	Ser	Cys	Tyr	Gln
	1570				1575					1580					
Ser	Pro	Tyr	Met	Leu	Tyr	Gly	Phe	Thr	Pro	Gly	Ala	Gly	Ala	Thr	Thr
1585				1590					1595						1600
Leu	Phe	Pro	Ala	Arg	Leu	Gly	Arg	Gln	Leu	Ala	Asn	Glu	Ile	Leu	Phe
			1605					1610						1615	
Thr	Ala	Gln	Ser	Phe	Pro	Gly	His	Ile	Leu	Ala	Gln	Lys	Gly	Leu	Thr
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Ala	Pro	Val	Leu	Pro	Arg	Glu	Glu	Val	Leu	Pro	Gln	Ala	His	Ala	Leu
	1635					1640					1645				
Ala	Arg	Ser	Ile	Ala	Gln	Asn	Pro	Arg	Glu	Thr	Leu	Met	Ala	Arg	Lys
	1650				1655					1660					
Ser	Thr	Gln	Thr	Ala	Glu	Phe	Leu	His	Met	Leu	Pro	Arg	Leu	Phe	Glu
1665				1670					1675						1680
Ala	Glu	Leu	Ala	Leu	His	Glu	Ser	Thr	Phe	Val	Gly	Asn	Ser	Asp	Val
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Leu	Glu	Gln	Ile	Ser	Glu	His	Phe	Ala	Asp	Lys	Gln	Met	Thr	Gln	Lys
	1700					1705						1710			
Pro	Gly	Ala	Ser	Gln	Lys	Glu	Ala	Arg	Asn	Thr	Ser	Ala	Leu	Lys	Thr
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Gln	Leu	Arg	Met	Met	Leu	Ala	Glu	Glu	Leu	Asp	Ile	Pro	Pro	Asp	Arg
	1730				1735					1740					
Ile	Asp	Asp	Asp	Thr	Pro	Phe	Val	Asp	Leu	Gly	Leu	Glu	Ser	Ile	Ala
1745				1750					1755						1760
Ala	Val	Ile	Trp	Val	Arg	Lys	Ile	Gly	Glu	Glu	Leu	Gly	Ala	Gln	Ile
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Gly	Ala	Thr	Ser	Val	Tyr	Ser	His	Pro	Asn	Leu	Ala	Ala	Phe	Thr	Glu
		1780					1785					1790			
Leu	Val	Ala	Glu	Lys	Gly	Gly	Gln	Leu	Ala	Glu	Ala	Val	Asn	Lys	Thr
	1795					1800						1805			

Thr Ala Pro Pro Ser Glu Pro Pro Lys Ala Ala Ile Pro Ala Asp Pro
 1810 1815 1820
 Glu Glu Arg Leu Leu Pro Ser Asp Ser Ser Asp Leu Phe Val Trp Leu
 1825 1830 1835 1840
 Gln Ala Ser Leu Glu Thr Glu Leu Ser Ile Pro Ser Gly Thr Leu Asp
 1845 1850 1855
 Pro Asp Arg Pro Phe Val Glu Leu Gly Leu Asp Ser Val Thr Ala Val
 1860 1865 1870
 Thr Trp Ile Arg Gln Val Asn Asp Ala Leu Gly Thr Lys Glu Thr Gly
 1875 1880 1885
 Thr Val Val Tyr His His Thr Asn Leu Thr Glu Leu Ala Ala Tyr Leu
 1890 1895 1900
 Ala Gly Ile Ala Gly Lys Thr Pro Thr Thr Arg Thr Thr Ser Leu Pro
 1905 1910 1915 1920
 Tyr Lys Leu Glu Ala Pro Val Arg Ser Ala Leu Pro Arg Leu Glu Asn
 1925 1930 1935
 Leu Ala Pro Phe Gln Asp Glu Arg Pro Gly Ile Ala Ile Val Gly Met
 1940 1945 1950
 Ala Gly Arg Phe Pro Glu Ala Pro Asn Val Ser Ser Phe Trp Gln Asn
 1955 1960 1965
 Val Leu Ala Gly Arg Asp Cys Val Tyr Glu Ile Pro Ala Thr Arg Trp
 1970 1975 1980
 Ser Ile Asp Ala Tyr Tyr Asp Pro Asp Arg Gln Ala Pro Gly Lys Thr
 1985 1990 1995 2000
 Val Cys Arg Arg Met Gly Ala Ile Glu Asp Ile Asp Ala Phe Asp Ser
 2005 2010 2015
 Leu Phe Phe Gly Ile Ser Pro Ala Glu Ala Glu Leu Met Asp Pro Gln
 2020 2025 2030
 Gln Arg Leu Phe Leu Glu Thr Ala Trp Glu Ala Ile Glu Asp Ala Gly
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 His Ala Pro Ser Thr Leu Ala Gly Thr Arg Cys Gly Leu Phe Val Gly
 2050 2055 2060
 Thr Glu Asn Gly Asp Tyr Ala Arg Ile Ala Gly Asp Ala Lys Pro Glu
 2065 2070 2075 2080
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 Cys Ser Ala Ser Leu Val Ala Ile Ala Gln Ala Cys Ala Ser Leu His
 2115 2120 2125
 Asp Arg His Cys Asp Ser Ala Leu Ala Gly Gly Val Asn Val Leu Thr
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 Gly Pro Glu Ile His Val Ala Met Ser His Ala Gly Met Leu Ser Pro
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 Ser Gly Lys Cys Asn Ser Phe Asp Ser Arg Ala Asp Gly Phe Val Pro
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 Gly Glu Gly Val Gly Ala Leu Leu Leu Lys Arg Leu Glu Asp Ala Gln
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 Ala Asn Gly Asp Asp Val Tyr Ala Val Ile Arg Gly Trp Gly Val Asn
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Gln Asp Gly Arg Thr Asn Gly Ile Thr Ala Pro Asn Pro Ala Ala Gln
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 Thr Arg Leu Gln Thr Glu Leu Tyr His Arg Phe His Ile Asp Pro Ala
 2225 2230 2235 2240
 Arg Ile Gly Met Val Glu Ala His Gly Thr Gly Thr Ala Leu Gly Asp
 2245 2250 2255
 Pro Ile Glu Val Glu Ala Leu Lys Arg Ser Phe Ala Gln Phe Thr Asp
 2260 2265 2270
 Arg Lys Asn Tyr Cys Ala Leu Gly Ser Val Lys Ser Asn Ile Gly His
 2275 2280 2285
 Leu Ala Thr Ala Ala Gly Val Ala Gly Ala Ile Lys Ala Thr Leu Ala
 2290 2295 2300
 Leu Lys His Arg Lys Ile Pro Ala Ser Ile His His Asp Gln Leu Asn
 2305 2310 2315 2320
 Pro His Ile Asp Leu Lys Asp Ala Pro Phe Tyr Val Pro Arg Thr Ala
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 Ala Asp Trp Thr Ala Gly Pro Asp Ala Pro Gln Tyr Ala Ala Val Ser
 2340 2345 2350
 Ser Phe Gly Tyr Ser Gly Thr Asn Ala His Leu Val Leu Glu Ala Ala
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 Pro Ala Arg Pro Val Pro Val Thr Gln Thr Gln Ala Val Ile Val Pro
 2370 2375 2380
 Val Ser Ala Arg Ser Leu Glu Cys Leu Thr Glu Ala Val Thr Arg Leu
 2385 2390 2395 2400
 Ser Thr Tyr Leu Gly Thr Gly Ala Gly Gln Thr Val Pro Leu Ala Asp
 2405 2410 2415
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 Ala Phe Leu Ala Asp Ser His Asp Ser Leu Arg Ala Gly Leu Glu Gln
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 Phe Leu Asn Glu Pro Glu His Ala Gly Gly Val Val Tyr Ser Asn Asp
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 Met Pro Pro Thr Leu Arg Asp Thr Ala Thr Ala Trp Ile Glu Gly Lys
 2465 2470 2475 2480
 Thr Ile Ala Trp Pro Val Val Ala Gly Ala Ser Arg Arg His Gly Cys
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 Pro Thr Tyr Pro Phe Ala Lys Glu Arg His Trp Val Ser Asp Ala Pro
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 Gln Pro Glu Ala Glu Asp Thr Ala Val Asp Pro Asp Trp Arg Glu Arg
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 Leu Lys Gln Arg Phe Ala Arg Pro Ile Thr Leu Leu Ser Asp Asp Pro
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 Lys Trp Ile Gly Ser Met Ala Ser Leu Leu Ser Ala Leu Gly Ala Ala
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 Pro Gly Gly Pro Gly Gln Pro Asp Leu Arg Ile Lys Ser Asn Leu Arg
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 Glu Ala Glu Gly Ser Val Phe Cys Asp Thr His Leu Gly Thr Arg Leu
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Pro Gly Asn Glu Gln Val Asp Leu Leu Ile Leu Thr Glu Leu Pro Ser
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 Asp Pro Gly Leu Ile Pro Gln His Ala Leu Ile Val Ser Asp Asp Asn
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 Arg Asp Asp Ile Glu Ser His Cys Gln Arg Leu Ile Gln Glu Trp Leu
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 Arg Leu Glu Pro Asp Gly Ser Lys Asp Thr Leu His Val Gln Phe Arg
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 Asn Gly Arg Arg Leu Val Ala Ala Lys Pro Leu Asp Pro Ala Asp Gly
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 Ala Cys Ile Leu Arg Lys Thr Trp Gln Arg Thr Pro Leu Ala Asp Gln
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 Asp Leu Asn Leu Leu His Leu Thr Cys Asp Val Ile Pro Phe Arg Ser
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 Arg Gly Val Gly Leu Thr Leu Ala Gln Asp Leu Ala Ala Gln Gly Ala
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 Trp Pro Ser Leu Ile Ala Ala Ala Asp Thr Pro Ala Glu Ile Arg Ser
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 Gln Leu Ser Ile Leu Gln Ala Leu Ser Asp Gln Leu Glu Thr Leu Glu
 2945 2950 2955 2960
 Ile Leu His Ala Cys Val Ser Asp Ala Ala Lys Val Ser Ala Trp Leu
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 Ser Ser Leu Arg Lys Arg Gly Leu Pro Leu Ser Gly Val Ile His Ala
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 Ala Gly Arg Tyr Ser Glu Val Asp Pro Pro Gly Phe Ala Ala Lys Ser
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Ala Asp His Met Arg Ala Val Leu Thr Ala Lys Ala Asp Gly Leu Glu
 3010 3015 3020
 Thr Leu His Ser Leu Thr Lys Asn Asp Pro Leu Ser Phe Leu Leu Val
 3025 3030 3035 3040
 Leu Thr Ser Ile Thr Gly Leu Val Pro His Phe Ala Arg Gly Ala Leu
 3045 3050 3055
 Asp Tyr Ala Met Ala Asn Ala Tyr Ala Asp Leu Phe Ala Ala Lys Ala
 3060 3065 3070
 His Glu Leu Asp Gly Gly Arg Thr Arg Ser Thr Ile Leu Ser Asp Trp
 3075 3080 3085
 Thr Gln Ser Gly Ala Phe Cys Arg Val Arg Pro Glu Lys Ala Lys Ser
 3090 3095 3100
 Val Gln Lys Asn Phe Asp Gln Ile Gly Leu Lys Thr Leu Ser Asp Ala
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 Glu Gly Cys Ala Leu Ile Arg Arg Ala Leu Ser Pro Thr Ala Glu Thr
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 Gly Thr Ile Leu Gly Leu Ile Ala Glu Asp Arg Phe Ala Ala Ala Arg
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 Pro Gly Leu Leu Leu Ala Gly Thr Leu Asn Asp Glu Ala Leu Asp Met
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 Asn Thr Gln Leu Ala Arg Trp Glu Lys Ile Arg Ser Arg Gly Asp Leu
 3170 3175 3180
 Val Thr Ile Glu Asp Val Thr Ser Val Ile Gly Leu Glu Gln Ile Arg
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<212> PRT

<213> Labrenzia sp. PHM005

<400> 7

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 Cys Asn Val Leu Lys Leu Lys Glu Ile Asp His Asn Thr Pro Leu Gln
 35 40 45
 Asn Tyr Gly Leu Asp Ser Ile Ser Gly Met Ile Leu Ser Thr Arg Leu
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 Glu Ile Ala Leu Asp Met Thr Val Asp Pro Arg Thr Leu Ile Asp His
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 Pro Ser Ile Ala Ala Leu Ser Ala Tyr Ile Gln Lys Ala Arg Glu Ala
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 Ala

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 <212> PRT
 <213> Labrenzia sp. PHM005

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

Asp	Glu	Ile	Ala	Cys	Leu	Met	Asp	Phe	Gly	Ala	Asp	Tyr	Asp	Ile	Val
			340					345					350		
Arg	His	Gly	Phe	Thr	His	Leu	Ala	Gln	Leu	Ala	Gln	His	Tyr	Ser	Ser
		355					360					365			
Pro	Leu	Leu	Thr	Pro											
	370														

<210> 9
 <211> 318
 <212> PRT
 <213> Labrenzia sp. PHM005

<400> 9

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

Ile	Val	Glu	Val	Thr	Asp	Met	Ile	Trp	Thr	Tyr	Tyr	Glu	Leu	Asp	Ala
290						295					300				
Ile	Thr	Gly	Pro	Cys	Pro	Ile	Leu	Gly	Ala	Ser	Lys	Pro	Arg		
305					310					315					

<210> 10
 <211> 414
 <212> PRT
 <213> Labrenzia sp. PHM005

<400> 10

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

Arg	Val	Ala	Ala	Gln	Ser	Cys	Glu	Ile	Gly	Gly	Val	Lys	Ile	Pro	Gln
305					310					315					320
Gly	Ala	Pro	Val	Ile	Gly	Leu	Leu	Arg	Ala	Thr	Asn	Arg	Asp	Pro	Ala
				325					330					335	
Arg	Phe	Lys	Asp	Pro	His	Arg	Phe	Asp	Ile	Thr	Arg	Thr	Gly	Asn	Ala
			340					345					350		
His	His	Thr	Phe	Gly	Gly	Gly	Ala	His	Phe	Cys	Leu	Gly	Ala	Pro	Leu
		355					360					365			
Ala	Arg	Met	Glu	Gly	Arg	Leu	Ala	Phe	Gln	Cys	Leu	Leu	Ser	Ala	Phe
	370					375					380				
Ala	Asp	Ile	Glu	Leu	Gln	Glu	Pro	Pro	Arg	Trp	Leu	Asn	Met	Gly	Thr
385					390					395					400
Asn	Ala	Arg	Ser	Leu	Glu	Ser	Leu	Ile	Val	Thr	Leu	Lys	Arg		
				405					410						

<210> 11

<211> 455

<212> PRT

<213> Labrenzia sp. PHM005

<400> 11

Met	Ile	Ala	Ala	Gly	His	Leu	Gly	Ser	Ala	Ala	Phe	Arg	Asp	Asp	Tyr
1				5					10					15	
Gly	Val	Ser	His	Ala	Tyr	Met	Ala	Gly	Ala	Met	Val	Lys	Gly	Ile	Ala
			20					25					30		
Ser	Ala	Asp	Leu	Val	Ile	Arg	Met	Ala	Gln	Ala	Arg	Leu	Leu	Ala	Ile
		35					40					45			
Tyr	Gly	Ser	Gly	Gly	Val	Pro	Ile	Glu	Asp	Ala	Ala	Val	Gln	Ile	Arg
	50					55				60					
Arg	Ile	Lys	Glu	Thr	Val	Pro	Pro	Gly	Ser	Val	Phe	Gly	Val	Asn	Val
65					70					75					80
Leu	Ala	Asp	Pro	Leu	His	Pro	Arg	Arg	Glu	Met	Leu	Met	Val	Asp	Arg
				85					90					95	
Leu	Leu	Gln	Leu	Gly	Ile	Arg	Val	Ile	Glu	Ala	Ser	Ala	Phe	Met	Glu
		100						105					110		
Val	Thr	Glu	Ala	Leu	Val	Lys	Tyr	Arg	Leu	Lys	Gly	Ala	Lys	Leu	Arg
	115						120					125			
Asp	Gly	Ala	Leu	Asp	Val	Pro	Asn	Arg	Val	Phe	Ala	Lys	Val	Ser	His
	130					135				140					
Pro	Gly	Val	Ala	Ser	Ala	Phe	Leu	Ala	Pro	Ala	Thr	Pro	Glu	Leu	Ile
145					150					155					160
Gln	Arg	Leu	Leu	Ser	Gln	Gly	Leu	Ile	Thr	Glu	Glu	Glu	Ala	Ser	Leu
				165					170					175	
Ala	Pro	Gly	Ile	Pro	Val	Ala	Ser	Asp	Leu	Thr	Val	Glu	Ala	Asp	Ser
		180						185					190		
Gly	Gly	His	Thr	Asp	Arg	Gly	Val	Thr	Ser	Ala	Leu	Leu	Pro	Ala	Met
		195					200					205			
Ile	Ala	Leu	Arg	Asp	Ala	Gln	Gln	Ala	Gln	His	Ser	Phe	Ala	Gln	Pro
	210					215					220				

Ser	Arg	Val	Gly	Ser	Ala	Gly	Gly	Ile	Gly	Thr	Pro	Gln	Ala	Ala	Ala
225					230					235					240
Thr	Ala	Phe	Leu	Leu	Gly	Ala	Asp	Tyr	Ile	Ala	Thr	Gly	Ser	Ile	Asn
				245					250					255	
Gln	Cys	Thr	Pro	Glu	Ala	Gly	Thr	Ser	Glu	Ala	Val	Lys	Glu	Val	Leu
			260					265					270		
Gln	Arg	Thr	Gly	Val	Gln	Asp	Thr	Ala	Tyr	Ala	Pro	Ala	Gly	Asp	Met
		275					280					285			
Phe	Glu	Leu	Gly	Ala	Lys	Val	Gln	Val	Leu	Lys	Lys	Gly	Leu	Leu	Phe
	290					295					300				
Pro	Ala	Arg	Ala	Asn	Lys	Leu	Tyr	Asp	Leu	Trp	Arg	Ala	His	Pro	Gly
305					310					315					320
Leu	Glu	Ala	Leu	Pro	Val	Ala	Ile	Arg	Lys	Glu	Ile	Glu	Asp	Lys	Tyr
				325					330					335	
Phe	Arg	Arg	Ser	Phe	Glu	Asp	Val	Tyr	Ala	Glu	Thr	Arg	Ser	Phe	Tyr
			340					345					350		
Asp	Lys	Ala	Ala	Pro	Glu	Glu	Ile	Glu	Arg	Ala	Glu	Arg	Asn	Pro	Lys
		355					360					365			
Val	Lys	Met	Ala	Leu	Ile	Phe	Arg	Trp	Tyr	Phe	Ile	His	Ser	Met	Arg
		370				375					380				
Leu	Ala	Leu	Ala	Gly	Glu	Thr	Gly	Gln	Lys	Thr	Asp	Trp	Gln	Val	Tyr
385					390					395					400
Cys	Gly	Pro	Ala	Leu	Gly	Ala	Phe	Asn	Thr	Tyr	Val	Ala	Gly	Thr	Asp
				405					410					415	
Leu	Glu	Lys	Trp	Gln	Asn	Arg	His	Val	Asp	Tyr	Ile	Gly	Leu	His	Leu
			420					425					430		
Met	Asp	Gln	Thr	Ala	Ser	Tyr	Leu	Gly	Ala	Gln	Phe	Asn	Ala	Leu	Arg
		435					440					445			
Gln	Thr	Gly	Thr	Ala	Leu	Ser									
	450					455									

<210> 12

<211> 337

<212> PRT

<213> Labrenzia sp. PHM005

<400> 12

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

Leu	Ile	Ala	Glu	Gly	Leu	Pro	Lys	Pro	Asn	Leu	Leu	Leu	Gly	Val	Ser
			100					105					110		
Leu	Gly	Glu	Tyr	Val	Ala	Ala	Ala	Val	Ser	Gly	Ala	Ile	Ser	Pro	Glu
		115					120					125			
Glu	Val	Leu	Pro	Ala	Leu	Leu	Arg	Gln	Ala	Trp	Thr	Ile	Gln	Ser	Lys
	130					135					140				
Ala	Glu	Pro	Gly	Ala	Met	Leu	Met	Val	Leu	Asp	Asp	Leu	Ala	Gln	Phe
145					150					155					160
Glu	Ala	Asp	Pro	Ile	Tyr	Arg	Arg	Gly	Ser	Ser	Glu	Leu	Ala	Gly	Val
			165					170						175	
Val	Phe	Asp	Arg	Cys	Phe	Val	Ile	Thr	Gly	Pro	Thr	Asn	Gly	Ile	Asn
		180						185					190		
Asp	Ile	Ala	Asp	Asp	Leu	Arg	Ala	Arg	Asp	Ile	Ser	His	His	Arg	Leu
		195					200					205			
Pro	Val	Arg	Tyr	Ala	Phe	His	Gly	Ser	Gly	Ile	Glu	Ala	Ile	Glu	Thr
	210					215					220				
Ser	Phe	Arg	Ala	Ala	Leu	Arg	Ala	Phe	Ser	Trp	Gly	Ala	Ala	Gln	Ile
225					230					235					240
Pro	Val	Ile	Gly	Ala	Ser	Asp	Gly	Thr	Gly	Arg	Pro	Phe	Asp	Pro	Val
			245						250					255	
Glu	Arg	Asp	Trp	Trp	Lys	Val	Val	Arg	Gly	Pro	Ile	Arg	Leu	His	Glu
		260						265					270		
Thr	Leu	Leu	Ala	Leu	Asn	Ala	Gln	Tyr	Pro	Lys	Ala	Thr	Tyr	Ile	Asp
		275					280					285			
Cys	Gly	Pro	Ala	Gly	Asn	Leu	Arg	Thr	Ala	Cys	Leu	Tyr	Gly	Leu	Gly
	290				295						300				
Asp	Asp	Leu	Arg	Ala	Arg	Ser	Phe	Ala	Val	Met	Thr	Pro	Phe	Gly	Ala
305					310					315					320
Asp	Thr	Gln	Asn	Leu	Ser	Ala	Leu	Lys	Asn	His	Leu	Gly	Glu	Ala	Val
			325						330					335	

Gly

<210> 13

<211> 375

<212> PRT

<213> Labrenzia sp. PHM005

<400> 13

Met	Lys	Ala	Phe	Leu	Phe	Pro	Gly	Gln	Gly	Ser	Gln	His	Ile	Gly	Met
1				5					10					15	
Gly	Glu	Gly	Leu	Phe	Glu	Arg	Tyr	Ser	Glu	Met	Thr	Glu	Ala	Ala	Asp
		20					25						30		
Thr	Val	Leu	Gly	Tyr	Ser	Ile	Ala	Asp	Leu	Cys	Leu	Arg	Asp	Pro	Asp
		35				40						45			
Lys	Gln	Leu	Thr	Gln	Thr	Glu	Phe	Thr	Gln	Pro	Ala	Leu	Phe	Val	Val
	50					55					60				
Asn	Ala	Met	Met	Ala	Arg	Ala	Gln	Gln	Asp	Asp	Ser	Gly	Ala	Pro	Asp
65					70					75					80

Ile	Ala	Ala	Gly	His	Ser	Val	Gly	Glu	Tyr	Asn	Ala	Leu	His	Gln	Ala
				85					90					95	
Gly	Val	Val	Asn	Phe	Glu	Asp	Gly	Leu	Arg	Leu	Val	Gln	Lys	Arg	Gly
			100					105					110		
Ala	Leu	Met	Ser	Thr	Ala	Pro	Lys	Gly	Gly	Met	Ala	Ala	Val	Ile	Gly
		115					120					125			
Leu	Thr	Pro	Asp	Arg	Ile	Ala	Thr	Val	Leu	Gln	Asp	Asn	Gly	Phe	Ala
	130					135					140				
Ser	Ile	Asp	Val	Ala	Asn	Leu	Asn	Ser	Asp	Lys	Gln	Thr	Ile	Ile	Ser
145					150					155					160
Gly	Leu	Ile	Glu	Asp	Ile	Ser	Ala	Val	Glu	Pro	Phe	Phe	Ser	Asp	Ala
			165						170					175	
Gly	Ala	Met	Tyr	Ile	Pro	Leu	Asn	Val	Ser	Gly	Ala	Phe	His	Ser	Arg
		180						185					190		
Tyr	Met	Ala	Pro	Val	Gln	Glu	Glu	Phe	Glu	Ala	Phe	Leu	Gly	Glu	Phe
	195					200						205			
Arg	Phe	Glu	Ala	Pro	Gly	Ile	Pro	Val	Ile	Ala	Asn	Val	Asp	Ala	Arg
	210				215						220				
Pro	Tyr	Gln	Asp	Gly	Cys	Thr	Ala	Gln	Met	Leu	Ala	Gln	Gln	Leu	Thr
225					230					235					240
Ser	Pro	Val	Arg	Trp	Gln	Glu	Ser	Ile	Gly	Tyr	Met	Leu	Asn	Leu	Gly
			245						250					255	
Val	Gly	His	Phe	Phe	Glu	Thr	Gly	Pro	Gly	Asn	Val	Leu	Ser	Lys	Leu
		260						265					270		
Val	Ala	Gly	Ile	Arg	Lys	Gln	His	Val	Val	Thr	Pro	Val	Glu	Thr	Glu
	275					280						285			
Leu	Pro	Pro	Gln	Ala	Gly	Ser	Pro	Pro	Val	Leu	Gln	Glu	Glu	Thr	Gln
	290					295					300				
Ala	Gln	Glu	Ala	Lys	Thr	Pro	Val	Gln	Ile	Val	Glu	Asp	Trp	Asn	Thr
305				310						315					320
Gln	His	Ser	Ala	Gly	Ile	Asp	Val	Gln	Val	Asn	Gly	Tyr	Asp	Gly	Val
			325					330						335	
Met	Lys	Thr	Arg	Ser	Glu	Ala	Ile	Leu	Leu	Phe	Gly	His	Arg	Pro	Ala
		340						345					350		
Val	Tyr	Met	Glu	Gly	Tyr	Ser	Gly	Tyr	Phe	Ala	Leu	Ser	Asp	Val	Thr
	355						360					365			
Pro	Ile	Glu	Ala	Gln	Leu	Ser									
	370					375									

<210> 14
 <211> 245
 <212> PRT
 <213> Labrenzia sp. PHM005

<400> 14
 Met Leu Ser Pro Leu Ser Ile Thr Gln Asn Gly Arg Ser Ser Thr Leu
 1 5 10 15
 Trp Phe Asp Arg Pro Glu Ser Gly Asn Thr Ile Thr Glu Ala Leu Val
 20 25 30

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

<210> 15

<211> 411

<212> PRT

<213> Labrenzia sp. PHM005

<400> 15

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

Leu	Gln	Ser	Arg	Glu	Met	Glu	Leu	Ile	Arg	Asn	Lys	Leu	Leu	Asn	Thr
	115						120					125			
Ser	Pro	Asn	Leu	Ala	Pro	Pro	Arg	Leu	Gly	His	Ser	Phe	Leu	Asp	Thr
	130						135				140				
Asp	Val	Ala	Ala	Leu	Ile	Ser	Glu	Glu	Leu	Val	Leu	Asp	Gly	Pro	Ile
145					150					155					160
Met	Ser	Val	Gly	Gly	Ala	Ser	Ala	Ser	Gly	Ala	Leu	Ala	Val	His	Leu
			165						170					175	
Ala	Ala	Ala	Ala	Ile	Arg	Ser	Gly	Glu	Leu	Asp	Ile	Cys	Leu	Val	Ile
			180					185					190		
Gly	Pro	Leu	Gln	Asp	Met	Ser	Trp	Leu	Glu	Leu	Gln	Ala	Leu	Arg	Asn
	195						200					205			
Leu	Gly	Ala	Met	Gly	Pro	His	Leu	Ser	Asp	Glu	Ser	Gly	Asp	Leu	Met
	210					215					220				
Pro	Glu	Pro	Arg	Cys	Arg	Pro	Phe	Asp	Ala	Ala	Gly	Thr	Gly	Phe	Leu
225					230					235					240
Phe	Gly	Glu	Ser	Ala	Ala	Ala	Leu	Val	Leu	Ala	Arg	Ser	Asp	Leu	Gly
				245					250					255	
Pro	Gln	Ser	Tyr	Gly	Arg	Ile	Ser	Gly	Leu	Gly	Arg	Val	Gln	Ala	Gln
			260					265					270		
Thr	Arg	Gly	Pro	Glu	Pro	Ser	Gln	Asn	Ala	Leu	Gln	Glu	Ala	Ile	Thr
	275						280					285			
Ala	Ala	Leu	Thr	Asp	Ala	Gly	Ile	Pro	Pro	Ser	Ser	Leu	Asp	Phe	Ile
	290					295					300				
Ser	Ala	His	Ala	Thr	Gly	Thr	Pro	Arg	Gly	Asp	Ala	Ala	Glu	Ala	Gln
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Ala	Leu	Val	Ala	Gln	Leu	Leu	Asn	Ser	Val	His	Val	Thr	Ala	Pro	Lys
				325					330					335	
Ser	Ala	Leu	Gly	His	Gly	Val	Ala	Ala	Ala	Gly	Ala	Val	Glu	Ile	Ala
			340					345					350		
Leu	Ala	Phe	Leu	Gln	Met	Glu	Ala	Gly	Gln	Ile	Ala	Pro	Ile	His	Gly
		355					360					365			
Leu	Val	Gln	Pro	Thr	Leu	Pro	Asp	Leu	Asn	Tyr	Val	Leu	Asp	Asn	Pro
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Glu	Ser	Gly	Arg	Phe	Asn	Ser	Ala	Met	Cys	Leu	Ser	Ser	Gly	Phe	Gly
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 <212> PRT
 <213> Labrenzia sp. PHM005

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 35 40 45
 Leu Ser Asp Met Leu Gly Val Ser Ile Ala Pro Thr Val Phe Phe Glu
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 Ala Lys Asn Ala Lys Glu Leu Ala Gln Ile Leu Asp Gly Arg Tyr Arg
 65 70 75 80
 Arg Glu Ala Asp Arg Val Pro Gln Ser Gln Lys Ala Pro Gln Asn Pro
 85 90 95
 Leu Ala Leu Pro Asp Arg Arg Ala Glu Lys Arg Ala Pro Lys Glu Thr
 100 105 110
 Ser Arg Thr Val Pro Ala Ser Arg Ser Lys Lys Ala Ala Ser Trp Ile
 115 120 125
 Ala Ser Ala Lys Ala Ala Leu Ala Gln Pro Gly Gln Phe Arg Thr Asp
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 Gln Glu Asp Met Gly Ala Val Glu Thr Pro His Val Ser Gly Ser Ala
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 Phe Glu Pro Ile Ala Val Leu Ala Met Asp Gly Arg Phe Ala Gln Ser
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 Ala Asp Leu Gly Glu Leu Gln Ser His Leu Glu Gln Gly Asp Asp Cys
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 Ile Thr Glu Ile Pro Ala Glu Arg Trp Asp Trp Arg Gln Ile Tyr Asp
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 Asp Pro Gly Lys Gly Glu Phe Thr Lys Val Lys Tyr Gly Gly Val Ala
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 Pro Ala Val Asp Gln Phe Asp Pro Leu Tyr Phe Gly Leu Ser Pro Arg
 225 230 235 240
 Glu Ala Glu Leu Met Asp Pro Gln His Arg Leu Phe Ile Gln Ser Ala
 245 250 255
 Tyr Arg Leu Leu Gly Glu Ala Gly Tyr Ala Pro Ser Ser Ile Ala Gly
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 Arg Pro Val Gly Val Phe Ile Gly Val Asn Leu Gln Asp Tyr Ala His
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 Met Ile Asp Arg Ala Gly Ser Ile Glu Ala Leu His Leu Thr Ser Leu
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 Gly His Met Phe Cys Pro Asn Arg Leu Ser Phe Met Leu Asp Ile Thr
 305 310 315 320
 Gly Pro Ser Gln Val Ile Asp Thr Ala Cys Ser Ser Ser Leu Ile Ala
 325 330 335
 Val His Arg Ala Val Leu Ala Leu Gln His Glu Gly Cys Glu Met Ala
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 Ile Ala Gly Gly Ala Asn Leu Met Leu Thr Pro Asp Met His Ile Met
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 Tyr Ser Lys Val Gly Met Leu Cys Glu Asp Gly Arg Cys Lys Thr Phe
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 Ser Ala Arg Ala Asn Gly Tyr Val Arg Gly Asp Gly Val Gly Ala Val
 385 390 395 400
 Leu Leu Lys Pro Leu Ser Ala Ala Glu Arg Asp Gly Asp Thr Ile Leu
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 Ala Val Ile Arg Gly Ser Ser Glu Asn His Gly Gly Gln Ser Thr Ser
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Leu	Thr	Ala	Pro	Asn	Pro	Leu	Ala	Gln	Ala	Arg	Leu	Ile	Ala	Glu	Ala		
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His	Gly	His	Ala	Gly	Gly	Asp	Pro	Arg	Arg	Val	Gly	Tyr	Ile	Glu	Cys		
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His	Gly	Thr	Gly	Thr	Glu	Leu	Gly	Asp	Pro	Ile	Glu	Ile	Asn	Gly	Leu		
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Lys	Gln	Ala	Phe	Thr	Ser	Leu	Tyr	Asp	Ala	Leu	Gly	Lys	Thr	Pro	Glu		
			485						490						495		
Gly	Ala	Pro	His	Cys	Gly	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Ile	Gly	His		
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Pro	Leu	Ile	Ser	Leu	Glu	Gln	Thr	Pro	Phe	Phe	Ile	Ser	Arg	Lys	Gly		
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Ser	Asp	Trp	Pro	Arg	Pro	Val	Leu	Asp	Gly	Gln	Thr	Phe	Pro	Arg	Arg		
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Ala	Gly	Val	Ser	Ser	Phe	Gly	Ala	Gly	Gly	Ser	Asn	Ala	His	Val	Val		
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Val	Glu	Glu	Tyr	Leu	Pro	Glu	Thr	Arg	Thr	Ala	Ala	Val	Gly	Arg	Pro		
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Asp	Arg	Pro	Met	Leu	Ile	Pro	Leu	Ser	Ala	Arg	Thr	Glu	Ala	Gln	Leu		
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Arg	Asp	Pro	Met	Ala	Phe	Arg	Leu	Ala	Phe	Val	Ala	Asp	Thr	Val	Gly		
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Ser	Leu	Val	Ala	Ser	Leu	Arg	Arg	Leu	Arg	Asp	Gly	Asp	Gln	Ala	Gly		
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Phe	Ala	Lys	Gly	Cys	Val	Lys	Thr	Arg	Arg	Arg	Ser	Arg	Glu	Glu	Thr		
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Thr	Pro	Ala	Asp	Leu	Ser	Gln	Pro	Leu	Pro	Asp	Leu	Ala	Glu	Ala	Trp		
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Val	Ser	Gly	Ala	Leu	Leu	Asp	Trp	Ser	Ala	Leu	His	Glu	Asn	Arg	Pro		
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Ala	Lys	Val	Arg	Leu	Pro	Ala	Tyr	Pro	Phe	Glu	Lys	Arg	Arg	Cys	Trp		
			740					745					750				
Ile	Pro	Ala	Pro	Ala	Gly	Glu	Met	Pro	Leu	Arg	Arg	Arg	Ser	Ser	Ala		
		755					760					765					
Val	Phe	Arg	Lys	Lys	Ser	Gly	Phe	Gly	Leu	Ala	Ala	His	Lys	Asn	Glu		
	770					775					780						
Pro	Gly	Glu	Gly	Arg	Tyr	Asp	Leu	Thr	Leu	Thr	Gly	Ala	Glu	Arg	Phe		
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Leu	Lys	Asp	His	Val	Val	Val	Gly	Val	Pro	Met	Leu	Pro	Gly	Ala	Ala		
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Tyr	Leu	Glu	Ile	Ala	Arg	Ala	Ala	Ala	Ala	Gln	Phe	Leu	Asp	Val	Ser		
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 Gln Glu Thr Ser Ala Ala Thr Val Ile Leu Ala Ala Arg Ser Thr Ala
 1250 1255 1260
 Asp Ala Asp Leu Val Val Arg Leu Gln Asp Leu Gly Leu Lys Val Asp
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 Ser Thr Ser Cys Asp Leu Gly Asp Pro Asp Ala Val Gln Ala Met Val
 1285 1290 1295
 Arg Ser Val Val Ala Arg His Gly Arg Ile Asp Gly Ile Leu His Ala
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 Phe Asp Leu Val Gly Arg Ala Lys Leu Ala Gly Thr Trp Ala Leu Asp
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 Gln Ala Ser Val Asp Leu Pro Leu Asp Phe Phe Ala Thr Phe Gly Ser
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 Ala Ser Ala Val Trp Gly Ser Ala Gly Gln Thr Asp Tyr Ala Ala Ala
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 Asn Gly Phe Leu Glu Ala Phe Ala Leu Trp Arg Ser Arg Lys Ala Ala
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 Gln Gly Glu Arg Phe Gly Val Ser Leu Asn Ile Ala Trp Pro Pro Trp
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 Gln Asp Gly Gly Met Arg Met Ala Pro Glu Ala Leu Ala Arg Met Gln
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 Glu Ser Thr Gly Leu Gly Val Leu Ala Thr Ala Ala Gly Ile Asp Glu
 1425 1430 1435 1440
 Phe Glu Ala Ala Leu Leu Ser Gly Gly Pro Gln Gln Val Val Met Cys
 1445 1450 1455
 Gly Thr Gln Leu Ala Ile Asp Asp Ile Leu Thr Pro Pro Ala Ala Pro
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 Val Ser Ala Gln Pro Val Ser Gln Arg Thr Glu Ser Asp Gly Leu Gln
 1475 1480 1485
 Leu Ala Ala Glu Glu Leu Leu Leu Glu His Ile Ala Glu His Met Gly
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 Phe Glu Arg Gln Asp Leu Asp Ala Glu Ser Glu Trp Ser Asp Leu Gly
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 Phe Asp Ser Ile Thr Met Thr Thr Phe Ser Asn Arg Leu Asn Glu Ala
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 His Gly Met Asp Leu Thr Pro Thr Val Phe Phe Glu Tyr Val Thr Ile
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 1555 1560 1565
 Gly Leu Leu Pro Glu Asn Pro Val Arg His Thr Ala Lys Ile Thr Glu
 1570 1575 1580
 Lys Pro Leu Pro Asp Gln Pro Asp Pro Thr Ser Pro Pro Asp Ala Glu
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 Ala Ile Ala Ile Ile Gly Met Ala Gly Arg Phe Pro Asp Ala Pro Asp
 1605 1610 1615
 Leu Glu Thr Phe Trp Glu Asn Leu Arg Ser Gly Arg Ala Cys Leu Arg
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Glu Ile Pro Glu Asp Arg Trp Asp Trp Arg Ala Leu Lys Ala Ala Gly
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 Leu Thr Asp Val Asn Arg Ala Gly Phe Ile Asp Gly Ile Ala Glu Phe
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 Asp Ala Arg His Phe Gly Ile Ser Arg Arg Glu Ala Ala Leu Met Asp
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 Pro Ala Gln Arg Leu Leu Met Glu Tyr Val Trp Arg Ala Ile Glu Asp
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 Ala Gly Tyr Ala Pro Ser Ser Leu Ala Gly Ser Asp Thr Ala Val Ile
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 Ile Gly Thr Ala Pro Ser Gly Tyr Gly Ala Arg Met Ala Glu Asn Gly
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 Ile Gly Ile Asp Ser His Ser Ser Thr Gly Ser Val Gly Ser Val Gly
 1730 1735 1740
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 Ser Ala Met Arg Ala Gly Asp Cys Ser Gln Ala Ile Val Gly Gly Val
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 Asn Leu Val Leu Ser Pro Glu Thr His Ile Ser Phe Ser Lys Ala Gly
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 Met Leu Ser Pro Asp Gly Arg Cys Lys Thr Phe Ser Ala Gln Ala Asp
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 Gly Tyr Gly Arg Gly Glu Gly Val Gly Met Leu Phe Leu Lys Pro Leu
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 Thr Ala Ala Glu Arg Asp Gly Asp Phe Val His Gly Ile Ile Leu Gly
 1845 1850 1855
 Ser Ala Glu Asn His Gly Gly Lys Ala Asn Ser Leu Thr Ala Pro Asn
 1860 1865 1870
 Pro Arg Ala Gln Ala Ala Leu Val Glu Thr Ala Val Arg Arg Ala Gly
 1875 1880 1885
 Ile Ala Pro Gln Ser Leu Ser Tyr Met Glu Ala His Gly Thr Gly Thr
 1890 1895 1900
 Glu Leu Gly Asp Pro Ile Glu Ile Glu Gly Leu Lys Thr Ala Phe Asp
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 Ala Leu Glu Ala Gly Gln Glu Ala Arg Cys Ala Ile Gly Ser Val Lys
 1925 1930 1935
 Thr Asn Ile Gly His Leu Glu Leu Ala Ala Gly Val Ala Gly Val Leu
 1940 1945 1950
 Lys Val Leu Leu Gln Met Arg Asn Arg Thr Leu Ala Pro Ser Leu Pro
 1955 1960 1965
 Glu Glu Val Asn Pro Tyr Leu Lys Leu Lys Asp Ser Pro Phe Tyr Leu
 1970 1975 1980
 Val Pro Gln Ala Gln Glu Trp Arg Arg Pro Val Asp Ala Val Gly Lys
 1985 1990 1995 2000
 Glu Ile Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Phe Gly Gly Val
 2005 2010 2015
 Asn Ala His Val Val Leu Glu Glu Pro Ala Gln Thr Ile Arg Ala Asp
 2020 2025 2030

Met Pro Glu Ile Pro Glu Leu Ile Val Leu Ser Ala Arg Asp Arg Glu
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 Gly Leu Ala Ala Ser Ala Asp Ala Leu Ala Lys Ala Leu Thr Pro Tyr
 2050 2055 2060
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 2065 2070 2075 2080
 Ala Cys Leu Ala Asp Ile Leu Glu Ile Asp Ile Asp Glu Val Glu Pro
 2085 2090 2095
 Leu Thr Lys Leu Asp Asp Leu Gly Val Glu Pro Val His Arg Pro Leu
 2100 2105 2110
 Leu Arg Arg Ser Val Glu Lys Val Leu Gly Leu Thr Ile Asp His Asp
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 Leu Val His Arg Ala Gly Ser Ile Arg Glu Ile Ser Ser Ala Phe Gln
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 Ser Leu Pro Ser Gly Met Ala Leu Thr Arg Lys Ser Asp Gly Val Phe
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 Glu Val Ser Leu Ser Gly Asp Glu Phe Phe Leu Arg Asp His Ile Val
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 Gln Gly Gln Pro Val Leu Pro Gly Val Ala Tyr Leu Glu Leu Ala Arg
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 Val Val Trp Val Gln Pro Ala Val Ile Ser Glu Pro Gln Thr Leu Gln
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 Val Val Leu Gly Ser Pro Gly Pro Gly Gln Glu Tyr Pro Phe Arg Ile
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 Leu Ser His Gly Asp Ser Gly Glu Arg Leu His Cys Arg Gly Ala Ile
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 Ala His Leu Pro Glu Val Pro Pro Glu Ile Ile Asn Asn Asp Ala Ile
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 Pro Ser Gly Arg Arg Ile Pro Ser Asn Glu Ile Tyr Ser Leu Phe Glu
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Thr Ala Gly Leu His Tyr Gly Pro Gly His Gln Cys Leu Asn Trp Leu
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 Val Ser Asp Gly Ser Arg Val Val Ala Asp Leu Ser Leu Pro Glu Ile
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 Asp Gly Leu Pro Gly Gln Val Gly Val Tyr Ala Gly Val Met Tyr Gly
 2820 2825 2830

Glu Tyr Gln Leu Leu Gly Leu Gln Gly Ser Leu Ala Gly Glu Pro Met
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 Ser Thr Ala Ser Tyr Tyr Ala Gly Val Ala Asn Arg Val Ser Tyr Ala
 2850 2855 2860
 Leu Asn Leu His Gly Pro Ser Met Ala Val Asp Thr Met Cys Ser Ser
 2865 2870 2875 2880
 Ser Leu Thr Ala Ile His Leu Ala Cys Ala Asp Leu Ala Leu Gly Arg
 2885 2890 2895
 Val Arg Met Ala Phe Ala Gly Gly Val Asn Leu Asn Leu His Pro Asn
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 Lys Tyr Ser Leu Leu Ser Lys Gly Gln Phe Ile Ser Ser Asn Gly Arg
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 Cys Gln Ser Phe Gly Ser Glu Gly Asp Gly Tyr Val Pro Ala Glu Gly
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 Val Gly Val Val Leu Leu Lys Arg Leu Ala Asp Ala Glu Ala Asp Gly
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 Asp His Ile Tyr Gly Val Ile Lys Gly Ser Ala Leu Asn His Gly Gly
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 Arg Ala Asn Gly Tyr Thr Val Pro Asn Pro Glu Ala Gln His His Val
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 Ile Ala Arg Ala Leu Arg Glu Ala Gly Val Asp Pro Arg Ala Ile Gly
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 Tyr Val Glu Ala His Gly Thr Gly Thr Lys Leu Gly Asp Pro Ile Glu
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 Trp Ile Gly Ser Ala Lys Ser Asn Ile Gly His Gly Glu Ala Val Ser
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 Pro Val His Glu Gly Lys Thr Leu Pro Arg Val Ser Ala Val Ser Ser
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Ser Asn Pro Thr Val Glu Asn Pro Asp Gly Leu Ala Ala Glu Val Leu
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 Gly Gly Glu Ala Arg Arg Leu Ser Leu Pro Thr Tyr Pro Phe Ala Arg
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 Arg Thr Ala Ala Thr Thr Ala Lys Thr Thr Glu Thr Arg Ala Leu Glu
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Gly	Pro	Arg	Gly	Met	Ala	Leu	Ser	Val	Ala	Trp	Pro	Tyr	Trp	Ala	Asp
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Ala	Gly	Leu	Val	Pro	Leu	Ser	Thr	Ala	Arg	Gly	Leu	Glu	Ala	Leu	Asp
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Arg	Ile	Val	Arg	Ala	Gly	Trp	Pro	Gln	Thr	Met	Val	Leu	Glu	Gly	Asp
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Ala	Gly	Ala	Pro	Ala	Gly	Pro	Glu	Pro	Ala	Pro	Pro	Pro	Ser	Ser	Phe
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His	Leu	Gln	Asp	Ala	Val	Glu	Glu	Tyr	Leu	Ala	Glu	Glu	Leu	Ala	Lys
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Val	Leu	Arg	Ile	Ser	Pro	Gln	Arg	Leu	Glu	Ala	Asp	Val	Pro	Leu	Val
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Asp	Tyr	Gly	Val	Asp	Ser	Val	Ala	Ile	Met	Ala	Leu	Thr	Ala	Ser	Ile
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Leu	Met	Glu	Ala	Leu	His	Val	Pro	Glu	Pro	Thr	Val	Asp	Leu	Leu	Glu
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Pro	Ala	Pro	Gly	Gly	Thr	Ala	Glu	Asp	Gln	Ala	Pro	Ser	Glu	Asp	Pro
			3860				3865					3870			
Leu	Leu	Asp	Asn	Asn	Ala	Lys	Pro	Val	Arg	Ala	Glu	Ala	Ala	Val	Pro
		3875				3880					3885				
Asp	Thr	Gln	Ser	Ala	Gly	Ser	Gly	Asp	Ile	Ala	Ile	Ile	Ala	Met	Glu
		3890				3895				3900					
Gly	Arg	Phe	Pro	Gly	Ala	Glu	Asp	Leu	Glu	Glu	Phe	Trp	Asp	Asn	Leu
3905				3910						3915					3920
Val	Asn	Gly	Arg	Asn	Ser	Ile	Thr	Glu	Val	Pro	Lys	Asp	Arg	Trp	Asp
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Ala	Glu	Ser	Leu	Phe	Asp	Pro	Asp	Gly	Ala	Tyr	Glu	Gly	Lys	Ala	Arg
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Cys	Lys	Trp	Gly	Gly	Phe	Leu	Ser	Asp	Val	Asp	Gly	Phe	Asp	Ala	Arg
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Phe	Phe	Arg	Ile	Thr	Pro	Asp	Glu	Ala	Glu	Leu	Leu	Asp	Pro	Gln	

Arg Glu Ala Leu Thr Val Leu Ser Ser Pro Ser Ser Ile Ala Asn Arg
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 Val Ser Asn Val Leu Asp Leu Asn Gly Pro Ser Leu Ala Val Asp Thr
 4050 4055 4060
 Met Cys Ser Ser Gly Ile Val Ala Ile His Met Ala Cys Glu Ser Leu
 4065 4070 4075 4080
 Arg Ala Gly Ala Cys Arg Ala Ala Ile Ala Gly Gly Val Asn Val Ser
 4085 4090 4095
 Ile His Pro Lys Lys Tyr Ile Gly Leu Ser Ala Ser Gln Phe Ile Gly
 4100 4105 4110
 Ser Arg Arg Asp Ser Thr Ser Phe Arg Asp Gly Asp Gly Tyr Leu Pro
 4115 4120 4125
 Ala Glu Gly Val Gly Ala Val Leu Leu Arg Pro Leu Asp Asp Ala Val
 4130 4135 4140
 Ala Ala Gly Asp Arg Val Leu Ala Leu Ile Lys Ser Thr Gly Ile Asn
 4145 4150 4155 4160
 His Ser Gly Arg Ser Asn Gly Tyr Arg Val Pro Ser Val Ala Ala Gln
 4165 4170 4175
 Ala Lys Leu Ile Gly Asp Thr Ile Arg Gln Ala Gly Val Pro Val Asn
 4180 4185 4190
 Thr Ile Thr Tyr Ala Glu Ala Ala Asn Gly Ala Ala Met Gly Asp
 4195 4200 4205
 Ser Ile Glu Leu Ala Ala Phe Arg Gln Ala Phe Gln Asp Leu Thr Pro
 4210 4215 4220
 Glu Gln Lys Phe Cys Ala Ile Gly Ser Val Lys Ser Asn Ile Gly His
 4225 4230 4235 4240
 Ala Glu Ser Ala Ser Gly Leu Ser Gln Leu Ala Lys Val Val Leu Gln
 4245 4250 4255
 Met Gln Ala Glu Thr Leu Val Pro Thr Leu Gly Thr Asp Ala Leu Asn
 4260 4265 4270
 Pro Lys Leu Asp Phe Ser Ser Gly Pro Phe Arg Leu Gln Ser Glu Leu
 4275 4280 4285
 Gln Ala Trp Ala Arg Pro Ile Gly Ser Asp Ala Ala Ser Gly Gly Ser
 4290 4295 4300
 Asn Gln Pro Leu Arg Ala Ile Leu Asn Ser Val Gly Ala Gly Gly Thr
 4305 4310 4315 4320
 Asn Ala Cys Met Val Leu Glu Glu Pro Pro Lys Thr Ser Ala Pro Pro
 4325 4330 4335
 Ala Ala Val Ala Gln Asp Gln Tyr Leu Ile Pro Leu Ser Ala Arg Asp
 4340 4345 4350
 Glu Ala Asp Leu Arg Val Leu Ala Gly Arg Leu Lys Thr Tyr Leu Glu
 4355 4360 4365
 Thr Arg Pro Glu Thr Arg Met Ala Asp Leu Ala Leu Thr Leu Gln Thr
 4370 4375 4380
 Gly Arg Ser Gln Leu Asp Gln Arg Ala Ala Met Ile Ser Arg Asp Val
 4385 4390 4395 4400
 Pro Ala Leu Leu His Gln Leu Glu Ala Leu Ala Glu Gly Leu Glu Ala
 4405 4410 4415
 Asp Gly Leu Val Thr Gly Asn Thr Met Thr Gly Gln Asp Ala Leu Ser
 4420 4425 4430

Gly Leu Leu Thr Gly Lys Thr Gly Ala Glu Ile Val Ser Leu Leu Leu
 4435 4440 4445
 Arg His Arg Asn Leu Arg Lys Leu Ala Val Ala Trp Val His Gly Ala
 4450 4455 4460
 Arg Leu Asn Trp Ser Pro Leu Gln Ala Glu Gly Ala Gln Arg Leu Ala
 4465 4470 4475 4480
 Leu Pro Ala Tyr Pro Phe Arg Arg Thr Arg Tyr Trp Leu Gly Gly Ile
 4485 4490 4495
 Asp Ala Arg Glu Ala Val Ser Gln Leu Glu Pro Asp Thr Arg Ser Asp
 4500 4505 4510
 Thr Thr Asp Pro Glu Thr Cys Ile Arg Asp Tyr Leu Ile Asn Asp Leu
 4515 4520 4525
 Arg Ile Ala Pro Glu Glu Ile Asp Phe Arg Arg Ser Ala Leu Asp His
 4530 4535 4540
 Gly Leu Asn Ser Val Met Leu Met Pro Leu Cys Gln Ala Leu Glu Ala
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 Arg Cys Gly Leu Thr Val Gly Leu Gly Asp Ile Met Glu Ser Lys Ser
 4565 4570 4575
 Leu Ala Thr Leu Leu Ser Arg Ile Ala Gly Lys Asp Gly Tyr Ala Pro
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 Met Asp Asn Pro Lys His Ala Gln Pro Gly Thr Ser Asp Ala Val Asn
 4595 4600 4605
 Thr Ala Leu Pro Leu Thr Lys Gly Gln Ile Ala Leu Trp Leu His Asp
 4610 4615 4620
 Gln Lys Thr Pro Gly Asp Ala Gly Tyr Thr Val Pro Met Ala Leu Arg
 4625 4630 4635 4640
 Leu Ala Gly Ser Leu Asp Lys Asp Met Leu Arg Ala Ala Phe Ala Asp
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 Leu Leu Lys Arg His Pro Val Leu Thr Ser Val Phe Thr Ala Asn Gly
 4660 4665 4670
 Gly Met Pro Gln Arg Ile Val Gln Asp Gly Ile Ser Tyr Pro Ile Glu
 4675 4680 4685
 Glu Leu Asp Leu Ser Gly Ala Pro Ala Ser Val Ile Glu Asn Glu Leu
 4690 4695 4700
 His Ala Phe Ala Gly Leu Pro Phe Asp Leu Thr Asn Gly Pro Leu Val
 4705 4710 4715 4720
 Arg Ser Leu Leu Ile Gln Glu Ala Ala Asp Arg His Val Leu Ile Ile
 4725 4730 4735
 Cys Val His His Ile Val Phe Asp Gly Gln Ser Ala Met Ile Leu Ile
 4740 4745 4750
 Asp Asp Leu Met Arg Leu Tyr Glu Ala Arg Leu Gln Gly Val Arg Leu
 4755 4760 4765
 Pro Arg Pro Ile Gly Ser Ser Phe Asp Ala Phe Gln Arg Trp Gln Glu
 4770 4775 4780
 Arg Leu Leu Thr Ser Glu Arg Gly Thr Asn Ile Arg Ala Phe Trp Arg
 4785 4790 4795 4800
 Asp Glu Leu Glu Gly His Asn Glu Leu Cys Leu Pro Gly Asp Trp Asp
 4805 4810 4815
 Ala Asp Leu Glu Cys Ala Ser Lys Ala Gly Ser His Val Leu Trp Ile
 4820 4825 4830

Asp Lys Asp Thr Ala Arg Arg Ile Thr Glu Ala Ser Thr Ala His Gly
 4835 4840 4845
 Ala Thr Pro Ala Gln Phe Met Met Ala Ala Phe Val Leu Ile Leu His
 4850 4855 4860
 Arg Leu Thr Gly Ser His Asp Leu Leu Ile Gly Leu Pro Val Leu Gly
 4865 4870 4875 4880
 Arg Pro Asp Arg Ser Phe Asp His Thr Val Gly Tyr Phe Ala Asn Leu
 4885 4890 4895
 Leu Pro Leu Arg Ile Arg Leu Ser Asp Gln Val Ser Ile Arg Asp Leu
 4900 4905 4910
 Val Arg Glu Thr Arg Gln Thr Met Leu Asn Ala Leu Glu His Gly Asp
 4915 4920 4925
 Leu Pro Leu Ser Glu Met Gly Glu Val Ser Gly Thr Gly Arg Leu Leu
 4930 4935 4940
 Met Pro Arg Val Gln Phe Ala Phe Gln Ser Leu Val Gly Pro Gln Asn
 4945 4950 4955 4960
 Thr Asp Arg Gly Ser Leu Glu Val Ser Val Val Asp Gly Ile Asp Gln
 4965 4970 4975
 Gln Gly Val Gln Asp Leu Ala Leu Glu Val Tyr Pro Gly Pro Glu Gly
 4980 4985 4990
 Met Arg Cys Arg Phe Ala Tyr Asn Ala Arg Gln Phe Lys Ser Asp Thr
 4995 5000 5005
 Val Ser Ala Leu Ala Asp Ala Tyr Gln Lys Val Leu Ser Thr Phe Leu
 5010 5015 5020
 Ala Asp Pro Gly Gly Ala Leu Val Asp Val Ser Leu Ala Gly Ala Asp
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 Asp Glu Val Leu Thr Asp Trp Gly His Gly Gly Pro Pro Ala Pro Asp
 5045 5050 5055
 Glu Ala Leu Ile Pro Ala Trp Arg Ala Gln Val Arg Met Ala Pro Asp
 5060 5065 5070
 Ala Pro Ala Val Ile Cys Gly Asp Thr Val Leu Thr Asn Ala Ala Leu
 5075 5080 5085
 Glu Gln Asn Ala Gly Asp Leu Ala Ala Arg Leu Val Asp Ala Gly Val
 5090 5095 5100
 Gln Pro Gly Asp Val Val Ala Ser Cys Leu Ala Arg Ser Ala Asn Ser
 5105 5110 5115 5120
 Leu Val Ala Val Leu Ala Thr Trp Trp Val Gly Ala Val His Met Pro
 5125 5130 5135
 Leu Ser Pro Val Gln Ser Ser Ser Arg Leu Asp Asp Met Ile Ala Asp
 5140 5145 5150
 Gly Ala Pro Val Leu Ala Leu Thr Asp Ala Lys Thr Ala Ser Leu Leu
 5155 5160 5165
 Ser Ile Arg Gln Met Arg Val Asp Glu Arg Thr Glu Ile Ser Lys Ala
 5170 5175 5180
 Thr Ala Gly Val Leu Pro Thr Pro Val Ile Gln Asp Pro Ala Ala Ala
 5185 5190 5195 5200
 Ala Tyr Ile Leu Phe Thr Ser Gly Ser Ser Gly Arg Pro Lys Gly Val
 5205 5210 5215
 Gln Val Pro His His Ala Leu Ala His His Ile Gln Ala Met Ala Asn
 5220 5225 5230

Leu Phe Ala Val Asn Asp Gln Asp Arg Val Leu Gln Phe Val Glu Thr
 5235 5240 5245
 Ser Phe Asp Ala Ala Phe Glu Gln Trp Leu Thr Thr Leu Val Arg Gly
 5250 5255 5260
 Ala Thr Val Val Met Arg Pro Glu Gly Leu Trp Ser Ala Leu Asp Phe
 5265 5270 5275 5280
 Ala Glu Ala Val Gln Arg Trp Ala Val Thr Val Ala Asp Leu Pro Pro
 5285 5290 5295
 Ala Phe Leu Asp Glu Val Leu Arg Asp Leu Gly Arg Ser Asp Asp Trp
 5300 5305 5310
 Gln Leu Leu Gln Ser Leu Arg Thr Val Val Thr Gly Gly Glu Ala Leu
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 Thr Glu Asn Thr Leu Ser Thr Trp Cys Asp Ser Pro Leu Ala Asp Arg
 5330 5335 5340
 Ala Leu Val Asn Val Tyr Gly Pro Thr Glu Thr Thr Ile Gly Ser Thr
 5345 5350 5355 5360
 Ala Phe Val Tyr Arg Ala Gln Met Asp Gly Pro Glu Arg Arg Leu Pro
 5365 5370 5375
 Ile Gly Arg Pro Leu Pro Gly Glu Asn Val Phe Val Leu Asp Val Ala
 5380 5385 5390
 Asp Gln Pro Leu Pro Ala Gly Leu Ile Gly Glu Leu Ala Ile Gly Gly
 5395 5400 5405
 Val Gly Leu Ala Asp Gly Tyr Ile Ala Ala Gln Asn Lys Gln Gly Gly
 5410 5415 5420
 Phe Ser Ser Gly Pro Gly Gly Lys Ala Asp Arg Leu Tyr Lys Thr Gly
 5425 5430 5435 5440
 Asp Leu Ala Arg Trp Arg Thr Asp Gly Gln Leu Glu Phe Leu Gly Arg
 5445 5450 5455
 Arg Asp Asn Gln Val Asn Val Arg Gly Phe Arg Val Glu Leu Ala Glu
 5460 5465 5470
 Val Glu Ala Gly Leu Glu Arg Ile Asp Gly Val Leu Arg Ala Ala Val
 5475 5480 5485
 Thr Val Ser Asp Arg Lys Pro Asp Thr Thr Leu Gln Ala Tyr Val Thr
 5490 5495 5500
 Val Ser Asp Pro Asp Leu Glu Pro Ala Ala Ile Ser Arg Ala Leu Lys
 5505 5510 5515 5520
 Ser Ser Leu Pro Asp Tyr Met Trp Pro Ser Glu Ile Arg Val Val Thr
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 Ala Leu Pro Gln Thr Ile Ala Gly Lys Leu Asp Arg Gln Ser Leu Asn
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 Gly Ala Pro Ala Pro Ser Val Ser Ile Pro Glu Gly Pro Leu Ser Arg
 5555 5560 5565
 Ile Glu Lys Val Leu Ala Ser Leu Trp Ala Glu Leu Leu Asp Cys Pro
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 Ser Val Pro Val Thr Ala Asn Ile Phe Glu Leu Gly Ala His Ser Leu
 5585 5590 5595 5600
 Leu Leu Ile Arg Phe Ala Gly Glu Ile Arg Ser Arg Leu Gly Ala Glu
 5605 5610 5615
 Leu Ser Val Ala Gln Leu Phe Gln Ala Pro Thr Val Ala Asp Gln Ala
 5620 5625 5630

Val Leu Ile Glu Arg Ala Lys Gly Asn Arg Ser Ser Val Val Asn Leu
 5635 5640 5645
 Gln Ala Gly Ser Gly Pro Gly Leu Val Leu Val His Gly Gly Val Gly
 5650 5655 5660
 Thr Leu Leu Cys Tyr Arg Thr Leu Met Lys His Leu Asp Pro Arg Phe
 5665 5670 5675 5680
 Ser Ile Leu Gly Leu Glu Met Asn Arg Leu Asp Arg Trp Asn Ser Ile
 5685 5690 5695
 Pro Asp Ala Ala Thr Ala Tyr Leu Ala Asp Leu Glu Phe Asp Gln Gly
 5700 5705 5710
 Gln Ala Pro Leu His Leu Ala Gly Trp Ser Ser Gly Gly Ile Val Ala
 5715 5720 5725
 Trp Glu Met Ala Arg Gln Ile Glu Arg Ser Gly Gly Glu Leu Ala Ser
 5730 5735 5740
 Leu Thr Leu Ile Asp Ser Tyr Pro Pro Ala Val Leu Ser His Ile Asp
 5745 5750 5755 5760
 Asn Arg Ile Gln Pro His Asp His Glu Lys Ala Leu Leu Ala Gly Phe
 5765 5770 5775
 Ala Arg Asp Met Gly Leu Ala Ala Glu Leu Pro Ser Ala Glu Pro Lys
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 Gly Ala Pro Glu Lys Tyr Leu Gln Asn Met Ala Glu Asn Thr Gly Glu
 5795 5800 5805
 Asp Phe Gln Val Leu Leu Thr Leu Phe Asn Asn Tyr Lys His Ile Ala
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 Lys Ala Val Asp Gly Tyr Thr Pro Glu Pro Val Ser Val Ala Ala Ser
 5825 5830 5835 5840
 Val Phe His Ala Glu Gly Ala Glu Ile Ser Ser Ala Met Arg Gly Trp
 5845 5850 5855
 Pro Ala Glu Ala Gly Val Leu Asp Ile Gln Pro Val Pro Gly Gly His
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 Asn Gly Lys Leu Thr Thr Ala His Asp
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<211> 437

<212> PRT

<213> Labrenzia sp. PHM005

<400> 17

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 Gly Pro Leu Gly Ile Gly Leu Gly Arg Glu Leu Ser Glu Gly Gly Ile
 20 25 30
 Asp Tyr Asp Leu Tyr Glu Gln Glu Ser Asp Leu Gly Gly Val Trp Asn
 35 40 45
 Thr Asp Ala Pro Cys Gly Arg Thr Tyr Pro Ser Leu His Leu Ile Ser
 50 55 60

Pro	Lys	Phe	Asn	Thr	Gln	Val	Pro	Asp	Phe	Pro	Met	Pro	Asp	His	Tyr
65					70					75					80
Pro	Ala	Tyr	Pro	Asn	His	Lys	Met	Met	Leu	Asp	Tyr	Ile	Arg	Ser	Tyr
				85					90					95	
Ala	Arg	His	Phe	Gly	Val	Tyr	Asp	His	Ala	His	Cys	Asn	Thr	Gly	Val
			100					105					110		
Thr	Trp	Ile	Glu	Pro	Asp	Gly	Asp	Gly	Trp	Asn	Val	Glu	Leu	Ser	Thr
		115					120					125			
Gly	Ala	Thr	Arg	Arg	Tyr	Asp	Ile	Val	Ala	Val	Cys	Asn	Gly	Ala	Gln
	130					135					140				
Arg	Val	Pro	His	Tyr	Pro	Lys	Pro	Pro	Tyr	Pro	Gly	Thr	Phe	Ser	Gly
145					150					155					160
Glu	Val	Leu	His	Thr	Ala	Asp	Tyr	Lys	Asn	Pro	Ser	Gln	Ile	Ala	Gly
				165					170					175	
Lys	Arg	Val	Leu	Val	Ile	Gly	Ala	Gly	Asn	Ser	Gly	Cys	Asp	Val	Ala
		180						185					190		
Val	Asp	Ala	Val	His	His	Ala	Val	Ser	Val	His	His	Ser	Thr	Arg	Arg
	195						200					205			
Gly	Tyr	His	Tyr	Tyr	Pro	Lys	Phe	Ile	Asp	Gly	Lys	Pro	Thr	Pro	Gln
	210					215					220				
Trp	Met	Leu	Gln	Leu	Gly	Thr	Lys	Phe	Thr	Ser	Lys	Glu	Glu	Thr	Ser
225					230					235					240
Ala	Tyr	Ile	Gln	Lys	Val	Phe	Lys	Leu	Ala	Gly	Phe	Asp	Gly	Thr	Asp
				245					250					255	
Phe	Gly	Leu	Pro	Ala	Pro	Asp	His	Pro	Ile	Asp	Ala	Ala	His	Pro	Ile
		260						265					270		
Met	Asn	Ser	Gln	Ile	Leu	Tyr	His	Ile	Gly	His	Gly	Asp	Ile	Ala	Thr
	275						280					285			
Val	Gly	Asp	Val	Ala	Gly	Phe	Asp	Asp	Leu	Thr	Val	Arg	Phe	Lys	Asp
	290					295					300				
Gly	His	Glu	Ala	Glu	Ile	Asp	Ile	Ile	Val	Tyr	Ala	Thr	Gly	Tyr	Asp
305					310					315					320
Arg	His	Phe	Pro	Phe	Ile	Asp	Pro	Asp	Ile	Leu	Asp	Trp	Lys	Asp	Gly
				325					330					335	
Ile	Pro	Asp	Leu	Phe	Ile	His	Ile	Val	Pro	Arg	Asn	Leu	Asn	Asn	Leu
		340						345					350		
Phe	Phe	Phe	Gly	Phe	Val	Asn	Ala	Ala	Ala	Gly	Leu	Gly	Asp	Gly	Met
	355					360						365			
Arg	Leu	Gln	Gly	Gln	Phe	Val	Arg	Ser	Tyr	Val	Arg	Ala	Phe	Glu	Asn
	370					375					380				
Gln	Thr	Leu	Gly	Tyr	Gln	Lys	Phe	Val	Ala	Ala	Lys	Ala	Gln	Asp	Asp
385					390					395					400
Pro	Asp	Leu	Gly	Gln	Asp	Tyr	Phe	Val	Asp	Ser	Arg	Arg	His	Thr	Trp
			405						410					415	
Glu	Val	Asp	Phe	Trp	Lys	Phe	Ile	Arg	His	Ala	Arg	Tyr	Tyr	Arg	Glu
		420						425					430		
Met	Leu	Asp	Asp	Asp											
	435														

<210> 18

<211> 2764
 <212> PRT
 <213> Labrenzia sp. PHM005

<400> 18

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

Arg	Ala	Leu	Thr	Ser	Gly	Leu	Lys	Gln	Val	Leu	Asn	Ser	Gly	Gln	Leu	355	360	365
Pro	Met	Leu	Ser	Arg	Leu	Thr	Glu	Ser	Gly	Pro	Gln	Asn	Gly	Trp	Val	370	375	380
Arg	Glu	Ile	Pro	Leu	Pro	Ser	Arg	Thr	Ala	Tyr	Phe	Ala	Ala	Gly	Asp	385	390	395
Val	Ile	Trp	Ile	Thr	Gly	Gly	Leu	Gly	Gly	Ile	Gly	Arg	Ile	Leu	Ala	405	410	415
Arg	His	Tyr	Ala	Ser	Ala	Gly	Gln	Arg	Val	Val	Leu	Thr	Gly	Arg	Ser	420	425	430
Ala	Pro	Pro	Ser	Gly	Ala	Glu	Ala	Phe	Leu	Thr	Glu	Thr	Gly	Ala	Leu	435	440	445
Tyr	Leu	Gln	Gly	Asp	Val	Thr	Asp	Cys	Ser	Thr	Ala	Thr	Leu	Leu	Ala	450	455	460
Arg	Asp	Ile	Leu	Ala	Lys	His	Gly	Arg	Leu	Asp	Ala	Val	Ile	His	Ala	465	470	475
Ala	Gly	Leu	Ile	Glu	Asp	Gly	Leu	Leu	Arg	Asp	Lys	Gly	Gln	Glu	Ser	485	490	495
Ala	Ala	Arg	Val	Leu	Ala	Pro	Lys	Leu	Ala	Gly	Thr	Arg	Ala	Leu	Asp	500	505	510
Glu	Ala	Thr	Ala	Glu	Leu	Pro	Leu	Lys	Ala	Phe	Val	Leu	Cys	Ser	Ser	515	520	525
Val	Ala	Gly	Val	Leu	Gly	Asn	Val	Gly	Gln	Ala	Asp	Tyr	Ala	Cys	Ala	530	535	540
Asn	Ala	Tyr	Leu	Asp	Val	Phe	Ala	Glu	Leu	Arg	Gln	Gly	Gln	Val	Leu	545	550	555
Asn	Gly	Gln	Arg	His	Gly	Gln	Ser	Leu	Ser	Val	Ala	Trp	Pro	Leu	Trp	565	570	575
Gln	Gly	Gly	Gly	Met	Ala	Met	Thr	Asp	Glu	Asn	Ala	Arg	Met	Met	Arg	580	585	590
Thr	Gly	Thr	Gly	Met	Val	Pro	Met	Pro	Asp	Gly	Thr	Gly	Ile	Glu	Ala	595	600	605
Leu	Glu	Arg	Ala	Leu	Ala	Ser	Gly	Glu	Thr	Arg	Leu	Val	Val	Ala	Tyr	610	615	620
Gly	Leu	Pro	Glu	Glu	Ile	Arg	Glu	Arg	Phe	Leu	Gly	Phe	Glu	Tyr	Pro	625	630	635
Ala	Gly	Asn	Asn	Val	Leu	Glu	Pro	Ala	Ala	Val	Glu	Gln	Gln	Ala	Asp	645	650	655
Gln	Ser	Glu	Leu	Glu	Thr	Arg	Leu	Arg	Asp	Leu	Val	Ala	Lys	Val	Gln	660	665	670
His	Ile	Pro	Val	Gln	Lys	Val	Thr	Arg	Tyr	Lys	Pro	Leu	Ser	Asp	Tyr	675	680	685
Gly	Phe	Asp	Ser	Ile	Ser	Phe	Thr	Glu	Leu	Ala	Asn	Glu	Val	Asn	Ser	690	695	700
Ala	Phe	Gly	Leu	Arg	Leu	Met	Pro	Thr	Val	Phe	Phe	Glu	Ile	Pro	Asp	705	710	715
Leu	Ala	Ala	Leu	Ala	Asp	Lys	Leu	Ala	Lys	Asp	His	Ser	Val	Thr	Leu	725	730	735
Glu	Pro	Glu	Lys	Arg	Pro	Ser	Ser	Val	Thr	Ser	Pro	Ala	Pro	Ala	Arg	740	745	750

Ala	Val	Val	Asp	Gln	Glu	Lys	Pro	Val	Arg	Ser	Ser	Ala	Gly	Phe	Asp
		755					760					765			
Gly	Ser	Val	Ser	Ile	Gly	Lys	Ala	Pro	Ser	Val	Asn	Arg	Gly	Met	Asp
		770				775					780				
Thr	Ala	Glu	Pro	Ile	Ala	Val	Ile	Gly	Met	Ala	Ala	Lys	Leu	Pro	Gly
785					790					795					800
Val	Gln	Ser	Leu	Asp	Ala	Phe	Trp	Arg	Ala	Leu	Asp	Ala	Gly	Arg	Asp
				805					810					815	
Leu	Ile	Ser	Glu	Val	Pro	Ala	Asp	Arg	Trp	Asp	Trp	Arg	Ala	Phe	Gln
			820					825					830		
Ser	Gly	Pro	Asp	Glu	Asp	Lys	Ser	Ala	Leu	Lys	Trp	Gly	Gly	Phe	Leu
		835				840						845			
Ala	Asp	Met	Ala	Cys	Phe	Asp	His	Ala	His	Phe	Gly	Ile	Ser	Pro	Ala
		850				855					860				
Glu	Ala	Glu	Val	Leu	Asp	Pro	Gln	Leu	Arg	Leu	Met	Leu	Glu	Thr	Leu
865					870					875					880
Trp	Ala	Thr	Leu	Glu	Asn	Ala	Gly	Val	Ala	Pro	Asp	Ser	Val	Ser	Gly
				885					890					895	
Ser	Arg	Thr	Gly	Val	Phe	Thr	Gly	Val	Ala	Thr	Cys	Asp	Tyr	Ser	Glu
			900				905						910		
Leu	Leu	Ala	Lys	Ala	Arg	Glu	Ala	Gly	His	Leu	Arg	Ser	Ala	Ala	Glu
		915				920						925			
Pro	Phe	Ser	Phe	Leu	Val	Ala	Asn	Arg	Ala	Ser	Tyr	Phe	Phe	Asn	Leu
		930				935					940				
His	Gly	Pro	Ser	Glu	Thr	Ile	Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Ile
945					950					955					960
Ala	Ile	His	Arg	Ala	Thr	Glu	Ser	Leu	Arg	Ala	Gly	Met	Cys	Asp	Met
				965					970					975	
Ala	Leu	Ala	Gly	Gly	Val	Asn	Ile	Leu	Ala	Thr	Pro	Arg	Ile	Thr	Leu
			980					985					990		
Ala	Ser	Ser	Arg	Ala	Gly	Met	Leu	Ser	Glu	Asp	Gly	Arg	Cys	Met	Ser
		995				1000						1005			
Phe	Asp	Ala	Arg	Ala	Asn	Gly	Tyr	Val	Arg	Ser	Glu	Gly	Val	Gly	Ala
		1010				1015					1020				
Val	Leu	Leu	Lys	Pro	Leu	Ala	Asp	Ala	Gln	Arg	Asp	Gly	Asp	Arg	Val
1025					1030					1035					1040
Leu	Gly	Val	Ile	Arg	Ala	Ser	Gly	Glu	Asn	His	Gly	Gly	Arg	Ala	Ser
				1045					1050					1055	
Ser	Pro	Thr	Ala	Pro	Asn	Ala	Thr	Ala	Gln	Lys	Glu	Leu	Ile	Val	Asp
			1060					1065					1070		
Val	Val	Arg	Arg	Ala	Gly	Ile	Asp	Pro	Ala	Ser	Ile	Gly	Tyr	Phe	Glu
		1075					1080					1085			
Ala	His	Gly	Thr	Gly	Thr	Glu	Leu	Gly	Asp	Pro	Val	Glu	Val	Asn	Gly
		1090				1095					110				

Arg Ile Ala Gly Asn Pro His Leu Arg Asp Pro Asn Pro Tyr Leu Asp
 1155 1160 1165
 Leu Asp Glu Thr Pro Leu Ser Leu Val Arg Gly Ser Leu Asp Trp Pro
 1170 1175 1180
 Ser Gly Pro Ala Pro Arg Arg Ala Gly Leu Ser Ser Phe Gly Val Gly
 1185 1190 1195 1200
 Gly Ser Asn Ala His Leu Val Leu Glu Glu Pro Ala Thr Asp Thr Glu
 1205 1210 1215
 Pro Gly Leu Pro Gly Ser Ser Pro Ala Glu Ala Glu Ile Ile Ile Leu
 1220 1225 1230
 Ser Ala Arg Thr Pro Glu Ile Arg Ala Gln Met Ala Gly Asp Leu Ala
 1235 1240 1245
 Gln His Leu Arg Ala Asn Gln Asp Thr Leu Cys Leu Ser Asp Val Ala
 1250 1255 1260
 His Thr Leu Arg Val Gly Arg Ala Arg Leu Pro Ala Arg Leu Ala Phe
 1265 1270 1275 1280
 Glu Thr Ser Ser Leu Thr Glu Thr Ile Gln Leu Leu Glu Thr Val Ala
 1285 1290 1295
 Gln Gly Gln Val Pro Glu Asn Val Thr Leu Gly Glu Thr Glu Glu Ile
 1300 1305 1310
 Thr Gly Ile Ala Leu Ser Glu Asp Leu Pro Asp Leu Ile Glu Val Trp
 1315 1320 1325
 Leu Ala Lys Gly Gln Leu Ser Arg Val Leu Lys Ala Trp Val Ala Gly
 1330 1335 1340
 Ala Asp Leu Asp Trp Ala Gln Val Ala Pro Lys Arg Glu Gly Arg Arg
 1345 1350 1355 1360
 Ile Glu Leu Pro Gly Tyr Pro Phe Glu Arg Ile Thr His Trp Ile Gly
 1365 1370 1375
 Ser Glu Ser Pro Glu Ala Leu His Val Pro Asp Ala Ala Ala Ala Leu
 1380 1385 1390
 Pro Ser Val Arg Gln Phe Ala Glu Glu Trp Glu Pro Ser Pro Leu Leu
 1395 1400 1405
 Glu Pro Gly Ser Gly Pro Val Gly Arg Val Leu Val Leu Ala Pro Lys
 1410 1415 1420
 Ser Met Ser Ala Ala Asp Ala Asp Leu Asn Ala Gly Glu Asp Leu Leu
 1425 1430 1435 1440
 Trp Leu Thr Pro Glu Pro Glu Asp Leu Gln Asn Ser Glu Ala Ala Ala
 1445 1450 1455
 Arg Leu Leu Ser Trp Leu Glu Pro Ala Ser His Val Leu Leu Leu Leu
 1460 1465 1470
 Gly Asp Glu Asp Arg Val Ala Gly Pro Ile Ile His Leu Leu Gln Ala
 1475 1480 1485
 Leu Ala Gln Gly Arg Gln Arg Pro Gln Ser Leu Met Ile Cys Gly His
 1490 1495 1500
 Ala Glu Thr Pro Glu Asp Leu Ala Trp Leu Asp Ala Leu Val Gly Val
 1505 1510 1515 1520
 Gln Arg Ser Cys Arg Ser Ala Leu Pro Asp Leu Asn Val Ser Ile Val
 1525 1530 1535
 Phe Gly Ser Gly Thr Ser Leu Thr Val Met Val Arg His Ala Leu Ala
 1540 1545 1550

Glu Met Thr Ala Gly Ala Gly Val Cys Val Arg Tyr Arg Gly Glu Glu
 1555 1560 1565
 Arg Gln Ile Cys Ala Ser Arg Ala Leu Lys Ala Pro Pro Asp Val Gln
 1570 1575 1580
 Thr Pro Trp Arg His Arg Gly Val Tyr Trp Ile Val Gly Gly Ser Gly
 1585 1590 1595 1600
 Ala Val Gly Ser Val Leu Ala Arg His Leu Ala Arg Thr Val Ser Ala
 1605 1610 1615
 Arg Leu Val Leu Ser Gly Arg Gly Pro Glu Asp Arg Ala Leu Ile Asp
 1620 1625 1630
 Glu Leu Cys Ala Leu Gly Ala Asp Val Cys Tyr Leu Pro Ala Asp Val
 1635 1640 1645
 Thr Asp Ile Ala Ala Leu His Thr Val Arg Asp Gln Ile Phe Ser Arg
 1650 1655 1660
 Trp Asp Arg Leu Asp Gly Ala Phe His Leu Ala Gly Arg Ser Gly Ala
 1665 1670 1675 1680
 Ala Pro Leu Ile Glu Ala Lys Ala Ser Gly Phe Asp Ser Val Leu Ala
 1685 1690 1695
 Pro Lys Leu Gln Gly Thr Lys Asn Leu His Glu Val Leu Thr Asn Ser
 1700 1705 1710
 Gly Ala Asp Phe Leu Cys Leu Phe Ser Ser Ser Ser Ala Val Leu Gly
 1715 1720 1725
 Asp Leu Gly Ser Gly Asp Tyr Ala Met Ala Asn Arg Phe Gln Ser Ala
 1730 1735 1740
 Phe Ala Ala Glu His Asn Asn Glu Thr Leu Pro Val Leu Ala Val Glu
 1745 1750 1755 1760
 Trp Pro Leu Trp Arg Ala Arg Gly Leu Ala Asp Ala Glu Ser Glu Ser
 1765 1770 1775
 Leu Tyr Leu Ala Ser Ser Gly Gln Val Pro Leu Glu Gly Glu Gln Ala
 1780 1785 1790
 Met Gln Ala Leu Glu Thr Ala Val Phe Thr Gly Arg Thr Arg Thr Leu
 1795 1800 1805
 Val Leu Ser Gly Asn Ala Glu Arg Leu Asp His Leu Ala Gly Thr Pro
 1810 1815 1820
 Gln Lys Ser Lys Pro Ser Ala Glu Thr Gly Asp Val Leu Thr Val Leu
 1825 1830 1835 1840
 Lys Ser Leu Ala Ala Asp Gln Leu Lys Met Ser Ser Gly Glu Ile Gly
 1845 1850 1855
 Ser His Lys Asn Leu Ala Ser Phe Gly Phe Asp Ser Ile Ala Leu Ser
 1860 1865 1870
 Glu Phe Ala Arg Ser Ile Gly Thr Cys Phe Asp Ile Asp Leu Ala Pro
 1875 1880 1885
 Ser Val Phe Phe Ser His Ala Thr Leu Gly Lys Leu Ala Ala His Leu
 1890 1895 1900
 Ser Glu Ile Gly Val Gly Val Thr Thr Pro Glu Ser Thr Gln Pro Arg
 1905 1910 1915 1920
 Thr Phe Ala Gln Pro Arg Ala Val Ser Asp Asp Ala Ile Ala Ile Ile
 1925 1930 1935
 Gly Thr Ser Gly Arg Phe Pro Gly Ala Arg Asp Val Gly Gly Leu Trp
 1940 1945 1950

Asn Ile Leu Asp Gln Gly Arg Glu Ala Val Glu Glu Val Thr Pro Glu
 1955 1960 1965
 Arg Phe Asp Trp Arg Arg Ile Tyr Glu Ala Lys Thr Pro Pro Val Pro
 1970 1975 1980
 Gly Lys Thr Asn Ser Arg Trp Cys Gly Gln Val Pro Gly Leu Ser Glu
 1985 1990 1995 2000
 Phe Asp Pro Leu Phe Phe Glu Ile Ser Pro Leu Glu Ala Glu Arg Met
 2005 2010 2015
 Asp Pro Arg Gln Arg His Leu Leu Gln Glu Ser Trp Leu Ala Leu Glu
 2020 2025 2030
 Ser Ala Ala Leu Gly Pro Glu His Leu Ala Ser Gln Arg Val Gly Ser
 2035 2040 2045
 Phe Val Gly Val Glu Asp Gly Ser Asp Tyr Ile Lys Arg Ser Asp Gln
 2050 2055 2060
 Ile Ser Leu Thr Gly Ala His Asn Ala Val Leu Ala Ala Arg Leu Ser
 2065 2070 2075 2080
 Tyr Phe Leu Gly Leu Asp Gly Pro Ala Leu Ala Leu Asn Thr Ala Cys
 2085 2090 2095
 Ser Ser Gly Leu Met Ala Ala His Met Ala Cys Gln Ser Leu Arg Ala
 2100 2105 2110
 Gly Glu Cys Asp Val Ala Leu Ala Ala Gly Val Asn Leu Met Val Ser
 2115 2120 2125
 Gln Asp Ala Tyr Ile Gly Met Gly Gln Ala Gly Met Leu Ser Pro Asp
 2130 2135 2140
 Gly Lys Cys Tyr Thr Phe Asp Val Arg Ala Asn Gly Met Val Pro Gly
 2145 2150 2155 2160
 Glu Ala Val Ala Val Leu Val Leu Lys Ser Leu Ala Arg Ala Arg Glu
 2165 2170 2175
 Asp Gly Asp Pro Ile Gln Ala Val Ile Arg Thr Ser Gly Thr Asn Tyr
 2180 2185 2190
 Asp Gly His Thr Asn Gly Ile Thr Ala Pro Ser Gly Gln Ser Gln Val
 2195 2200 2205
 Asp Leu Leu Arg Arg Val Gln Ala Gln Ala Gly Val Lys Pro His Glu
 2210 2215 2220
 Ile Asp Trp Val Ile Ala His Gly Thr Gly Thr Glu Leu Gly Asp Leu
 2225 2230 2235 2240
 Val Glu Ala His Ala Leu Arg Asp Val Phe Ser Gly Ala Glu Arg Glu
 2245 2250 2255
 Pro Asn Ser Ile Ala Val Thr Thr Thr Lys Gly Asn Phe Gly His Thr
 2260 2265 2270
 Phe Ala Ala Ser Gly Leu Val Ser Ala Ile Gly Ala Val His Ala Leu
 2275 2280 2285
 Gln His Asp Arg Leu Pro Ala Ser Leu Asn His Asn Gln Pro Ser Pro
 2290 2295 2300
 Met Leu Gly Trp Gln Lys Thr Pro Leu Tyr Val Asn Thr Gln Ser Arg
 2305 2310 2315 2320
 Asp Trp Pro Arg Pro His Ala Gly Arg Ser Arg Leu Ile Ser Val Ser
 2325 2330 2335
 Ala Phe Gly Ile Ser Gly Thr Asn Val Asn Leu Leu Ile Glu Asp Ala
 2340 2345 2350

Pro Asp Ser Pro Ala Gln Leu Pro Ser Glu Glu Arg Asn Tyr Val Ile
 2355 2360 2365
 Ser Leu Ser Ala Lys Thr Glu Ser Ser Leu Gln Ala Met Ala Ser Lys
 2370 2375 2380
 Leu Ala Ala Tyr Leu Lys Ser Pro Glu Ala Ala Asp Gln Gln Leu Ala
 2385 2390 2395 2400
 Ala Ile Ser Leu Thr Leu Leu Thr Gly Arg His Ala Phe Thr His Arg
 2405 2410 2415
 Leu Ala Leu Val Val Lys Asp Leu Gln Asp Ala Ala Arg Gln Leu Glu
 2420 2425 2430
 Ala Phe Asp Ser Thr Pro Gly Tyr Arg Gly His Val Pro Glu Glu Pro
 2435 2440 2445
 Asp Leu Pro Asp Met Ser Gln Gln Ile Ser Gly Leu Leu Glu Lys Ala
 2450 2455 2460
 Gln Ser Arg Glu Ala Leu His Glu Leu Ala Glu Leu Phe Cys Gln Gly
 2465 2470 2475 2480
 His Pro Ile Pro Trp Val Asn Leu Phe Pro Cys Ser Leu Arg Arg Ile
 2485 2490 2495
 Asn Leu Pro Gly Tyr Val Phe Glu Arg Asp Arg Cys Trp Ile Asp Ala
 2500 2505 2510
 Pro Glu Ala Arg Pro Ala Pro Ala Ile Gly Pro Tyr Val Lys Pro Leu
 2515 2520 2525
 Pro Glu Pro Asp Thr Pro Ala His Pro Pro Val Ser Gly Val Ser Asp
 2530 2535 2540
 Leu Ser Pro Gly Leu Asp Met Leu Glu Ala Ala Arg Gly Ala Ala Ser
 2545 2550 2555 2560
 Asn Val Leu Asn Arg Asp Val Gln Thr Leu Ser Arg Ile Val Trp Gly
 2565 2570 2575
 Ala Pro Gln Ser Ser Glu Ile Arg Pro Asp Pro Asn Glu Ile Cys Ile
 2580 2585 2590
 Leu Ser Ala Asp Gln Gly Leu Val Ala Val Glu Ala Ala Gly Thr Thr
 2595 2600 2605
 Asp Ala Leu Ala Leu Leu Ala Gln Ala Gly Ala Pro Cys Ser Ser Phe
 2610 2615 2620
 Pro Ala Pro Val Arg Leu Pro Arg Leu Arg Gly Gly Leu Lys Pro Val
 2625 2630 2635 2640
 Ser Ala Pro Gln Gly Val Ala Ala Leu Tyr Gly Asp Glu Gly Arg Leu
 2645 2650 2655
 Val Gly Asn Met Lys Gly Leu Ser Ala Pro Ala Val Phe Asp Val Arg
 2660 2665 2670
 Val Leu Arg Ala Ile Trp Asn Ser Val Gln Cys Leu Ser Asp Leu Glu
 2675 2680 2685
 Thr Ala Gln Val Ala Trp Pro Ala Ser Leu Met Thr Leu Ala Ser Thr
 2690 2695 2700
 Ala Pro Leu Thr Ser Asp Val His Phe Glu Val Val Arg Leu Ser Asp
 2705 2710 2715 2720
 Pro Asp Pro Gly Tyr Leu Asn Val Asp Val Thr Val Tyr Asp Pro Gln
 2725 2730 2735
 Gly Thr Pro Leu Met Ile Leu Arg Glu Phe Ser Leu Ser Leu Gly Ala
 2740 2745 2750

Leu Pro Glu Asn Ile Gln Trp Glu Gly Val Glu Ala
 2755 2760

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

Glu	Ile	Pro	Tyr	Arg	Lys	Asn	Gly	Val	Tyr	Leu	Val	Leu	Gly	Gly	Ala	
				325					330					335		
Gly	Ala	Leu	Gly	Arg	Val	Trp	Thr	Thr	His	Leu	Leu	Gln	Arg	Val	Ser	
			340					345					350			
Ala	Gln	Val	Val	Trp	Leu	Gly	Arg	Ser	Ala	Leu	Ser	Ala	Gln	Ile	Arg	
		355					360					365				
Gln	Asn	Met	Ala	Ala	Tyr	Asp	Gly	Ala	Val	Ser	Tyr	His	Ser	Ala	Asp	
	370					375					380					
Ala	Arg	Asn	Pro	Gly	Glu	Leu	Ala	Asp	Ala	Ile	Ala	Asp	Ile	Arg	Asn	
385					390					395					400	
Arg	Tyr	Glu	Lys	Leu	Asp	Gly	Val	Ile	Val	Ser	Thr	Leu	Ala	Glu	Tyr	
			405					410						415		
Asp	Lys	Ser	Ile	Ala	Glu	Met	Ser	Glu	Thr	Leu	Phe	Gln	Asp	Ile	Leu	
			420					425					430			
Ser	Thr	Arg	Leu	Asn	Val	Val	Ser	Ala	Leu	Asp	Lys	Ala	Leu	Met	Gly	
		435					440					445				
Val	Pro	Thr	Pro	Asp	Phe	Val	Ala	Leu	Phe	Ser	Ser	Leu	Ala	Ser	Cys	
	450					455					460					
Gly	Lys	Pro	Ala	Gly	Met	Ala	Ala	Tyr	Val	Ala	Gly	Cys	Gln	Ala	Ser	
465					470					475					480	
Glu	Ala	Ala	Ala	Phe	Ala	Leu	Gly	Arg	Ser	His	Ser	Cys	Pro	Val	Thr	
				485				490						495		
Val	Val	Asn	Trp	Gly	Tyr	Trp	Asp	Ile	Gly	Gly	Gly	Val	Arg	Val	Thr	
		500						505					510			
Asp	Ser	Leu	Arg	Ala	Leu	Ala	Ala	Arg	Arg	Gly	Val	Val	Pro	Ile	Asp	
		515					520					525				
Pro	Glu	Ala	Gly	Met	Ala	Leu	Phe	Glu	Thr	Ala	Leu	Ala	Met	Lys	Gln	
	530					535					540					
Pro	Gln	Ile	Ala	Ile	Ser	Arg	Thr	Thr	Arg	Pro	Asp	Arg	Ile	Glu	Thr	
545					550					555					560	
Val	Leu	Glu	Thr	Pro	Arg	Met	Lys	Pro	Leu	Ser	Gly	Thr	Ala	Leu	Pro	
			565					570						575		
Val	Leu	Pro	Gln	Val	Val	Thr	Arg	Glu	Ala	Pro	Pro	Glu	Pro	Ala	Arg	
		580						585					590			
Glu	Ala	Ala	Ala	Leu	Asp	Gln	Trp	Leu	Gly	Arg	Leu	Leu	Leu	Ala	Gln	
		595				600					605					
Leu	Arg	Lys	Met	Asp	Val	Phe	Asp	Arg	Pro	Gly	Leu	Ser	Arg	Lys	Ile	
	610					615				620						
Glu	Phe	Glu	Thr	Phe	Ala	Ile	Leu	Ala	Lys	Phe	Arg	Pro	Trp	Trp	Asp	
625					630					635					640	
Glu	Ala	Leu	Asn	Ile	Leu	Glu	Glu	Gln	Gly	Ser	Ile	Ser	Arg	Asp	Ala	
			645						650					655		
Ala	Gly	Ala	Val	Thr	Leu	Leu	Gly	Asp	Asp	Leu	Leu	Ser	Pro	Asp	Thr	
		660						665					670			
Val	Trp	Ala	Glu	Trp	Glu	Lys	Ala	Gln	Gln	Ala	Phe	Leu	Glu	Thr	Pro	
	675					680						685				
Asp	Thr	Arg	Val	Leu	Ala	Ile	Leu	Thr	Thr	Asp	Cys	Leu	Lys	Ala	Leu	
	690					695					700					
Pro	Gln	Ile	Leu	Arg	Gly	Gln	Ala	Leu	Val	Thr	Asp	Ile	Leu	Phe	Pro	
705					710					715					720	

Arg Asn Met Ile Asp Gly Val Asp Pro Val Val Pro Leu Pro Gly Arg
 1125 1130 1135
 Tyr Met Arg Pro Glu Lys Val Ser Gln Asp Lys Glu Pro Gly Lys Ser
 1140 1145 1150
 Tyr Cys Arg Trp Gly Gly Ile Leu Glu Asp Arg Asp Ala Phe Asp Pro
 1155 1160 1165
 Leu Phe Phe Arg Leu Ser Pro Arg Glu Ala Ala Ser Met Asn Pro His
 1170 1175 1180
 Gln Arg Leu Ile Leu Leu Glu Ser Trp His Ala Leu Glu Asp Ala Gly
 1185 1190 1195 1200
 Ile Asp Pro Gly Gly Leu Ala Glu Ser Arg Thr Gly Val Phe Val Gly
 1205 1210 1215
 Cys Glu Pro Ser Gly Tyr Val His Asp Thr Phe Thr Gly Ala Ser Asp
 1220 1225 1230
 Ala Ile Val Ala Ser Arg Ile Ser Tyr Phe Leu Asp Leu Lys Gly Pro
 1235 1240 1245
 Ala Tyr Val Val Asn Thr Gly Cys Ser Ser Ser Gly Val Ala Leu His
 1250 1255 1260
 Leu Ala Cys Glu Ser Leu Arg Asn Gly Glu Cys Asp Leu Ala Leu Ala
 1265 1270 1275 1280
 Gly Gly Ala Phe Ala Val Met Gly Glu Asn Ile Leu Ile Gly Leu Ala
 1285 1290 1295
 Gln Thr Glu Met Leu Thr Arg Thr Gly His Cys Arg Thr Phe Asp Ala
 1300 1305 1310
 Glu Ala Asp Gly Met Val Met Ser Glu Ala Ala Gly Met Val Val Leu
 1315 1320 1325
 Lys Pro Leu Ser Ala Ala Val His Asp Gly Asp Pro Ile His Gly Val
 1330 1335 1340
 Ile Arg Ala Ser Gly Thr Asn Gln Asp Gly Ala Ser Asn Gly Ile Thr
 1345 1350 1355 1360
 Ala Pro Ser Gly Ala Ala Gln Ala Ala Leu Ile Ser Asp Val Gln Ser
 1365 1370 1375
 Arg Phe Asp Ile Asp Pro Arg Arg Ile Ser Tyr Val Glu Thr His Gly
 1380 1385 1390
 Thr Gly Thr Lys Leu Gly Asp Pro Val Glu Ala Asn Ala Leu Val Lys
 1395 1400 1405
 Ala Phe Gln Pro His Asp Leu Thr Pro Gly Ser Cys Ala Leu Gly Ser
 1410 1415 1420
 Val Lys Ser His Ile Gly His Ser Ala Ala Ala Ala Gly Val Cys Gly
 1425 1430 1435 1440
 Leu Ile Ala Val Leu Met Ala Met Lys His Arg Lys Met Pro Glu Leu
 1445 1450 1455
 Arg His Phe Lys Ser Leu Asn Pro Leu Ile Asn Leu Glu Gly Ala Pro
 1460 1465 1470
 Phe Tyr Pro Leu Thr Glu Thr Ser Asp Trp Thr Arg Arg Asp Gly Gln
 1475 1480 1485
 Pro Leu Leu Ala Ala Leu Asn Ser Phe Gly His Ser Gly Thr Asn Ala
 1490 1495 1500
 His Leu Val Ile Glu Glu Ala Pro Glu Leu Arg Val Ser Pro Thr Val
 1505 1510 1515 1520

Ser Val Gly Asp Pro Gln Gln Glu Leu Ile Leu Leu Ser Ala Lys Asp
1525 1530 1535
Val Glu Arg Leu Gln Leu Gln Ala Gly Ala Leu Ala Arg Lys Ile Glu
1540 1545 1550
Asn Val Pro Asp Leu Leu Leu Ala Asp Ile Ala His Thr Leu Arg Thr
1555 1560 1565
Gly Arg Met Ala Met Glu Cys Arg Ala Ala Phe Leu Val Thr Thr Arg
1570 1575 1580
Thr Glu Leu Leu Asp Arg Phe Lys Gly Leu Ala Ala Gly Thr Leu Ala
1585 1590 1595 1600
Ala Asp Trp Ser Gly Glu Val Pro Ser Lys Trp Thr Ala Arg Ala Gly
1605 1610 1615
Pro Gln Pro Glu Ala Pro Ser Ser Thr Ala Val Leu Ser Met Gln Ala
1620 1625 1630
Glu Ala Trp Val Ala Gly Ala Pro Ile Asp Trp Ser Gly Val Ala Leu
1635 1640 1645
His Gln Gly Trp Arg Gly Gln Arg Cys His Leu Pro Gly Tyr Pro Phe
1650 1655 1660
Ala Lys Glu Arg Tyr Trp Arg Ser Asp Arg Gln Asp Gln Asp Arg Asp
1665 1670 1675 1680
Lys Ser Gly His Asp Thr Leu His Leu Asn Gly Glu Glu Ser Trp Leu
1685 1690 1695
Arg Asp His Arg Ile Ala Gly Arg Pro Val Val Pro Gly Val Ala Tyr
1700 1705 1710
Pro Ala Leu Ala Leu Ala Arg Leu Thr Gly Ala Arg Asn Thr Gly Trp
1715 1720 1725
Arg Phe Glu Asp Leu Val Trp Pro Val Pro Leu Thr Val Glu Ala Pro
1730 1735 1740
Val Asp Leu Glu Ile Glu Ala Lys Ser Phe Asp Gln Asp Gly Ser Tyr
1745 1750 1755 1760
Ala Leu Ser Ser Leu Ala Pro Asp Gly Thr Ser Gln Val His His Gln
1765 1770 1775
Gly Arg Leu Ile Pro Leu Glu Gly Pro Pro Pro Ala Val Asp Leu Pro
1780 1785 1790
Ser Ile Arg Ala Arg Leu Ser Ala His Glu Met Ala Val Asp Ala Ile
1795 1800 1805
Tyr Gly Ala Leu Asn Glu Ala Gly Val Val His Gly Pro Ala Leu Lys
1810 1815 1820
Ser Ile Gly Arg Val Trp Ala Thr Pro Asp Glu Ile Leu Ala Glu Leu
1825 1830 1835 1840
Asn Leu Pro Gly Thr Ala Glu Ser Gly Val Met Pro Ile Ala Leu Leu
1845 1850 1855
Asp Gly Ala Trp Gln Ala Thr Leu Ala Leu Ser Leu Ala Asp Pro Asn
1860 1865 1870
Asn Pro Ala Pro Ala Ala Leu Pro Phe Ser Leu Glu Thr Leu Asp Leu
1875 1880 1885
His Ala Pro Leu Gly Arg Val Arg Phe Trp Ser Arg Arg Asn Gly Ala
1890 1895 1900
Arg Ala Trp Trp Thr Cys Lys Phe Cys Cys Pro Met Gly His Gln Arg
1905 1910 1915 1920

Cys	Lys	Cys	Ala	Gly	Cys	Thr	Pro	Gly	Pro	Ser	Ala	Leu	Pro	Asn	Pro
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Arg	Leu	Leu	Lys	Ser	His	Trp	Met	Arg	Arg	Thr	Arg	Phe			
			1940					1945							

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

Leu	Pro	Gln	Arg	Leu	Glu	His	Arg	Leu	Lys	Ala	Leu	Ile	Gly	Pro	Ile	305	310	315	320
Leu	Gly	Arg	Asp	Ala	Glu	Ala	Leu	Asn	Pro	Val	Glu	Pro	Leu	Gln	His	325	330	335	
Tyr	Gly	Ile	Asp	Ser	Ile	Thr	Ile	Thr	Arg	Ile	Ala	Arg	Asp	Leu	Gln	340	345	350	
Ser	Leu	Ala	Gly	Pro	Gly	Ala	Gln	Thr	Leu	Leu	Phe	Arg	Phe	Ser	Thr	355	360	365	
Ile	Arg	Ser	Leu	Ala	Glu	His	Leu	Ala	Lys	Thr	Tyr	Gly	Ala	Ala	Cys	370	375	380	
His	Glu	Trp	Ile	Lys	Glu	Ala	Ala	Ala	Ile	Thr	Pro	Gln	Asn	Ser	Asn	385	390	395	400
Thr	Thr	Ser	Val	Arg	Pro	Thr	Gly	Thr	Thr	Gln	Leu	Ser	Ala	Thr	Glu	405	410	415	
Ser	Ile	Ser	Ser	Pro	Ala	His	Ala	Arg	Ala	Glu	Lys	Ser	Glu	Ser	Ile	420	425	430	
Ala	Ile	Ile	Gly	Leu	Ala	Gly	Arg	Tyr	Pro	Gly	Ser	Asp	Ser	Leu	Glu	435	440	445	
Gly	Phe	Trp	Gln	Asn	Leu	Ala	Gln	Gly	Arg	Asp	Cys	Ile	Thr	Glu	Ile	450	455	460	
Pro	Glu	Glu	Arg	Trp	Arg	Leu	Asp	Gly	Phe	Phe	Glu	Pro	Asp	Glu	Thr	465	470	475	480
Arg	Ala	Val	Ala	Gln	Gly	Lys	Ser	Tyr	Ser	Lys	Trp	Gly	Gly	Phe	Leu	485	490	495	
Glu	Gly	Phe	Ala	Asp	Phe	Asp	Pro	Leu	Phe	Phe	Asn	Met	Ser	Pro	Arg	500	505	510	
Glu	Ala	Arg	Asp	Ile	Asp	Pro	Gln	Glu	Arg	Ile	Phe	Leu	Gln	Cys	Val	515	520	525	
Trp	His	Ala	Leu	Glu	Asp	Ala	Ala	Leu	Thr	Arg	Lys	Asp	Leu	Lys	Glu	530	535	540	
His	Tyr	Asp	Gln	Asn	Val	Gly	Val	Phe	Ala	Gly	Val	Thr	Lys	Thr	Gly	545	550	555	560
Phe	Asp	Leu	Tyr	Gly	Pro	Ala	Gln	Arg	Ala	Ala	Gly	Lys	Val	Ala	Phe	565	570	575	
Pro	His	Thr	Ser	Phe	Gly	Ser	Ile	Ala	Asn	Arg	Val	Ser	Tyr	Val	Leu	580	585	590	
Asp	Leu	His	Gly	Pro	Ser	Met	Pro	Ile	Asp	Thr	Met	Cys	Ser	Ser	Gly	595	600	605	
Leu	Thr	Ala	Ile	His	Gln	Ala	Cys	Ala	Ala	Leu	Leu	Asp	Arg	Ser	Thr	610	615	620	
Asn	Leu	Ala	Ile	Ala	Gly	Ala	Val	Asn	Leu	Tyr	Leu	His	Ser	Ser	Asn	625	630	635	640
Tyr	Ala	Glu	Leu	Cys	Ser	Ala	Tyr	Met	Leu	Ser	Arg	Ser	Gly	Arg	Cys	645	650	655	
Arg	Ser	Phe	Gly	Ala	Asp	Ala	Asp	Gly	Tyr	Val	Pro	Gly	Glu	Gly	Val	660	665	670	
Gly	Ala	Ala	Val	Leu	Lys	Arg	Leu	Ser	Glu	Ala	Glu	Gln	Asp	Gly	Asp	675	680	685	
Arg	Ile	His	Gly	Val	Ile	Arg	Ser	Thr	Ala	Val	Asn	His	Gly	Gly	His	690	695	700	

Thr	His	Gly	Tyr	Thr	Val	Pro	Asn	Pro	Arg	Ala	Gln	Ala	Ala	Leu	Val
705					710					715					720
Arg	Ser	Ala	Leu	Asn	Lys	Ala	Gly	Ile	Asp	Ala	Asp	Thr	Ile	Gly	Tyr
				725					730					735	
Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Pro	Leu	Gly	Asp	Pro	Ile	Glu	Val
			740					745					750		
Asp	Gly	Leu	Val	Glu	Ala	Phe	Ala	Ser	Gly	Asn	Val	Leu	Pro	Gly	Gln
		755					760					765			
Cys	Trp	Leu	Gly	Ser	Val	Lys	Ser	Asn	Val	Gly	His	Leu	Glu	Ala	Ala
	770					775					780				
Ala	Gly	Leu	Ala	Gly	Leu	Thr	Lys	Val	Leu	Met	Gln	Met	Arg	Ala	Gly
785					790					795					800
Gln	Ile	Ala	Pro	Ser	Leu	His	Ala	Asp	Ala	Val	Asn	Pro	Ala	Ile	Asp
				805					810					815	
Phe	Gly	Asn	Thr	Pro	Phe	Arg	Val	Pro	Thr	Val	Leu	Thr	Glu	Trp	Thr
			820					825					830		
Pro	Ala	Asp	Asp	Lys	Pro	Arg	Arg	Ala	Gly	Ile	Ser	Ser	Phe	Gly	Pro
		835					840					845			
Ala	Glu	Pro	Met	His	Met	Trp	Trp	Ser	Lys	Asn	Ile	Arg	Arg	His	Leu
	850					855					860				
Pro	Asn	Arg	Ala	Arg	Leu	Asn	Pro	Gly	Gln	Phe					
865					870					875					

<210> 21

<211> 2142

<212> PRT

<213> Labrenzia sp. PHM005

<400> 21

Met	Glu	Ala	Ala	Ser	Gly	Leu	Ala	Ala	Leu	Leu	Lys	Val	Val	His	Ser
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Phe	Ala	Ala	Asp	Arg	Ile	Phe	Gly	Ile	Ala	Gly	Phe	Asp	Gln	Val	His
			20					25					30		
Pro	Glu	Ile	Arg	Glu	Asp	Gly	Ala	Ala	Cys	Ala	Leu	Ala	Val	Asn	Asp
		35				40						45			
Thr	Pro	Trp	Pro	Arg	Ser	Gly	Thr	Pro	Arg	His	Ala	Gly	Ile	His	Cys
	50				55					60					
His	Ala	Met	Ser	Gly	Val	Asn	Ala	His	Ile	Leu	Leu	Gln	Glu	Pro	Pro
65				70					75					80	
Cys	Lys	Ser	Val	Ala	Arg	Pro	Gln	Asp	Ala	Pro	Ala	Asp	Pro	Gln	Val
			85					90						95	
Ile	Val	Leu	Ser	Ala	Ala	Ser	Pro	Ser	Ser	Leu	Glu	Arg	Met	Ile	Ala
		100					105						110		
Asn	Leu	Leu	Lys	His	Leu	Gln	Gln	Gln	Pro	Glu	Arg	Leu	Cys	Asp	Val
		115				120						125			
Ala	Lys	Thr	Leu	Gln	Gln	Gly	Arg	Asp	Ala	Leu	Ala	Tyr	Arg	Ile	Ala
	130					135					140				
Trp	Val	Val	Pro	Asp	Thr	Ala	Ala	Leu	Ile	Glu	Ala	Leu	Glu	Val	Glu
145					150					155					160

Leu Thr Leu Pro Leu Pro Ala Ser Val Ala Gly Ala Met Arg Ser Tyr
 565 570 575
 Ser Arg Ala Glu Arg Cys Pro Leu Ser Ser Leu Cys Leu Ala Leu Phe
 580 585 590
 Ala Thr Leu Leu His Arg Leu Ser Gly Asp Asp Asp Ile Ile Val Gly
 595 600 605
 Met Pro Asp His Gly Arg His Asp Pro Arg Tyr Ala Glu Thr Val Gly
 610 615 620
 Tyr Leu Val Asn Met Leu Pro Ile Arg Met Gln Gly Leu Ala Gly Arg
 625 630 635 640
 Thr Leu Arg Asp Leu Ala Tyr His Leu Gln Gly Glu Val Ala Asp Ala
 645 650 655
 Leu Asp His Ala Ala Tyr Pro Phe Ala Gln Met Val Arg Asp Leu Gly
 660 665 670
 Leu Ser Ser Gly Pro Gly Glu Pro Pro Val Phe Arg Val Ala Phe Glu
 675 680 685
 Tyr Gln Asn Ala Phe Ser His Asp Ala Leu Pro Ala Leu His Gln Arg
 690 695 700
 Leu Gln Val Thr Gly Asp Leu Thr Leu Val Glu Asp Leu Arg Gln Glu
 705 710 715 720
 Gly Glu Tyr Glu Leu Val Leu Glu Val Arg Glu Thr Ser Asp Thr Leu
 725 730 735
 Ser Leu Cys Met Lys Tyr Asn Pro Asp Leu Tyr Ser Glu Gln Arg Val
 740 745 750
 Gln Gly Trp Leu Glu Ala Leu Thr Asn Leu Ala Gln Gln Ala Leu Ala
 755 760 765
 Asp Pro Glu Ala Asn Leu Asp Ser Phe Asp Ile Val Gly Thr Ser Asp
 770 775 780
 Arg Ala Lys Leu Leu Ala Trp Gly Thr Gly Pro Lys Pro Glu Phe Ser
 785 790 795 800
 Ala Asp Thr Val Met Gln Leu Val Gln Arg Gln Thr Asp Met His Ser
 805 810 815
 Ala Glu Thr Ala Val Val Asp Cys Asp Gly Ala Trp Thr Tyr Glu Gln
 820 825 830
 Leu Asp Gln Glu Ser Leu Arg Val Ala Ala Ala Ile Gln Gln Ala Gly
 835 840 845
 Val Arg Pro Gly Asp Arg Val Ala Leu Cys Leu Gly Arg Arg Arg Asn
 850 855 860
 Tyr Ser Ala Ala Leu Leu Gly Thr Leu Arg Ala Gly Ala Val Phe Val
 865 870 875 880
 Pro Leu Asp Pro Ala His Pro Lys Ala Arg Leu Arg His Ile Leu Glu
 885 890 895
 Asp Cys Ala Pro Arg Ala Ile Leu Ala Asp Val Ser Thr Asp Ala Met
 900 905 910
 Ala Thr Gln Leu Ala Glu Pro Asp Cys Thr Met Val Arg Val Asp Ala
 915 920 925
 Leu Ser Cys Ala Pro Glu Pro Gln Pro Val Gly Leu Lys Gly Gly Asp
 930 935 940
 Pro Ala Tyr Leu Ile Tyr Thr Ser Gly Ser Thr Gly Arg Pro Lys Gly
 945 950 955 960

Val	Gln	Val	Pro	His	Arg	Ala	Leu	Ala	Asn	Phe	Leu	Gln	Ala	Met	Ala		
				965					970					975			
Gln	Arg	Pro	Gly	Ala	Gly	Thr	Gly	Asp	Arg	Leu	Leu	Ala	Val	Thr	Thr		
			980					985					990				
Phe	Ala	Phe	Asp	Ile	Ser	Leu	Leu	Glu	Leu	Leu	Leu	Pro	Ile	Thr	Ser		
		995					1000					1005					
Gly	Gly	Ser	Val	His	Ile	Cys	Pro	Glu	Glu	Ile	Ala	Gln	Asp	Pro	Asp		
	1010					1015					1020						
Ala	Leu	Ala	Ser	Glu	Ile	Ser	Arg	Val	Lys	Pro	Asp	Ile	Leu	Gln	Ala		
1025					1030				1035						1040		
Thr	Ala	Ser	Val	Trp	Thr	Met	Leu	Phe	Ala	Ala	Gly	Trp	Gln	Pro	Pro		
			1045					1050					1055				
Asp	Gly	Leu	Lys	Ala	Leu	Cys	Gly	Gly	Glu	Pro	Met	Pro	Asp	Arg	Leu		
		1060						1065				1070					
Asn	Ser	Leu	Phe	Gln	Asn	Ser	Lys	Leu	Asp	Ala	Trp	Asn	Met	Tyr	Gly		
	1075					1080					1085						
Pro	Thr	Glu	Thr	Thr	Ile	Trp	Ser	Thr	Cys	Gly	Pro	Val	Thr	Gly	Ser		
	1090					1095					1100						
Gln	Asp	Thr	Val	Thr	Ile	Gly	Met	Pro	Ile	Ala	Phe	Thr	Glu	Val	Leu		
1105					1110				1115						1120		
Val	Leu	Asp	Glu	Tyr	Leu	Gln	Leu	Val	Pro	Val	Gly	Glu	Gln	Gly	Glu		
		1125						1130					1135				
Leu	Tyr	Ile	Ser	Gly	Ala	Gly	Leu	Ala	Asp	Gly	Tyr	Trp	Gln	Gln	Ala		
		1140				1145					1150						
Asp	Arg	Thr	Ala	Gln	Ser	Phe	Ile	Ala	His	Pro	Tyr	Arg	Ser	Gly	Glu		
	1155					1160					1165						
Arg	Leu	Tyr	Lys	Thr	Gly	Asp	Leu	Ala	Ser	Trp	Ser	Pro	Ser	Gly	Gly		
	1170				1175					1180							
Leu	Ile	His	His	Gly	Arg	Arg	Asp	Gln	Gln	Ile	Lys	Leu	Arg	Gly	His		
1185				1190				1195						1200			
Arg	Ile	Glu	Leu	Ala	Glu	Ile	Glu	Cys	Val	Leu	Asp	Arg	His	Lys	Glu		
		1205						1210				1215					
Leu	Arg	Glu	Ser	Ala	Val	Val	Leu	Arg	Lys	Ser	Gly	Pro	Glu	Ala	Gln		
		1220						1225				1230					
Leu	Val	Ala	Tyr	Val	Val	Pro	Glu	Arg	Glu	Ala	Val	Pro	Ala	Val	Glu		
	1235					1240					1245						
Leu	Arg	Ala	Cys	Leu	Arg	Glu	Asp	Leu	Pro	Ala	Tyr	Met	Leu	Pro	Asp		
	1250					1255					1260						
Leu	Ile	Ile	Ser	Leu	Ala	Asn	Leu	Pro	Leu	Thr	Pro	Ala	Gly	Lys	Ile		
1265				1270				1275						1280			
Asp	Arg	Met	Ala	Leu	Ala	Ala	Arg	Gln	Val	Asp	Leu	Gly	His	Asp	Arg		
		1285						1290				1295					
Ser	Ala	Ser	Pro	Glu	Ile	Glu	Pro	Gly	Pro	Pro	Asp	Met	Asp	Leu	Glu		
	1300							1305				1310					
Lys	Glu	Val	Leu	Ala	Leu	Trp	Ser	Asp	Val	Leu	Asp	Ser	Thr	Gly	Ile		
	1315					1320					1325						
Gly	Arg	Asp	Ile	Gly	Phe	Phe	Glu	Ala	Gly	Gly	Asn	Ser	Val	Thr	Ala		
	1330				1335						1340						
Ala	Val	Leu	Ala	Ala	Arg	Ile	Ser	Glu	Arg	Phe	Gly	Val	Glu	Leu	Arg		
1345				1350						1355					1360		

Val Ser Asp Leu Phe Arg Phe Pro Thr Ile Arg Ala Gln Ala Arg His
1365 1370 1375
Leu Gly Ala Gly Thr Ser Asp Val Val Pro Ala Ser Gln Lys Gln Val
1380 1385 1390
Thr Ala Ala His Glu Ala Pro Lys Leu Asn His Phe Ala Ala Pro Ser
1395 1400 1405
Leu Ala Gln Arg Leu Asp Asp Glu Pro Leu Ala Val Ile Gly Leu Ser
1410 1415 1420
Cys Ala Val Pro Gly Ala Leu Asp Leu Gln Ser Phe Trp Gln Asn Leu
1425 1430 1435 1440
Leu Asp Gly Arg Glu Ala Arg Glu Val Leu Thr Pro Glu Glu Leu Arg
1445 1450 1455
Ala Ala Gly Val Pro Asp Ala Gln Leu Ser Gln Pro Asp Phe Val Pro
1460 1465 1470
Val Ala Phe Pro Leu Ala Glu Arg Ala Cys Phe Asp Pro Gly Phe Phe
1475 1480 1485
Asn Ile Ser Ala Arg Ala Ala Leu His Met Asp Pro Gln Ser Arg Leu
1490 1495 1500
Leu Leu Gln His Ala Trp Lys Ala Met Glu Glu Ala Gly His Ser Thr
1505 1510 1515 1520
Ala Ser Leu Pro Lys Thr Ala Val Phe Thr Ala Val Ser His Gly His
1525 1530 1535
Tyr Lys Thr Leu Leu His Asp Cys Gln Ala Val Ser Asp Asp Glu Phe
1540 1545 1550
Tyr Ser Ala Trp Ile Ala Gly Gln Gly Gly Thr Val Pro Thr Met Leu
1555 1560 1565
Ser Tyr Gln Leu Gly Leu Thr Gly Pro Ser Met Ala Val His Ser Asn
1570 1575 1580
Cys Ser Ser Gly Leu Val Ala Leu His Gln Ala Arg Gln Ala Leu Leu
1585 1590 1595 1600
Ala Gly Glu Ala Arg Ala Ala Leu Ile Gly Ala Ala Ser Val Tyr Ala
1605 1610 1615
Val Pro Gly Ala Gly Tyr Leu His Gln Pro Gly Leu Asn Val Ser Ser
1620 1625 1630
Asp Gly His Cys Arg Ala Phe Asp Ala Lys Ala Asp Gly Leu Val Ala
1635 1640 1645
Gly Glu Gly Leu Gly Val Val Leu Val Lys Arg Leu Ser Asp Ala Gln
1650 1655 1660
Ala Asp Gly Asp His Ile His Ala Leu Ile Lys Gly Val Gly Ile Ser
1665 1670 1675 1680
Asn Asp Gly Ala Asp Lys Ala Gly Phe Phe Ala Pro Ser Val Gln Gly
1685 1690 1695
Gln Ser Glu Ala Ile Arg Arg Ala Leu Glu Ser Ala Lys Val Asp Pro
1700 1705 1710
Ala Ser Ile Gly Tyr Ile Glu Ala His Gly Thr Gly Thr Arg Leu Gly
1715 1720 1725
Asp Pro Val Glu Ile Leu Gly Leu Gln Ser Val Tyr Gly Arg Ala Ala
1730 1735 1740
Gly Ala Pro Gln Pro Val Arg Ile Gly Ser Leu Lys Pro Asn Ile Gly
1745 1750 1755 1760

His	Leu	Asp	Thr	Ala	Ala	Gly	Leu	Val	Gly	Leu	Ile	Lys	Ala	Val	Met
				1765					1770					1775	
Ala	Val	Lys	Thr	Gly	Glu	Ile	Pro	Pro	Ser	Ile	Asn	Phe	Glu	Thr	Pro
				1780					1785					1790	
Asn	Pro	Glu	Ile	Asp	Phe	Glu	Asp	Ala	Gly	Leu	Glu	Val	Ala	Ala	Ile
				1795					1800					1805	
Arg	Gln	Gly	Trp	Pro	Glu	Thr	Ser	Gly	Ser	Pro	Arg	Arg	Ala	Gly	Ile
				1810					1815					1820	
Ser	Ala	Phe	Gly	Ile	Gly	Gly	Thr	Asn	Ala	His	Ala	Ile	Val	Glu	Glu
1825					1830					1835					1840
Phe	Gln	Pro	Glu	Ser	Ala	Met	Pro	Val	Ser	Pro	Val	Ala	Glu	Pro	Ser
				1845						1850				1855	
Ser	Gln	Ile	Val	Pro	Val	Ser	Ala	Arg	Thr	Gln	Asp	Gly	Leu	Arg	Gln
				1860						1865				1870	
Leu	Leu	Ser	Arg	Leu	Leu	Ala	Val	Val	Glu	Asp	Lys	Ala	Glu	Ala	Pro
				1875						1880				1885	
Leu	Ala	Asp	Ile	Ala	Tyr	Thr	Leu	Gln	Thr	Gly	Arg	Arg	His	Met	Val
				1890						1895				1900	
Tyr	Arg	Lys	Ala	Phe	Val	Val	Ser	Gly	Leu	Asp	Glu	Leu	Arg	Ala	Glu
1905					1910						1915				1920
Leu	Lys	Ala	Cys	Leu	Ser	Thr	Ala	Glu	Leu	Glu	Asp	Gln	Pro	Ala	
				1925						1930				1935	
Ala	Ser	Met	Pro	Lys	Leu	Lys	Ser	Gln	Glu	Met	Ser	Val	Leu	Met	Glu
				1940						1945				1950	
His	Trp	Leu	Ala	Thr	Arg	Gln	Leu	Asp	Arg	Val	Ala	Glu	Ala	Trp	Thr
				1955						1960				1965	
Gly	Gly	Thr	Glu	Val	Asp	Trp	Thr	Gln	Leu	His	Thr	Gly	Pro	Arg	Arg
				1970						1975				1980	
Arg	Val	Ser	Leu	Pro	Thr	Tyr	Pro	Phe	Ala	Lys	Glu	Ile	Phe	Trp	Pro
1985					1990						1995				2000
Gly	Lys	Pro	Gly	Ala	Gln	Pro	Ser	Ala	Gly	Ser	Met	Gln	Ser	Leu	Leu
				2005						2010				2015	
Leu	Thr	Gln	Asp	Arg	Gln	Val	Ala	Asn	Arg	Ile	Pro	Val	Ser	Ala	Pro
				2020						2025				2030	
Ala	Gly	Val	Gln	Lys	Val	Trp	Leu	Met	Gly	Ala	Leu	Gly	Gln	His	Gln
				2035						2040				2045	
Gln	Thr	Leu	Ser	Glu	Leu	Leu	Pro	Asp	Ala	Arg	Ile	Thr	Asp	Leu	Pro
				2050						2055				2060	
Gly	Glu	Ser	Gly	Ala	Asp	Pro	Ala	Ser	His	Tyr	Met	Lys	Leu	Ser	Arg
2065					2070						2075				2080
Ala	Leu	Leu	Ala	Lys	Ala	Arg	Asp	Leu	Ala	Leu	Glu	Gly	Gly	Ala	Gly
				2085						2090				2095	
Leu	Leu	Gln	Ile	Val	Leu	Asp	Ala	Arg	Gly	Pro	Gly	Val	Pro	Val	Phe
				2100						2105				2110	
Leu	Pro	Pro	Trp	Arg	Arg	Arg	Ser	Arg	Thr	Cys	Ala	Phe	Lys	Ser	Tyr
				2115						2120				2125	
Lys	Ser	Leu	Arg	Pro	Tyr	Arg	Phe	Arg	Thr	Trp	Leu	Ala	His		
				2130						2135				2140	

<210> 22

<211> 377
 <212> PRT
 <213> Labrenzia sp. PHM005

<400> 22

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

Phe	Asn	Arg	Ala	Met	Lys	Arg	Phe	Gly	Gln	Glu	Ala	Gly	Ala	Ala	Ala
	355						360					365			
Leu	Met	Arg	Ser	Val	Ser	Ser	Val	Arg							
	370					375									

<210> 23
 <211> 278
 <212> PRT
 <213> Labrenzia sp. PHM005

<400> 23

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