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SEQUENCE LISTING

<110> Regeneron Pharmaceuticals, Inc.

<120> Piezo Type Mechanosensitive Ion Channel Component 1 (PIEZ01)
Variants And Uses Thereof

<130> 189238.02502 (3172)

<150> 62/862,847

<151> 2019-06-18

<150> 62/806,932

<151> 2019-02-18

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<170> PatentIn version 3.5

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Val Tyr Leu Leu Phe Leu Leu Leu Leu Pro Trp Phe Pro Gly Pro Thr
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Arg Cys Gly Leu Gln Gly His Thr Gly Arg Leu Leu Arg Ala Leu Leu
 50 55 60

Gly Leu Ser Leu Leu Phe Leu Val Ala His Leu Ala Leu Gln Ile Cys
 65 70 75 80

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

Arg Trp Glu Thr Leu Ser Arg His Ile Gly Val Thr Arg Leu Asp Leu
 100 105 110

Lys Asp Ile Pro Asn Ala Ile Arg Leu Val Ala Pro Asp Leu Gly Ile
 115 120 125

Leu Val Val Ser Ser Val Cys Leu Gly Ile Cys Gly Arg Leu Ala Arg
 130 135 140

Asn Thr Arg Gln Ser Pro His Pro Arg Glu Leu Asp Asp Asp Glu Arg
 145 150 155 160

Asp Val Asp Ala Ser Pro Thr Ala Gly Leu Gln Glu Ala Ala Thr Leu
 165 170 175

Ala Pro Thr Arg Arg Ser Arg Leu Ala Ala Arg Phe Arg Val Thr Ala
 180 185 190

His Trp Leu Leu Val Ala Ala Gly Arg Val Leu Ala Val Thr Leu Leu
 195 200 205

Ala Leu Ala Gly Ile Ala His Pro Ser Ala Leu Ser Ser Val Tyr Leu

210

215

220

Leu Leu Phe Leu Ala Leu Cys Thr Trp Trp Ala Cys His Phe Pro Ile
 225 230 235 240

Ser Thr Arg Gly Phe Ser Arg Leu Cys Val Ala Val Gly Cys Phe Gly
 245 250 255

Ala Gly His Leu Ile Cys Leu Tyr Cys Tyr Gln Met Pro Leu Ala Gln
 260 265 270

Ala Leu Leu Pro Pro Ala Gly Ile Trp Ala Arg Val Leu Gly Leu Lys
 275 280 285

Asp Phe Val Gly Pro Thr Asn Cys Ser Ser Pro His Ala Leu Val Leu
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Asn Thr Gly Leu Asp Trp Pro Val Tyr Ala Ser Pro Gly Val Leu Leu
 305 310 315 320

Leu Leu Cys Tyr Ala Thr Ala Ser Leu Arg Lys Leu Arg Ala Tyr Arg
 325 330 335

Pro Ser Gly Gln Arg Lys Glu Ala Ala Lys Gly Tyr Glu Ala Arg Glu
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Leu Glu Leu Ala Glu Leu Asp Gln Trp Pro Gln Glu Arg Glu Ser Asp
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Gln His Val Val Pro Thr Ala Pro Asp Thr Glu Ala Asp Asn Cys Ile
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Val His Glu Leu Thr Gly Gln Ser Ser Val Leu Arg Arg Pro Val Arg
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Pro Lys Arg Ala Glu Pro Arg Glu Ala Ser Pro Leu His Ser Leu Gly
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His Leu Ile Met Asp Gln Ser Tyr Val Cys Ala Leu Ile Ala Met Met
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Val Trp Ser Ile Thr Tyr His Ser Trp Leu Thr Phe Val Leu Leu Leu
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Trp Ala Cys Leu Ile Trp Thr Val Arg Ser Arg His Gln Leu Ala Met
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Leu Cys Ser Pro Cys Ile Leu Leu Tyr Gly Met Thr Leu Cys Cys Leu
 465 470 475 480

Arg Tyr Val Trp Ala Met Asp Leu Arg Pro Glu Leu Pro Thr Thr Leu
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Gly Pro Val Ser Leu Arg Gln Leu Gly Leu Glu His Thr Arg Tyr Pro
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Cys Leu Asp Leu Gly Ala Met Leu Leu Tyr Thr Leu Thr Phe Trp Leu
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Leu Leu Arg Gln Phe Val Lys Glu Lys Leu Leu Lys Trp Ala Glu Ser
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Pro Ala Ala Leu Thr Glu Val Thr Val Ala Asp Thr Glu Pro Thr Arg
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Thr Gln Thr Leu Leu Gln Ser Leu Gly Glu Leu Val Lys Gly Val Tyr
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Ala Lys Tyr Trp Ile Tyr Val Cys Ala Gly Met Phe Ile Val Val Ser
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Phe Ala Gly Arg Leu Val Val Tyr Lys Ile Val Tyr Met Phe Leu Phe
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Leu Leu Cys Leu Thr Leu Phe Gln Val Tyr Tyr Ser Leu Trp Arg Lys
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Leu Leu Lys Ala Phe Trp Trp Leu Val Val Ala Tyr Thr Met Leu Val
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Leu Ile Ala Val Tyr Thr Phe Gln Phe Gln Asp Phe Pro Ala Tyr Trp

645

650

655

Arg Asn Leu Thr Gly Phe Thr Asp Glu Gln Leu Gly Asp Leu Gly Leu
 660 665 670

Glu Gln Phe Ser Val Ser Glu Leu Phe Ser Ser Ile Leu Val Pro Gly
 675 680 685

Phe Phe Leu Leu Ala Cys Ile Leu Gln Leu His Tyr Phe His Arg Pro
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Phe Met Gln Leu Thr Asp Met Glu His Val Ser Leu Pro Gly Thr Arg
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Leu Pro Arg Trp Ala His Arg Gln Asp Ala Val Ser Gly Thr Pro Leu
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Leu Arg Glu Glu Gln Gln Glu His Gln Gln Gln Gln Glu Glu Glu
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Glu Glu Glu Glu Asp Ser Arg Asp Glu Gly Leu Gly Val Ala Thr Pro
 755 760 765

His Gln Ala Thr Gln Val Pro Glu Gly Ala Ala Lys Trp Gly Leu Val
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Ala Glu Arg Leu Leu Glu Leu Ala Ala Gly Phe Ser Asp Val Leu Ser
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Arg Val Gln Val Phe Leu Arg Arg Leu Leu Glu Leu His Val Phe Lys
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Leu Val Ala Leu Tyr Thr Val Trp Val Ala Leu Lys Glu Val Ser Val
 820 825 830

Met Asn Leu Leu Leu Val Val Leu Trp Ala Phe Ala Leu Pro Tyr Pro
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Arg Phe Arg Pro Met Ala Ser Cys Leu Ser Thr Val Trp Thr Cys Val
 850 855 860

Ile Ile Val Cys Lys Met Leu Tyr Gln Leu Lys Val Val Asn Pro Gln
865 870 875 880

Glu Tyr Ser Ser Asn Cys Thr Glu Pro Phe Pro Asn Ser Thr Asn Leu
885 890 895

Leu Pro Thr Glu Ile Ser Gln Ser Leu Leu Tyr Arg Gly Pro Val Asp
900 905 910

Pro Ala Asn Trp Phe Gly Val Arg Lys Gly Phe Pro Asn Leu Gly Tyr
915 920 925

Ile Gln Asn His Leu Gln Val Leu Leu Leu Leu Val Phe Glu Ala Ile
930 935 940

Val Tyr Arg Arg Gln Glu His Tyr Arg Arg Gln His Gln Leu Ala Pro
945 950 955 960

Leu Pro Ala Gln Ala Val Phe Ala Ser Gly Thr Arg Gln Gln Leu Asp
965 970 975

Gln Asp Leu Leu Gly Cys Leu Lys Tyr Phe Ile Asn Phe Phe Phe Tyr
980 985 990

Lys Phe Gly Leu Glu Ile Cys Phe Leu Met Ala Val Asn Val Ile Gly
995 1000 1005

Gln Arg Met Asn Phe Leu Val Thr Leu His Gly Cys Trp Leu Val
1010 1015 1020

Ala Ile Leu Thr Arg Arg His Arg Gln Ala Ile Ala Arg Leu Trp
1025 1030 1035

Pro Asn Tyr Cys Leu Phe Leu Ala Leu Phe Leu Leu Tyr Gln Tyr
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Leu Leu Cys Leu Gly Met Pro Pro Ala Leu Cys Ile Asp Tyr Pro
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Trp Arg Trp Ser Arg Ala Val Pro Met Asn Ser Ala Leu Ile Lys

1070						1075						1080			
Trp	Leu	Tyr	Leu	Pro	Asp	Phe	Phe	Arg	Ala	Pro	Asn	Ser	Thr	Asn	
1085						1090					1095				
Leu	Ile	Ser	Asp	Phe	Leu	Leu	Leu	Leu	Cys	Ala	Ser	Gln	Gln	Trp	
1100						1105					1110				
Gln	Val	Phe	Ser	Ala	Glu	Arg	Thr	Glu	Glu	Trp	Gln	Arg	Met	Ala	
1115						1120					1125				
Gly	Val	Asn	Thr	Asp	Arg	Leu	Glu	Pro	Leu	Arg	Gly	Glu	Pro	Asn	
1130						1135					1140				
Pro	Val	Pro	Asn	Phe	Ile	His	Cys	Arg	Ser	Tyr	Leu	Asp	Met	Leu	
1145						1150					1155				
Lys	Val	Ala	Val	Phe	Arg	Tyr	Leu	Phe	Trp	Leu	Val	Leu	Val	Val	
1160						1165					1170				
Val	Phe	Val	Thr	Gly	Ala	Thr	Arg	Ile	Ser	Ile	Phe	Gly	Leu	Gly	
1175						1180					1185				
Tyr	Leu	Leu	Ala	Cys	Phe	Tyr	Leu	Leu	Leu	Phe	Gly	Thr	Ala	Leu	
1190						1195					1200				
Leu	Gln	Arg	Asp	Thr	Arg	Ala	Arg	Leu	Val	Leu	Trp	Asp	Cys	Leu	
1205						1210					1215				
Ile	Leu	Tyr	Asn	Val	Thr	Val	Ile	Ile	Ser	Lys	Asn	Met	Leu	Ser	
1220						1225					1230				
Leu	Leu	Ala	Cys	Val	Phe	Val	Glu	Gln	Met	Gln	Thr	Gly	Phe	Cys	
1235						1240					1245				
Trp	Val	Ile	Gln	Leu	Phe	Ser	Leu	Val	Cys	Thr	Val	Lys	Gly	Tyr	
1250						1255					1260				
Tyr	Asp	Pro	Lys	Glu	Met	Met	Asp	Arg	Asp	Gln	Asp	Cys	Leu	Leu	
1265						1270					1275				

Pro	Val	Glu	Glu	Ala	Gly	Ile	Ile	Trp	Asp	Ser	Val	Cys	Phe	Phe
1280						1285					1290			
Phe	Leu	Leu	Leu	Gln	Arg	Arg	Val	Phe	Leu	Ser	His	Tyr	Tyr	Leu
1295						1300					1305			
His	Val	Arg	Ala	Asp	Leu	Gln	Ala	Thr	Ala	Leu	Leu	Ala	Ser	Arg
1310						1315					1320			
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1325						1330					1335			
His	Arg	Arg	Ile	Glu	Glu	Lys	Ser	Leu	Ala	Gln	Leu	Lys	Arg	Gln
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1355						1360					1365			
Val	Asp	Arg	Ser	Arg	Pro	Gln	Asp	Thr	Leu	Gly	Pro	Lys	Asp	Pro
1370						1375					1380			
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1385						1390					1395			
Arg	Arg	Gln	Trp	Trp	Arg	Pro	Trp	Leu	Asp	His	Ala	Thr	Val	Ile
1400						1405					1410			
His	Ser	Gly	Asp	Tyr	Phe	Leu	Phe	Glu	Ser	Asp	Ser	Glu	Glu	Glu
1415						1420					1425			
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1430						1435					1440			
Phe	Gln	Leu	Ala	Tyr	Gln	Ala	Trp	Val	Thr	Asn	Ala	Gln	Ala	Val
1445						1450					1455			
Leu	Arg	Arg	Arg	Gln	Gln	Glu	Gln	Glu	Gln	Ala	Arg	Gln	Glu	Gln
1460						1465					1470			
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1475

1480

1485

Pro Ala Glu Gly Pro Glu Glu Ala Ala Ala Gly Arg Ser His Val
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Val Gln Arg Val Leu Ser Thr Ala Gln Phe Leu Trp Met Leu Gly
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Gln Ala Leu Val Asp Glu Leu Thr Arg Trp Leu Gln Glu Phe Thr
 1520 1525 1530

Arg His His Gly Thr Met Ser Asp Val Leu Arg Ala Glu Arg Tyr
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Leu Leu Thr Gln Glu Leu Leu Gln Gly Gly Glu Val His Arg Gly
 1550 1555 1560

Val Leu Asp Gln Leu Tyr Thr Ser Gln Ala Glu Ala Thr Leu Pro
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Gly Pro Thr Glu Ala Pro Asn Ala Pro Ser Thr Val Ser Ser Gly
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Leu Gly Ala Glu Glu Pro Leu Ser Ser Met Thr Asp Asp Met Gly
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Ser Pro Leu Ser Thr Gly Tyr His Thr Arg Ser Gly Ser Glu Glu
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Ala Val Thr Asp Pro Gly Glu Arg Glu Ala Gly Ala Ser Leu Tyr
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Gln Gly Leu Met Arg Thr Ala Ser Glu Leu Leu Leu Asp Arg Arg
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Leu Arg Ile Pro Glu Leu Glu Glu Ala Glu Leu Phe Ala Glu Gly
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Gln Gly Arg Ala Leu Arg Leu Leu Arg Ala Val Tyr Gln Cys Val
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Ala	Ala	His	Ser	Glu	Leu	Leu	Cys	Tyr	Phe	Ile	Ile	Ile	Leu	Asn
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His	Met	Val	Thr	Ala	Ser	Ala	Gly	Ser	Leu	Val	Leu	Pro	Val	Leu
1700						1705					1710			
Val	Phe	Leu	Trp	Ala	Met	Leu	Ser	Ile	Pro	Arg	Pro	Ser	Lys	Arg
1715						1720					1725			
Phe	Trp	Met	Thr	Ala	Ile	Val	Phe	Thr	Glu	Ile	Ala	Val	Val	Val
1730						1735					1740			
Lys	Tyr	Leu	Phe	Gln	Phe	Gly	Phe	Phe	Pro	Trp	Asn	Ser	His	Val
1745						1750					1755			
Val	Leu	Arg	Arg	Tyr	Glu	Asn	Lys	Pro	Tyr	Phe	Pro	Pro	Arg	Ile
1760						1765					1770			
Leu	Gly	Leu	Glu	Lys	Thr	Asp	Gly	Tyr	Ile	Lys	Tyr	Asp	Leu	Val
1775						1780					1785			
Gln	Leu	Met	Ala	Leu	Phe	Phe	His	Arg	Ser	Gln	Leu	Leu	Cys	Tyr
1790						1795					1800			
Gly	Leu	Trp	Asp	His	Glu	Glu	Asp	Ser	Pro	Ser	Lys	Glu	His	Asp
1805						1810					1815			
Lys	Ser	Gly	Glu	Glu	Glu	Gln	Gly	Ala	Glu	Glu	Gly	Pro	Gly	Val
1820						1825					1830			
Pro	Ala	Ala	Thr	Thr	Glu	Asp	His	Ile	Gln	Val	Glu	Ala	Arg	Val
1835						1840					1845			
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1850						1855					1860			
Arg	Asp	Thr	Arg	Arg	Ile	Ser	Leu	Arg	Phe	Arg	Arg	Arg	Lys	Lys
1865						1870					1875			
Glu	Gly	Pro	Ala	Arg	Lys	Gly	Ala	Ala	Ala	Ile	Glu	Ala	Glu	Asp

1880						1885						1890			
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Arg	Glu 1910	Lys	Arg	Pro	Ser	Arg 1915	Ser	Gly	Gly	Arg	Val 1920	Arg	Ala	Ala	
Gly	Arg 1925	Arg	Leu	Gln	Gly	Phe 1930	Cys	Leu	Ser	Leu	Ala 1935	Gln	Gly	Thr	
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Tyr	Arg 1955	Ala	Ala	Thr	Asp	Val 1960	Tyr	Ala	Leu	Met	Phe 1965	Leu	Ala	Asp	
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Lys	His 1985	Ser	Ala	Ala	Thr	Asp 1990	Ile	Thr	Ser	Ser	Leu 1995	Ser	Asp	Asp	
Gln	Val 2000	Pro	Glu	Ala	Phe	Leu 2005	Val	Met	Leu	Leu	Ile 2010	Gln	Phe	Ser	
Thr	Met 2015	Val	Val	Asp	Arg	Ala 2020	Leu	Tyr	Leu	Arg	Lys 2025	Thr	Val	Leu	
Gly	Lys 2030	Leu	Ala	Phe	Gln	Val 2035	Ala	Leu	Val	Leu	Ala 2040	Ile	His	Leu	
Trp	Met 2045	Phe	Phe	Ile	Leu	Pro 2050	Ala	Val	Thr	Glu	Arg 2055	Met	Phe	Asn	
Gln	Asn 2060	Val	Val	Ala	Gln	Leu 2065	Trp	Tyr	Phe	Val	Lys 2070	Cys	Ile	Tyr	
Phe	Ala 2075	Leu	Ser	Ala	Tyr	Gln 2080	Ile	Arg	Cys	Gly	Tyr 2085	Pro	Thr	Arg	

Ile	Leu	Gly	Asn	Phe	Leu	Thr	Lys	Lys	Tyr	Asn	His	Leu	Asn	Leu
2090						2095					2100			
Phe	Leu	Phe	Gln	Gly	Phe	Arg	Leu	Val	Pro	Phe	Leu	Val	Glu	Leu
2105						2110					2115			
Arg	Ala	Val	Met	Asp	Trp	Val	Trp	Thr	Asp	Thr	Thr	Leu	Ser	Leu
2120						2125					2130			
Ser	Ser	Trp	Met	Cys	Val	Glu	Asp	Ile	Tyr	Ala	Asn	Ile	Phe	Ile
2135						2140					2145			
Ile	Lys	Cys	Ser	Arg	Glu	Thr	Glu	Lys	Lys	Tyr	Pro	Gln	Pro	Lys
2150						2155					2160			
Gly	Gln	Lys	Lys	Lys	Lys	Ile	Val	Lys	Tyr	Gly	Met	Gly	Gly	Leu
2165						2170					2175			
Ile	Ile	Leu	Phe	Leu	Ile	Ala	Ile	Ile	Trp	Phe	Pro	Leu	Leu	Phe
2180						2185					2190			
Met	Ser	Leu	Val	Arg	Ser	Val	Val	Gly	Val	Val	Asn	Gln	Pro	Ile
2195						2200					2205			
Asp	Val	Thr	Val	Thr	Leu	Lys	Leu	Gly	Gly	Tyr	Glu	Pro	Leu	Phe
2210						2215					2220			
Thr	Met	Ser	Ala	Gln	Gln	Pro	Ser	Ile	Ile	Pro	Phe	Thr	Ala	Gln
2225						2230					2235			
Ala	Tyr	Glu	Glu	Leu	Ser	Arg	Gln	Phe	Asp	Pro	Gln	Pro	Leu	Ala
2240						2245					2250			
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2255						2260					2265			
Gln	Ile	Glu	Gly	Ser	Ser	Gly	Ala	Leu	Trp	Arg	Ile	Ser	Pro	Pro
2270						2275					2280			
Ser	Arg	Ala	Gln	Met	Lys	Arg	Glu	Leu	Tyr	Asn	Gly	Thr	Ala	Asp

2285

2290

2295

Ile Thr Leu Arg Phe Thr Trp Asn Phe Gln Arg Asp Leu Ala Lys
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Gly Gly Thr Val Glu Tyr Ala Asn Glu Lys His Met Leu Ala Leu
 2315 2320 2325

Ala Pro Asn Ser Thr Ala Arg Arg Gln Leu Ala Ser Leu Leu Glu
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Gly Thr Ser Asp Gln Ser Val Val Ile Pro Asn Leu Phe Pro Lys
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Tyr Ile Arg Ala Pro Asn Gly Pro Glu Ala Asn Pro Val Lys Gln
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Leu Gln Pro Asn Glu Glu Ala Asp Tyr Leu Gly Val Arg Ile Gln
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Leu Arg Arg Glu Gln Gly Ala Gly Ala Thr Gly Phe Leu Glu Trp
 2390 2395 2400

Trp Val Ile Glu Leu Gln Glu Cys Arg Thr Asp Cys Asn Leu Leu
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Pro Met Val Ile Phe Ser Asp Lys Val Ser Pro Pro Ser Leu Gly
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Phe Leu Ala Gly Tyr Gly Ile Met Gly Leu Tyr Val Ser Ile Val
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Leu Val Ile Gly Lys Phe Val Arg Gly Phe Phe Ser Glu Ile Ser
 2450 2455 2460

His Ser Ile Met Phe Glu Glu Leu Pro Cys Val Asp Arg Ile Leu
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Lys Leu Cys Gln Asp Ile Phe Leu Val Arg Glu Thr Arg Glu Leu
 2480 2485 2490

Glu	Leu	Glu	Glu	Glu	Leu	Tyr	Ala	Lys	Leu	Ile	Phe	Leu	Tyr	Arg
2495						2500					2505			
Ser	Pro	Glu	Thr	Met	Ile	Lys	Trp	Thr	Arg	Glu	Lys	Glu		
2510						2515					2520			