

1
LISTADO DE SECUENCIAS

<110> Consejo Superior de Investigaciones Científicas (CSIC).
 <120> Uso de la rapamicina y derivados para el tratamiento de la tripanosomiasis africana.
 <130> ES1641.50
 <160> 4
 <170> PatentIn version 3.4
 <210> 1
 <211> 2432
 <212> PRT
 <213> Trypanosoma brucei
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Asn Ser Glu Cys Gln Ser Arg Glu Ala Asn Leu Arg Leu Ser Val Trp
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Ile Ser Ser Gln Ile Gly Gln Leu Phe Arg Arg Pro Glu Thr Gln Arg
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Ala Ala Ile Leu Cys Val Lys Thr Leu Leu Asp Val Glu Tyr Glu Ala
 85 90 95

Ile Asn Asn Leu Asp Gln Thr Phe Leu Arg Leu Leu Glu Asp Ser Val
 100 105 110

Lys Cys Ala Asp Met Ser Val Ser Arg Met Ala Ala Glu Val Trp Gly
 115 120 125

Leu Trp Leu Asn Asn Ser Gly Thr Ser Thr Glu Gly Ile Ala Gln Ser
 130 135 140

Arg Leu Lys Ile Cys Phe Ala Asp Leu Arg Glu Ser Asp Lys Val Met
 145 150 155 160

Asp Lys Val Ala Ala Cys Leu Phe Leu Glu Glu Leu Leu Lys Arg Thr
 165 170 175

Pro Ser Thr Val Ala Pro Leu Leu Asp Val Val Ala Glu Cys Leu His
 180 185 190

Pro Ala Val Leu Ser Ser Ser Asp Leu Val Gln Ala Ser Ala Ala Thr

| | | | | | | | | | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--|
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| Ala | Leu 210 | Arg | Tyr | Val | Leu | Leu 215 | Leu | Met | Tyr | Thr | Ser 220 | Met | Asn | Pro | Ser | |
| Gly 225 | Ile | Lys | Lys | Trp | Tyr 230 | Glu | Thr | Phe | Leu | Ser 235 | Ala | Ser | Leu | Asp | Ala 240 | |
| Leu | Arg | Ser | Gly | Ala 245 | Pro | Glu | Arg | Arg | Thr 250 | Gly | Ala | Ile | Arg | Cys 255 | Phe | |
| Asn | Ala | Val | Met 260 | Ser | Ser | Val | Thr | Ser 265 | Asn | Val | Ser | Ala | Cys 270 | Asp | Thr | |
| Ala | Val | Thr 275 | Phe | Ser | Glu | Thr | Ser 280 | Val | Ala | His | Val | His 285 | Glu | Ile | Trp | |
| Glu | Tyr 290 | Val | Ser | Glu | Gln | Val 295 | Thr | Leu | Thr | Ser | Thr 300 | Leu | Glu | Leu | Arg | |
| Arg 305 | Glu | Leu | Leu | Gln | Ser 310 | Leu | Thr | Ile | Leu | Ala 315 | Leu | Tyr | Asp | Thr | Glu 320 | |
| Ala | Phe | Lys | Arg | Met 325 | Ser | Ile | Ala | Lys | Val 330 | Val | Glu | Ala | Ala | Ser 335 | Gly | |
| Val | Phe | Gln | Thr 340 | Pro | Thr | Glu | Lys | Asp 345 | Leu | Glu | Pro | Leu | Val 350 | Phe | Gln | |
| Thr | Leu | Gly 355 | Lys | Leu | Ala | Gly | Val 360 | Met | Pro | Asp | Gln | Ile 365 | Val | Thr | Phe | |
| Leu | Gly 370 | Cys | Ser | Met | Arg | His 375 | Ile | Glu | Glu | Val | Leu 380 | Lys | Gln | Gly | Arg | |
| His 385 | Asp | Ala | Cys | Gly | Leu 390 | Gly | Ala | Ile | Ala | Cys 395 | Val | Ala | Ala | Phe | Ala 400 | |
| Glu | Val | Asn | Pro | Arg 405 | Ala | Val | Arg | Pro | Tyr 410 | Leu | Arg | Gln | Ile | Leu 415 | Ala | |
| Pro | Ile | Leu | Ser 420 | Gly | Ser | Leu | Thr | Val 425 | Asp | Phe | Ala | Lys | Gly 430 | Val | Ala | |
| Arg | Ile | Cys 435 | Ala | Ala | Phe | Pro | Glu 440 | Leu | Arg | Ser | Thr | Cys 445 | Leu | Ser | Lys | |
| Ile | Leu 450 | Glu | Val | Ala | Lys | Lys 455 | Gln | Leu | Arg | Asp | Asp 460 | Arg | Cys | Asn | Ala | |
| Gly 465 | Gly | Ala | Gly | Ala | Leu 470 | Cys | Asp | Gly | Gly | Val 475 | Ser | Pro | Ala | Ala | Gln 480 | |

Ile Leu Ser Ala Leu Ser Asn Leu Glu Phe Ala Gly Tyr Pro Thr Leu
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 Pro Phe Leu Cys Asp Thr Ala Val Ala Tyr Val Ser Val Pro Asn Gly
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 Glu Val Arg Arg Ala Ala Ile Lys Leu Cys Phe Lys Leu Val Leu Ser
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 Gly Cys Leu Gly Pro Gln Ser Pro Cys Arg Gln Thr Ser Asp Gly Val
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 Lys Lys Leu Val Asn Ala Ala Val Ala Asp Pro Glu Ser Asp Ile Arg
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 Thr Asp Leu Ser Val Leu Arg Gln Val Leu Ala Leu Leu Lys Glu Leu
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 Cys Cys Ser Leu Arg Glu Glu Phe Arg Pro Tyr Met Ser Ser Leu Leu
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 Gly Pro Ile Ile Val Leu Val Glu Glu Asn Val Glu Glu Thr Ser Glu
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 980 985 990
 Leu His Thr Val Leu Pro Val Val Cys Asn Ile Ile Val Asp Thr Ser
 995 1000 1005
 Val Pro Ser Arg Cys Arg Ile Val Ala Val Lys Thr Leu Ile Cys
 1010 1015 1020

| | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|------------------|-----|------|-----|-----|-----|
| Phe | Thr | Lys | Arg | Leu | Pro | Asp | Leu | Cys | ⁵ Phe | His | Ala | Ser | Arg | Cys |
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| Val | His | Cys | Leu | Cys | Arg | Val | Leu | Arg | Glu | Ser | Asp | Gly | Gly | Asp |
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| Gly | Val | Gly | Asp | Glu | Gly | Arg | Leu | Gly | Phe | Ser | Ala | Met | Glu | Ala |
| | 1055 | | | | | 1060 | | | | | 1065 | | | |
| Leu | Cys | Thr | Leu | Ala | Gly | Ser | Leu | Gly | Lys | Asn | Phe | Glu | Asn | Phe |
| | 1070 | | | | | 1075 | | | | | 1080 | | | |
| Val | Leu | Val | Val | Leu | Pro | Ala | Val | Ala | Asp | Arg | Tyr | Gly | Glu | Thr |
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| Ser | Gly | Glu | Tyr | Cys | Arg | Phe | Cys | His | Asp | Ile | Tyr | Glu | Ala | Ile |
| | 1100 | | | | | 1105 | | | | | 1110 | | | |
| Asp | Gly | Lys | Arg | Ala | Pro | Glu | Val | Ser | Ser | Asn | Gly | Val | Gly | Lys |
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| Ala | Gly | Gly | Gly | Gly | Ala | Pro | Ser | Leu | Pro | Phe | Thr | Ala | Gly | Thr |
| | 1130 | | | | | 1135 | | | | | 1140 | | | |
| Ser | Ala | Ser | Pro | Leu | Lys | Asp | Arg | Ala | Asp | Ala | Tyr | Ala | Ser | Leu |
| | 1145 | | | | | 1150 | | | | | 1155 | | | |
| Arg | Phe | His | Leu | Arg | Lys | Arg | Asp | Gln | Ala | Ser | Asp | Glu | Asp | Trp |
| | 1160 | | | | | 1165 | | | | | 1170 | | | |
| Asn | His | Trp | Leu | Pro | Gln | Leu | Ala | Val | Asn | Leu | Leu | Arg | Ser | Ser |
| | 1175 | | | | | 1180 | | | | | 1185 | | | |
| Ser | Ser | Pro | Ser | His | Gly | Arg | Ala | Leu | Thr | Leu | Ala | Glu | Leu | His |
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| Glu | Pro | Phe | Ala | Arg | Gln | Met | Leu | His | Ser | Ala | Phe | Ala | Ala | Cys |
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| Tyr | Ala | Asp | Met | Asp | Glu | His | Thr | Gln | Arg | Glu | Val | Val | Gly | Leu |
| | 1220 | | | | | 1225 | | | | | 1230 | | | |
| Leu | Thr | Glu | Val | Leu | Arg | Gly | Leu | Arg | Val | Pro | Ser | Glu | Val | Met |
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| Gln | Glu | Leu | Leu | Asn | Leu | Ser | Glu | His | Met | Glu | Arg | Gln | Gly | Ile |
| | 1250 | | | | | 1255 | | | | | 1260 | | | |
| Arg | Leu | Ser | Ala | Gly | Gly | Lys | Ala | Ser | Ile | Lys | His | Ser | Ser | Asn |
| | 1265 | | | | | 1270 | | | | | 1275 | | | |
| Phe | Cys | Pro | Phe | Asp | Arg | Gln | Val | Leu | Met | Glu | Ser | Ser | Ala | Asn |

| 1280 | 1285 | 1290 |
|-------------------------|---------------------|-----------------|
| Cys Asn Leu Tyr Ser Lys | Ala Leu His Tyr Ala | Glu Ile Glu Phe |
| 1295 | 1300 | 1305 |
| Phe Glu Thr Val Arg Glu | Tyr Glu Arg Ser Ile | Leu Arg Gly Cys |
| 1310 | 1315 | 1320 |
| Pro Lys Pro Leu Pro Val | Lys Asp Trp Gln Asn | Leu Ile Lys Leu |
| 1325 | 1330 | 1335 |
| Cys Glu Lys Ser Ile Tyr | Phe Cys Asn Leu Leu | Gly Gln Arg Glu |
| 1340 | 1345 | 1350 |
| Ser Ala Asn Gly Ile Leu | Lys Phe Ile Arg Gln | Asn Leu Pro Leu |
| 1355 | 1360 | 1365 |
| Leu Thr Gly Lys Lys Val | Thr Glu Leu Ser Gln | Met Met Asp Ala |
| 1370 | 1375 | 1380 |
| His Leu Phe Asp Lys Leu | Arg Trp Trp Ser Gln | Ser Leu Gln Ala |
| 1385 | 1390 | 1395 |
| Tyr Glu Arg Arg Leu Gln | Gln Glu Pro Asn Lys | Val Ser Asn Met |
| 1400 | 1405 | 1410 |
| Val Gly Leu Leu Arg Ala | Leu Asp Ala Leu Gly | Glu Tyr Pro Arg |
| 1415 | 1420 | 1425 |
| Val Leu Glu Met Trp Arg | Gln Phe Ser Lys Arg | Val Ser Lys Arg |
| 1430 | 1435 | 1440 |
| Glu Val Ser Lys Leu Ala | Ser Met Gly Ala His | Ala Ala Trp Leu |
| 1445 | 1450 | 1455 |
| Leu Arg Arg Trp Asp Asp | Met Glu His Ile Thr | Ser Phe Met Ser |
| 1460 | 1465 | 1470 |
| Asp Glu Asp Tyr Thr Gly | Thr Thr Ala Leu Phe | Tyr Lys Ala Thr |
| 1475 | 1480 | 1485 |
| Leu Ala Ala Arg Lys Lys | Arg Phe Arg Glu Ala | Glu Lys Leu Ile |
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| Asp Met Cys Arg Lys Arg | Val Asp Ser Lys Leu | Ser Ala Leu Val |
| 1505 | 1510 | 1515 |
| Ala Glu Ser Tyr Asp Arg | Ala Tyr Asp Leu Phe | Val Gly Ile Gln |
| 1520 | 1525 | 1530 |
| Gln Leu Ser Glu Leu Glu | Glu Leu Ala Met Ala | Thr Ser Asp Pro |
| 1535 | 1540 | 1545 |

| | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Gln | Ser | Ala | Met | His | Trp | Arg | Gln | Leu | Trp | Glu | Arg | Arg | Leu | Ser |
| | 1550 | | | | | 1555 | | | | | 1560 | | | |
| Val | Met | Ala | Tyr | Glu | Gly | Trp | Pro | Gly | Thr | Leu | Ala | Asn | His | Thr |
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| Leu | Leu | Val | Pro | Pro | Ser | Ser | Glu | Ile | Asp | Met | Trp | Leu | Arg | Phe |
| | 1580 | | | | | 1585 | | | | | 1590 | | | |
| Val | Ser | Leu | Ser | Arg | Ala | His | Gly | Gln | Gly | Ser | Val | Ser | Thr | Glu |
| | 1595 | | | | | 1600 | | | | | 1605 | | | |
| Val | Leu | Arg | Glu | Leu | Leu | Gly | Asn | Gln | Ser | Ile | Glu | Ser | Ala | Ile |
| | 1610 | | | | | 1615 | | | | | 1620 | | | |
| Glu | Asn | Gly | Ile | Pro | Thr | Pro | Ala | Val | Ala | Met | Gly | Ser | Phe | Gln |
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| His | Leu | Tyr | Glu | Thr | Asn | Gln | Arg | Asp | Ser | Ala | Ile | Ala | Arg | Leu |
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| Gln | Leu | Tyr | Val | Ser | Lys | Val | Glu | Gly | Ser | Gly | Ala | Gln | His | Val |
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| Ser | Arg | Glu | Arg | Glu | Asp | Met | Ala | Val | Cys | His | Ala | Lys | Leu | Ala |
| | 1670 | | | | | 1675 | | | | | 1680 | | | |
| Glu | Trp | Leu | Val | His | Gln | Lys | Lys | Ala | His | Arg | Thr | Glu | Asp | Glu |
| | 1685 | | | | | 1690 | | | | | 1695 | | | |
| Leu | Gln | Lys | Ile | Phe | His | His | Leu | Arg | Arg | Ala | Thr | Glu | Leu | Asp |
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| Lys | Ser | Asn | Gly | Ser | Ile | Trp | Arg | Thr | Leu | Ala | Arg | Val | His | Arg |
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| Glu | Ala | Ala | Thr | Lys | Pro | Ala | Asp | Gly | Ser | Asp | Ser | Ser | Gly | Ala |
| | 1730 | | | | | 1735 | | | | | 1740 | | | |
| Ser | Gly | His | Ile | Met | Glu | Ala | Leu | Ser | Ala | Tyr | Leu | Arg | Ser | Val |
| | 1745 | | | | | 1750 | | | | | 1755 | | | |
| Ser | Leu | Ser | Glu | Glu | Leu | Glu | Asp | Ala | Leu | Gly | Phe | Leu | Ser | Leu |
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| Trp | Phe | Met | Tyr | Gly | Pro | Leu | Leu | Ala | Val | Gln | Val | Gly | Ser | Thr |
| | 1775 | | | | | 1780 | | | | | 1785 | | | |
| Leu | Lys | Glu | Glu | Ile | Glu | Glu | Val | Asn | Pro | Thr | Val | Trp | Leu | Lys |
| | 1790 | | | | | 1795 | | | | | 1800 | | | |

| | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Val | Ile | Pro | Gln | Ile | Ile | Ala | Arg | Ile | Ser | Ser | Pro | Asn | Gly | Thr |
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| Val | Ala | Asp | Ser | Val | Tyr | Asn | Leu | Leu | Val | Leu | Val | Ala | Arg | Arg |
| | 1820 | | | | | 1825 | | | | | 1830 | | | |
| His | Pro | Gln | Ala | Ile | Leu | Tyr | Ser | Leu | Asn | Val | Ala | His | Ser | Ser |
| | 1835 | | | | | 1840 | | | | | 1845 | | | |
| Tyr | Gln | Gly | Lys | Gly | Thr | Ala | Asp | Gly | Val | Glu | Pro | Leu | Lys | Gly |
| | 1850 | | | | | 1855 | | | | | 1860 | | | |
| Ser | His | Arg | Val | Leu | Ala | Arg | Ile | Ala | Glu | Ile | His | Gln | Asn | Gly |
| | 1865 | | | | | 1870 | | | | | 1875 | | | |
| Lys | Ala | Met | Val | Glu | Asp | Ser | Ala | Leu | Val | Cys | Arg | Glu | Leu | Val |
| | 1880 | | | | | 1885 | | | | | 1890 | | | |
| Arg | Cys | Ala | Val | Leu | Trp | Pro | Glu | Leu | Trp | Ile | Asn | Glu | Leu | Gly |
| | 1895 | | | | | 1900 | | | | | 1905 | | | |
| Arg | Ala | Leu | Tyr | Gln | Trp | Glu | Arg | Gln | Arg | Ser | Ala | Glu | Asn | Leu |
| | 1910 | | | | | 1915 | | | | | 1920 | | | |
| Leu | Leu | Ala | Met | Gly | Pro | Leu | Leu | Glu | Gln | Leu | Lys | Arg | Pro | Glu |
| | 1925 | | | | | 1930 | | | | | 1935 | | | |
| Thr | Met | Ala | Glu | Ala | Gln | Phe | Ala | Ala | Glu | Leu | Arg | Gln | Pro | Leu |
| | 1940 | | | | | 1945 | | | | | 1950 | | | |
| Glu | Asn | Ala | Cys | Cys | His | Val | Glu | Arg | Ala | Val | Ser | Ser | Arg | His |
| | 1955 | | | | | 1960 | | | | | 1965 | | | |
| Glu | Gln | Phe | Met | Glu | Glu | Ala | Arg | Arg | Ile | Phe | Val | Ser | Ile | Glu |
| | 1970 | | | | | 1975 | | | | | 1980 | | | |
| Arg | Arg | Ile | Arg | Glu | Gln | Ile | Ser | Gly | Met | Ser | Ser | Leu | Ala | Leu |
| | 1985 | | | | | 1990 | | | | | 1995 | | | |
| Gln | Leu | Val | Ser | Pro | Lys | Leu | His | Gln | Asn | Gly | Arg | Asn | Leu | Ser |
| | 2000 | | | | | 2005 | | | | | 2010 | | | |
| Leu | Val | Val | Pro | Gly | Gln | Tyr | Arg | Glu | Asp | Gly | Asn | Tyr | Pro | Leu |
| | 2015 | | | | | 2020 | | | | | 2025 | | | |
| Ile | Ala | Ser | Phe | Gln | Asn | Val | Leu | Lys | Val | Leu | Asn | Ser | Lys | Gln |
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| Arg | Pro | Arg | Arg | Ile | Tyr | Ile | Asn | Gly | Ser | Asn | Gly | Glu | Ile | Tyr |
| | 2045 | | | | | 2050 | | | | | 2055 | | | |

| | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Lys | Phe | Leu | Leu | Lys | Gly | His | Glu | Asp | Leu | Arg | Leu | Asp | Glu | Arg |
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| Val | Met | Gln | Leu | Leu | Gly | Phe | Val | Asn | Thr | Ile | Leu | Glu | Lys | His |
| | 2075 | | | | | 2080 | | | | | 2085 | | | |
| Ser | Val | Ala | Lys | Arg | His | Asp | Cys | Leu | Ile | Gln | Thr | Tyr | Ser | Val |
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| Thr | Pro | Leu | Ser | Asp | Asn | Ala | Gly | Leu | Val | Gly | Trp | Val | Asp | His |
| | 2105 | | | | | 2110 | | | | | 2115 | | | |
| Cys | Asp | Thr | Leu | Asn | Lys | Ile | Ile | Glu | Asp | Tyr | Arg | Val | Asn | Pro |
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| Arg | Cys | Ile | Arg | Met | Glu | Leu | Asp | Leu | Met | Arg | Ser | Met | Cys | Asp |
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| Asn | Leu | Tyr | Tyr | Leu | Thr | Ala | Ile | Gln | Arg | Val | Glu | Pro | Phe | Glu |
| | 2150 | | | | | 2155 | | | | | 2160 | | | |
| Phe | Ala | Leu | Glu | Arg | Thr | Glu | Gly | Val | Asp | Leu | Val | Arg | Ser | Phe |
| | 2165 | | | | | 2170 | | | | | 2175 | | | |
| Trp | Val | Lys | Ala | Pro | Ser | Ala | Glu | Thr | Trp | Leu | Glu | Arg | Arg | Thr |
| | 2180 | | | | | 2185 | | | | | 2190 | | | |
| Thr | Tyr | Val | Cys | Ser | Leu | Ala | Thr | Met | Ser | Met | Val | Gly | His | Ile |
| | 2195 | | | | | 2200 | | | | | 2205 | | | |
| Leu | Gly | Leu | Gly | Asp | Arg | His | Pro | Ser | Asn | Leu | Met | Ile | His | Ala |
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| Phe | Ser | Gly | Arg | Val | Val | His | Ile | Asp | Phe | Gly | Asp | Cys | Phe | Glu |
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| Val | Ala | Gln | Gln | Arg | Ser | Ile | His | Pro | Glu | Lys | Val | Pro | Phe | Arg |
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| Leu | Thr | Arg | Met | Leu | Val | Lys | Ala | Met | Glu | Met | Gly | Gly | Ile | Glu |
| | 2255 | | | | | 2260 | | | | | 2265 | | | |
| Gly | Leu | Phe | Arg | His | Gly | Cys | His | Thr | Val | Met | Asn | Val | Leu | Arg |
| | 2270 | | | | | 2275 | | | | | 2280 | | | |
| Glu | Glu | Gly | Gly | Ser | Leu | Leu | Ala | Leu | Leu | Glu | Ala | Phe | Val | His |
| | 2285 | | | | | 2290 | | | | | 2295 | | | |
| Asp | Pro | Leu | Val | Ser | Trp | Trp | Arg | Asp | Glu | Ala | Glu | Gly | Phe | Ser |
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 Ala Ser Arg Ala Phe Gly Glu Thr Leu Val Thr Ser Met Thr Ser Asp
 115 120 125

Phe Val Gln Glu Gln Val Glu Gly Ala Phe Leu Ala Ile Asp Leu Lys
 130 135 140

Glu Asn Ile Thr His Ala Gln Arg Val Cys Ala Leu Leu Met Leu Gln
 145 150 155 160

Glu Val Val Thr Lys Ile Pro Met Arg Ile Leu Asp Met Leu Asp Ser
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Leu Phe Glu Lys Leu Trp Gly Met Leu Ala Ser Ser Asp Ala Met Ile
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Arg Glu Ile Ser His Leu Leu Phe Met Asp Cys Gly Lys Leu Leu Cys
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Ser Arg Ser Pro Val Asn Arg Lys Lys Thr Val Asp Ser Leu Leu His
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Gln Leu Lys Phe Asn Leu Ala Ala Lys Ser Arg Glu Ser Asn Met Ala
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Gly Leu Leu Ala Phe Glu Thr Val Val Met Thr Ser Val Gly Thr Ala
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Ser Gln Pro Arg Tyr Glu Asp Met Ser Ile Met Leu Val Pro Tyr Val
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Met Thr Gly Gly Ser Thr Asn Ile Ala Glu Leu Arg Glu Leu Leu Phe
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Arg Cys Leu Ile Val Leu Cys Arg Tyr Ser Thr Thr Leu Phe Ile Thr
 290 295 300

Asn Gln Leu Lys Asp Thr Val Gly Phe Ala Leu Lys Ser Ile Glu Asn
 305 310 315 320

Gly Tyr Gln Val Ala Ala Ser Phe Asn Met Leu Ser Glu Ile Ile Val
 325 330 335

Leu Val Thr Asp Val Ala Phe Arg Pro Phe Val Asn Glu Thr Cys Asn
 340 345 350

Ala Val Arg Tyr Val Ser Gly Lys Ser Ser Lys Pro Cys Trp Glu Ala
 355 360 365

Val Arg Cys Phe Ser Val Ile Cys His Val Cys Pro Pro Val Asp Val
 370 375 380

Glu Ser Tyr Ile Glu Pro Cys Ile Glu Asn Ile Phe Arg Trp Gly Leu
 385 390 395 400

Ser Leu Pro Leu Ile¹² Glu Ser Met Pro His Ile Ile Ala Ser Ser Ser
 405 410 415
 Ala Lys Tyr Arg Ser Arg Leu Glu Glu Gly Leu Leu Asp Met Ile Ser
 420 425 430
 Val Thr Leu Cys Gly Leu Pro Phe Arg Gln Gln Pro Gly Ser Lys Gly
 435 440 445
 Thr Ile Thr Met Lys Val Glu Ser Glu Pro Thr Glu Ser Gln Ile Thr
 450 455 460
 Val Ala Leu Asp Ala Leu Val Gln Phe Gly Phe Ser Asp Ser Glu Leu
 465 470 475 480
 Met Gly Asp Phe Leu Arg Asp Ser Val Leu Pro Leu Ile Asp Ser Glu
 485 490 495
 Ser Val Ser Val Arg Thr Ala Ala Val Arg Thr Ile Cys Thr Leu Leu
 500 505 510
 Ile Pro Pro Gly Val Lys Gly Glu Leu Thr Met Ala Arg Arg Ile Cys
 515 520 525
 Val Asp Val Ile Leu Ser Arg Met Leu Val Val Gly Leu Ser Asn Pro
 530 535 540
 Asp Pro Val Val Arg Lys Gly Ile Leu Ser Ser Phe Thr Glu Pro Phe
 545 550 555 560
 Tyr Pro Phe Leu Lys Glu Val Gln Phe Val Thr Ser Ile Tyr Ala Ala
 565 570 575
 Leu Gly Asp Glu Asp Ile Ser Cys Arg Val Ala Ala Thr Val Leu Leu
 580 585 590
 Cys Arg Met Thr Phe His Asp Pro Ser His Ile Leu Pro Ile Phe Arg
 595 600 605
 Lys Gln Ile Val Gln Ile Leu His Thr Val Ser Thr Ser Asp Asn Thr
 610 615 620
 Gly Ala Val Gln Ser Gly Leu Gln Leu Leu Asp Ala Ala Ala Ser Asn
 625 630 635 640
 Ala Pro Gln Phe Val Met Asn Phe Ala Asp Gly Ile Ile Lys Ala Leu
 645 650 655
 Gly His His Phe Ser Thr Val Asn Ile His Ser Ser Ile Leu Gln His
 660 665 670
 Leu Leu Arg Cys Cys Thr Ser Val Ala His Ala Ala His Phe Phe Gly

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 675 | | | | | | 680 | | | | | | 685 | | | |
| Asn | Thr | Asp | Ala | Ile | Phe | Arg | Val | Glu | Val | Asp | Arg | Ala | Tyr | Met | Leu |
| | 690 | | | | | 695 | | | | | 700 | | | | |
| Leu | Lys | Ala | Leu | Pro | Leu | Asp | Ser | Glu | Ser | Val | Glu | Leu | Arg | Leu | Trp |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 |
| Cys | Leu | Arg | Phe | Leu | Ser | Ala | Thr | Leu | Gly | Pro | Gln | Ile | Glu | Gly | Arg |
| | | | | 725 | | | | | 730 | | | | | 735 | |
| Ser | Pro | Tyr | Glu | Val | Tyr | Pro | His | Leu | Tyr | Gln | Gln | Leu | Ser | Gly | Ile |
| | | | 740 | | | | | 745 | | | | | 750 | | |
| Val | Lys | Asn | Asn | Asp | Glu | Asp | Leu | Asp | Val | Arg | Leu | Glu | Ala | Leu | Arg |
| | | 755 | | | | | 760 | | | | | 765 | | | |
| Cys | Ala | Gly | Val | Ile | Gly | Ala | Leu | Asp | Ile | Ser | Ile | Phe | His | Ser | Thr |
| | 770 | | | | | 775 | | | | | 780 | | | | |
| Val | Val | Asn | Arg | Thr | Cys | Arg | His | Glu | Glu | Met | Lys | Arg | Asn | Glu | Pro |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 |
| Ser | Thr | Leu | Ser | His | Ala | Met | Cys | Cys | Arg | Val | Val | Ile | Arg | Ser | Ile |
| | | | | 805 | | | | | 810 | | | | | 815 | |
| Ala | Ser | Leu | Leu | Asp | Leu | Ser | Glu | Lys | Arg | Phe | Ser | Gly | Gly | Lys | Asp |
| | | | 820 | | | | | 825 | | | | | 830 | | |
| Asn | Val | Leu | Arg | Val | Gly | Ile | Gln | Thr | Ile | Leu | Asn | Ile | Ala | Glu | Ser |
| | | 835 | | | | | 840 | | | | | 845 | | | |
| Cys | Pro | Asp | Ser | Arg | Gly | Glu | Ile | Ala | Val | Val | Ile | Pro | Pro | Val | Val |
| | 850 | | | | | 855 | | | | | 860 | | | | |
| Arg | Ala | Val | Ser | Glu | Leu | Ser | Ala | Cys | Arg | Leu | Leu | Gly | Thr | Leu | Leu |
| 865 | | | | | 870 | | | | | 875 | | | | | 880 |
| His | Glu | Leu | Thr | Gln | Ile | Ile | Arg | Tyr | Val | Gly | Val | Ala | Ala | Leu | Ser |
| | | | | 885 | | | | | 890 | | | | | 895 | |
| His | Ala | His | Leu | Leu | Tyr | Asn | Leu | Ile | Asp | Glu | Ser | Trp | Val | Lys | Ser |
| | | | 900 | | | | | 905 | | | | | 910 | | |
| Ser | Lys | Tyr | Arg | Phe | Leu | Ala | Val | Arg | Leu | Ala | Leu | Thr | Leu | Val | Thr |
| | | 915 | | | | | 920 | | | | | 925 | | | |
| Leu | Glu | Ala | Asp | Gly | Lys | Ala | Glu | Ser | Arg | Arg | Ser | Asn | Met | Arg | Met |
| | 930 | | | | | 935 | | | | | 940 | | | | |
| Ser | Pro | Ile | Lys | Phe | Asp | Ala | Leu | Asn | Asp | Ile | Glu | Ser | Ser | Glu | Ser |
| 945 | | | | | 950 | | | | | 955 | | | | | 960 |

Leu Arg Tyr Ala Ile Ile Glu Tyr Ile Leu Lys His Thr Gln Thr Leu
 965 970 975

Lys Thr Cys Val Glu Thr Val Val Thr Asn Leu Leu Arg Ala Ala Gln
 980 985 990

Arg Cys Pro Ile Asp Phe Ala Leu Ser Val Ile Thr Thr Leu Arg Val
 995 1000 1005

Val Cys Phe Arg Leu His Val Asp Glu Phe Ala Gly Leu Ile Val
 1010 1015 1020

Arg Gly Leu Leu Ser Cys Leu Lys Thr Arg Leu Ser Thr Ser Met
 1025 1030 1035

Arg Ala Thr Glu Gln Asn Ala Phe Val Ser Arg Ile Met Gly Val
 1040 1045 1050

Phe Cys Val Leu Met Thr Val Leu Gln Ser Glu Phe Val Lys Tyr
 1055 1060 1065

Ser Ser Glu Val Leu Arg Thr Leu Lys Thr Leu Arg Val Ser Asn
 1070 1075 1080

Asn Glu Leu Ile Thr Leu His Gly Thr Leu Met Lys Gly Gly Val
 1085 1090 1095

Cys Thr Leu Ser Lys Gly Phe Val Thr Glu His Gln Lys Gln Val
 1100 1105 1110

Val Arg Leu Leu Lys Glu Cys Glu Gly Ile Ala Leu Arg His Val
 1115 1120 1125

Ser Asp Leu Asp Lys Val Leu Ser Thr Arg Gly Asn Val Asp Glu
 1130 1135 1140

Lys Gly Trp Asn Ser Asp Asp Gly Glu Arg Pro Leu Pro Phe Ser
 1145 1150 1155

Glu Lys Leu Ile Ile Ser Thr Thr Arg Thr Ala Pro Leu Thr Lys
 1160 1165 1170

Glu Glu Trp Leu Arg Trp Leu Asn Asp Phe Ser Cys Val Ile Met
 1175 1180 1185

Gln Glu Ser Pro Tyr Arg Val Phe Arg Cys Ile Ser Leu Pro Leu
 1190 1195 1200

Thr Ala Asn Thr Ser Pro Leu Val Asp Cys Ser Pro Gln Phe Thr
 1205 1210 1215

| | | | | | | | | | | | | | | |
|-------------|-----|-----|-----|-----|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-----|
| Gln 1220 | Asp | Ile | Ala | Pro | His | Ala 1225 | Phe | Arg | Ala | Leu | Trp 1230 | Asn | Phe | Ala |
| Ser 1235 | Ala | Ser | Val | Arg | Ser | Ser 1240 | Leu | Ala | Asp | Phe | Phe 1245 | Phe | Gln | Val |
| Leu 1250 | Gln | Gln | Ala | Met | Glu | Ser 1255 | Ser | Ala | Val | Pro | Asp 1260 | Glu | Val | Val |
| Ser 1265 | Ala | Leu | Leu | Thr | Val | Ala 1270 | Glu | Tyr | Met | Asp | Asn 1275 | Val | Gly | Met |
| Ala 1280 | Leu | Pro | Ile | Ala | Pro | Ser 1285 | Ile | Leu | Ser | Arg | Cys 1290 | Ala | Trp | Gly |
| Arg 1295 | Gly | Met | Leu | Ala | Lys | Ala 1300 | Leu | Tyr | Trp | Cys | Glu 1305 | Ala | Ala | Tyr |
| Arg 1310 | Lys | Asp | Pro | Arg | Gly | Thr 1315 | Ala | Lys | Tyr | Leu | Phe 1320 | Ser | Leu | Tyr |
| Arg 1325 | Glu | Leu | Gln | Gln | Ser | Gly 1330 | Leu | Leu | Met | Val | Thr 1335 | Gly | His | Ser |
| Glu 1340 | Ser | Leu | Lys | Leu | Leu | Gln 1345 | Gly | Cys | Ile | Asp | Asn 1350 | Glu | Arg | Ser |
| Glu 1355 | Ser | Asp | Gly | Ser | Asp | Glu 1360 | Tyr | Ser | Val | Lys | Trp 1365 | Leu | Ser | Arg |
| Gln 1370 | Glu | Ser | Leu | Arg | Arg | Met 1375 | Cys | Gly | Val | Gly | Gly 1380 | Arg | Ser | Arg |
| Ser 1385 | Asp | Ala | Asn | Ser | Ser | Phe 1390 | Asn | Gly | Glu | Asp | Val 1395 | Lys | Leu | Asp |
| Pro 1400 | Glu | Met | Glu | Asn | Glu | Val 1405 | Asn | Thr | Leu | Tyr | Ala 1410 | Leu | Ser | Glu |
| Ala 1415 | Gly | Asp | Tyr | Asp | Ala | Val 1420 | Leu | Glu | Gln | Trp | Lys 1425 | Val | Leu | Phe |
| Gln 1430 | Lys | Tyr | Asn | Gly | Arg | Asp 1435 | Glu | Gln | Lys | Arg | Glu 1440 | Glu | Asn | Thr |
| Leu 1445 | Phe | Tyr | Val | Ser | Gln | Cys 1450 | Ala | Ala | Asp | Ala | Ser 1455 | Ile | Arg | Leu |
| Gln 1460 | Ala | Trp | Asp | Thr | Leu | Glu 1465 | Asp | Thr | Thr | Arg | Trp 1470 | Gln | Leu | Asn |

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Asp | Thr | Val | Ser | Tyr | His | Val | Ser | Arg | Ala | Ala | Leu | Ser | Ile | His |
| 1475 | | | | | | 1480 | | | 16 | | 1485 | | | |
| Lys | Arg | Arg | Tyr | Glu | Glu | Ala | Thr | Ser | Ala | Ile | Asn | Glu | Gly | Arg |
| 1490 | | | | | | 1495 | | | | | 1500 | | | |
| Lys | Leu | Leu | Leu | Glu | Asp | Leu | Ser | Gly | Leu | Leu | His | Gln | Ser | Tyr |
| 1505 | | | | | | 1510 | | | | | 1515 | | | |
| Thr | Arg | Ala | Tyr | Glu | Gly | Leu | Val | Ile | Ala | Gln | Lys | Leu | Ser | Glu |
| 1520 | | | | | | 1525 | | | | | 1530 | | | |
| Leu | Glu | Glu | Ile | Val | Thr | Val | Lys | Arg | Ala | Glu | Val | Val | Ser | Ser |
| 1535 | | | | | | 1540 | | | | | 1545 | | | |
| Thr | His | His | Leu | Ser | Arg | Val | Leu | Arg | Leu | Trp | Ser | Gln | Arg | Ile |
| 1550 | | | | | | 1555 | | | | | 1560 | | | |
| Glu | Met | Met | Ser | Ser | Thr | Val | Ser | Ala | Trp | Lys | Glu | Val | Leu | Gly |
| 1565 | | | | | | 1570 | | | | | 1575 | | | |
| Val | Arg | Gly | Leu | Leu | Ile | Pro | Pro | Gly | Glu | Asp | Val | Ala | Thr | Arg |
| 1580 | | | | | | 1585 | | | | | 1590 | | | |
| Leu | Arg | Phe | Val | Asn | Leu | Cys | Arg | Arg | Glu | Lys | Ala | Lys | Gln | His |
| 1595 | | | | | | 1600 | | | | | 1605 | | | |
| Glu | Arg | Phe | Ile | Leu | Cys | Gln | Leu | Leu | Gly | Tyr | Arg | Cys | Pro | Thr |
| 1610 | | | | | | 1615 | | | | | 1620 | | | |
| Ser | Glu | Gln | Leu | Met | His | Ser | Asn | Ala | Asn | Pro | Arg | Val | Val | Met |
| 1625 | | | | | | 1630 | | | | | 1635 | | | |
| Gln | Tyr | Ile | Ser | Phe | Leu | Ser | Ala | Asn | Gly | Glu | Leu | Gly | Pro | Lys |
| 1640 | | | | | | 1645 | | | | | 1650 | | | |
| Ser | Ser | Tyr | Gly | Leu | Glu | Arg | Asp | Leu | Leu | Lys | Arg | Met | Ile | Asp |
| 1655 | | | | | | 1660 | | | | | 1665 | | | |
| Thr | His | Ser | Arg | Asn | Glu | Asn | Ala | Phe | Leu | Leu | Ser | Ser | Ala | Tyr |
| 1670 | | | | | | 1675 | | | | | 1680 | | | |
| Ala | Arg | Leu | Gly | Ser | Ser | Ala | Glu | Leu | Ser | Glu | Ala | Val | Gln | Cys |
| 1685 | | | | | | 1690 | | | | | 1695 | | | |
| Tyr | Lys | Ala | Ala | Thr | Thr | Tyr | Cys | Pro | Lys | Trp | Phe | His | Ala | Trp |
| 1700 | | | | | | 1705 | | | | | 1710 | | | |
| Arg | Met | Phe | Ala | Glu | Ser | Asn | Ala | Glu | Met | Leu | Asp | Val | Thr | Phe |
| 1715 | | | | | | 1720 | | | | | 1725 | | | |
| Ser | Asp | Ala | Thr | Cys | Ala | Ala | Ala | Ile | Glu | Gly | Tyr | Ile | Gln | Ser |

| 1730 | 1735 | 1740 |
|--------------|--------------------------|--------------------------|
| Ile Lys 1745 | Leu Gly Asn Ser Asp 1750 | Ser Thr Ile Ile Gln 1755 |
| Lys Leu 1760 | Leu Thr Leu Leu Ser 1765 | Arg His Cys Asp Gln 1770 |
| Leu Lys 1775 | Glu Leu Arg Lys Arg 1780 | Val Phe Glu Val Ser 1785 |
| Trp Lys 1790 | Leu Val Val Pro Gln 1795 | Leu Ile Ala Arg Leu 1800 |
| Ser Asp 1805 | Gly Ser Cys Glu Leu 1810 | Val Ala Glu Ile Leu 1815 |
| Ser Phe 1820 | Asp Cys Pro Leu Ser 1825 | Leu Ile Tyr Pro Leu 1830 |
| Ala Met 1835 | Ser Asn Ser Arg Arg 1840 | Arg Arg Lys Tyr Ala 1845 |
| Leu Asp 1850 | Lys Leu Gln Ser Lys 1855 | His Pro Leu Val Val 1860 |
| Arg Ile 1865 | Leu Val Asp Glu Leu 1870 | Val Arg Thr Ser Asp 1875 |
| Glu Gln 1880 | Trp Tyr His Met Leu 1885 | Glu Cys Ser Ala Thr 1890 |
| Asp Arg 1895 | Asn Asp Tyr Lys Gly 1900 | Met Leu Asp Val Leu 1905 |
| His Glu 1910 | Lys Leu His Leu Ser 1915 | Thr Asp Thr Ile Val 1920 |
| Phe Thr 1925 | Cys Lys Phe Gly Asn 1930 | Lys Leu Asp Arg Ala 1935 |
| Leu Gln 1940 | Ser Tyr Leu Arg Thr 1945 | Gly Ser Ile Ala Asp 1950 |
| Ala Trp 1955 | Asn Ile Tyr His Ala 1960 | Val Tyr Gln Gln Ile 1965 |
| Ile Arg 1970 | Ser Gln Ser Lys Leu 1975 | His Leu Ser Phe Cys 1980 |
| Leu Phe 1985 | Glu Ala Arg Asn Leu 1990 | Ala Val Gly Leu Pro 1995 |

| | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Pro | Ser | Glu | Asp | Cys | Ala | Val | Arg | Cys | Thr | Ala | Ser | Phe | Asn | Gly |
| | 2000 | | | | | 2005 | | | | | 2010 | | | |
| Thr | Leu | Thr | Val | Ile | Gly | Ser | Lys | Gln | Arg | Pro | Lys | Arg | Leu | Ser |
| | 2015 | | | | | 2020 | | | | | 2025 | | | |
| Val | Thr | Thr | Val | Asp | Gly | Glu | Thr | Gln | Lys | Tyr | Leu | Leu | Lys | Gly |
| | 2030 | | | | | 2035 | | | | | 2040 | | | |
| Arg | Glu | Asp | Leu | Arg | Leu | Asp | Glu | Arg | Val | Met | Gln | Leu | Phe | Arg |
| | 2045 | | | | | 2050 | | | | | 2055 | | | |
| Leu | Val | Asn | Thr | Leu | Met | Met | Thr | Asp | Ser | Arg | Thr | Cys | Lys | Asn |
| | 2060 | | | | | 2065 | | | | | 2070 | | | |
| Pro | Gly | Phe | Gln | Ile | Gln | Arg | Tyr | Ser | Val | Thr | Pro | Leu | Lys | Asp |
| | 2075 | | | | | 2080 | | | | | 2085 | | | |
| Thr | Val | Gly | Leu | Ile | Gly | Trp | Val | Ser | Gly | Cys | Asp | Thr | Leu | His |
| | 2090 | | | | | 2095 | | | | | 2100 | | | |
| Thr | Leu | Val | Thr | Lys | Tyr | Arg | Lys | Phe | Arg | Gly | Ile | Pro | Pro | Glu |
| | 2105 | | | | | 2110 | | | | | 2115 | | | |
| Leu | Glu | Leu | Arg | Met | Met | Asn | Gln | Ile | Ile | Val | Cys | Asp | Arg | Pro |
| | 2120 | | | | | 2125 | | | | | 2130 | | | |
| Lys | Thr | Tyr | Asp | His | Leu | Thr | Met | Ile | Ser | Lys | Val | Glu | Val | Met |
| | 2135 | | | | | 2140 | | | | | 2145 | | | |
| Glu | Phe | Leu | Ala | Asp | His | Thr | Ser | Gly | His | Asp | Val | Arg | Lys | Ala |
| | 2150 | | | | | 2155 | | | | | 2160 | | | |
| Met | Trp | Ala | Ser | Ala | Ser | Asn | Cys | Glu | Met | Trp | Leu | Glu | Gln | Arg |
| | 2165 | | | | | 2170 | | | | | 2175 | | | |
| Gln | Val | Phe | Thr | Thr | Ser | Ser | Ala | Thr | Thr | Cys | Met | Val | Gly | Tyr |
| | 2180 | | | | | 2185 | | | | | 2190 | | | |
| Ile | Leu | Gly | Leu | Gly | Asp | Arg | His | Pro | Asn | Asn | Val | Met | Ile | Gln |
| | 2195 | | | | | 2200 | | | | | 2205 | | | |
| Arg | Thr | Ser | Gly | Leu | Phe | Val | His | Ile | Asp | Phe | Gly | Asp | Cys | Phe |
| | 2210 | | | | | 2215 | | | | | 2220 | | | |
| Glu | Val | Ala | Met | Thr | Arg | Gln | Met | Phe | Pro | Glu | Arg | Val | Pro | Phe |
| | 2225 | | | | | 2230 | | | | | 2235 | | | |
| Arg | Leu | Thr | Arg | Met | Ile | Arg | Asn | Ala | Leu | Asp | Val | Phe | Gly | Val |
| | 2240 | | | | | 2245 | | | | | 2250 | | | |

Asp Gly Pro Phe Arg Ser Ile Ala Glu Thr Ala Met Cys Val Leu
2255 2260 2265

Arg Asp Gly Ser Arg Ser Val Leu Ala Ile Leu Glu Ala Phe Ile
2270 2275 2280

Gln Asp Pro Leu Ile Ser Trp Arg Leu Leu Asn His Met Lys Lys
2285 2290 2295

Glu Pro Gly Asp Ser Thr Val His Lys Asn Ile Asp Glu Gln Ser
2300 2305 2310

Glu Ala Val Gly Pro Arg Met Ser Ser Val Ala Phe Pro Gly Ala
2315 2320 2325

Pro Val Arg Asp Asp Met Phe Thr Val Asp Ser Lys Leu Thr Arg
2330 2335 2340

Cys Ala Ser Ile Pro Asp Asp Asp Val Val His Lys Gly Val Lys
2345 2350 2355

Val Phe Gln Arg Val Arg Ser Lys Leu Lys Gly Glu Glu Phe Leu
2360 2365 2370

Arg Thr Lys Gly Asp Thr Lys Ser Thr Asp Pro Lys Val Gln Val
2375 2380 2385

Ala Arg Leu Ile Val Glu Ala Thr Asp Ile Thr Asn Val Ala Gln
2390 2395 2400

Ser Trp Ala Gly Trp Tyr Pro Phe Trp
2405 2410

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<211> 2595
<212> PRT
<213> Trypanosoma brucei

<400> 3

Met Ser Asn Ile Glu Ser Pro Arg Ser Ser Arg Pro Phe Gly Asp Ser
1 5 10 15

Ala Ser Ala Leu Thr Arg Gln Phe Gly Leu Val Phe Ser Asn Leu Gln
20 25 30

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

Leu Leu Asp Ile Leu Val Ala His Ala Leu Glu Leu Ser Glu His Cys
50 55 60

Leu Ile Asp Tyr Ile Phe Gln Leu Leu Cys Asp Thr Phe Gly Val Ser

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

Lys Ser Leu Asn Asn Ile Glu Ser His Ala Val Leu Thr Val Asp Ala
 355 360 365
 Val Ser Asp Phe Ile Ala Lys Ser Pro Phe Asn Gln Leu Ala Phe Glu
 370 375 380
 Ile Leu Asp Tyr Leu Arg Thr Gln Cys Gly Glu Gln Cys Val Phe Gly
 385 390 395 400
 Val Tyr Asp Leu Leu Glu Arg Ala Asp Val Leu Asn Ser Val Glu Lys
 405 410 415
 Val Ala Ala Leu Leu His Phe Met Gly Asn Arg Ala Pro Ser Asn Val
 420 425 430
 Asp Trp Leu Glu Glu Cys Asn Ile Asp Leu Ser Pro Asp Ser Asp Val
 435 440 445
 Asp Val Leu Val Arg Ser Leu Ser Phe Leu Glu Thr Leu Arg Tyr Thr
 450 455 460
 Glu Ala Leu Glu Ser Ala Val Gly Leu Val Phe His Lys His Thr Asp
 465 470 475 480
 Val Arg Arg Ala Ala Val Gly Thr Val Val Ser Leu Cys Glu Val Leu
 485 490 495
 Leu Ser Pro Asp Lys Gly Gly Ser Cys Gln Gly Ser His Val Asp Ala
 500 505 510
 Thr Ile Thr Gln Leu Asn Ser Arg Val Lys Ile Ala Val Glu Ser Leu
 515 520 525
 Leu Asp Val Ala Val Thr Asp Arg Gln Met Glu Ile Arg Tyr Tyr Thr
 530 535 540
 Leu Lys Arg Leu Ser Pro Val Phe Glu Pro Tyr Leu Val Gln Leu Asp
 545 550 555 560
 Asn Ile Asp Ala Leu Phe Met Ser Arg Asn Asp Val Cys Arg Gly Val
 565 570 575
 Arg Asp Gln Ala Met Leu Leu Leu Tyr Arg Leu His Ser Leu Gln Pro
 580 585 590
 Asp Ile Leu His Ala Gln Leu Leu Gln Leu Gln Glu Tyr Met Leu Arg
 595 600 605
 Glu Ile Asp Val Lys Asp Gly Ser Ile Ser Ser Thr Val Tyr His Ala
 610 615 620

Phe Leu Leu Gln Met Ala Ala Glu Asn Gly Thr Ile Leu Leu Ser Pro
 625 630 635 640
 Ser Thr Val Glu Thr Ser Val Leu Arg Arg Leu Glu Lys Gln Pro Phe
 645 650 655
 Val Ser Lys Ser Leu Ser Val Ala Leu Leu Asn Leu Leu Arg Ala Val
 660 665 670
 Leu Asp His Ser Gly Pro Arg Asn His Cys Asp Ala Lys Gln Leu Ile
 675 680 685
 Gln Pro Val Leu Ala Ile Val Asn Gly Ser Thr Ser Ser Thr Arg Arg
 690 695 700
 Lys Ala Ala Ile Glu Ala Leu Cys Ser Ile Leu Ala Thr Val Pro Ile
 705 710 715 720
 Thr Glu Gln Ser Thr His Val Ser Val Tyr Arg Ala Leu Ser Arg Ile
 725 730 735
 Ile Arg Gly Glu Ala Glu Glu Ser Glu Ala Val Ile Tyr Ser Ala Met
 740 745 750
 Lys Cys Leu Ser Val Ile Gly Ala Val Asp Pro Thr Lys Ala Arg Tyr
 755 760 765
 Ile Val Lys Ala Leu Gln Glu Gly Glu Ile Ala Glu Glu Glu Glu Val
 770 775 780
 Ala Thr Pro Ala Leu Ala Leu Tyr Lys Pro Arg Leu Arg Ile His Leu
 785 790 795 800
 His Met Asp Glu Arg Tyr Pro Cys Ile Val Leu Tyr Leu Leu Val Lys
 805 810 815
 Thr Leu Gln His Ser Ala Asp Val Glu Gln Gln Ala Ser Val Ile Ser
 820 825 830
 Val Ile His Ser Met Ile His Glu Val Pro Gly Arg Gln Lys Ala Met
 835 840 845
 Leu Leu Thr Gln Phe Leu Pro Gln Leu Gln Ala Trp Leu Ala Asp Pro
 850 855 860
 Glu Lys Val His Leu Tyr Glu Val Ile Leu Leu Leu Met Ser Asp Leu
 865 870 875 880
 Ala Thr Leu Leu Gln Arg Phe Lys Asp Val Ile Pro Ala Ser Thr Gly
 885 890 895

Leu Glu Leu Leu Lys Ser Val Arg Leu Phe Cys Leu Leu Pro Gln Ala
 900 905 23 910

Ser Gln Lys Pro Leu Asn Ala Gly Val Val Glu Leu Leu Asp Arg Val
 915 920 925

Gly Arg Gly Leu Ser Pro Glu Glu Met Arg Asp His Arg Trp Ala Val
 930 935 940

Glu Phe Ile His Gln Arg Leu Leu Gln Asp Lys Arg Asp Leu Ala Leu
 945 950 955 960

Val Val Arg Ala Val Lys Ser Leu Asp Ser Phe Leu Ala Ile Leu His
 965 970 975

Glu Arg Asp Phe Gln Val Leu Leu Pro His Val Leu Gly Cys Ile Glu
 980 985 990

Pro Ala Asp Ala Ala Thr Pro Asn Val Pro Gly Leu Lys Lys Lys Glu
 995 1000 1005

Val Asn Thr Ala Cys Phe Glu Phe Leu Asn Gln Ile Met Ala Lys
 1010 1015 1020

Gln Pro Leu Leu Met Lys Asp Phe Cys Ser Gln Ile Ile His Thr
 1025 1030 1035

Ile Thr Trp Tyr Ile Glu Glu Ser Asp Cys Gln Asp Glu Met Glu
 1040 1045 1050

Met Gly Leu Arg Thr Leu Ala Phe Leu Val Gly Ile Val Gln Arg
 1055 1060 1065

Pro Ala Arg Arg Phe Ile Lys Pro Ile Gln Arg Leu Val Gln Gln
 1070 1075 1080

Cys Gly Leu Pro Glu Asp Met Phe Thr Asn Leu Leu Lys Ser Ala
 1085 1090 1095

Ala Asp Gly Leu Leu Lys Ala Arg Ala Pro Leu Ser Gly His Asp
 1100 1105 1110

Asn Leu Asn Pro Glu Leu Pro Leu Thr Leu Val Ser Asp Gln Pro
 1115 1120 1125

Ser Leu Ser Lys Glu Asp Phe Gln Gln Val Met Lys Arg Val Leu
 1130 1135 1140

Arg Leu Gly Asp His Asp Phe Glu Val Ile Ser Val Thr His Ser
 1145 1150 1155

Glu Gly Asn Thr Val Val Tyr Phe Arg Phe Val Gln Gly Glu Asp

| 1160 | 1165 | 1170 |
|----------|------------------------------|--------------------------|
| Leu 1175 | Leu Asn Phe Arg Ser 1180 | Phe Thr Ser Lys Ala 1185 |
| Gln 1190 | Thr Leu Ser Arg Asn 1195 | Leu Gly Ile Leu Lys 1200 |
| Asn 1205 | Ala Met Ser Tyr Cys Gln 1210 | Val Asp Asp Ser Leu 1215 |
| Ile 1220 | Arg Met Pro Val Ala 1225 | Asn Lys Lys Lys Arg 1230 |
| Trp 1235 | Met Ala Trp Leu His Asn 1240 | Thr Ser Val Val Met 1245 |
| Ser 1250 | Pro Ile Gln Pro Leu Arg 1255 | Cys Thr Ala Gln Leu 1260 |
| Asn 1265 | Thr Gly Leu Ser Arg Asp 1270 | Leu Phe Pro Phe Ala 1275 |
| Phe 1280 | Ile Gly Lys Leu Asn Ala 1285 | Gln Gln Gln Glu Val 1290 |
| Ala 1295 | Phe Thr Arg Ala Leu Glu 1300 | Val Ser Pro Asn Asp 1305 |
| Ala 1310 | Ile Phe Asp Phe Ala Glu 1315 | Phe Ile Glu Ser Glu 1320 |
| Leu 1325 | Asn Pro Glu Met Ile Leu 1330 | Leu Val Glu Lys Leu 1335 |
| Val 1340 | Glu Arg Asp Asn Glu Glu 1345 | Arg Lys Phe Gly Ile 1350 |
| Glu 1355 | Val Ser Gly Asp Val Val 1360 | Val Ser His Leu Glu 1365 |
| Pro 1370 | Gly Ala Leu Ala Gly Val 1375 | Pro Val Gly Ala Arg 1380 |
| Leu 1385 | Asn Gly Lys Arg Leu Val 1390 | Thr Thr His Glu Val 1395 |
| Val 1400 | Lys Gly Leu Asn Arg Ile 1405 | Glu Leu Thr Leu Glu 1410 |
| Gly 1415 | Gly Lys Arg Gly Leu Ser 1420 | Phe Asp Cys Leu Met 1425 |

| | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Val | Leu | Ala | Arg | Val | Ala | Leu | Asn | Ser | Lys | Met | Tyr | Ala | Arg | Ala |
| | 1430 | | | | | 1435 | | | | | 1440 | | | |
| Ile | Phe | Leu | Asn | Glu | Ile | Leu | Phe | Ala | Gln | Leu | Leu | Ser | Glu | Leu |
| | 1445 | | | | | 1450 | | | | | 1455 | | | |
| Ser | Gly | Gln | Val | Ser | Asp | Arg | Gln | Asn | Ala | Ala | Val | Arg | His | Ala |
| | 1460 | | | | | 1465 | | | | | 1470 | | | |
| Leu | Glu | Val | Ala | Glu | Arg | Leu | Ile | Glu | Phe | Tyr | Asn | His | Leu | Gly |
| | 1475 | | | | | 1480 | | | | | 1485 | | | |
| Leu | Thr | Met | Val | Ala | Lys | Gly | Leu | Val | Lys | Lys | Met | Ser | Glu | Lys |
| | 1490 | | | | | 1495 | | | | | 1500 | | | |
| Phe | Ser | Ser | Asn | Ile | Ile | Ala | Pro | Glu | Gln | Phe | Gly | Phe | Asp | Glu |
| | 1505 | | | | | 1510 | | | | | 1515 | | | |
| Val | Gly | Ala | Leu | Glu | Gln | Leu | Asn | Trp | Trp | Gly | Glu | Ala | Leu | Ser |
| | 1520 | | | | | 1525 | | | | | 1530 | | | |
| Arg | Tyr | Lys | Ser | Arg | Met | Asn | Val | Ala | Asp | Gly | Thr | Leu | Asp | Thr |
| | 1535 | | | | | 1540 | | | | | 1545 | | | |
| Ser | Ala | Phe | Leu | Gly | Ala | Leu | Arg | Cys | Tyr | Asp | Ala | Leu | Gly | Glu |
| | 1550 | | | | | 1555 | | | | | 1560 | | | |
| Thr | Ile | Thr | Met | Gln | Glu | Leu | Ile | Ala | Thr | Asn | Trp | Glu | Leu | Leu |
| | 1565 | | | | | 1570 | | | | | 1575 | | | |
| Asp | Arg | Asp | Ala | Gln | Leu | Glu | Val | Ala | Pro | Leu | Lys | Ala | Lys | Ala |
| | 1580 | | | | | 1585 | | | | | 1590 | | | |
| Ala | Leu | Trp | Leu | Gly | Arg | Trp | Asp | Glu | Phe | Asp | Glu | Val | Val | Gly |
| | 1595 | | | | | 1600 | | | | | 1605 | | | |
| Gln | Pro | Gly | Val | Met | Glu | Arg | Leu | Asp | Met | Val | Glu | Arg | Cys | Ala |
| | 1610 | | | | | 1615 | | | | | 1620 | | | |
| Ser | Leu | Phe | Arg | Gln | Lys | His | Tyr | Gly | Glu | Leu | Leu | Asp | Tyr | Val |
| | 1625 | | | | | 1630 | | | | | 1635 | | | |
| Asp | Glu | His | Arg | Lys | Ser | Leu | Phe | Asp | Ser | Phe | Phe | Glu | Ser | Phe |
| | 1640 | | | | | 1645 | | | | | 1650 | | | |
| Thr | Glu | Ser | Tyr | Asn | Arg | Ser | Tyr | Asp | Thr | Leu | Val | Glu | Leu | Gln |
| | 1655 | | | | | 1660 | | | | | 1665 | | | |
| His | Val | Arg | His | Phe | Glu | Glu | Leu | Val | Ser | Phe | Val | Lys | Ser | Gly |
| | 1670 | | | | | 1675 | | | | | 1680 | | | |

| | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Ser | Glu | Arg | Arg | Lys | Met | Leu | Arg | Glu | Leu | Trp | His | Lys | Arg | Val |
| | 1685 | | | | | 1690 | | | | | 1695 | | | |
| Thr | Leu | Met | Ser | Ser | Arg | Pro | Ala | His | Ile | Lys | Thr | Leu | Ile | Thr |
| | 1700 | | | | | 1705 | | | | | 1710 | | | |
| Ile | Asn | Ser | Leu | Val | Leu | Ser | Pro | Gln | Glu | Asp | Leu | Pro | Ser | Gln |
| | 1715 | | | | | 1720 | | | | | 1725 | | | |
| Val | Val | Cys | Val | Arg | Ala | Leu | Thr | Lys | His | His | Trp | Thr | Ser | Leu |
| | 1730 | | | | | 1735 | | | | | 1740 | | | |
| Ala | Asp | His | Thr | Leu | Ser | Thr | Leu | Leu | His | Pro | Asn | Gly | Leu | Asn |
| | 1745 | | | | | 1750 | | | | | 1755 | | | |
| Thr | Arg | Leu | Ala | Asn | Leu | Asp | Pro | Asp | Val | Ile | His | Val | Tyr | Met |
| | 1760 | | | | | 1765 | | | | | 1770 | | | |
| Lys | His | Cys | Tyr | Val | Thr | Arg | Gly | Lys | Gln | Glu | Thr | Tyr | Thr | Leu |
| | 1775 | | | | | 1780 | | | | | 1785 | | | |
| Leu | Ser | Asp | Ile | Leu | Asn | Asn | Val | Gln | Leu | Thr | Ala | Thr | Ser | Asn |
| | 1790 | | | | | 1795 | | | | | 1800 | | | |
| Arg | Ala | Glu | Ala | Trp | Gly | Cys | Cys | Trp | Leu | Leu | Leu | Gly | Glu | Trp |
| | 1805 | | | | | 1810 | | | | | 1815 | | | |
| Thr | Val | Gln | Leu | Phe | Pro | Asp | Cys | Gly | Thr | Lys | Ala | Ile | Glu | Thr |
| | 1820 | | | | | 1825 | | | | | 1830 | | | |
| Leu | Arg | Thr | Ala | Thr | Gln | Leu | Cys | Pro | Glu | Asn | Cys | Ala | Ala | Phe |
| | 1835 | | | | | 1840 | | | | | 1845 | | | |
| His | Ser | Leu | Gly | Ile | Leu | His | Tyr | Asp | Leu | Ser | Arg | Asp | Pro | Asn |
| | 1850 | | | | | 1855 | | | | | 1860 | | | |
| Thr | Ser | Gln | Glu | Thr | Gln | Thr | Lys | His | His | Ile | Glu | Ser | Ile | Thr |
| | 1865 | | | | | 1870 | | | | | 1875 | | | |
| Ala | Leu | Phe | Lys | Ala | Val | Ala | Leu | Ser | Arg | Arg | Glu | Ser | Asn | Gly |
| | 1880 | | | | | 1885 | | | | | 1890 | | | |
| Val | Met | Glu | Asp | Val | Leu | Arg | Ile | Leu | Ser | Ile | Trp | Phe | Ser | His |
| | 1895 | | | | | 1900 | | | | | 1905 | | | |
| Ser | Thr | Val | Asn | Glu | Val | Asn | Glu | Ala | Ile | Gln | Glu | Gly | Ile | Lys |
| | 1910 | | | | | 1915 | | | | | 1920 | | | |
| Ser | Val | Pro | Cys | Tyr | Val | Trp | Leu | Asn | Val | Ile | Pro | Gln | Leu | Val |
| | 1925 | | | | | 1930 | | | | | 1935 | | | |

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| | | | | | | | | | | | | | | |
|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Ala | Arg | Ile | Gly | Ile | Thr | Gly | Ala | Lys | Ala | Arg | Ser | Ile | Leu | Thr |
| | 1940 | | | | | 1945 | | | | | 1950 | | | |
| Asp | Leu | Leu | Val | Ser | Ile | Gly | Ser | Asn | Phe | Pro | His | Ala | Leu | Leu |
| | 1955 | | | | | 1960 | | | | | 1965 | | | |
| Tyr | Pro | Leu | Thr | Val | Thr | Glu | Lys | Ser | Pro | Glu | Val | Met | Arg | Arg |
| | 1970 | | | | | 1975 | | | | | 1980 | | | |
| Gln | Ala | Ala | Glu | Arg | Val | Leu | Lys | Gly | Ile | Arg | Val | Thr | Asn | Gly |
| | 1985 | | | | | 1990 | | | | | 1995 | | | |
| Pro | Met | Val | Glu | Glu | Ala | Ser | Leu | Ile | Ser | Asn | Glu | Met | Val | Arg |
| | 2000 | | | | | 2005 | | | | | 2010 | | | |
| Ile | Ala | Ile | Leu | Trp | Thr | Glu | Lys | Trp | His | Asn | Cys | Ile | Gln | Leu |
| | 2015 | | | | | 2020 | | | | | 2025 | | | |
| Ala | Ala | Gly | Lys | Pro | Glu | Asn | Val | Ser | Glu | Ile | Arg | Asn | Ile | Leu |
| | 2030 | | | | | 2035 | | | | | 2040 | | | |
| Arg | Pro | Leu | Tyr | Glu | Glu | Met | Lys | Lys | Glu | Ser | Thr | Pro | Asn | Glu |
| | 2045 | | | | | 2050 | | | | | 2055 | | | |
| Gln | His | Phe | Val | Lys | Val | His | Gly | Ser | Thr | Leu | Arg | Arg | Ala | Trp |
| | 2060 | | | | | 2065 | | | | | 2070 | | | |
| Ala | Ala | Leu | Gln | Lys | Gly | Glu | Ser | Gln | Glu | Ala | Trp | Val | Leu | Leu |
| | 2075 | | | | | 2080 | | | | | 2085 | | | |
| Lys | Gln | Val | Tyr | Cys | Glu | Leu | His | Lys | Ala | Val | Gly | Glu | Arg | Arg |
| | 2090 | | | | | 2095 | | | | | 2100 | | | |
| Leu | Gln | Met | Asp | Asp | Leu | Ser | Pro | Thr | Leu | Val | Lys | Ile | Asn | Lys |
| | 2105 | | | | | 2110 | | | | | 2115 | | | |
| Ser | Asn | Val | Pro | Val | Pro | Gly | Thr | Phe | Val | Leu | Gly | Gln | Gln | Leu |
| | 2120 | | | | | 2125 | | | | | 2130 | | | |
| Ile | Thr | Ile | Gln | Lys | Phe | His | Ser | Arg | Val | Tyr | Val | Met | Pro | Ser |
| | 2135 | | | | | 2140 | | | | | 2145 | | | |
| Lys | Gln | Arg | Pro | Arg | Arg | Phe | Gly | Val | Asp | Gly | Ser | Asp | Gly | Ser |
| | 2150 | | | | | 2155 | | | | | 2160 | | | |
| Lys | Tyr | Arg | Phe | Leu | Leu | Lys | Gly | His | Glu | Asp | Leu | Arg | Gln | Asp |
| | 2165 | | | | | 2170 | | | | | 2175 | | | |
| Glu | Arg | Val | Met | Gln | Phe | Ile | Glu | Leu | Ile | Asn | Thr | Ile | Phe | Ser |
| | 2180 | | | | | 2185 | | | | | 2190 | | | |
| Ser | Asp | Ser | Leu | Ser | Asn | Ala | Met | Gly | Leu | Ile | Ile | Pro | Gln | Tyr |

| 2195 | 2200 | 2205 |
|--------------|--------------------------|--------------------------|
| Ala Val 2210 | Ile Pro Leu Thr Asp 2215 | Asn Val Gly Ile Ile 2220 |
| Glu Asn 2225 | Thr Glu Thr Ile Tyr 2230 | Lys Met Leu Glu Arg 2235 |
| Asp His 2240 | Asn Ile Ser Ile Tyr 2245 | Lys Glu Val Ser Met 2250 |
| Lys Gly 2255 | Lys Leu Val Asn Ile 2260 | Thr Glu Tyr His His 2265 |
| Gln Glu 2270 | Arg Lys Gln Leu Leu 2275 | Ser His Val Met Ala 2280 |
| Asp Asp 2285 | Glu Leu Arg Arg Ile 2290 | Ile Trp Asp Lys Asn 2295 |
| Glu His 2300 | Trp Leu Gln Tyr Arg 2305 | Gly Thr Tyr Gly His 2310 |
| Ile Met 2315 | Ser Ile Val Gly Tyr 2320 | Val Leu Gly Leu Gly 2325 |
| Leu Asn 2330 | Asn Leu Met Leu Gln 2335 | Asp Lys Gly Ser Val 2340 |
| Asp Phe 2345 | Gly Asp Cys Phe Glu 2350 | Val Ala Met His Arg 2355 |
| Ser Glu 2360 | Ala Val Pro Phe Arg 2365 | Leu Thr Arg Leu Leu 2370 |
| Leu Gly 2375 | Ile Thr Gly Val Asp 2380 | Gly Val Phe Arg Leu 2385 |
| Leu Val 2390 | Met Lys Ile Leu Arg 2395 | Arg His Ser Glu Asn 2400 |
| Ile Leu 2405 | Glu Ala Phe Ile Tyr 2410 | Asp Pro Leu Ile Asn 2415 |
| Thr Thr 2420 | Val Ala Glu Gly Glu 2425 | Asn Ser Ala Ser Leu 2430 |
| Pro Val 2435 | Ala Gly Gly Glu Ala 2440 | Ser Pro Phe Ala Glu 2445 |
| Leu Ile 2450 | Asp Gly Pro Pro Met 2455 | Gln Leu Ser Arg Ser 2460 |

Val Arg Glu Gln Ala Pro Gly Thr Thr Leu Glu Gln Thr Gly Glu
2465 2470 2475

Glu Glu Thr Arg Asn Thr Gln Gly Asp Leu Ala Leu Ala Arg Val
2480 2485 2490

Arg Ala Lys Leu Thr Gly Glu Asp Phe Ala Asp Gly Cys His Val
2495 2500 2505

Val Ala Gly Gln Pro Ser Arg Arg Glu Val Ser Glu Asp Pro Asn
2510 2515 2520

Asp Pro Phe Ser Trp Trp Ser Gln Gly Leu Ala Glu Ser Ser Arg
2525 2530 2535

Asp Val Tyr Met Thr Asp Gly Arg Ala Leu Pro Ser Trp Ser Ser
2540 2545 2550

Phe Arg Thr Val Asn Asn Gln Glu Asn Leu Gln Asn Val Ala Ser
2555 2560 2565

Gln Val Asp Arg Leu Ile Glu Glu Ala Thr Ser Leu Asp Asn Leu
2570 2575 2580

Ala Glu Ala Tyr Ile Thr Gly Trp Ala Pro Phe Trp
2585 2590 2595

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<211> 2903
<212> PRT
<213> Trypanosoma brucei
<400> 4

Met Pro Arg Tyr Thr Ala Met Arg Arg Leu Gly Pro Val Gly His Ser
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Gly Gly Ile Ser Ser Asn Gly Val Thr Thr Val Gly Ala Val Thr Ala
20 25 30

Ser Asn Val Gly Asn Gly Val Val Asn Ile Gly Gly Asp Gly Ser Gln
35 40 45

Gly Val Ala Met Gly Pro Gly Ala Thr Asp Val Ala Ser Ala Arg Pro
50 55 60

Leu Leu Ile Val Pro Asn Thr Thr Ser Ala Ala Gly Gly Ser Ala Asp
65 70 75 80

Val Ser Asp Glu Glu Val Asp Gln Leu Leu Arg Glu Leu Glu Arg Ser
85 90 95

Val Asp Ser Pro Gln Ala Ala Ala Val³⁰ Met Arg Asp Ala Val Trp Ala
 100 105 110
 Ile Glu Arg Arg Ala Phe Ser Ser Cys Asp Pro His Ser Arg Asp Tyr
 115 120 125
 Phe Leu Glu Ser Arg Val Arg Ile Ile Leu Met Ser Leu Ser Thr Thr
 130 135 140
 Ser Asp Val Lys Gln Leu Leu Leu Ala Val Asp Phe Ile Glu Ala Leu
 145 150 155 160
 Leu Ala Val Pro Tyr Thr Asn Leu Gln His Arg Phe Thr Arg Leu Cys
 165 170 175
 Arg Ser Leu Met Asn Ile Leu Arg Cys Gly Ile Glu Glu Pro Ala Arg
 180 185 190
 Glu Ala Gln Arg Val Leu Lys Arg Met Leu Val Thr Asp Ser Gln Phe
 195 200 205
 Gly Ala Tyr His Thr Pro Leu Arg Ser Phe Ile Thr Lys Glu Leu Arg
 210 215 220
 Asp Asn Cys Lys Val Ala Leu Met Arg Leu Tyr Gly Arg Ala Gln Gln
 225 230 235 240
 Ala Asn Val Ser Phe Thr Pro Asp Phe Leu Ser Thr Met Leu Ala Ala
 245 250 255
 Glu Ala Thr Ala Glu Ile Ser Pro Arg Phe Ile Thr Gly Thr Leu Arg
 260 265 270
 Gln Gln Val Leu Glu Leu Ala Ser Met Leu Ala Gly Phe Ser Asp Leu
 275 280 285
 Leu Leu Arg Arg Ala Ala Tyr Arg Cys Met Val Val Leu Phe Lys Asn
 290 295 300
 Thr Ser Ala Met Arg Arg Lys Glu Val Val Leu Glu Asn Arg Arg Ile
 305 310 315 320
 Ile Asn Glu Ala Ile Arg Ser Leu Asn Leu Ser His Asn Ser Glu Ser
 325 330 335
 Ser Ile Ile Ser Thr Leu Glu Thr Leu Arg Ala Leu Leu Ser Ser Arg
 340 345 350
 Gly Val His Cys Met Asp Lys Gln Val Asn Thr Leu Pro Gln Leu Cys
 355 360 365
 Val Leu Val Thr Glu Gln His Arg Ile Ser Lys Thr Thr Ala Val Arg

370 375 380
 Asn Ala Val Cys Asp Leu Val Pro Val Ile Ala Glu Thr Asp Ile Ser
 385 390 395 400
 Ser Ala Ala Arg Arg Thr Thr Tyr Cys Ala Ile Ile Met Glu Pro Val
 405 410 415
 Lys Asn Val Arg Asp Asp Ser Asn Lys Asp Leu Glu Leu Arg Asn Leu
 420 425 430
 Ala Ile Phe Ile Gln Asn Val Gly Tyr Glu Val Leu Asp Ser Thr Asn
 435 440 445
 Arg Val Asn Leu Asp Ser Ile Ile Gln Arg Tyr Ile Thr Arg Arg Gly
 450 455 460
 Thr Glu Glu Glu Cys Trp His Ile Leu Ala Ala Ile Cys Ser Ser Arg
 465 470 475 480
 Ala Arg Pro Glu Thr Gln Arg Thr His Met Cys Ser Lys Thr Ser Tyr
 485 490 495
 Ile Ala Met Ser Ser Ser Ser Ala Met Gln Lys Gly Cys Glu Thr Ile
 500 505 510
 Gln Gly His Gln Ser Gly Gly Glu Ile Ser Leu Ser Ala Gln Glu Leu
 515 520 525
 Arg Ser Ala Ser Ala Glu Ala His Ser Val Cys Gln Leu Val Ala Gly
 530 535 540
 Glu Ser Gln Asn Ser Cys Asn Ser His Glu Leu Met Gln Pro Val Glu
 545 550 555 560
 Ala Leu Val Arg Arg Cys Leu Pro His Met Val His Ala Val Leu Ser
 565 570 575
 Asp Glu Phe Val Arg Tyr Ile Thr Ile Ile Gln Asp His Leu Pro Ser
 580 585 590
 Leu Ser Ser Asp Leu Gln Thr Tyr Leu Asp Gln Leu Val Asn Arg Thr
 595 600 605
 Leu Arg Asn Asp Lys Arg Lys Tyr Cys Gly Gly Glu Val Glu Asp Gly
 610 615 620
 Ala Leu Val Ala Gln Val Phe Ala Gly Asp Arg Leu Ser Thr Glu Leu
 625 630 635 640
 Gly Asn Ser Gln Pro Gln Glu Asp Ile Ile Gln Ser Ser Thr Leu Ala
 645 650 655

Tyr Val Thr Ala Met Gly Arg Leu Ala Gln Tyr Leu Leu Pro Thr Thr
 660 665 670
 Leu Pro Glu Gly Gly Ala Ile Asn Trp Gln Gln Ser Gln Gly Ala Thr
 675 680 685
 Ser Thr Thr Ala Thr Asp Gly Asn Gly Gln Gly Tyr Ser Leu Gly Ser
 690 695 700
 Val Glu Thr Phe Cys Lys Ser Val Val Ala Gly Gln Pro Gln Leu Val
 705 710 715 720
 Ser Pro Glu Ser Thr Leu Ser Ser Ala Ala Gly Ala Thr Thr Ala Glu
 725 730 735
 Val Cys Ser Gly Ala Ala Pro Asp Ser Val Gly Ala Ser Glu Leu Lys
 740 745 750
 Ile Ala Leu Glu Val Phe Ser Lys Arg Gln Ile Thr Ser Ser Asp Gln
 755 760 765
 Leu Arg Glu Val Ser Asp Ile Ile Ile Gln Tyr Gln Arg His Pro Asp
 770 775 780
 Lys Arg Val Arg Gln Gln Cys Cys Thr Thr Val Ile Glu Ala Leu Lys
 785 790 795 800
 Cys Trp Ala Arg Tyr Ser Gln Ser Asp Arg Thr Ser Ala Tyr Ser Ser
 805 810 815
 Leu Val Pro Asp Leu Leu Glu Val Tyr Leu Lys Asn Val Ala Met Glu
 820 825 830
 Leu Asp Pro Lys Val Arg Leu Val Glu Val Thr Leu Leu Ala Asp Ala
 835 840 845
 Val Glu Leu Arg Met Phe Leu Arg Glu Lys Arg Ile Ile Asp Thr Leu
 850 855 860
 Ile Ser Phe Leu His Asp Ile Ser His Val Arg Glu Lys Thr Met Glu
 865 870 875 880
 Leu Leu Val Thr Leu Ala Gln Asp Asn His Thr Gly Pro Ser Val Glu
 885 890 895
 Thr Val Gln Tyr Ser Leu Leu Ile Val Val Glu Ser Ser Val Ala Ala
 900 905 910
 Leu Glu Tyr Ser Ser Asp Pro Arg Ile Leu Ile Arg His Met Ser Asp
 915 920 925

Leu Gln Thr Val Ala Lys Phe Ser Leu Arg Pro Leu Met Gly His Leu
 930 935 940

Asp Arg Thr Phe Val Ala Cys Arg Arg Arg Leu Val Glu Glu Val Val
 945 950 955 960

Pro Asp Thr Ile Ala Leu Ser Thr Leu Lys Thr Leu Arg Thr Ile Leu
 965 970 975

Glu Ala Ile Lys Arg Glu Glu Ala Val Leu Leu Lys Tyr Lys Asp Val
 980 985 990

Ala Leu Glu Leu Tyr Ala Pro Val Ala Val Ala Leu Arg Ala Ser Thr
 995 1000 1005

Ala Ser Pro Leu Ser His Ala Ala Ile Gly Val Leu Val Cys Met
 1010 1015 1020

His Glu Ile Gly Ala Ser Pro Leu Asn Trp Asp Ala Arg Gln Leu
 1025 1030 1035

His Glu Leu Leu Gln Ser Val Thr Ala Val Tyr Ile Glu Ala Ala
 1040 1045 1050

Asn Ser Thr Glu Glu Glu Leu Gly Arg Ala Leu Thr Leu Phe Gly
 1055 1060 1065

Gln Ile Gly Ala Val Asp Pro Ala Thr Lys Pro Asp Thr Ala Ala
 1070 1075 1080

Met Lys Lys Lys Asp Asp Glu Ala Ala Ile Gln Asp Glu Ala Asp
 1085 1090 1095

Leu Glu Leu Thr Tyr Asp Tyr Thr Lys Ile Val Tyr Arg Asn Leu
 1100 1105 1110

Ser Arg Met Leu Asp Leu Ser Leu Ser Glu Ser Val Cys Val Gln
 1115 1120 1125

Ser Met Cys Thr Leu Leu His Leu Val Arg Leu Thr Thr Asp Arg
 1130 1135 1140

Lys Glu Leu Ile Gly Gly Met His Ala Ile Lys Ala Ile Leu Gln
 1145 1150 1155

Ile Ala Arg Arg Ala Asn Asp Ala Pro Leu Leu Arg Ile Glu Ala
 1160 1165 1170

Leu His Ile Leu Ala Ala Ile Thr Ser Leu Arg His Glu Lys Val
 1175 1180 1185

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| | | | | | | | | | | | | | | |
|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-----|
| Cys | Lys 1190 | Thr | Leu | Leu | Pro | Glu 1195 | Leu | Val | Thr | Leu | Phe 1200 | Glu | Gln | Leu |
| Trp | Tyr 1205 | Pro | Gln | Asp | His | Ala 1210 | Leu | Phe | Arg | Ala | Val 1215 | Leu | Asn | Leu |
| Val | Ser 1220 | Ala | Leu | Lys | Pro | Gly 1225 | Asn | Leu | Thr | Gly | Lys 1230 | Glu | Gln | Ser |
| Glu | Val 1235 | Trp | Pro | Trp | Leu | Tyr 1240 | Pro | Arg | Leu | Val | Asp 1245 | Val | Ala | Leu |
| Gln | Asp 1250 | His | Thr | Glu | Thr | Arg 1255 | Glu | Phe | Cys | Leu | Arg 1260 | Val | Val | Gly |
| Ile | Ile 1265 | Gln | His | Ala | Lys | Tyr 1270 | Ile | Pro | Pro | His | Cys 1275 | Ile | Pro | Ile |
| Val | Phe 1280 | Pro | Met | Leu | Thr | Gln 1285 | Phe | Val | Gln | Gln | Met 1290 | Asp | Gln | Leu |
| Ala | Glu 1295 | Leu | Arg | Ser | Leu | Ser 1300 | Leu | Cys | Ala | Ala | Ile 1305 | Arg | Ile | Val |
| Cys | Asn 1310 | Leu | Gln | Ala | Val | Gln 1315 | His | Leu | Pro | Ser | Leu 1320 | Met | His | Thr |
| Ile | Cys 1325 | Thr | Leu | Thr | Arg | His 1330 | Cys | Asp | Leu | Thr | Glu 1335 | Asn | Leu | Gly |
| Pro | Arg 1340 | Leu | Ser | Thr | Pro | Thr 1345 | Leu | His | Arg | Ser | Leu 1350 | Arg | Leu | Leu |
| Ser | Asn 1355 | Thr | His | Pro | Asn | Gly 1360 | Glu | Ala | Asp | Val | Asn 1365 | Ala | Leu | Cys |
| Glu | Arg 1370 | Leu | Cys | Ala | Thr | Gly 1375 | Ser | Glu | Gly | Ser | Ala 1380 | Asp | Ala | Gly |
| Gly | Cys 1385 | Phe | Thr | Asn | Glu | Gly 1390 | Gly | Glu | Thr | Leu | Pro 1395 | Thr | Ser | Thr |
| Gln | Pro 1400 | Asn | Ser | Ser | Phe | His 1405 | Cys | Gly | Asn | Gly | Asp 1410 | Tyr | Ala | Ser |
| Ala | Pro 1415 | Tyr | Leu | Gly | Gln | Tyr 1420 | Thr | Gln | Lys | Cys | Gln 1425 | Gln | Gln | Gln |
| Gln | Gly 1430 | Gly | Thr | Tyr | Leu | Asp 1435 | Pro | Asn | Asp | Asp | Glu 1440 | Ala | Tyr | Asp |
| Thr | Leu | Pro | Gln | Gly | Gln | Gln | Asp | Ile | Thr | Ala | Phe | Met | Lys | His |

| | | | | | | | | | | | | | | | |
|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-----|--|
| | 1445 | | | | | 1450 | | | | | 1455 | | | | |
| Val | Glu 1460 | Phe | Gly | Leu | Arg | Ala 1465 | Lys | Asp | Asn | Lys | Trp 1470 | Arg | Glu | Trp | |
| Phe | Ala 1475 | Glu | Phe | Gln | Lys | Asn 1480 | Met | Ile | Val | Ala | Ser 1485 | Pro | His | Pro | |
| Val | Phe 1490 | Arg | Ile | Met | Val | Asp 1495 | Leu | Phe | Asp | Lys | His 1500 | Glu | Pro | Leu | |
| Arg | Arg 1505 | Lys | Leu | Phe | His | Pro 1510 | Ser | Phe | Lys | Cys | Phe 1515 | Tyr | Glu | Ser | |
| Leu | Asn 1520 | Ala | Glu | His | Met | Lys 1525 | Lys | Val | Lys | Asp | Val 1530 | Leu | Asn | Leu | |
| Ala | Leu 1535 | Arg | Ser | Ser | Asp | Thr 1540 | Glu | Val | Val | Ser | Lys 1545 | Cys | Ile | Gly | |
| Leu | Ala 1550 | Asp | Tyr | Leu | Asp | His 1555 | Asn | Pro | Pro | Asn | Ile 1560 | Ser | Glu | Ser | |
| Val | Leu 1565 | Gln | Gln | Leu | Arg | His 1570 | Leu | Glu | Gly | Asn | Glu 1575 | Pro | Met | Asp | |
| Val | Gly 1580 | Lys | Phe | Thr | Lys | His 1585 | Ser | Asn | Leu | His | Val 1590 | Gly | Asn | Val | |
| Ile | Ala 1595 | Gly | Ser | Arg | Ser | Pro 1600 | Thr | Pro | Ala | Cys | Arg 1605 | His | Glu | Pro | |
| Gly | Gly 1610 | Tyr | Tyr | Ala | Ser | His 1615 | His | Gly | Gln | Leu | Tyr 1620 | Arg | Asn | Ile | |
| Ser | Asp 1625 | Asn | Tyr | Asn | Phe | Glu 1630 | Ser | Val | Leu | His | Ser 1635 | Leu | Asn | Ser | |
| Pro | Lys 1640 | Thr | Glu | Gly | Pro | Val 1645 | Phe | Asn | Glu | Gly | Val 1650 | Arg | Pro | Pro | |
| Ser | His 1655 | Lys | Val | Gln | Asp | Val 1660 | Gly | Asn | Gly | Glu | His 1665 | Glu | Val | Thr | |
| Asp | Asn 1670 | Gly | Gly | Thr | Asp | Ser 1675 | Gly | Cys | Gly | Val | Glu 1680 | Arg | Asn | Gly | |
| Lys | Glu 1685 | Gly | Arg | Ser | Glu | Ser 1690 | Glu | Ser | Gly | Asp | Val 1695 | Asn | Gly | Ser | |
| Ala | Arg 1700 | Arg | Gln | Thr | Met | Leu 1705 | Pro | Val | Ala | Lys | Ser 1710 | Ile | Glu | Gly | |

| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Asp | Thr | Asn | Glu | Gly | Leu | Ser | Phe | Leu | Ala | Gly | Pro | Val | Ala | Arg |
| 1715 | | | | | | 1720 | | | | | 1725 | | | |
| Arg | Ile | Thr | Val | Ser | Ala | His | His | Thr | Thr | Asn | Val | Asn | Ala | Ser |
| 1730 | | | | | | 1735 | | | | | 1740 | | | |
| Asp | Gly | Thr | Cys | Pro | Asn | Thr | Gly | Asp | Ala | Glu | Val | His | Ile | Arg |
| 1745 | | | | | | 1750 | | | | | 1755 | | | |
| Ala | Thr | Ala | Ile | Pro | Ser | Thr | Val | Asn | Pro | Leu | Phe | Thr | Asn | Asp |
| 1760 | | | | | | 1765 | | | | | 1770 | | | |
| Ser | Leu | Val | Glu | Ala | Ala | Leu | Arg | Thr | Arg | Met | Pro | Asp | Lys | Ala |
| 1775 | | | | | | 1780 | | | | | 1785 | | | |
| Met | Ser | Tyr | Leu | Glu | Asn | Lys | Leu | Leu | Pro | Val | Met | Gln | Lys | Tyr |
| 1790 | | | | | | 1795 | | | | | 1800 | | | |
| Arg | Tyr | Ala | His | Ser | Val | Pro | Lys | Glu | Ala | Val | Gln | Ala | Val | Val |
| 1805 | | | | | | 1810 | | | | | 1815 | | | |
| Leu | Pro | Leu | Ala | Ser | Leu | Tyr | Ser | Arg | Leu | Glu | Met | Gln | Asp | Ser |
| 1820 | | | | | | 1825 | | | | | 1830 | | | |
| Val | Val | Gly | Leu | Phe | His | Ala | Met | Arg | Tyr | Lys | Ser | Asp | Asn | Glu |
| 1835 | | | | | | 1840 | | | | | 1845 | | | |
| Asp | Gly | Phe | Ala | Tyr | Glu | Leu | Leu | Gln | Trp | Trp | Asp | Val | Ala | Gln |
| 1850 | | | | | | 1855 | | | | | 1860 | | | |
| Gly | Val | Tyr | Ala | Thr | Lys | Val | His | Asp | Cys | Cys | Gly | Ser | Ser | Ala |
| 1865 | | | | | | 1870 | | | | | 1875 | | | |
| Arg | Asp | Ile | Asp | Gly | Tyr | Val | Arg | Met | Leu | Cys | Leu | Cys | Gly | Glu |
| 1880 | | | | | | 1885 | | | | | 1890 | | | |
| Trp | Glu | Arg | Ala | Leu | Gln | Val | Val | Lys | Asp | Thr | Tyr | Lys | Ser | Leu |
| 1895 | | | | | | 1900 | | | | | 1905 | | | |
| Asp | Gln | Pro | Ser | Ser | Thr | Ile | Ala | Gln | Ser | Gly | Ala | Met | Ala | Ala |
| 1910 | | | | | | 1915 | | | | | 1920 | | | |
| Trp | Ile | Leu | Gly | Lys | Trp | Asp | Asp | Val | Lys | Met | Leu | Ile | Glu | Arg |
| 1925 | | | | | | 1930 | | | | | 1935 | | | |
| Leu | Pro | Asn | Lys | Glu | Lys | Gly | Asn | Ile | Thr | Leu | Arg | His | Phe | Phe |
| 1940 | | | | | | 1945 | | | | | 1950 | | | |
| Gln | Asn | Ala | Thr | Leu | Phe | His | Gln | Glu | Phe | Gly | Cys | Arg | Ala | Gln |
| 1955 | | | | | | 1960 | | | | | 1965 | | | |

| | | | | | | | | | | | | | | |
|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-----|-----|-------------|-----|-----|-----|
| Trp | Asp 1970 | Cys | Gly | Val | Gln | Asp 1975 | Gly | Gln | Arg | Arg | Leu 1980 | Glu | Thr | Ser |
| Pro | Gln 1985 | Val | Glu | Ala | Leu | Arg 1990 | Ala | Ser | Ile | Met | Arg 1995 | Ala | Lys | Met |
| Glu | Val 2000 | Asp | Glu | Ser | Leu | Lys 2005 | Thr | Leu | Leu | Pro | Leu 2010 | Ser | Tyr | Ala |
| His | Ala 2015 | Tyr | Glu | Asn | Leu | Thr 2020 | Met | Leu | Gln | His | Phe 2025 | Thr | Glu | Met |
| Glu | Glu 2030 | His | Ile | Ala | Tyr | Met 2035 | Glu | Ser | Arg | Thr | Glu 2040 | Glu | Phe | Arg |
| Gly | Gln 2045 | Leu | Arg | Glu | Arg | Trp 2050 | Asn | Arg | Arg | Phe | Ala 2055 | Ala | Leu | Lys |
| Pro | Asp 2060 | Ser | Leu | Met | Pro | Asn 2065 | Leu | Arg | Ser | Leu | Met 2070 | Leu | His | Ser |
| Leu | Val 2075 | Leu | Asn | Ala | Ser | Glu 2080 | Met | Ser | Val | Met | Val 2085 | Val | Asn | Phe |
| Cys | Glu 2090 | Arg | Thr | Gly | Thr | Asn 2095 | Tyr | Pro | Gln | Leu | Ser 2100 | Lys | Trp | Ala |
| Met | Glu 2105 | Trp | Leu | Lys | Gln | Gly 2110 | Lys | Phe | Pro | Arg | Ala 2115 | Asn | His | Leu |
| Ser | Gln 2120 | Ser | Cys | His | Val | Leu 2125 | Pro | Ala | Thr | Pro | Val 2130 | Ser | Leu | Glu |
| Pro | Cys 2135 | Val | Ala | Ile | Thr | Tyr 2140 | Ile | Gly | Gln | Val | Trp 2145 | Ser | Gly | Gly |
| Gln | Arg 2150 | Gln | Lys | Ala | Val | Gln 2155 | Leu | Met | Glu | Asn | Phe 2160 | Leu | Glu | Glu |
| Thr | His 2165 | Ser | Thr | Leu | Glu | Glu 2170 | Gln | Gln | Pro | Ala | Ala 2175 | Tyr | Gly | Val |
| Ala | Gln 2180 | Leu | Arg | Leu | Gly | Met 2185 | Trp | Lys | Gln | Glu | Met 2190 | Phe | Ala | Asp |
| Ser | Phe 2195 | Trp | Lys | Val | Glu | His 2200 | Arg | Gln | Glu | Val | Leu 2205 | Arg | His | Phe |
| His | Glu 2210 | Ala | Val | Arg | Ala | Val 2215 | Pro | Gly | Ser | Cys | Glu 2220 | Ala | Trp | His |

Ser Trp Gly Leu Met Asn Tyr Arg Val ³⁸Gln Gln Arg Asp Cys Ser
 2225 2230 2235
 Leu Ser Arg Tyr Glu Gln Arg Leu Phe Val Glu Ala Ala His Gln
 2240 2245 2250
 Gly Phe Val Ala Ala Ile Cys Arg Ser Ala Ser Pro Ser Thr Ala
 2255 2260 2265
 Leu Pro Gly Val Met Arg Leu Leu Gln Leu Trp Val Phe His Asn
 2270 2275 2280
 Gly Met Ser Leu Leu Lys Glu Ser Val Ala Asp Ser Val Ala Arg
 2285 2290 2295
 Ile Pro Thr Asp Tyr Trp Val Gln Ala Ile Pro Gln Leu Ile Gly
 2300 2305 2310
 His Leu Arg Ser Ala Ser His Asp Val Arg Asp Val Val Ser Met
 2315 2320 2325
 Ile Leu Gln Arg Leu Cys Val Ala His Ser Gln Ala Val Val Phe
 2330 2335 2340
 Pro Leu Leu Val Val Leu Met Ser Ala Asp Gly Gly Gly Gly Glu
 2345 2350 2355
 Thr His Ser Arg Arg Lys Glu Leu Ala Arg Ser Ile Ile Asn Asn
 2360 2365 2370
 Leu Pro Lys Arg Ile Arg Ala Glu Ala Glu Leu Val Ala Thr Leu
 2375 2380 2385
 Leu Ile Asn Ala Ser Ala Thr Pro Ile Glu Arg Ile Gly Glu Ser
 2390 2395 2400
 Leu Ser Ala Val Ala Thr Ala Trp Asn Pro Asn Ala Glu Tyr Glu
 2405 2410 2415
 Glu Asp Lys Glu Glu Val Arg Arg Lys Leu Arg Tyr Val Leu Asp
 2420 2425 2430
 Val Phe Asn Thr Asn Arg Arg Gln Leu Leu Tyr Asn Val Gly Asp
 2435 2440 2445
 Ile Gly Gln Tyr Val Arg Ile Val Met Glu Glu Asp Ala Cys Gly
 2450 2455 2460
 Arg Arg Glu Lys Ala Ser Gly Ile Leu Thr Gln Leu Val Glu Glu
 2465 2470 2475
 Ile Thr Lys His Ile Ser Glu Lys Leu Gly Lys Glu Pro Gln Lys

| 2480 | | | | | 2485 | | | | | 2490 | | | | |
|------|-------------|-----|-----|-----|------|-------------|-----|-----|-----|------|-------------|-----|-----|-----|
| Ala | Met 2495 | Glu | Pro | Leu | Leu | Asn 2500 | Leu | Arg | Asn | Leu | Ser 2505 | Ile | Ala | Val |
| Phe | Gly 2510 | Glu | Tyr | Asp | Ile | Gln 2515 | Tyr | Thr | Asn | Phe | Pro 2520 | Thr | Ile | Ala |
| Ser | Phe 2525 | Ser | Ser | Lys | Leu | Asp 2530 | Val | Ile | Pro | Ser | Lys 2535 | Lys | Arg | Pro |
| Arg | Arg 2540 | Ile | Arg | Leu | Ser | Gly 2545 | Ser | Asn | Gly | Cys | Met 2550 | Tyr | Thr | Tyr |
| Cys | Leu 2555 | Lys | Gly | Asn | Glu | Asp 2560 | Ile | Arg | Met | Asp | Glu 2565 | Arg | Val | Met |
| Gln | Leu 2570 | Phe | Gly | Met | Val | Asn 2575 | Val | Leu | Leu | Ser | Asp 2580 | Ala | Lys | Thr |
| Ala | Lys 2585 | Ser | Ala | Phe | Ile | His 2590 | Arg | Phe | Pro | Val | Ile 2595 | Pro | Ile | Ser |
| Asp | Asn 2600 | Val | Gly | Leu | Leu | Gly 2605 | Trp | Val | Glu | His | Ala 2610 | Asn | Thr | Ile |
| Asn | Asn 2615 | Thr | Ile | Cys | Thr | His 2620 | Arg | Asn | Thr | Ile | Ser 2625 | Lys | Val | Arg |
| Thr | His 2630 | His | Glu | Ser | Asn | Thr 2635 | Leu | Arg | Ala | Tyr | Val 2640 | Glu | Thr | Ile |
| Gly | Ser 2645 | Trp | Glu | Lys | Leu | Ser 2650 | Met | Ile | Arg | Arg | Thr 2655 | Glu | Ile | Leu |
| Asp | Tyr 2660 | Val | Met | Ser | Gln | Lys 2665 | Asp | Cys | Glu | Ala | Val 2670 | Asp | Val | Ala |
| Arg | Ala 2675 | Met | Trp | His | Arg | Ser 2680 | Asn | Thr | Ala | Glu | Gln 2685 | Trp | Leu | Glu |
| Arg | Arg 2690 | Thr | Ala | Phe | Thr | Gln 2695 | Ser | Leu | Ala | Thr | Met 2700 | Ser | Met | Val |
| Gly | Tyr 2705 | Val | Leu | Gly | Leu | Gly 2710 | Asp | Arg | His | Leu | Gly 2715 | Asn | Ile | Leu |
| Leu | Ser 2720 | Met | Ser | Thr | Gly | Lys 2725 | Ile | Val | His | Ile | Asp 2730 | Phe | Gly | Asp |
| Ser | Phe 2735 | Asp | Val | Gly | Arg | Leu 2740 | Arg | His | Val | Leu | Pro 2745 | Glu | Thr | Val |

Pro Phe Arg Leu Thr Arg Met Leu Thr Asn Ala Met Glu Val Phe
 2750 2755 2760
 Gly Val Asp Gly Val Phe Arg Ala Ser Cys Asn Arg Thr Gln Ser
 2765 2770 2775
 Thr Leu His Lys Asn Ala Asp Ser Ile Met Ala Leu Leu Thr Ala
 2780 2785 2790
 Phe Val His Asp Pro Ile Val Gln His Lys Gly Lys Met Arg Asn
 2795 2800 2805
 Met Met Glu Lys Ser Arg Thr Pro Gln Asn Ile Val Glu Arg Ile
 2810 2815 2820
 Arg Asn Lys Leu Arg Gly Thr Glu Met Ala Val Arg Asn Ala Asp
 2825 2830 2835
 Thr Val Ile Phe Asn Thr Val Leu Glu Ser Ser Arg Arg Pro Asp
 2840 2845 2850
 Leu Leu Tyr Met Ser His Ala Phe Asn Asp Val Ala Lys Arg Thr
 2855 2860 2865
 Val Val Asn Gly Arg Thr Thr Glu Glu Gln Val Ser Met Leu Ile
 2870 2875 2880
 Asp Glu Ala Thr Arg Leu Glu Asn Tyr Ala Ala Leu Tyr Phe Gly
 2885 2890 2895
 Trp Gly Pro Leu Trp
 2900