

SEQUENCE LISTING

<110> Inthera Bioscience AG

<120> Oxopiperazine derivatives

<130> NTHR-001/001WO

<150> 62/599,336

<151> 2017-12-15

<150> CH1522018

<151> 2018-02-08

<160> 2

<170> PatentIn version 3.5

<210> 1

<211> 2414

<212> PRT

<213> homo sapiens

<400> 1

Met Ala Glu Asn Val Val Glu Pro Gly Pro Pro Ser Ala Lys Arg Pro
1 5 10 15

Lys Leu Ser Ser Pro Ala Leu Ser Ala Ser Asp Gly Thr Asp
20 25 30

Phe Gly Ser Leu Phe Asp Leu Glu His Asp Leu Pro Asp Glu Leu Ile
35 40 45

Asn Ser Thr Glu Leu Gly Leu Thr Asn Gly Gly Asp Ile Asn Gln Leu
50 55 60

Gln Thr Ser Leu Gly Met Val Gln Asp Ala Ala Ser Lys His Lys Gln
65 70 75 80

Leu Ser Glu Leu Leu Arg Ser Gly Ser Ser Pro Asn Leu Asn Met Gly
85 90 95

Val Gly Gly Pro Gly Gln Val Met Ala Ser Gln Ala Gln Gln Ser Ser
100 105 110

Pro Gly Leu Gly Leu Ile Asn Ser Met Val Lys Ser Pro Met Thr Gln
115 120 125

Ala Gly Leu Thr Ser Pro Asn Met Gly Met Gly Thr Ser Gly Pro Asn
130 135 140

Gln Gly Pro Thr Gln Ser Thr Gly Met Met Asn Ser Pro Val Asn Gln
145 150 155 160

Pro Ala Met Gly Met Asn Thr Gly Met Asn Ala Gly Met Asn Pro Gly
165 170 175

Met Leu Ala Ala Gly Asn Gly Gln Gly Ile Met Pro Asn Gln Val Met
180 185 190

Asn Gly Ser Ile Gly Ala Gly Arg Gly Arg Gln Asn Met Gln Tyr Pro
195 200 205

Asn Pro Gly Met Gly Ser Ala Gly Asn Leu Leu Thr Glu Pro Leu Gln
210 215 220

Gln Gly Ser Pro Gln Met Gly Gly Gln Thr Gly Leu Arg Gly Pro Gln
225 230 235 240

Pro Leu Lys Met Gly Met Met Asn Asn Pro Asn Pro Tyr Gly Ser Pro
245 250 255

Tyr Thr Gln Asn Pro Gly Gln Gln Ile Gly Ala Ser Gly Leu Gly Leu
260 265 270

Gln Ile Gln Thr Lys Thr Val Leu Ser Asn Asn Leu Ser Pro Phe Ala
275 280 285

Met Asp Lys Lys Ala Val Pro Gly Gly Gly Met Pro Asn Met Gly Gln
290 295 300



Gln Pro Ala Pro Gln Val Gln Gln Pro Gly Leu Val Thr Pro Val Ala
305 310 315 320

Gln Gly Met Gly Ser Gly Ala His Thr Ala Asp Pro Glu Lys Arg Lys
325 330 335

Leu Ile Gln Gln Gln Leu Val Leu Leu Leu His Ala His Lys Cys Gln
340 345 350

Arg Arg Glu Gln Ala Asn Gly Glu Val Arg Gln Cys Asn Leu Pro His
355 360 365

Cys Arg Thr Met Lys Asn Val Leu Asn His Met Thr His Cys Gln Ser
370 375 380

Gly Lys Ser Cys Gln Val Ala His Cys Ala Ser Ser Arg Gln Ile Ile
385 390 395 400

Ser His Trp Lys Asn Cys Thr Arg His Asp Cys Pro Val Cys Leu Pro
405 410 415

Leu Lys Asn Ala Gly Asp Lys Arg Asn Gln Gln Pro Ile Leu Thr Gly
420 425 430

Ala Pro Val Gly Leu Gly Asn Pro Ser Ser Leu Gly Val Gly Gln Gln
435 440 445

Ser Ala Pro Asn Leu Ser Thr Val Ser Gln Ile Asp Pro Ser Ser Ile
450 455 460

Glu Arg Ala Tyr Ala Ala Leu Gly Leu Pro Tyr Gln Val Asn Gln Met
465 470 475 480

Pro Thr Gln Pro Gln Val Gln Ala Lys Asn Gln Gln Asn Gln Gln Pro
485 490 495

Gly Gln Ser Pro Gln Gly Met Arg Pro Met Ser Asn Met Ser Ala Ser
500 505 510

Pro Met Gly Val Asn Gly Gly Val Gly Val Gln Thr Pro Ser Leu Leu
515 520 525

Ser Asp Ser Met Leu His Ser Ala Ile Asn Ser Gln Asn Pro Met Met
530 535 540

Ser Glu Asn Ala Ser Val Pro Ser Leu Gly Pro Met Pro Thr Ala Ala
545 550 555 560

Gln Pro Ser Thr Thr Gly Ile Arg Lys Gln Trp His Glu Asp Ile Thr
565 570 575

Gln Asp Leu Arg Asn His Leu Val His Lys Leu Val Gln Ala Ile Phe
580 585 590

Pro Thr Pro Asp Pro Ala Ala Leu Lys Asp Arg Arg Met Glu Asn Leu
595 600 605

Val Ala Tyr Ala Arg Lys Val Glu Gly Asp Met Tyr Glu Ser Ala Asn
610 615 620

Asn Arg Ala Glu Tyr Tyr His Leu Leu Ala Glu Lys Ile Tyr Lys Ile
625 630 635 640

Gln Lys Glu Leu Glu Glu Lys Arg Arg Thr Arg Leu Gln Lys Gln Asn
645 650 655

Met Leu Pro Asn Ala Ala Gly Met Val Pro Val Ser Met Asn Pro Gly
660 665 670

Pro Asn Met Gly Gln Pro Gln Pro Gly Met Thr Ser Asn Gly Pro Leu
675 680 685

Pro Asp Pro Ser Met Ile Arg Gly Ser Val Pro Asn Gln Met Met Pro
690 695 700



Arg Ile Thr Pro Gln Ser Gly Leu Asn Gln Phe Gly Gln Met Ser Met
705 710 715 720

Ala Gln Pro Pro Ile Val Pro Arg Gln Thr Pro Pro Leu Gln His His
725 730 735

Gly Gln Leu Ala Gln Pro Gly Ala Leu Asn Pro Pro Met Gly Tyr Gly
740 745 750

Pro Arg Met Gln Gln Pro Ser Asn Gln Gly Gln Phe Leu Pro Gln Thr
755 760 765

Gln Phe Pro Ser Gln Gly Met Asn Val Thr Asn Ile Pro Leu Ala Pro
770 775 780

Ser Ser Gly Gln Ala Pro Val Ser Gln Ala Gln Met Ser Ser Ser Ser
785 790 795 800

Cys Pro Val Asn Ser Pro Ile Met Pro Pro Gly Ser Gln Gly Ser His
805 810 815

Ile His Cys Pro Gln Leu Pro Gln Pro Ala Leu His Gln Asn Ser Pro
820 825 830

Ser Pro Val Pro Ser Arg Thr Pro Thr Pro His His Thr Pro Pro Ser
835 840 845

Ile Gly Ala Gln Gln Pro Pro Ala Thr Thr Ile Pro Ala Pro Val Pro
850 855 860

Thr Pro Pro Ala Met Pro Pro Gly Pro Gln Ser Gln Ala Leu His Pro
865 870 875 880

Pro Pro Arg Gln Thr Pro Thr Pro Pro Thr Thr Gln Leu Pro Gln Gln
885 890 895

Val Gln Pro Ser Leu Pro Ala Ala Pro Ser Ala Asp Gln Pro Gln Gln
900 905 910

Gln Pro Arg Ser Gln Gln Ser Thr Ala Ala Ser Val Pro Thr Pro Thr
915 920 925

Ala Pro Leu Leu Pro Pro Gln Pro Ala Thr Pro Leu Ser Gln Pro Ala
930 935 940

Val Ser Ile Glu Gly Gln Val Ser Asn Pro Pro Ser Thr Ser Ser Thr
945 950 955 960

Glu Val Asn Ser Gln Ala Ile Ala Glu Lys Gln Pro Ser Gln Glu Val
965 970 975

Lys Met Glu Ala Lys Met Glu Val Asp Gln Pro Glu Pro Ala Asp Thr
980 985 990

Gln Pro Glu Asp Ile Ser Glu Ser Lys Val Glu Asp Cys Lys Met Glu
995 1000 1005

Ser Thr Glu Thr Glu Glu Arg Ser Thr Glu Leu Lys Thr Glu Ile
1010 1015 1020

Lys Glu Glu Glu Asp Gln Pro Ser Thr Ser Ala Thr Gln Ser Ser
1025 1030 1035

Pro Ala Pro Gly Gln Ser Lys Lys Lys Ile Phe Lys Pro Glu Glu
1040 1045 1050

Leu Arg Gln Ala Leu Met Pro Thr Leu Glu Ala Leu Tyr Arg Gln
1055 1060 1065

Asp Pro Glu Ser Leu Pro Phe Arg Gln Pro Val Asp Pro Gln Leu
1070 1075 1080

Leu Gly Ile Pro Asp Tyr Phe Asp Ile Val Lys Ser Pro Met Asp
1085 1090 1095



Leu 1100	Ser	Thr	Ile	Lys	Arg	Lys 1105	Leu	Asp	Thr	Gly	Gln 1110	Tyr	Gln	Glu
Pro	Trp 1115	Gln	Tyr	Val	Asp	Asp 1120	Ile	Trp	Leu	Met	Phe 1125	Asn	Asn	Ala
Trp	Leu 1130	Tyr	Asn	Arg	Lys	Thr 1135	Ser	Arg	Val	Tyr	Lys 1140	Tyr	Cys	Ser
Lys	Leu 1145	Ser	Glu	Val	Phe	Glu 1150	Gln	Glu	Ile	Asp	Pro 1155	Val	Met	Gln
Ser	Leu 1160	Gly	Tyr	Cys	Cys	Gly 1165	Arg	Lys	Leu	Glu	Phe 1170	Ser	Pro	Gln
Thr	Leu 1175	Cys	Cys	Tyr	Gly	Lys 1180	Gln	Leu	Cys	Thr	Ile 1185	Pro	Arg	Asp
Ala	Thr 1190	Tyr	Tyr	Ser	Tyr	Gln 1195	Asn	Arg	Tyr	His	Phe 1200	Cys	Glu	Lys
Cys	Phe 1205	Asn	Glu	Ile	Gln	Gly 1210	Glu	Ser	Val	Ser	Leu 1215	Gly	Asp	Asp
Pro	Ser 1220	Gln	Pro	Gln	Thr	Thr 1225	Ile	Asn	Lys	Glu	Gln 1230	Phe	Ser	Lys
Arg	Lys 1235	Asn	Asp	Thr	Leu	Asp 1240	Pro	Glu	Leu	Phe	Val 1245	Glu	Cys	Thr
Glu	Cys 1250	Gly	Arg	Lys	Met	His 1255	Gln	Ile	Cys	Val	Leu 1260	His	His	Glu
Ile	Ile 1265	Trp	Pro	Ala	Gly	Phe 1270	Val	Cys	Asp	Gly	Cys 1275	Leu	Lys	Lys
Ser	Ala 1280	Arg	Thr	Arg	Lys	Glu 1285	Asn	Lys	Phe	Ser	Ala 1290	Lys	Arg	Leu
Pro	Ser 1295	Thr	Arg	Leu	Gly	Thr 1300	Phe	Leu	Glu	Asn	Arg 1305	Val	Asn	Asp
Phe	Leu 1310	Arg	Arg	Gln	Asn	His 1315	Pro	Glu	Ser	Gly	Glu 1320	Val	Thr	Val
Arg	Val 1325	Val	His	Ala	Ser	Asp 1330	Lys	Thr	Val	Glu	Val 1335	Lys	Pro	Gly
Met	Lys 1340	Ala	Arg	Phe	Val	Asp 1345	Ser	Gly	Glu	Met	Ala 1350	Glu	Ser	Phe
Pro	Tyr 1355	Arg	Thr	Lys	Ala	Leu 1360	Phe	Ala	Phe	Glu	Glu 1365	Ile	Asp	Gly
Val	Asp 1370	Leu	Cys	Phe	Phe	Gly 1375	Met	His	Val	Gln	Glu 1380	Tyr	Gly	Ser
Asp	Cys 1385	Pro	Pro	Pro	Asn	Gln 1390	Arg	Arg	Val	Tyr	Ile 1395	Ser	Tyr	Leu
Asp	Ser 1400	Val	His	Phe	Phe	Arg 1405	Pro	Lys	Cys	Leu	Arg 1410	Thr	Ala	Val
Tyr	His 1415	Glu	Ile	Leu	Ile	Gly 1420	Tyr	Leu	Glu	Tyr	Val 1425	Lys	Lys	Leu
Gly	Tyr 1430	Thr	Thr	Gly	His	Ile 1435	Trp	Ala	Cys	Pro	Pro 1440	Ser	Glu	Gly
Asp	Asp 1445	Tyr	Ile	Phe	His	Cys 1450	His	Pro	Pro	Asp	Gln 1455	Lys	Ile	Pro
Lys	Pro 1460	Lys	Arg	Leu	Gln	Glu 1465	Trp	Tyr	Lys	Lys	Met 1470	Leu	Asp	Lys



Ala Val Ser Glu Arg Ile Val His Asp Tyr Lys Asp Ile Phe Lys
1475 1480 1485

Gln Ala Thr Glu Asp Arg Leu Thr Ser Ala Lys Glu Leu Pro Tyr
1490 1495 1500

Phe Glu Gly Asp Phe Trp Pro Asn Val Leu Glu Glu Ser Ile Lys
1505 1510 1515

Glu Leu Glu Gln Glu Glu Glu Arg Lys Arg Glu Glu Asn Thr
1520 1525 1530

Ser Asn Glu Ser Thr Asp Val Thr Lys Gly Asp Ser Lys Asn Ala
1535 1540 1545

Lys Lys Lys Asn Asn Lys Lys Thr Ser Lys Asn Lys Ser Ser Leu
1550 1555 1560

Ser Arg Gly Asn Lys Lys Lys Pro Gly Met Pro Asn Val Ser Asn
1565 1570 1575

Asp Leu Ser Gln Lys Leu Tyr Ala Thr Met Glu Lys His Lys Glu
1580 1585 1590

Val Phe Phe Val Ile Arg Leu Ile Ala Gly Pro Ala Ala Asn Ser
1595 1600 1605

Leu Pro Pro Ile Val Asp Pro Asp Pro Leu Ile Pro Cys Asp Leu
1610 1615 1620

Met Asp Gly Arg Asp Ala Phe Leu Thr Leu Ala Arg Asp Lys His
1625 1630 1635

Leu Glu Phe Ser Ser Leu Arg Arg Ala Gln Trp Ser Thr Met Cys
1640 1645 1650

Met Leu Val Glu Leu His Thr Gln Ser Gln Asp Arg Phe Val Tyr
1655 1660 1665

Thr Cys Asn Glu Cys Lys His His Val Glu Thr Arg Trp His Cys
1670 1675 1680

Thr Val Cys Glu Asp Tyr Asp Leu Cys Ile Thr Cys Tyr Asn Thr
1685 1690 1695

Lys Asn His Asp His Lys Met Glu Lys Leu Gly Leu Gly Leu Asp
1700 1705 1710

Asp Glu Ser Asn Asn Gln Gln Ala Ala Ala Thr Gln Ser Pro Gly
1715 1720 1725

Asp Ser Arg Arg Leu Ser Ile Gln Arg Cys Ile Gln Ser Leu Val
1730 1735 1740

His Ala Cys Gln Cys Arg Asn Ala Asn Cys Ser Leu Pro Ser Cys
1745 1750 1755

Gln Lys Met Lys Arg Val Val Gln His Thr Lys Gly Cys Lys Arg
1760 1765 1770

Lys Thr Asn Gly Gly Cys Pro Ile Cys Lys Gln Leu Ile Ala Leu
1775 1780 1785

Cys Cys Tyr His Ala Lys His Cys Gln Glu Asn Lys Cys Pro Val
1790 1795 1800

Pro Phe Cys Leu Asn Ile Lys Gln Lys Leu Arg Gln Gln Gln Leu
1805 1810 1815

Gln His Arg Leu Gln Gln Ala Gln Met Leu Arg Arg Arg Met Ala
1820 1825 1830

Ser Met Gln Arg Thr Gly Val Val Gly Gln Gln Gln Gly Leu Pro
1835 1840 1845



Ser 1850	Pro	Thr	Pro	Ala	Thr	Pro 1855	Thr	Thr	Pro	Thr	Gly 1860	Gln	Gln	Pro
Thr 1865	Thr		Pro	Gln	Thr	Pro 1870	Pro	Thr	Ser	Gln	Pro 1875	Gln	Pro	Thr
Pro 1880	Pro	Asn	Ser	Met	Pro	Pro 1885	Tyr	Leu	Pro	Arg	Thr 1890	Gln	Ala	Ala
Gly 1895	Pro	Val	Ser	Gln	Gly	Lys 1900	Ala	Ala	Gly	Gln	Val 1905	Thr	Pro	Pro
Thr 1910	Pro	Pro	Gln	Thr	Ala	Gln 1915	Pro	Pro	Leu	Pro	Gly 1920	Pro	Pro	Pro
Ala 1925	Ala	Val	Glu	Met	Ala	Met 1930	Gln	Ile	Gln	Arg	Ala 1935	Ala	Glu	Thr
Gln 1940	Arg	Gln	Met	Ala	His	Val 1945	Gln	Ile	Phe	Gln	Arg 1950	Pro	Ile	Gln
His 1955	Gln	Met	Pro	Pro	Met	Thr 1960	Pro	Met	Ala	Pro	Met 1965	Gly	Met	Asn
Pro 1970	Pro	Pro	Met	Thr	Arg	Gly 1975	Pro	Ser	Gly	His	Leu 1980	Glu	Pro	Gly
Met 1985	Gly	Pro	Thr	Gly	Met	Gln 1990	Gln	Gln	Pro	Pro	Trp 1995	Ser	Gln	Gly
Gly 2000	Leu	Pro	Gln	Pro	Gln	Gln 2005	Leu	Gln	Ser	Gly	Met 2010	Pro	Arg	Pro
Ala 2015	Met	Met	Ser	Val	Ala	Gln 2020	His	Gly	Gln	Pro	Leu 2025	Asn	Met	Ala
Pro 2030	Gln	Pro	Gly	Leu	Gly	Gln 2035	Val	Gly	Ile	Ser	Pro 2040	Leu	Lys	Pro
Gly 2045	Thr	Val	Ser	Gln	Gln	Ala 2050	Leu	Gln	Asn	Leu	Leu 2055	Arg	Thr	Leu
Arg 2060	Ser	Pro	Ser	Ser	Pro	Leu 2065	Gln	Gln	Gln	Gln	Val 2070	Leu	Ser	Ile
Leu 2075	His	Ala	Asn	Pro	Gln	Leu 2080	Leu	Ala	Ala	Phe	Ile 2085	Lys	Gln	Arg
Ala 2090	Ala	Lys	Tyr	Ala	Asn	Ser 2095	Asn	Pro	Gln	Pro	Ile 2100	Pro	Gly	Gln
Pro 2105	Gly	Met	Pro	Gln	Gly	Gln 2110	Pro	Gly	Leu	Gln	Pro 2115	Pro	Thr	Met
Pro 2120	Gly	Gln	Gln	Gly	Val	His 2125	Ser	Asn	Pro	Ala	Met 2130	Gln	Asn	Met
Asn 2135	Pro	Met	Gln	Ala	Gly	Val 2140	Gln	Arg	Ala	Gly	Leu 2145	Pro	Gln	Gln
Gln 2150	Pro	Gln	Gln	Gln	Leu	Gln 2155	Pro	Pro	Met	Gly	Gly 2160	Met	Ser	Pro
Gln 2165	Ala	Gln	Gln	Met	Asn	Met 2170	Asn	His	Asn	Thr	Met 2175	Pro	Ser	Gln
Phe 2180	Arg	Asp	Ile	Leu	Arg	Arg 2185	Gln	Gln	Met	Met	Gln 2190	Gln	Gln	Gln
Gln 2195	Gln	Gly	Ala	Gly	Pro	Gly 2200	Ile	Gly	Pro	Gly	Met 2205	Ala	Asn	His
Asn 2210	Gln	Phe	Gln	Gln	Pro	Gln 2215	Gly	Val	Gly	Tyr	Pro 2220	Pro	Gln	Gln



Gln Gln Arg Met Gln His His Met Gln Gln Met Gln Gln Gly Asn
2225 2230 2235

Met Gly Gln Ile Gly Gln Leu Pro Gln Ala Leu Gly Ala Glu Ala
2240 2245 2250

Gly Ala Ser Leu Gln Ala Tyr Gln Gln Arg Leu Leu Gln Gln Gln
2255 2260 2265

Met Gly Ser Pro Val Gln Pro Asn Pro Met Ser Pro Gln Gln His
2270 2275 2280

Met Leu Pro Asn Gln Ala Gln Ser Pro His Leu Gln Gly Gln Gln
2285 2290 2295

Ile Pro Asn Ser Leu Ser Asn Gln Val Arg Ser Pro Gln Pro Val
2300 2305 2310

Pro Ser Pro Arg Pro Gln Ser Gln Pro Pro His Ser Ser Pro Ser
2315 2320 2325

Pro Arg Met Gln Pro Gln Pro Ser Pro His His Val Ser Pro Gln
2330 2335 2340

Thr Ser Ser Pro His Pro Gly Leu Val Ala Ala Gln Ala Asn Pro
2345 2350 2355

Met Glu Gln Gly His Phe Ala Ser Pro Asp Gln Asn Ser Met Leu
2360 2365 2370

Ser Gln Leu Ala Ser Asn Pro Gly Met Ala Asn Leu His Gly Ala
2375 2380 2385

Ser Ala Thr Asp Leu Gly Leu Ser Thr Asp Asn Ser Asp Leu Asn
2390 2395 2400

Ser Asn Leu Ser Gln Ser Thr Leu Asp Ile His
2405 2410

<210> 2
<211> 8779
<212> DNA
<213> homo sapiens

<400> 2
gagaaggagg aggacagcgc cgaaggaggaa gaggttgatg gcggcggcgg agctccgaga 60
gacctcggtc gggcaggggc cggcctgtggc gggcaggggga ctgcgcctct agagccgcga 120
gttctcggga attcgcgcga gcggacgcgc tcggcgaatt tgtgctcttg tgccctctc 180
cgggcttggg ccacggcccg gccctcgca ctgccccta cttttctat cgagtcgcga 240
tccctctcca gccactcgca ccggcggaag agaaaaagga acttcccca cccctcggg 300
tgccgtcggga gccccccagc ccaccctgg gtgcggcgcg gggaaccccg gccgaagaag 360
agatttcctg aggattctgg ttttctcgc ttgtatctcc gaaagaatta aaaatggcgg 420
agaatgtggt ggaaccgggg cgccttcag ccaagcggcc taaactctca tctcgggcc 480
tctcggcgtc cgccagcgat ggcacagatt ttggctctct attgacttg gagcacgact 540
taccagatga attaatcaac tctacagaat tgggactaac caatggtggt gatattaatc 600
agcttcagac aagtcttggc atggtacaag atgcagcttc taaacataaa cagctgtcag 660
aattgctcgc atctgtagt tcccctaacc tcaatatggg agttggtggc ccaggtcaag 720
tcatggccag ccaggcccaa cagagcagtc ctggattagg ttgataaat agcatggtca 780
aaagcccaat gacacaggca ggcttgactt ctcccaacat ggggatgggg actagtggac 840
caaatcaggg tcctacgcag tcaacaggta tgatgaacag tccagtaaat cagcctgcca 900
tgggaatgaa cacagggatg aatgcgggca tgaatcctgg aatgttggt gcaggcaatg 960
gacaagggat aatgcctaata caagtcatga acggttcaat tggagcaggc cgagggcgac 1020
agaatatgca gtacccaac ccaggcatgg gaagtgtctg caactactg actgagcttc 1080
ttcagcaggg ctctccccag atgggaggac aaacaggatt gagaggcccc cagccttta 1140
agatgggaat gatgaacaac ccaatcctt atggttcacc atatactcag aatcctggac 1200
agcagattgg agccagtggc cttggtctcc agattcagac aaaaactgta ctatcaata 1260



acttatctcc atttgc	atg gacaaaaagg cagttcctgg tggagg	aatg cccaacatgg	1320
gtcaacagcc agccccgcag gtccagcagc	caggccctgg gactccagtt gcccaaggga		1380
tgggttcttgg agcacataca gctgatccag	agaagcgcaa gctcatccag cagcagcttg		1440
ttctcctttt gcatgctcac aagtgccagc	gccggggaaca ggccaatggg gaagtgaaggc		1500
agtgcacctt tccccactgt cgacaaatga	agaatgtcct aaaccacatg acacactgcc		1560
agtcaggcaaa gtcttgccaa gtggcacact	gtgcatcttc tcgacaaatc atttcacact		1620
ggaagaattg tacaagacat gattgtcctg	tgtgtctccc cctcaaaaat gctggtgata		1680
agagaaatca acagccaatt ttgactggag	cacccgttgg acttggaaat cctagctctc		1740
taggggtggg tcaacagtct gccccc	aacc taagcactgt tagtcagatt gatcccagct		1800
ccatagaaaag agcctatgca gctcttggac	taccctatca agtaaatcag atgccgacac		1860
aaccccaagg gcaagcaaa	g aaccagcaga atcagcagcc tgggcagttc	ccc	1920
tgcgcccat gagcaacatg agtgctagtc	ctatgggagt aaatggagg	gtaggagttc	1980
aaacccgag tcttctttct gactcaatgt	tgcatccagc cataaattct caaaaccaa		2040
tgatgagtga aatgccagt gtgccctccc	tgggtcctat gccaacagca gctcaacct		2100
ccactactgg aattcgaaa cagtggcacg	aagatattac tcaggatctt cgaaatcac		2160
ttgttcacaa actcgtccaa gccatatctc	ctacgccgga tcctgctgct ttaaaagaca		2220
gacgagtga aaacctagtt gcatatgctc	ggaaagtga aggggacatg tatgaatctg		2280
caaacaatcg agcggaaac taccaccttc	tagctgagaa aatctataag atccagaaa	g	2340
aactagaaga aaaacgaagg accagactac	agaagcagaa catgctacca aatgctgcag		2400
gcatggttcc agtttccatg aatccagggc	ctaacatggg acagccgcaa ccaggaaatga		2460
cttctaattg ccctctacct gacccaagta	tgatccgtgg cagtgtgcca aaccagatga		2520
tgccctgaat aactccacaa tctggttga	atcaatttgg ccagatgagc atggcccagc		2580
cccctattgt accccggcaa acccctcctc	ttcagcacca tggacagtgt gctcaacctg		2640
gagctctcaa ccgcccatg ggctatgggc	ctcgtatgca acagccttc aaccagggcc		2700
agttccttcc tcagactcag ttcccatcac	agggaaatgaa tgtaacaaat atccctttg		2760
ctccgtccag cggtaagct ccagtgtctc	aagcacaaat gtctagtctt tcctgcccg		2820
tgaactctcc tataatgcct ccagggtctc	aggggagcca cattcactgt cccagcttc		2880
ctcaaccagc ttttcatcag aattcacctt	cgctgtacc tagtctgacc cccaccctc		2940
accatactcc ccaagcata ggggctcagc	agccaccagc aacaacaatt ccagccctg		3000
ttctacacc tcctgccatg ccacctgggc	cacagtccca ggctctacat cccctccaa		3060
ggcagacacc tacaccacca acaacacaac	ttcccacaag agtgcagcct tcacttcctg		3120
ctgcaccttc tgcagaccag ccccgagc	agcctcgctc acagcagagc acagcagcgt		3180
ctgttcttac cccaacagca ccgctgcttc	ctccgagcc tgcaactcca ctttccagc		3240
cagctgtaag cattgaagga caggtatcaa	atcctccatc tactagttagc acagaaatga		3300
attctcaggc cattgctgag aagcagcctt	cccaggaagt gaagatggag gccaaatgg		3360
aagtggatca accagaacca gcagatactc	agccggagga tatttcagag tctaaagtgg		3420
aagactgtaa aatggaatct accgaaacag	aagagagaag cactgagtta aaaactgaaa		3480
taaaaagagg ggaagaccag ccaagtactt	cagctaccca gtcatctccg gctccaggac		3540
agtcaaaagaa aaagattttc aaaccagaag	aactacgaca ggcaactgat ccaactttgg		3600
aggcacttta ccgtcaggat ccagaaatccc	ttccctttcg tcaacctgtg gaccctcagc		3660
ttttaggaaat ccctgattac ttgatattg	tgaagagccc catggatctt tctaccatta		3720
agaggaaagtt agacactgga cagtatcagg	agccctggca gtatgtcgat gatatttggc		3780
ttatgttcaa taatgcctgg ttatataacc	ggaaaacatc acgggtatac aaatactgct		3840
ccaagctctc tgaagttctt gaaacaagaaa	ttgacctagt gatgcaaa	g cttggatact	3900
gttgtggcag aaagtggag ttctctccac	agacactgtg ttgctacggc aaacagttgt		3960
gcacaatacc tcgtgatgcc acttattaca	gttaccagaa caggatatcat ttctgtgaga		4020
agtgtttcaa tgagatccaa ggggagagcg	tttctttggg ggaatgacct tcccagctc		4080
aaactacaat aaataaagaa caattttcca	agagaaaaaa tgacacactg gatcctgaac		4140
tgtttgttga atgtacagag tgcggaagaa	agatgcatca gatctgtgtc cttcaccatg		4200
agatcatctg gcctgctgga ttcgtctgtg	atggctgttt aaagaaaagt gcacgaacta		4260



ggaaagaaaa taagttttct gctaaaaggt tgccatctac cagacttggc acctttctag 4320

agaatcgtgt gaatgacttt ctgaggcgac agaatacccc tgagtcaggga gaggtcactg 4380

ttagagtagt tcatgcttct gacaaaaccg tggaaagtaaa accaggcatg aaagcaaggt 4440

ttgtggacag tggagagatg gcaagaatcct ttccataccg aaccaaagcc ctctttgcct 4500

ttgaagaaat tgatgggtgtt gacctgtgct tctttggcat gcatgttcaa gagtatggct 4560

ctgactgccc tccacccaac cagaggagag tatacatatc ttacctcgat agtgttcatt 4620

tcttcgtcc taaatgcttg aggactgcag tctatcatga aatcctaatt ggatatttag 4680

aatatgtcaa gaaattaggt tacacaacag ggcatatttg ggcatgtcca ccaagtgagg 4740

gagatgatta tatcttccat tgccatcctc ctgaccagaa gatacccaag cccaagcgac 4800

tgcaggaaatg gtacaaaaaa atgcttgaca aggctgtatc agagcgtatt gtccatgact 4860

acaaggatat ttttaacaa gctactgaag atagattaac aagtgcaaag gaattgcctt 4920

atttcgaggg tgatttctgg cccaatgttc tggaaagaa cattaaaggaa ctggaacagg 4980

aggaagaaaga gagaaaacga gaggaaaaca ccagcaatga aagcacagat gtgaccaagg 5040

gagacagcaa aaatgctaaa aagaagaata ataagaaaa cagcaaaaaa aagagcagcc 5100

tgagtagggg caacaagaag aaacccggga tgcccaatgt atctaacgac ctctcacaga 5160

aactatatgc caccatggag aagcataaag aggtcttctt tgatgccgc ctcatgtcg 5220

gccctgctgc caactccctg cctcccattg ttgatctga tcctctcgc ccttcgac 5280

tgatggatgg tcgggatgcg tttctcagc tggcaaggga caagcacctg gagtctctt 5340

cactccgaag agcccagtgg tccaccatgt gcatgctggt ggagctgcac acgcagagcc 5400

aggaccgctt tgtctacac tgcaatgaat gcaagcacca tgtggagaca cgctggcact 5460

gtactgtctg tgaggattat gacttgtgta tcacctgcta taacactaaa aacatgacc 5520

acaaaatgga gaaactaggc ctggccttag atgatgagag caacaaccag caggctgcag 5580

ccaccagag cccaggcgat tctgcccgc tgagtatcca gcgctgcac cagtctctg 5640

tccatgcttg ccagtgtcgg aatgccaatt gctcactgcc atcctgccag aagatgaagc 5700

gggttgtgca gcataccaag ggttgcaaac ggaaaaacaa tggcgggtgc cccatctgca 5760

agcagctcat tgccctctgc tgctaccatg ccaagcactg ccaggagaac aaatgcccg 5820

tgccgttctg ctaaacatc aagcagaagc tccgcagca acagctgcag caccgactac 5880

agcaggccca aatgcttgc aggagatgg ccagcatgca gcgactggt gtggttgggc 5940

agcaacaggg ctccttcc ccactcctg ccactccaac gacaccaact ggccaacagc 6000

caaccacccc gcagacgccc cagcccactt ctcagctca gcctacccct cccaatagca 6060

tgccacccta ctgcccagg actcaagctg ctggccctgt gtcccagggt aaggcagcag 6120

gccaggtgac cctccaacc cctcctcaga ctgctcagcc accccttcca gggcccccac 6180

ctgcagcagt ggaaatggca atgcagattc agagagcagc ggagacgcag cgccagatgg 6240

cccagtgca aatttttcaa aggccaatcc aacaccagat gccccgatg actcccatgg 6300

ccccatggg tatgaacca cctcccatga ccagggtcc cagtgggcat ttggagccag 6360

ggatgggacc gacagggatg cagcaacagc caccctggag ccaaggagga ttgcctcagc 6420

cccagcaact acagtctggg atgccaaagg cagccatgat gtcagtggcc cagcatggtc 6480

aacctttgaa catggctca caaccaggat tgggccaggt aggtatcagc ccactcaaac 6540

caggcactgt gtctcaacaa gccttaca aaacctttgct gactctcagg tctccagct 6600

ctccccctga gcagcaacag gtgcttagta tcttcacgc caaccccag ctgttgctg 6660

cattcatcaa gcagcgggct gccaaagtat ccaactctaa tccacaacc atccctgggc 6720

agcctggcat gcccaggggc cagccagggc tacagccacc taccatgcca ggtcagcagg 6780

gggtccactc caatccagcc atgcagaaca tgaatccaat gcaggcgggc gttcagagg 6840

ctggcctgcc ccagcagcaa ccacagcagc aactccagcc acccatggga gggatgagcc 6900

cccaggctca gcagatgaac atgaaccaca acaccatgcc ttcacaattc cgagacatct 6960

tgagacgaca gcaaatgatg caacagcagc agcaacaggg agcagggccca ggaataggcc 7020

ctggaatggc caaccataac cagttccagc aacccaagg agttggctac ccaccacagc 7080

agcagcagcg gatgcagcat cacatgcaac agatgcaaca aggaatatg ggacagatag 7140

gccagcttcc ccaggccttg ggagcagagg cagggtgccag tctacaggcc tatcagcagc 7200

gactccttca gcaacagatg gggttcccctg ttcagcccaa ccccatgagc ccccgagcagc 7260



atatgtctccc	aatcagggcc	cagtccccac	acctacaagg	ccagcagatc	cctaattctc	7320
tctccaatca	agtgcgctct	ccccagcctg	tcccttctcc	acggccacag	tcccagcccc	7380
cccactccag	tccttcccca	aggatgcagc	ctcagccttc	tcacacacac	gtttccccc	7440
agacaagttc	cccacatcct	ggactggtag	ctgcccaggc	caaccccatg	gaacaagggc	7500
attttgccag	cccggaccag	aattcaatgc	tttctcagct	tgctagcaat	ccaggcatgg	7560
caaacctcca	tggtgcaagc	gccacggacc	tgggactcag	caccgataac	tcagacttga	7620
attcaaacct	ctcacagagt	acactagaca	tacactagag	acaccttgta	gtattttggg	7680
agcaaaaaaa	ttattttctc	ttaacaagac	ttttgtact	gaaaacaatt	ttttgaatc	7740
tttcgtagcc	taaaagacaa	ttttccttgg	aacacataag	aactgtgcag	tagccgtttg	7800
tggtttaag	caaacatgca	agatgaacct	gagggatgat	agaatacaaa	gaatatattt	7860
ttgttatggc	tggttaccac	cagcctttct	tcccctttgt	gtgtgtggtt	caagtgtgca	7920
ctgggaggag	gctgaggcct	gtgaagccaa	acaatatgct	cctgccttgc	acctccaata	7980
ggttttatta	ttttttttaa	attaatgaac	atatgtaata	ttaatagtta	ttattttactg	8040
gtgcagatgg	ttgacatttt	tccctatttt	cctcacttta	tggaagagtt	aaaacatttc	8100
taaaccagag	gacaaaaagg	gttaatgtta	ctttaaiaatt	acattctata	tatatataaa	8160
tatatataaa	tatatattaa	aataccagtt	ttttttctct	gggtgcaaag	atgttcattc	8220
ttttaaaaaa	tgtttaaaaa	aaaaaaaaaa	ctgcctttct	tcccctcaag	tcaacttttg	8280
tgctccagaa	aattttctat	tctgtaagtc	tgagcgtaaa	acttcaagta	ttaaaataat	8340
ttgtacatgt	agagagaaaa	atgacttttt	caaaaatata	caggggcagc	tgccaaattg	8400
atgtattata	tatttggtt	tctgtttctt	gaaagaattt	ttttcgttat	ttttacatct	8460
aacaaagtaa	aaaaattaaa	aagagggttaa	gaaacgattc	cggtgggatg	attttaacat	8520
gcaaaatgtc	cctggggggtt	tcttctttgc	ttgctttctt	cctccttacc	ctacccccca	8580
ctcacacaca	cacacacaca	cacacacaca	cacactttct	ataaaacttg		8640
aaaatagcaa	aaacccctcaa	ctgttgtaaa	tcatgcaatt	aaagttgatt	acttataaat	8700
atgaactttg	gatcactgta	tagactgtta	aatttgattt	cttattacct	attgttaaat	8760
aaactgtgtg	agacagaca					8779

