```
                                 ((((.....(((..(((.....))).((.(((((((.....)))))))).....)))(
chr-5.trna18-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-5.trna45-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-18.trna33-Lys-CTT            GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-2.trna14-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-2.trna66-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-3.trna44-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-14.trna15-Lys-CTT            GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-14.trna11-Lys-CTT            GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-14.trna9-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-3.trna46-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-4.trna19-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-13.trna44-Lys-CTT            GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-17.trna22-Lys-CTT            GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-5.trna44-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-5.trna78-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-6.trna24-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-6.trna44-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-6.trna54-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-7.trna19-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-7.trna21-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-7.trna28-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-8.trna36-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-1.trna22-Lys-CTT             GCCC----GUCUAGCUCAGUUGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-1.trna47-Lys-CTT             GCCC----GUCUAGCUCAGUUGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-4.trna22-Lys-CTT             GCCC----GUCUAGCUCAGUUGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-5.trna50-Lys-CTT             GCCC----GUCUAGCUCAGUUGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-14.trna8-Lys-CTT             GCCC----GUCUAGCUCAGUUGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-15.trna50-Lys-CTT            GCCC----GUCUAGCUCAGUUGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-8.trna37-Lys-CTT             GCCC----GUCUAGCUCAGUUGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-8.trna20-Lys-CTT             GCCC----GUCUAGCUCGGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-5.trna67-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-13.trna14-Lys-CTT            GCCC----GUCUAGCUUAGUUUGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-16.trna17-Lys-TTT            GCCG----UCUUAGCUCAGUCGGUAGAGCGCACGGCUUUUAACCGUGUG-------GUCG 49
chr-15.trna7-Lys-TTT             GCCG----UCUUAGCUCAGUCGGUAGAGCGCACGGCUUUUAACCGUGUG-------GUCG 49
chr-10.trna46-Lys-TTT            GCCG----UCCUAGCUCAGUCGGUAGAGCGCACGGCUUUUAACCGUGUG-------GUCG 49
chr-9.trna4-Lys-TTT              GCCG----UCCUAGCUCAGUCGGUAGAGCGCACGGCUUUUAACCGUGUG-------GUCG 49
chr-7.trna18-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCCUGUG-------GUCG 49
chr-14.trna40-Lys-TTT            GCCG----UCCUAGCUCAGU-GGUAGAGCGCGUGGCUUUUAACCACGUG-------GUCG 48
chr-3.trna53-Lys-TTT             GCCG----UCCUAGCUCAGU-GGUAGAGCGCGUGGCUUUUAACCACGUG-------GUCG 48
chr-3.trna75-Lys-TTT             GCCG----UCCUAGCUCAGU-GGUAGAGCGCGUGGCUUUUAACCACGUG-------GUCG 48
chr-12.trna11-Lys-TTT            GCCG----UCCUAGCUCAGU-GGUAGAGCGCGUGGCUUUUAACCACGUG-------GUCG 48
chr-4.trna27-Lys-TTT             GCCG----UCCUAGCUCAGU-GGUAGAGCGCGUGGCUUUUAACCACGUG-------GUCG 48
chr-11.trna52-Lys-TTT            GCCG----UCCUAGCUCAGU-GGUAGAGCGCGUGGCUUUUAACCACGUG-------GUCG 48
chr-5.trna91-Lys-TTT             GCCG----ACCUAGCUCAGU-GGUAGAGCGCGUGGCUUUUAACCACGUG-------GUCG 48
chr-6.trna18-Lys-TTT             GCCG----ACCUAGCUCAGU-GGUAGAGCGCGUGGCUUUUAACCACGUG-------GUCG 48
chr-4.trna20-Lys-CTT             ACCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-6.trna86-Lys-CTT             GCCC----CUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAAACUUGUG-------GUCG 49
chr-7.trna20-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUACAGUGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-3.trna33-Lys-TTT             GGGU----GUAUAGCUCAGUUGGUAGAGCAUUGGGCUUUUAACCUAAUG-------GUCA 49
chr-14.trna7-Lys-TTT             GGGU----GUAUAGCUCAGUUGGUAGAGCAUUGGGCUUUUAACCUAAUG-------GUCG 49
chr-10.trna35-Lys-TTT            GGGU----GUAUAGCUCAGUUGGUAGAGCAUUGGGCUUUUAACCUAAUG-------GUCG 49
chr-17.trna3-Lys-TTT             GGGU----GUAUAGCUCAGUUGGUAGAGCAUUG-GCUUUUAACCUAAUG-------GUCG 48
chr-9.trna10-Lys-TTT             GCCG----UCCUAGCUCAGU-GGUAGAGCGCGUGGCUUUUAACCACGUG-------GUCG 48
chr-7.trna31-Lys-TTT             GCUG----UCCUAGCUCAGU-GGUAGAGCGCGUGGCUUUUAACCACGUG-------GUCG 48
chr-4.trna69-Lys-TTT             GCCG----UCCUAGCUCAGU-GGUAGAGCGCGUGGCUUUUAACCACGUG-------GUCG 48
chr-6.trna34-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-8.trna27-Lys-CTT             GCCC----GUCUAGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 49
chr-11.trna51-Lys-CTT            GCCU----UCACUAUCCUGUUGA--AAGUGCAAGGCUCUUAACCUUGUG-------GUCG 47
chr-3.trna36-Lys-TTT             CCGA----CCUUAGCUCAGUUGGUAGAGCGGAGGACU-GUAGUCUUUUGCAGCUAAAUCG 55
chr-14.trna47-Lys-CTT            GACGAUAUUUACCGCUCAGUCGGUAGAGCGCAAGGCUCUUAACCUUGUG-------GUCG 53
chr-2.trna10-Lys-TTT             UCUU---UGGG---CUCAGUUGGUAGAGCAUUGGGCUUUUAACCUAAUG-------GUCG 47
                                 .........10.........20.........30.........40.........50.....
```

```
                                 ((((.........)))))....))).)))))
chr-5.trna18-Lys-CTT             UGGG-U-UCGAACCCCAC----GGU-GGGCG 73
chr-5.trna45-Lys-CTT             UGGG-U-UCGAACCCCAC----GGU-GGGCG 73
chr-18.trna33-Lys-CTT            UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-2.trna14-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-2.trna66-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-3.trna44-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-14.trna15-Lys-CTT            UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-14.trna11-Lys-CTT            UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-14.trna9-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-3.trna46-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-4.trna19-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-13.trna44-Lys-CTT            UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-17.trna22-Lys-CTT            UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-5.trna44-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-5.trna78-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-6.trna24-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-6.trna44-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-6.trna54-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-7.trna19-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-7.trna21-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-7.trna28-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-8.trna36-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-1.trna22-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-1.trna47-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-4.trna22-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-5.trna50-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-14.trna8-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-15.trna50-Lys-CTT            UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-8.trna37-Lys-CTT             UGGG-U-UCGAGCCCCGC----GGU-GGGCG 73
chr-8.trna20-Lys-CTT             UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-5.trna67-Lys-CTT             UGGG-U-UCGAGCCCCAU----GGU-CGGCG 73
chr-13.trna14-Lys-CTT            UGGG-U-UCGAGCCCCAC----GGU-GGGCG 73
chr-16.trna17-Lys-TTT            UGGG-U-UCGAAUCCCAC----AGA-CGGCG 73
chr-15.trna7-Lys-TTT             UGGG-U-UCGAAUCCCAC----AGA-CGGCG 73
chr-10.trna46-Lys-TTT            UGGG-U-UCGAAUCCCAC----GGA-CGGCG 73
chr-9.trna4-Lys-TTT              UGGG-U-UCGAAUCCCAC----GGA-CGGCG 73
chr-7.trna18-Lys-CTT             UGGG-U-UCGAGUCCCAC----GGU-GGGCG 73
chr-14.trna40-Lys-TTT            UGGG-U-UCGAUCCCCAC----GGA-CGGCG 72
chr-3.trna53-Lys-TTT             UGGG-U-UCGAUCCCCAC----GGA-CGGCG 72
chr-3.trna75-Lys-TTT             UGGG-U-UCGAUCCCCAC----GGA-CGGCG 72
chr-12.trna11-Lys-TTT            UGGG-U-UCGAUCCCCAC----GGA-CGGCG 72
chr-4.trna27-Lys-TTT             UGGG-U-UCGAUCCCCAC----GGA-CGGCG 72
chr-11.trna52-Lys-TTT            UGGG-U-UCGAUCCCCAC----GGA-CGGCG 72
chr-5.trna91-Lys-TTT             UGGG-U-UCGAUCCCCAC----GGU-CGGCG 72
chr-6.trna18-Lys-TTT             UGGG-U-UCGAUCCCCAC----GGU-CGGCG 72
chr-4.trna20-Lys-CTT             UGGGUU-UCGAACCCCAC----GGU-GGGCG 74
chr-6.trna86-Lys-CTT             UGGGUU-UCGAGCCCCAC----GGU-GGGCG 74
chr-7.trna20-Lys-CTT             UGGGGU-UCGAGCCCCAC----GGU-GGGCG 74
chr-3.trna33-Lys-TTT             CAGG-U-UCAAGUCCUGC----UAU-ACCCA 73
chr-14.trna7-Lys-TTT             UAGG-U-UCAAGUCCUGC----UAU-ACCCA 73
chr-10.trna35-Lys-TTT            CAGG-U-UCAAGUCCUGC----UAU-ACCCA 73
chr-17.trna3-Lys-TTT             CAGG-U-UCAAGUCCUGC----UAU-ACCCA 72
chr-9.trna10-Lys-TTT             UUGGUUCUCGAUCCCCAC----GGA-CGGCG 74
chr-7.trna31-Lys-TTT             UGGGUUCUCGAUCCCCAC----GGA-CGGCG 74
chr-4.trna69-Lys-TTT             UGGGCUCUUGAUCCCCAC----GGA-CGGCG 74
chr-6.trna34-Lys-CTT             UG------UGAGCCCCAC----GGU-GGCCG 69
chr-8.trna27-Lys-CTT             UGGU---UCGAGCCCCAC----GGU-CGACG 72
chr-11.trna51-Lys-CTT            UGGGU--UCGAGCCCCAC----GGU-GGGCA 71
chr-3.trna36-Lys-TTT             CUGGU--UCGAAUCCGGC----AGG-UCGGA 79
chr-14.trna47-Lys-CTT            UGGGU--UCGAGCCCCACC-GGUGGGCGUCU 81
chr-2.trna10-Lys-TTT             CAGGU--UCAAGUCCUGCUAUACCCAAAAAA 76
                                 .........70.........80.........90
```