```
                                ..(((....((((..((((.........)))).(((((.......)))))).....((((
chr-4.trna429-Glu-TTC     --GGG----GAAAUAGCUCAGU-UGGUUAGAGUGCUGGUCUUUCACGCCAGAAGUCGCGG 53
chr-7.trna328-Glu-TTC     --GGG----GAAAUAGCUCAGU-UGGUUAGAGUGCUGGUCUUUCACGCCAGAAGUCGCGG 53
chr-14.trna19-Glu-TTC     --GCC----UCUAUAAUCUAGU-GGUUCAGGACAUCUCUCUUUCAAGGAGUCAG-CGGGG 52
chr-14.trna254-Glu-TTC    --GCC----CCUAUCAUCUAGU-GGUUCAGGACAUCUCUCUUUCAAGGAGGCAG-CGGGG 52
chr-7.trna144-Glu-TTC     --GCC----CCUAUCAUCUAGU-GGUUCAGGACAUCUCUCUUUCAAGGAGGCAG-CGGGG 52
chr-12.trna186-Glu-TTC    --GCC----CCUAUCGUCUAGU-GGUUCAGGACAUCUCUCUUUCAAGGAGGCAG-CGGGG 52
chr-3.trna395-Glu-TTC     --GCC----CCUAUCGUCUAGU-GGUUCAGGACAUCUCUCUUUCAAGGAGGCAG-CGGGG 52
chr-10.trna283-Glu-TTC    --GCC----CCUAUCGUCUAGU-GGUUCAGGACAUCUCUCUUUCAAGGAGGCAG-CGGGG 52
chr-5.trna229-Glu-TTC     --GCC----CCUAUCGUCUAGU-GGUUCAGGACAUCUCUCUUUCAAGGAGGCAG-CGGGG 52
chr-7.trna639-Glu-TTC     --GCC----CCUAUCGUCUAGU-GGUUCAGGACAUCUCUCUUUCAAGGAGGCAG-CAGGG 52
chr-7.trna518-Glu-TTC     --GCC----CCUAUUGUCGAGU-GGUUCAGGACAUCUCUCUUUCAAGGAGGCAU-CGGGG 52
chr-8.trna100-Glu-TTC     --GGC----CCUAUUGUCUAGU-GGUUCAGGACAUCUCUCUUUCAAGGAGGCAG-CGGGG 52
chr-5.trna346-Glu-TTC     --GCC----UCUAUCGUCCAGU-GGUUUAGGACAUCUCUCUUUCAAGGAGGCAA-UGGGG 52
chr-1.trna383-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGGCAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-13.trna489-Glu-TTC    --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-14.trna279-Glu-TTC    --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCAA-AGACACGG 51
chr-14.trna384-Glu-TTC    --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-1.trna68-Glu-TTC      --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-1.trna488-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-9.trna236-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-7.trna111-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-4.trna222-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-6.trna648-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-6.trna647-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-4.trna571-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-6.trna367-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-6.trna357-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-10.trna305-Glu-TTC    --GUC----CCUUUUGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-12.trna364-Glu-TTC    --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUUGA-AGACAUGG 51
chr-12.trna340-Glu-TTC    --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCAUCUUUUCAUGUCGA-AGACACGG 51
chr-6.trna645-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-4.trna419-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 51
chr-5.trna683-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCAUCUUUUCAUGUCGA-AGACACGG 51
chr-4.trna273-Glu-TTC     --GUC----CCUUUCGUCCAGA-GGUU-AGGACAUCGUCUUUUCAUGUUGA-AGACACGG 51
chr-13.trna40-Glu-TTC     --AUU----C--UUCAUCUAGA-GGUU-AGGACAUCGUCUUUUCAUGUCGA-AGACACGG 49
chr-1.trna12-Glu-TTC      --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-1.trna13-Glu-TTC      --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-1.trna14-Glu-TTC      --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-1.trna15-Glu-TTC      --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-1.trna16-Glu-TTC      --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-1.trna17-Glu-TTC      --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-1.trna18-Glu-TTC      --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-2.trna21-Glu-TTC      --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-2.trna22-Glu-TTC      --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-2.trna24-Glu-TTC      --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-2.trna25-Glu-TTC      --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-10.trna533-Glu-TTC    --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-2.trna567-Glu-TTC     --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-2.trna568-Glu-TTC     --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-2.trna569-Glu-TTC     --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-10.trna278-Glu-TTC    --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-10.trna224-Glu-TTC    --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-3.trna162-Glu-TTC     --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-9.trna353-Glu-TTC     --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-3.trna468-Glu-TTC     --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-4.trna394-Glu-TTC     --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-4.trna501-Glu-TTC     --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-1.trna11-Glu-TTC      --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-8.trna224-Glu-TTC     --UCC----AUUGUCGUCCAGCCCGGUUAGGAUAUCUGGCUUUCACCCAGG-CGACCCGG 53
chr-2.trna566-Glu-TTC     --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCCCCCAGG-CGACCCGG 53
chr-2.trna23-Glu-TTC      --UCC----AUUGUCGUGCAGCCCGGUUAGGAUACCUGCCUUUCACCCAGG-CGACCCGG 53
chr-9.trna19-Glu-TTC      --UCC----AUUGUCGUCCAGCCCGGUUAGGAUACCUGGCUUUCACUCAGG-CGACCCGU 53
chr-9.trna256-Glu-TTC     --UCC----AUCGUCGUCCAGCCCGGUUAGCAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-10.trna36-Glu-TTC     --UCC----AUCAUCGUCUAGUUCGAUUAGGAUAUCUGGCUUUCACCCAGA-CGACCCGG 53
chr-4.trna98-Glu-TTC      --UCC----AUUGUCGUCUAGCCCGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 53
chr-4.trna503-Glu-TTC     --UCC----AUUGUCGUCCAG--CGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 51
chr-3.trna469-Glu-TTC     --UCC----AUUGUCGUCCAG--CGGUUAGGAUACCUGGCUUUCACCCAGG-CGACCCGG 51
chr-7.trna39-Glu-TTC      --UAAAUCCAUUGUCGUCCAGCCCGGUUAGGAUAUCUGGCUUUCACCCAGG-CGACCCGG 57
chr-9.trna26-Glu-TTC      --UCC----AUCGUCGUCUAGUCCGGUUAGGAUAUCUGGCUUUCACCCAGA-CGACCCGG 53
chr-5.trna665-Glu-TTC     ---GGGAAUGUUCACCACAUAAGUGACUAGAACCCUUGGUUUUCAACCGAGAGGUCUUGG 57
chr-13.trna272-Glu-TTC    ---GGGAAUGUUCGCCACAUAAGUGACUAGAACCCUUGGUUUUCAACCAAGAGGUCUUGG 57
chr-10.trna324-Glu-TTC    ACUGGGAACGUUCGCCACAUAAGUGACUAGAACCCUUGGUUUUCAACCAAGAGGUCUUGG 60
chr-14.trna173-Glu-TTC    -------------CUGCUCAGUUGGUAAAGCACA--AAGCUUUCAACCUUGUGGACGUGG 45
chr-3.trna313-Glu-TTC     ----------CCACUGCUCAGUUGGUAAAGCACA--AAGCUUUCAACCUUGUGGACGUGG 48
                                .........10........20........30........40........50.........
```



```
                                (.......))))))...)))))))...
chr-4.trna429-Glu-TTC     GUUCGAACCCCGUU---UUCCCCG-- 74
chr-7.trna328-Glu-TTC     GUUCGAACCCCGUU---UUCCCCG-- 74
chr-14.trna19-Glu-TTC     AUUUGAAUUCCCCU---AGCGGUU-- 73
chr-14.trna254-Glu-TTC    AUUCGACUUCCCCU---AGGGGUA-- 73
chr-7.trna144-Glu-TTC     AUUCGACUUCCCCU---GGGGGUA-- 73
chr-12.trna186-Glu-TTC    AUUCGACUUCCCCU---GGGGGUA-- 73
chr-3.trna395-Glu-TTC     AUUCGACUUCCCCU---AGGGGUA-- 73
chr-10.trna283-Glu-TTC    AUUCGACUUCCCCU---GGGGGUA-- 73
chr-5.trna229-Glu-TTC     AUUCCACUUCCCCU---GGGGGUA-- 73
chr-7.trna639-Glu-TTC     AUUCGACUUCCCCU---GGGGGUA-- 73
chr-7.trna518-Glu-TTC     AUUCGACUUCCCCU---AGGGGUA-- 73
chr-8.trna100-Glu-TTC     AUUCGACUUCCCCU---AGGGGUA-- 73
chr-5.trna346-Glu-TTC     AUUCGACUUCCCCU---AGUGGUA-- 73
chr-1.trna383-Glu-TTC     GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-13.trna489-Glu-TTC    GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-14.trna279-Glu-TTC    GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-14.trna384-Glu-TTC    GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-1.trna68-Glu-TTC      GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-1.trna488-Glu-TTC     GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-9.trna236-Glu-TTC     GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-7.trna111-Glu-TTC     GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-4.trna222-Glu-TTC     GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-6.trna648-Glu-TTC     GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-6.trna647-Glu-TTC     GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-4.trna571-Glu-TTC     GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-6.trna367-Glu-TTC     GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-6.trna357-Glu-TTC     GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-10.trna305-Glu-TTC    GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-12.trna364-Glu-TTC    GUUUGAUUCCCGUA---AGGGAUA-- 72
chr-12.trna340-Glu-TTC    GUUCGAUUCCCGUA---AGGGAUA-- 72
chr-6.trna645-Glu-TTC     GUUCGAUUCCCGUA---AGGUAUA-- 72
chr-4.trna419-Glu-TTC     GUUCGA-UCCCGUA---AGGGAUA-- 71
chr-5.trna683-Glu-TTC     GUUCGAUUCCCAUA---AGGGAUA-- 72
chr-4.trna273-Glu-TTC     GUUCGAUUCACGUA---AGGGAUG-- 72
chr-13.trna40-Glu-TTC     GUUCGAUUCCCGUA---AGGGAUA-- 70
chr-1.trna12-Glu-TTC      GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-1.trna13-Glu-TTC      GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-1.trna14-Glu-TTC      GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-1.trna15-Glu-TTC      GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-1.trna16-Glu-TTC      GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-1.trna17-Glu-TTC      GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-1.trna18-Glu-TTC      GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-2.trna21-Glu-TTC      GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-2.trna22-Glu-TTC      GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-2.trna24-Glu-TTC      GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-2.trna25-Glu-TTC      GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-10.trna533-Glu-TTC    GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-2.trna567-Glu-TTC     GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-2.trna568-Glu-TTC     GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-2.trna569-Glu-TTC     GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-10.trna278-Glu-TTC    GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-10.trna224-Glu-TTC    GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-3.trna162-Glu-TTC     GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-9.trna353-Glu-TTC     GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-3.trna468-Glu-TTC     GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-4.trna394-Glu-TTC     GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-4.trna501-Glu-TTC     GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-1.trna11-Glu-TTC      GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-8.trna224-Glu-TTC     GUUCAAAUCCCGGC---AAUGGAA-- 74
chr-2.trna566-Glu-TTC     GUUCAAAUCCCUGC---AAUGGAG-- 74
chr-2.trna23-Glu-TTC      GUUCAAAUCCUGGC---AAUGGAG-- 74
chr-9.trna19-Glu-TTC      GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-9.trna256-Glu-TTC     GUUCAAAUCCCGGC---AAUGGAG-- 74
chr-10.trna36-Glu-TTC     GUUCAAAUCCCGGC---GAUGGAA-- 74
chr-4.trna98-Glu-TTC      GUUCAUAUCCCGGC---AAUGGAA-- 74
chr-4.trna503-Glu-TTC     GUUCGAUUCCCGGC---AAUGGAA-- 72
chr-3.trna469-Glu-TTC     GUUCGAUUUCCGGC---AAUGGAA-- 72
chr-7.trna39-Glu-TTC      GUUCAAAUCCCGGC---AAUUUAA-- 78
chr-9.trna26-Glu-TTC      GUUCAAAUCCCGGCAAUAAUGGAA-- 77
chr-5.trna665-Glu-TTC     GUUCGAGUCCCAGGAA-CUCUCA--- 79
chr-13.trna272-Glu-TTC    GUUCGAGUCCCAGGAA-CUCUCA--- 79
chr-10.trna324-Glu-TTC    GUUCGAGUCCCAGGAA-CUCUCAAUU 85
chr-14.trna173-Glu-TTC    GUUCACGCCCCAUG---AUGGGGG-- 66
chr-3.trna313-Glu-TTC     GUUCAAGCCCCAUG---AUGGGGG-- 69
                                .........70........80.....
```