```
                                 (((((((..((((.........))))..((((.......))))..................
chr-8.trna353-Tyr-GTA    GCGGAUGUAGCCAAGUGGAUCAAGGCAGUGGAUUGUAAAUCCA----------------C 44
chr-12.trna370-Tyr-GTA   GGCGGCGUGGCCAAGCGG--UAAGGCAGGGGACUGUAAAUCUU----------------U 42
chr-6.trna295-Tyr-GTA    CUGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-8.trna255-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCAU----------------U 43
chr-14.trna336-Tyr-GTA   CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-13.trna345-Tyr-GTA   CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-4.trna277-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-6.trna203-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-3.trna438-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-6.trna536-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-12.trna533-Tyr-GTA   CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-6.trna537-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-12.trna304-Tyr-GTA   CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-11.trna433-Tyr-GTA   CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-5.trna473-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-6.trna505-Tyr-GTA    CCGACUUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-5.trna10-Tyr-GTA     CCGACUUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-6.trna781-Tyr-GTA    CCGACUUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-9.trna420-Tyr-GTA    CCGACUUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-6.trna215-Tyr-GTA    CCGAUUUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-14.trna166-Tyr-GTA   CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-7.trna664-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-4.trna484-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-3.trna476-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-2.trna283-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-13.trna207-Tyr-GTA   CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-7.trna666-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-7.trna394-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-2.trna208-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-1.trna248-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-5.trna275-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-7.trna665-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-8.trna256-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-1.trna263-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-5.trna260-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGGGCCU----------------U 43
chr-8.trna254-Tyr-GTA    CCGACCUUAGCUCAGUUA-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-5.trna458-Tyr-GTA    CCGACUUUAUCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-10.trna105-Tyr-GTA   CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-12.trna534-Tyr-GTA   CUGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGAUCCU----------------U 43
chr-7.trna511-Tyr-GTA    UCCUCAGUAGCUCAG-UG-GUAGAGCGGUCGGUUGUAAACUAA----------------C 42
chr-10.trna428-Tyr-GTA   GGGUCCAUAGCUCAG-UG-GUAGAGCAAUUGACUGUAGAUCAA----------------U 42
chr-10.trna427-Tyr-GTA   GGGUCCAUAGCUCAG-UG-GUAGAGCAAUUGACUGUAGAUCAA----------------U 42
chr-9.trna138-Tyr-GTA    CCGACCUUAGCUCAGUUG-GUAGAGCGGAGGACUGUAGCUCUUUAAAGAACGGAGGGAGU 59
chr-7.trna628-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGAAUGUAAAUCUGU-------UGAAGGUUU 53
chr-9.trna287-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-6.trna191-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACAGUAAAUCUGU-------UGAAGGUUU 53
chr-1.trna273-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-4.trna421-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-4.trna4-Tyr-GTA      GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-4.trna667-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-6.trna288-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-8.trna371-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-9.trna100-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-9.trna414-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-9.trna565-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-9.trna570-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-13.trna225-Tyr-GTA   GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-13.trna273-Tyr-GTA   GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-9.trna301-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGAUAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-9.trna52-Tyr-GTA     GGGAGAGUGGCCGAGCGGUCAAAAGUGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-13.trna597-Tyr-GTA   GGGAGAGUGGCCGAGCGGUCAAAAGUGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-14.trna439-Tyr-GTA   GGGAGAGUGGCCGAGCGGUCAAAAGUGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-4.trna390-Tyr-GTA    GGGAGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-10.trna173-Tyr-GTA   GGGAGAGUGGCCGAGCGGUCAUAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-13.trna369-Tyr-GTA   GGGCGAGUGGCCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-14.trna18-Tyr-GTA    GGGAGAGUGGCCAAGCGGUCAAAAGCGACAGACUGUAAAUAUGU-------UGAAGGUUU 53
chr-7.trna400-Tyr-GTA    GGGAGAGUGGC-GAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 52
chr-11.trna416-Tyr-GTA   GGGAGAGUGGUCGAGCGGUCAAAAGCGACAGACUGUAAAUCUGU-------UGAAGGUUU 53
chr-3.trna396-Tyr-GTA    GGGUCGAUGCCCGAGUGGUUAAUGGGGACGGACUGUAAAUUCGU-------UGAUAA-UG 52
chr-7.trna145-Tyr-GTA    GGGUCGAUGCUCGAGUGGUUAAUGGGGACGGACUGUAAAUUCGU-------UGACAA-UG 52
chr-7.trna519-Tyr-GTA    GGGUCGAUGCUCGAGUGGUUAAUGGGGACGGACUGUAAAUUCGU-------UGACAA-UG 52
chr-10.trna284-Tyr-GTA   GGGUCGAUGCCCGAGUGGUUAAUGGGGACGGACUGUAAAUUCGU-------UGACAA-UG 52
chr-12.trna187-Tyr-GTA   GGGUCGAUGCCCGAGUGGUUAAUGGGGACGGACUGUAAAUUCGU-------UGACAA-UG 52
chr-7.trna640-Tyr-GTA    GGGUCGAUGCCCAAGUGGUUAAUGGGGACGGACUGUAAAUUCGU-------UGACAA-UG 52
chr-14.trna245-Tyr-GTA   GGGUCGAUGCCCGAGUGGUUAAUGGGGACGGACUGUAAAUUCGU-------UGACAA-UG 52
chr-10.trna544-Tyr-GTA   GGGUCGGUGCCCGAGUGGUUCAUGGGGACGGGCCGUAAAUUCGU-------UGACCA-UG 52
chr-9.trna632-Tyr-GTA    GGGUCGAUGCCCGAGUGGUUUAUGGGGACGGACUGUAAAUUCAU-------UGACAA-UG 52
chr-8.trna101-Tyr-GTA    GGGUCGAUGCCCUAGUGGUUAAUGGGGAUGGACUGUAAAUUCGU-------UGACA---G 50
                                 .........10........20........30........40........50.........
```



```
                                 .....(((((.......)))))..........
chr-8.trna353-Tyr-GTA    CAUGCGCGGGUUCAAUUCCCGUCGUUCGCC 74
chr-12.trna370-Tyr-GTA   UAU-CCCCAGUUCAAAUCUGGGUGUCGCCU 71
chr-6.trna295-Tyr-GTA    AGAUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-8.trna255-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-14.trna336-Tyr-GTA   AGGUCGCUGGUUCGAAUCCGGCAGGUCGGA 73
chr-13.trna345-Tyr-GTA   AGGUCGCUGGUUCGAAUCCGGCAGGUCGGA 73
chr-4.trna277-Tyr-GTA    AGGUCGCUGGUUCGAAUCCGGCAGGUCGGA 73
chr-6.trna203-Tyr-GTA    AGGUCGCUGGUUCGAAUCCGGCAGGUCGGA 73
chr-3.trna438-Tyr-GTA    AGGUCGCUGGUUCGAAUCCGGCAGGUCGGA 73
chr-6.trna536-Tyr-GTA    AGGUCGCUGGUUCGAAUCCGGCAGGUCGGA 73
chr-12.trna533-Tyr-GTA   AGGUCGCUGGUUCGAAUCCGGCAGGUCGGA 73
chr-6.trna537-Tyr-GTA    AGGUCGCUGGUUCGAAUCCGGCAGGUCGGA 73
chr-12.trna304-Tyr-GTA   AGGUCGCUGGUUCGAAUCCGGCAGGUCGGA 73
chr-11.trna433-Tyr-GTA   AGGUCGCUGGUUCGAAUCCGGCAGGUCGGA 73
chr-5.trna473-Tyr-GTA    AGGUCGCUGGUUCGAAUCCGGCAGGUCGGA 73
chr-6.trna505-Tyr-GTA    AGGUCGCUGGUUCGAAUCCGGCAAGUCGGA 73
chr-5.trna10-Tyr-GTA     AGGUCGCUGGUUCGAAUCCGGCAAGUCGGA 73
chr-6.trna781-Tyr-GTA    AGGUCGCUGGUUCGAAUCCGGCAAGUCGGA 73
chr-9.trna420-Tyr-GTA    AGGUCGCUGGUUCGAAUCCGGCAAGUCGGA 73
chr-6.trna215-Tyr-GTA    AGGUCGCUGGUUCGAAUCCGGCAAGUCGGA 73
chr-14.trna166-Tyr-GTA   AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-7.trna664-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-4.trna484-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-3.trna476-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-2.trna283-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-13.trna207-Tyr-GTA   AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-7.trna666-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-7.trna394-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-2.trna208-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-1.trna248-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-5.trna275-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-7.trna665-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-8.trna256-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 73
chr-1.trna263-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAAGUCGGA 73
chr-5.trna260-Tyr-GTA    AGGUCGCUGGUUCGAAUCCGGCAGGUCGGA 73
chr-8.trna254-Tyr-GTA    AGGUCACUGGUUUGAAUCCGGUAGGUCGGA 73
chr-5.trna458-Tyr-GTA    AGGUCGCUGGUUCGAAUCCGGCAAGUCGGA 73
chr-10.trna105-Tyr-GTA   AGGUCACUGGUUCGAAUCAGGUAGGUCGGA 73
chr-12.trna534-Tyr-GTA   -AGUCGCUGCUUCGAAUCCGGCAGGUCGGA 72
chr-7.trna511-Tyr-GTA    UGGUCGUAGGUUCGAAUCCUACUUGGGGAG 72
chr-10.trna428-Tyr-GTA   AGGUCAUCGUUUCGAACCCGGUUGGGCCCU 72
chr-10.trna427-Tyr-GTA   AGGUCACCUGUUCAAACCUGAUUGGGCCCU 72
chr-9.trna138-Tyr-GTA    AGGUCACUGGUUCGAAUCCGGUAGGUCGGA 89
chr-7.trna628-Tyr-GTA    UCUACAUAGGUUUGAAUCCUGCCUCUCCCA 83
chr-9.trna287-Tyr-GTA    UCUACAUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-6.trna191-Tyr-GTA    UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-1.trna273-Tyr-GTA    UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-4.trna421-Tyr-GTA    UCCACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-4.trna4-Tyr-GTA      UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-4.trna667-Tyr-GTA    UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-6.trna288-Tyr-GTA    UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-8.trna371-Tyr-GTA    UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-9.trna100-Tyr-GTA    UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-9.trna414-Tyr-GTA    UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-9.trna565-Tyr-GTA    UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-9.trna570-Tyr-GTA    UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-13.trna225-Tyr-GTA   UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-13.trna273-Tyr-GTA   UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-9.trna301-Tyr-GTA    UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-9.trna52-Tyr-GTA     UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-13.trna597-Tyr-GTA   UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-14.trna439-Tyr-GTA   UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-4.trna390-Tyr-GTA    UCUAUGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-10.trna173-Tyr-GTA   UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-13.trna369-Tyr-GTA   UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-14.trna18-Tyr-GTA    UCUACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-7.trna400-Tyr-GTA    UCUAUGUAGGUUCGAAUCCUGCCUCUCCCA 82
chr-11.trna416-Tyr-GTA   UCAACGUAGGUUCGAAUCCUGCCUCUCCCA 83
chr-3.trna396-Tyr-GTA    UCUACGCUGGUUCAAAUCCAGCUCGGCCCA 82
chr-7.trna145-Tyr-GTA    UCUACGCUGGUUCAAAUCCAGCUCGGCCCA 82
chr-7.trna519-Tyr-GTA    UCUACGCUGGUUCAAAUCCAGCUCGGCCCA 82
chr-10.trna284-Tyr-GTA   UCUACGCUGGUUCAAAUCCAGCUCGACCCA 82
chr-12.trna187-Tyr-GTA   UCUACGCUGGUUCAAAUCCAGCUCGGCCCA 82
chr-7.trna640-Tyr-GTA    UCUAUGCUGGUUCAAAUCCAGUUCGGCCCA 82
chr-14.trna245-Tyr-GTA   UCUACGCUGGUUCAAAUCCAGCUCGACGCA 82
chr-10.trna544-Tyr-GTA   UCUACGCUGGUUCAAAUCCAGCUCGGCCCA 82
chr-9.trna632-Tyr-GTA    UCUACGCUAGUUCAAAUCCAGCUCGGCCCA 82
chr-8.trna101-Tyr-GTA    UCUACGCUGGUUCAAAUCCAGCUCGGCCCA 80
                                 .........70........80.........
```