
Human tRNA^{Ser} gene organization and a tRNA^{Ser} gene sequence

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INTRODUCTION: Several recombinant phages identified in a human genomic library by hybridization have been isolated and sequenced (1,2). A 400 bp MnlI fragment derived from a 7.5 kb EcoRI fragment was subcloned and most of that sequence is presented below. Southern analysis demonstrates a minimum of 8 closely related tRNA^{Ser} genes in the human genome.

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GGTCCGAGGATAAAGTGTTACTTGTGTCAGTT 30
TACCACAACAGCATGATAGTCATCTAACTG 60
ATGTCAAAAAATAAGAAACATTGACAGCGA 90
ATACACTTTTTFGGCAGAAAATTTGACCTTT 120
CCAAGGGAGCTAAAGTTCAGTACAGTGACT 150
TATGCTAATGGACAAAGTGTCTTCACGTA 180
GTCGTGGCCGAGTGGTTAAGGCGATGGACT 210
AGAAATCCATFGGGGTTTCCCCACGCAGGT 240
TCGAATCCGCGGACTACGGTCCCTTTTCTT 270
GTTGGAAAGGGAGTCTACTGACACCTTGCC 300
AGATTGAAAGTCCGGTGTCTTGCCAGGTTG 330
AAAGTCTGTTATTGTCTCTCAGGAAGAAGC 360
TTCTTGTTC AACCTGTAGGCTTTTCTCT 390
  
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Figure 1. DNA sequence of a human MnlI fragment containing a tRNA^{Ser} gene. The tRNA sequence is underlined.

COMMENTS: This gene can be transcribed *in vitro* in a HeLa cell extract (unpublished). The tRNA coded by this gene would differ from two other human tRNA^{Ser}s(1,2) in that the first position of the anticodon is an A instead of a U. It also has an A instead of a G at the base of the extra arm. This change eliminates a HhaI site found in the other two genes.

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References:

1. Yoo, S.H. (1984) Kor. J. Genetics 6,101-108
2. Hong, H.J., Yoo, S.H, and Yoo, O.J. Nucl. Acids Res. 15, 4987

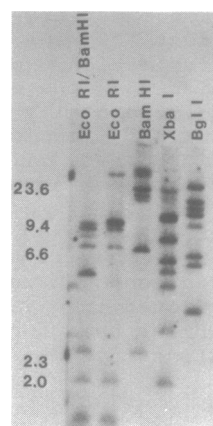


Figure 2. Human genomic Southern probed with a human tRNA^{Ser} gene. Digests as indicated.