Nucleotide sequence of a genomic fragment of the rat IGF-I gene spanning an alternate 5' non coding exon

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A 480 bp IGF-I cDNA clone spanning the entire coding region was isolated from a rat liver cDNA library by cross-hybridization with an human IGF-I cDNA probe (1). A recombinant phage containing the 5' region of the rat IGF-I gene was isolated from a DNA library in Charon4A after hybridization with the IGF-I cDNA clone. A map of the genomic clone was established. The position of the first coding exon(Ex2) and of two alternate 5' non coding regions (Ex1, Ex1A) was determined with oligonucleotides corresponding to the cDNA sequences (2-4). The isolation of cDNA clones with alternate 5' non coding sequences and the location and sequences of a 5' non coding region and of the coding exons of the rat IGF-I gene have been reported (2-4). A genomic HindIII-EcoRV 1449 bp fragment, located between the 5' non coding Ex1 and the first coding Ex2, hybridized to an alternate 5' non coding cDNA sequence (2). This fragment was subcloned in M13mp18 and sequenced by the dideoxy chain terminating method.


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aagctttcttaaaaaacgctctttggagccaagaattgggagttcttttgcacttctgcccagaaagtcaaagttaaagtgaagtttgatttgcttctctgtaaagctcttcgacagttgc  120
tgtctttgcatattcagaaatttttaaacagatccacgctgtgccgggaaagcagcagcgttctggcggctgcttgtctaacttttcatttggaaggggacttttgtggtggctgagcttg  240
gggcttagatttcggtttgaggctctgctcttagactaggtgcggtaaagtctctttaggtgaatctggctgccgctgctgctgctgctgccactgtccgtgcattgccttctcctttcg  360
atcactggacctacttcaagtttccattctcagcaaaattatatcctttccagacttgtctttttttcaatttcaagcacttctaagccgctgtcaccggctcctttggaggcgagttgccgg  480
agggcttaattcataaaagatcccagtcaaagagtgcagcgtttctgtgctgctttcaaatgcttcctcgctaggacttttcttaggcaaggaagtggcttgggacttagggaCGGGAGA  600
CAACCTTGTCAAGCACCTAATTGTGCCATCCGTGCGATGCCAGCCAGCTCCATCCACCTTACAGGAGTGAAGTCAGCGTTCATATACGCTGTGTGGTCTGGCAGCTGAGATAGTGTTTCC  720
CAAAGGGACTGTGGAATGTTACCTCAGCAGGCATTCATTTCGCGTTTGGAAAATCGTCTCCAAATGAACTTTCTTTCCGTGCTGGGTCTGCAGAACATTTCAGAAGCGGAGCTAGCAATC  840
TGCTTCAACTTTTTTTCCCCCGGTGCTTGCAGCAGGAGATGCCTGAAGGGAGCTGCTGCGTGGTGGTCTGAAACATAGTTCAAGGAATAGAGGTCAACTGCCTAGAGCGGTGCAGGCAGG  960
GCACAGGCTGGCTTTGTACTCTGAGTCTCAAGGTATTTCCCAGTGCCTGAGCCAGGGGGAAGGTGGGGGGAGGAAGGGAAGGAGCTGCCACTTGGATCGCTATTCTGGGTAGCCAAGACA 1080
GATAGCCATACAATGGAAATTAGTGGCTTCAACTTGGGGGAAAGGATGGACTCTAACTTCGAGCTGTGCAGTTCGCCCATTGTTTGAATGGACAAAAGGCAGTTTACCCAGGCTCCTAGC 1200
ATACCTGCCTGGGTGTCCAAATGTAACTAGATGCTTTCACAAACCCCACCCACAAAACAACACATGTTCTTAAGTCCTGGGCTTTGTTTTCACTTCGGCCTCATAATACCCACTCTGACC 1320
                                                                                                                    ▲
TGCTGTGTAAACGACCCGGGACGTACCAAAATGAGCGCACCTCCAgtgagtaccctcttacaactgttgccctcatattttgaccagccattttccttgctgttcagacatctgaaacca 1440
attgatatc
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The fragment contained the entire 5' non coding cDNA sequence previously reported (nts. 594-1365, capital letters) and a canonical splice donor site at the 5' of the intron. These data therefore establish the genomic location and confirm that alternate 5' non coding exons are spliced to the coding ones. Another cDNA clone with a different 5' region has been reported (3) and inferred to represent a third class of alternatively spliced IGF-I transcripts generated from the single-copy rat gene (5). The cDNA diverges from the genomic sequence at nt. 1308 (▲), where no canonical consensus for an acceptor splice site exists, and continues at the 5' with 29 nts. complementary to the 3' end of the mature IGF-I transcripts (3). The origin of such cDNA clones remains to be established.

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