Nucleotide sequence of cDNA encoding a novel human thyroid hormone receptor

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The *erbA* gene belongs to a multigene family which encodes steroid and thyroid hormone receptors and the *v-erbA* oncogene product. To isolate further members of this gene family, we used a 600 base pair (bp) *Ava*I-*Pst*I DNA fragment from *v-erbA* (1) to isolate two cDNA clones from a testis library (2). The larger clone (*erbA*-T-1), which contained a 2.1 kb insert has a long open reading frame of 490 amino acids with an initiator methionine codon at nucleotide 334 and a terminator codon at 1804 (both underlined). The ATG codon is directly preceded by a TGA stop codon. The 333 bp 5' untranslated region shares a 54% homology with the untranslated region of the chicken gene (*cc-erbA*) (3) and only a 40% homology with the human β gene (*hc-erbA*- β) (4). This region also contains three short open reading frames (underlined). The predicted *erbA*-T-1 polypeptide has a molecular mass of 54,753 (Mr = 55 K) and shows high homology with the polypeptides encoded by the *cc-erbA* gene and the *v-erbA* oncogene, but is also closely related to the human thyroid hormone receptor encoded by the *hc-erbA*- β gene (5). We have shown that the *erbA*-T-1 protein binds specifically to thyroid hormone (5). Our data therefore provide evidence that more than one thyroid hormone receptor exists in the human.

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CGCGTCGCTGCCACGCCGGTCCGGCGCGCCACGAGTGGATCTCTGGACAGGACAAGACTCCGAAGCTACTCCCCAGCACACAGCCCG 90
GGACCCACAAACCCAGCTTGCCCCAGCCCTCCACCTGCCACTCCCTGGCCCCCTCCACCGGCCGCCCCCTTGCGCGGGCGCATGGT 180
GTGAAGGCCAAGTGCTGAGGCGGGTATCATGGGTGCTGTGCCCCAGGCCCTGGGTGGCAGGGGGTGGGTGGCTGTGGGTGTGCCGGGG 270
GGCCAGTGTGGCCACCCAGCTCTCTTGGCGTGTGGAGGGCATCTGGATGGAAATGAAGTGAATGGAACAGAGCCAAAGCAAGGTGGAG 360
TGTGGGTGAGACCCAGAGGAGAACAGTGGCAGGTGACAGATGGAAAGCGAAAGAAAGAACGGCCAAATGTTCCCTGAAAGCAGCATG 450
TCAGGGTATATCCCTAGTTACCTGGACAAGACGAGCAGTGTGTGCTGTGGGACAGGCCAACTGGTTATCACTACCGCTGTATCACT 540
TGTGAGGGCTGCAAGGGCTCTTTTCCGCCACAATCCAGAAGAACCTCCATCCACCTATTCTGCAAAATGACAGCTGCTGTGTCAAT 630
GACAAATCACCACCAATCAGTCCAGCTGTGCGGCTTCAAGAAGTGATCGCGTGGCCATGGCCATGGACTGTGTTAGATGACTCG 720
AAGCGGGTGGCCAGCGTAAGCTGATGAGCAGAACCGGGAGCGCGCGGGAAGGAGGAGATGATCCGATCACTGCAGCAGCAGCAGAG 810
CCCACCTCTGAAGAGTGGGATCTGATCCACATGTCACAGAGGCCCATCGCAGCACCAATGCCAGGGCAGCCATTGGAAACAGAGGGCG 900
AAATCTCTGCCGATGACATTGGCCAGTCACCCATTGTCTCCATGCCGGAGCGGAGACAAGGTGGAGCTGGAAGCCTTCAGCGAGTTTACC 990
AAGATCATCACCCCGCCATCACCCGTGTGGTGGACTTTGCCAAAAAATGCCCATGTTCTCCGAGCTGCTTGGCAAGACAGATCATC 1080
CTCTCGAAGGGGTGCTGATGAGAGATCATGTCTCTCGGGCGGCTGTCCGCTACGACCTTGAGAGCGACACCTTGACGCTGAGTGGGGAG 1170
ATGCGCTGCAAGCGGGAGCAGCTCAAGAATGGCGGCTTGGCGGTAGTCTCCGACGCCATCTTCAAGTGGGCAAGTCACTCTCTGCTTT 1260
AACCTGGATGACAGGAAGTGGCTCTGCTGACAGGTGTGCTGCTAATGTCAACAGACCGCTCGGGCTGCTGTGTGTGGCAAGATCGAG 1350
AAGAGTCAGGAGCGTACCTGCTGGCGTTCGAGCACTACGTCAACACCGCCAAACACAACATTCCGCACCTTCTGGCCCAAGCTGCTGATG 1440
AAGGAGAGAGAAGTGCAGAGTTCGATTCGTGTACAGGGGGCAGCGCAGAGGCGCGCGGGCGGGTCACTGGCGCTCCACCCGGAAGGA 1530
CAGCAGCTTCTCGGAATGCATGTTGTTGACAGGTCGCGAGGTCCGCGCAGCTTGAGCAGCAGCTTGGTGAAGCGGGGAAGTCTCCAAGGGCC 1620
GTTCTTCAGCACCAGAGCCCAAGAGCCCGCAGCAGCTCTCTGGAAGTGTCTCCACCGAAGCGGAATTCCTCATGCCCCGAGCGGTCTGT 1710
GGGGAAGACGACAGCAGTGAAGCGGACTCCCCGAGCTCTCTGAGGAGGAACCGGAGGTCTGCGAGGACCTGGCAGGCAATGCAGCTCT 1800
CCCTGAAGCCCCCAAGGCCGATGGGAAGGAGAGGAGTGCCATACCTTCTCCAGGCGCTTCCCCAAGAGCAGGAGGTGCTGAA 1890
AGCTGGGAGCGTGGGCTCAGCAGGGGTGCTCACTCCATCCGTAAGCAGCAGCTTCCCTTCTCTCAGCAGGCAACATGGCCAGACTCCC 1980
TTGCTTTTGTGTGTGTTGCTGTGCTGCTGCGGTGGAGTGGCTTCCCTTCTGCTGCTGCAACATCTTACTGTGCTTGTAGGCCCCAAC 2070
TCAAGTGTCACTCTCTCCCGAGCTCCCCAGGCAGAAATAG 2112

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