

Primary structure of the rat beta-2 adrenergic receptor gene

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A rat genomic Charon 4A partial EcoRI library was screened with rat cardiac beta₂-adrenergic receptor cDNA probe and a 20mer oligonucleotide based on the published sequence (1). Three positive clones, which were identical, were isolated from 700,000. A 4190 bp section containing a single exon was sequenced. The gene does not share the promoter structure and consensus sequences of the human and hamster genes (2).

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-2251          CTGCAAGCTGAAAGCGGGAGAGAGCAGCCTTGCAGTGCACCCCTGCCCGTTATGTGCAC TAGACTTTAGGGGACTTGCCCAAGTGACGTGCA
-2150 AACTTTGAGCCAAATGGCACCCTGCCATGCCCGGAGGGGGGAGGCGCTAAGGGCCAAACCCTCCTTGCCTAGCCCGCCTCCTCCTGGGTTGGCCCGGGCCGAGCTGCTCCCG
-2040 GGCCAGGCACCACTCCCTTCCAGCTACCCCTGCTGGGGCTCCCGACAGAGAAATCTGGACTGCTGTGCCACCCGCCAACCCAGGCGCTCTCGAGAGTGTACTGTTTCATGT
-1920 GTCACTGTGGGGTGGAGGTTCTCTGGACGCCAGTGGCAGTGGGTGCATTTCTTTAGGAAACAGAAAGACAAAGCTCACCCGGACCCACACAGCCAAAGCCAGCTGCT
-1800 CTGGGAGCTGCTCAGACTTATGCCAACCACGCCACAGCAGCCAGCAGCCCGCCGCTCATGCTGGAGACGACAGCTGTCTCCTGGTCCACACAGAGAGGTGCTATAGC
-1680 ACTCAGGAACACCCAGAGCAGCTGAAAGAACACACACAGGGCTCCGGTGGAGACATGGAGTGCAGTCACTTAGACACCCGGTGTTCACATCCAGGTACTCCCTCCTAGCAC
-1560 ATAAATGACACCCCAATTCGCAGACACCCAGTGTATTCCTTTCAGTTATTTGGCAGAACACAGAGGTGACTCCAACAGCTACAGAGTTTCTAACCCACTTCCCTGAAATAATTT
-1440 TTGGCGTCTCCCTCCTTGAGAACATGCCAGCAACCCGACCAAGCCAGTAACTTCGCCCTTTCATTTCTTAGGAATGATGTACCCACTTGGGGAGATTGGGTGGGGTGT
-1320 TCTTAATCTTGGGAGTGTGCCATCATTTTCTGTGTATATGGTATATCCAGGATGCAATGAAACGAAATGCAAGATTTTCTTTTGAATAAAAAAATAAACTACATT
-1200 TTATGTTATGCCATGGAGTCTTATCTCTGTGTTTGTCTGTGCACCAGCTTTGGCATGTTTGGAGGTGAGGAAAGAGAGCATCAGATCCCTAGGACTGAAATATACAGATAGT
-1080 CACACACAGAGTGCCTTGTGAGTGTGGCAATCGAACCTGGTCTCTGGAAGTCAAGCAATGCTCTAACCACTGAGCTGTCTCCAGTGTGCATGATCTCTTTTCAACAAAT
-960 CTTAAGTAACTCCTTTGTAAATATAAAAGTGTAACTGTATTAATTTGTTTGGTGGATAATTAGCTAATCTTTTAGGCTATGTCTCATGTGAACCTCCACCACTGGGCCCTTTT
-840 TCTTTAAAAACCCCCCAATTTCAATATAATTCATATATAAAAATGTTTCTGAGTCCATTTAAAACTACAGAAAGAAATGATAGTTTTCTCCATTAAAAAAAACA
-720 AGACCAGACTAAGATTTCAAGAACCAACCTTTCGAGCTGGCAAGTACTGTTCCGAAAAAAAATAATTTCAAGTTTGTATTTCAGCTGATATATATTTGATAGACCAAAAGT
-600 TTCATGGAATAAGCAACATACTTGTAGATTACATAATAACAAATGGCTGACATTTAGGGACATTCCTGTTTGTGATTTGCAATTAATCTTCCACAAATCCACGGGG
-480 ATTTTGTAGCTCCAAATGGGGCTCAAAGAGGCAAAATCACTTGCACATGGACACTGGCCAGGACAGCCAGAAATCTGAATCGAAACCTAAATCTGTCTGATTCTAAGGTCCATTTCTTGC
-360 CTTTTAGGTACTGTGTTTTCATGTAGACGAGGGGAGGGCACAGAAAGTACAACTGGGATTGGAGCACCTGAGTTGCAGGTTCCACTTGAACCTTTGACAACTATTTCTCT
-240 GTCAAACCAAAAGAGGATTAGTATCCCTCCATCTGAGGGGATGTGCTGCACTGGCAGGATCCGAGCCCGGAGCACCCAGGACTCAGTGTGCAGGACCGCCGAGCCAGCC
-120 CCACCTACGGTCTCGAAATGAAGCTTCCAGGAGTCCGCCCGGGAGGGTGGCCCTCGGAGGTGCACCCCTGAGAGCTTGGGCACTGAAAGCCGGTGGCTCAGCTGCCCG
ATGGAGCCACAGGGAAATGACAGCGACTTCTTGTGGCACCAATGGAAAGCCGAGGCCAGGCCAGCAGCATCTCAGGAACGGGAGCAAGCTGGGTGGTGGCCATGGCCATCTCA
1
M E P H G N D S D F L L A P N G S R A P G H D I T Q E R D E A V V V G M A I L M
121 TCGGTTATPGTCTGGCCATCGTGTGGCAACGTGCTGTCATCACGCCATTCGCAAGTTCGAGCGACTACAAACCCGTCCCAACTACTTCAACCTCCTTGGCGTGTGCTGATC
S V I V L A I V F G N V L V I T A I A K F E R L O T V T N Y F I T S L A C A D L
241 GTATGGGCGTAGCGTGTGCTTTGGGGCCAGTCATATCTTATGAAAATGTGGAATTTGGCAATTTCTGGTGGAGTTCGGACTTCCATTTGATGTTGTGCGTCCACGCCA
V M G L A V P F G A S H I L M K M W N F G N F W C E F W T S I D V L C V T A S
361 ATCGAGCCCTGCGTGTGATTCGATGGATCGCTATGTTGCTATCATCTGCCCTCAAGTACCAGAGCCTGCTGACCAAGAAATAAGGCCCGAGTGGTCACTCAATGTTGGTGGATTG
I E T L C V I L A V D R Y V A I T S P F K Y Q S L L T K N K A K A R T V G V I L M V W I V
481 TCGGCGCTTACCTCCTTCTGCTATCCAGATGCATGGTACCCTGCCACCCAGCAAGCAGCCATCGATGTTATGCCAAGGAGACTTGTGTGACTTCTTACGAAACAGGCGCTATG
S G L T S F L P I Q M H W Y R A T H K Q A I D C Y A K E T C C D F F T N Q A Y A
601 ATCGCTTCTCTATCTATCTTCTACGTGGCTGGTGTGCTTGTCTTATGTTCCAGGTTCTCCAGTGGCCAAAAGGCCAGCTGCAGAAATAGACAAATCCGAGGCGAGAT
I A S S I V L V P L V V M V F V Y S R V F Q V A K R Q L Q K I D K S E G R F
721 CATGCCAAAACCTCAGCCAGTGGAGCAGGATGGGAGGAGCGGGCCAGGACTCCGAAGTTCCTCCAAGTTCCTGCTTGAAGAGCACAAAGCCCTCAAGACTTTAGGCATCATCGF
H A Q N L S Q V E Q D G R S G H G L R S S K F C L K E H K A L K T L G I I M G
841 ACCTTACCCCTTGTGGCTGCCCTTCTTCAATTTGCTCAATATTCCAGTCACTCCGGGCCAACCTCATCCCTAAGGAAGTTTACATCCCTCAACTGGTGGGCTATGTCACTM G
T F T L C W L P F F I V N I V H V I R A N L I G P K E V Y I L L N W L G Y V N S A
961 TTCAATCCTCTTACTGTCGGAGTCCAGATTTCAGGATTCCTTCCAGGACTTCTGTGCTTCCGCTTCCGCTTCTTTCGAAAACCTATGGGAACCGCTACTGTAGCAACCAAGC
F N P L I Y C R S P D F R I A F O E L L C L R R S S K T Y G N G Y S S N S N G
1081 AGGACAGACTACACAGGGAGCAGAGCGCATATCAGTGGGGCAGGAGAAATAAAGTAACTGCTTTGTGAGGAAGCCCTGGCATGGAAGGCTTTGTGAGTGTCAAGGACTGTCAAGTACTGTG
R T D Y T Q E O S A Y A Q L G O E K E N E L L C E A P G M G E G F V N C O G T V P
1201 AGCCTTAGCATTGACTCTCAAGGGAGAACTGTAAACACAAACCACTCCCKACTGTAGTGTAGGCTTTCTACTCTTAAAGAACCGCCCTCCCTGACAGGACATACCAGTATTTT
S L S I D S Q R N C N T N D S P L
1321 TTGAGTGTAAATACCTTAGAATAAAATTTGATAGAGATTTTGCAGAAAGGGCCATCCTTCTCCCTTTTTATTTTGGTTTTTAACTGCAAGTGTGAGAGAGAGGGAGAGAGCA
1441 CACAGCAGACAGAAAGAGAGAGAGAGACTGATTTTCAGTGTAAATGTTTCTTGTAGACTGACTGCTTGGCATGGAACCTTAAAGTTTCTGTCTGAAGTGTGTTGTTG
1461 CTGCTCTTGGAGCGTGTTCATGTATCTACTCTACTGGTCAAGTAAATTAAGGATAATATATATATATTTGCTGTGAAATTCATATGTAAGAGGAGAGAGTTTTCTCTCTGATACC
1561 GCACCTCAAAATATCTGTCTTGGACTTTCTGCTGTGAATGTGGACTCTCTCACTCCACTTATTCGCTCAAAATGGAGTGTGAGAGCGAGGATTTGAGGGACCAATCACTGTG
1681 TTTCTGACAAAGTCTAAAGTTTACAGTAAATAAATTTGTTGACCATGACTTATTCGAAACCTGTTTCTCCAAACCTCTTGTACTCTGGAGTGTCTTGTCTCTCCACTGGAACCA
1801 GGTAACTATGTGTCTAATC
1921
    
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Figure 1. Nucleotide sequence of the rat cardiac beta₂-adrenergic receptor. Differences to be reported on cDNA sequence are boxed.