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Primary structure of the rat beta-1 adrenergic receptor gene

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A rat cardiac cDNA library (Clontech, USA) and a rat genomic Charon 35 EcoRI library were screened with two oligonucleotides based on sequences present in the human beta-1 adrenergic receptor (1). Three positive clones, which were identical, and one clone were obtained from cDNA and genomic library, respectively. A 3680 bp section encoding a 464 amino acid protein was obtained, and predicted sequence demonstrated a 89% amino acid identity with the human clone.

REFERENCE

1. Frielle,T., Collins,S., Daniel,K.W., Caron,M.G., Lefkowitz,R.J. and Kobilka,B.K. (1987) *Proc. Natl. Acad. Sci. USA* **84**, 7920–7924.

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-612                                    CTGGGTGCTAGGGCAAGCGACACCACTTGGGCGGTGGGGGTGGGCACAGGAGGCGGCGGGGCACCGCAGAGG
-540 GCGCAGCAGACCAGACTCTGGAAGAAGCCTGAGCAGGAAAGGGCGCGCTCGCTGCAGCCCGTGGGTGCCGGCTGCGTAGTCCACCCGCAATCTTTGGAGCCTTTCAAT
-432 CGCGGTAGGAGGGGGTGCTGGGTGTTGGGGGTGGGGACACCATTGTTCGGGGGCGTGCCTTGGACGACGATTGGCTGCGGGAGCCTGACGCGCGGCCCCGGGGGCTGG
-324 CTGGGGGGTAGGGAGCGAGGTGGGGGGGAGGTGCTGGGTGTTGGAGCCGCCGGCCCCGCGCGCTCAGAAACATGCTGAGGTCCCGGCAACTCTTCCAGCAGCGACCCG
-216 CTCCAGCAGCAGCGGCGGCGGCGGCGGCGGCGACACGGCTTGGCTACGGAGGAGAAGGCGCCCGGCGTCCATGCCTCCGGCCCCAAGCCGCGGCTGCCCTGACCTGGC
-108 CGCGACCTCCCCGCGTCCCCGCGCGCGCCCCCAGCCCCGGCTCCTGGGGTGCTTCCCAGGCGCGGCCCAGTCCCGCCACACCCCCCGCGCCCGGCCTCCGAAGTCGGC
     M  G  A  G  A  L  A  L  G  A  S  E  P  C  N  L  S  S  A  A  P  L  P  D  G  A  T  A  A  R  L  L  V  L  A  S
   1 ATGGGCGCGGGGGCGCTCGCCCTGGGCGCCTCCGAACCCTGCAACCTGTCGTCGGCCGCGCCGCTGCCCGACGGCGCGACCGCGGCACGACTGCTGGTGCTCGCGTCG
     P  P  A  S  L  L  P  P  A  S  E  G  S  A  P  L  S  Q  Q  W  T  A  G  M  G  L  L  L  A  L  I  V  L  L  I  V
 109 CCTCCCGCCTCGCTGCTGCCTCCAGCCAGCGAGGGCTCAGCGCCGCTGTCGCAGCAGTGGACCGCGGGTATGGGCCTACTCCTGGCGCTCATCGTGCTGCTCATCGTA
     V  G  N  V  L  V  I  V  A  I  A  K  T  P  R  L  Q  T  L  T  N  L  F  I  M  S  L  A  S  A  D  L  V  M  G  L
 217 GTGGGCAACGTGTTGGTGATCGTGGCCATCGCCAAGACCCCGCGGCTGCAGACGCTCACCAACCTCTTCATCATGTCCCTGGCCAGCGCCGATCTGGTCATGGGACTG
     L  V  V  P  F  G  A  T  I  V  V  W  G  R  W  E  Y  G  S  F  F  C  E  L  W  T  S  V  D  V  L  C  V  T  A  S
 325 CTGGTGGTGCCTTTCGGGGCCACCATTGTGGTGTGGGGCCGCTGGGAGTACGGCTCCTTCTTCTGTGAGCTCTGGACTTCGGTAGACGTGCTATGTGTGACGGCCAGC
     I  E  T  L  C  V  I  A  L  D  R  Y  L  A  I  T  S  P  F  R  Y  Q  S  L  L  T  R  A  R  A  A  L  V  C  T  V
 433 ATCGAGACCCTGTGTGTCATCGCCCTGGACCGCTACCTCGCCATCACGTCGCCCTTTCGCTACCAGAGCCTGCTGACGCGCGCGCGAGCGGCCCTCGTGTGCACAGTG
     W  A  I  S  A  L  V  S  F  L  P  I  L  M  H  W  W  R  A  E  S  D  E  A  R  R  C  Y  N  D  P  K  C  C  D  F
 541 TGGGCCATCTCCGCGCTGGTGTCCTTCCTGCCCATCCTCATGCACTGGTGGCGGGCCGAGAGCGACGAAGCGCGCCGCTGCTACAACGACCCCAAGTGCTGCGATTTC
     V  T  N  R  A  Y  A  I  A  S  S  V  V  S  F  Y  V  P  L  C  I  M  A  F  V  Y  L  R  V  F  R  E  A  Q  K  Q
 649 GTCACCAACCGGGCCTACGCCATCGCCTCGTCCGTCGTCTCCTTCTACGTGCCCCTGTGCATCATGGCCTTCGTGTACCTCCGGGTGTTCCGCGAGGCCCAGAAACAG
     V  K  K  I  D  S  C  E  R  R  F  L  S  G  P  P  R  P  P  S  P  A  P  S  P  S  P  G  P  P  R  P  A  D  S  L
 757 GTGAAGAAGATCGACAGCTGCGAGCGCCGCTTCCTCAGCGGCCCGCCCCGGCCGCCCTCGCCCGCGCCCTCGCCATCACCAGGGCCACCGCGCCCCGCAGACTCGCTG
     A  N  G  R  S  S  K  R  R  P  S  R  L  V  A  L  R  E  Q  K  A  L  K  T  L  G  I  I  M  G  V  F  T  L  C  W
 865 GCCAACGGGCGCTCCAGCAAGCGGCGGCCGTCGCGCCTCGTGGCTCTGCGAGAGCAGAAGGCGCTCAAGACACTGGGCATCATCATGGGTGTGTTCACGCTCTGCTGG
     L  P  F  F  L  A  N  V  V  K  A  F  H  R  D  L  V  P  D  R  L  F  V  F  F  N  W  L  G  Y  A  N  S  A  F  N
 973 CTGCCCTTCTTCCTGGCCAACGTGGTGAAAGCTTTCCACCGCGACCTGGTGCCGGATCGCCTCTTCGTCTTCTTCAACTGGCTGGGCTACGCCAACTCGGCCTTCAAC
     P  I  I  Y  C  R  S  P  D  F  R  K  A  F  Q  R  L  L  C  C  A  R  R  A  A  C  R  R  R  A  A  H  G  D  R  P
1081 CCCATCATCTACTGCCGCAGCCCCGACTTCCGCAAGGCTTTCCAGCGCCTGCTTTGCTGCGCGCGCCGGGCCGCCTGCAGACGCCGCGCAGCCCACGGGGACCGGCCG
     R  A  S  G  C  L  A  R  A  G  P  P  P  S  P  G  A  P  S  D  D  D  D  D  D  A  G  A  T  P  P  A  R  L  L  E
1189 CGCGCCTCGGGCTGCCTGGCGAGAGCTGGGCCGCCGCCGTCCCCCGGGGCTCCTTCGGACGACGACGACGATGACGCCGGGGCCACCCCACCCGCGCGCCTGTTGGAG
     P  W  A  G  C  N  G  G  T  T  T  V  D  S  D  S  S  L  D  E  P  G  R  Q  G  F  S  S  E  S  K  V
1297 CCCTGGGCCGGCTGCAACGGCGGGACGACCACTGTGGACAGCGATTCGAGCCTGGACGAGCCGGGACGCCAGGGCTTCTCCTCCGAGTCCAAGGTGTAGAGGGCCAGG
1405 CTCTCCGGGCGCACGGACGCCGCTCCCCATAGTCCCGGGCTGGACACGGGCTCTGCATCCCTAGAGGAAGAGAGCCCGCCTGGGCCCCTGAGCCGCTCCCCAGGGGAG
1513 AGAGGAGATTTCTGTTTACTCAAGACCGAAAGCAGGTGAATGCGAAGCCCACAGATCTTTTGAATCATCCGAGACGTACAGAAAAGCCCCGGACCGAGCGTTGCGCAA
1621 AAAGGAAAGTTTGGGAGTAGTTGGGAGAGTGTGGCTTAGTGTGGCTTACTGGCTTGTCTTGAGTTCCTTTCTCTCTGAGGTTCGGCCTTTCGTGTGTTTAATGCACCT
1729 TTAGGCACCCCCCCCCCGTGGGTTTTGACACTTTCTGCAAGGACCCGAGTGGAAACTAGGAGGGGAGGGGAAGGGGGAGGGTGGAGTCTATCACCTGCCTTCTACTTC
1837 ACACCTAGGAACCTAAG
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Figure 1. Nucleotide sequence of the rat beta-1 adrenergic receptor.