

Nucleotide sequence of cDNA encoding subunit Va from rat heart cytochrome c oxidase

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Mammalian cytochrom c oxidase (COX) is composed of 3 catalytic, on mitochondrial DNA encoded, and of 10 nucleus-encoded subunits (1). The nucleus encoded subunits occur in tissue- and developmental-specific forms (2) and appear to modulate the functional activity of the enzyme (3). Recently the cDNA for human COX subunit Va was described (4). This gene probe was used for screening a rat heart cDNA library in λ gt11 to isolate the corresponding gene of the rat. The cDNA sequence was determined after subcloning in phage M13mp8 by standard procedures. The deduced amino acid sequence of the mature protein is 100% identical to bovine heart subunit Va (5) and 96% homologous to human subunit Va (4). The presequence of rat subunit Va contains 37, that of human 41 aminoacids. The identical amino acids with human subunit Va are underlined, the cleavage site of the presequence is indicated by an arrowhead.

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      M  L  A  A  A  L  R  R  C  T  A  A  A  A  A  R
GTGGTCGCCGTCATGCTCGCCGCTGCCCTCCGTCGCTGTACCGCAGCCGCGGCCGCCGA  60

      G  L  L  H  P  V  S  A  P  S  P  A  A  A  V  C  S  I  R  C
GGCCTTCTGCACCCCGTCTCGGCTCCAGCCCCGCTGCCGCTGTCTGTTCCATTTCGCTGC 120

      Y  S  H  G  S  H  E  T  D  E  E  F  D  A  R  W  V  T  Y  F
TATTCTCATGGGTACATGAGACAGATGAGGAGTTTGATGCTCGCTGGGTGACATACTTC 180

      N  K  P  D  I  D  A  W  E  L  R  K  G  M  N  T  L  V  G  Y
AACAGCCAGACATTGATGCCTGGGAGTTGCGTAAAGGGATGAATACACTTGTGGCTAT  240

      D  L  V  P  E  P  K  I  I  D  A  A  L  R  A  C  R  R  L  N
GATCTGGTTCCTGAGCCCCAAAATCATTGATGCTGCTTTGAGGGCATGTAGACGGTTAAAT 300

      D  F  A  S  A  V  R  I  L  E  V  V  K  D  K  A  G  P  H  K
GATTTTGCTAGTGTCTGTCATCTTGGAGGTTGTTAAGGACAAAGCAGGACCTCATAAG  360

      E  I  Y  P  Y  V  I  Q  E  L  R  P  T  L  N  E  L  G  I  S
GAAATCTACCCTATGTCAATCCAGGAACCTTAGACCAACTTTAAATGAATTGGGAATCTCC 420

      T  P  E  E  L  G  L  D  K  V  #
ACTCCAGAGGAACTGGGCCTTGACAAAGTGTAACCTCCCTTCGATGGGCTTCCCAAGGAC  480
TAACTGCTATTGCTACTTGATTGAAACAGTTGCCTGGAATGTTTTATTGAACAAATT  540
TTCCTTTGAGTATCAAACCATGTAACCTTGGACTTTAATAAAGGGAAATGAGTTTGACCCG  600
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA  644

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