

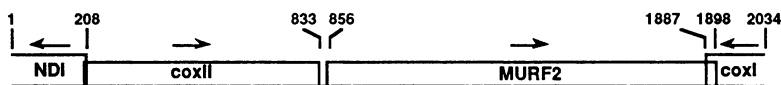
The nucleotide sequence of mitochondrial maxicircle genes of *Crithidia fasciculata*

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 Submitted May 19, 1989

EMBL accession no. X15081

We are studying the recently discovered RNA-editing process, operative in mitochondria from trypanosomatids such as *Trypanosoma brucei*, *Crithidia fasciculata* and *Leishmania tarentolae* (reviewed in Ref.1). Via this process, RNA sequences are altered by insertion and/or deletion of U residues. Our approach is a systematic comparison of maxicircle gene- and cDNA sequences of *C. fasciculata*. For this purpose, the nucleotide sequence of a 2034 nucleotide EcoRI-HindIII fragment of the maxicircle has been determined. The nucleotide sequence and the gene map of the fragment are shown in the figure. The position of the genes is inferred from the high degree of similarity at the nucleotide- and the amino acid level, with respect to the homologous genes in *T. brucei* and *L. tarentolae*. A number of translational defects appear to be encoded in the sequence shown: the NDI and MURF2 genes do not encode initiator AUG codons, whereas the *coxII* gene is frameshifted. The MURF2 gene, which is a frameshift gene in *L. tarentolae*, is continuous in *C. fasciculata*.



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1  AAGCTTATTA CAAAATAAC AAATTTAATA AATAATTGGA CGCCATCCGT GATAGGTGTG AGCACACAAA AAAAAACAAA AGCAGTCCCT ATTCGTATTT GAACAAGCCG
111 TAAAAATCCGT CGCTCACAGA GACTTACAAA ACCGGTAAAG ACAAGAACAA CTAATATGTC AACGATCAAA ATTATTATTA TGCAAGATT TAACAANAAT GCGTTTATAT
221 TATCGTTTTG AATGATATTT CTTATTGATG CAGTATTGT TTTATTATCT TTGTGTTGTG TTGTGTGTAT ATGAATTTGT TCGCTATTTT TCTCATCAIT TTTACTGGTA
331 TCTAAAATAA ATAAATGTTA TTGTACATGA GATTTTACAG CCTCAANAAT TATTGATGCA TATTGAATTA CCATGGTGGG TATGTTTGTG TTTATGTTAT TATTACGCTT
441 AATGCTTTTG TTATCTTTG TTGTTTAAA TTTTGTAGT TTGATTTAT GTAAGTTGT CGGGTCCAG TGAATTTGAG TATATTTTAT ATTTGGTAAA ACCACATTT
551 TTAGTAAATTT ABACTTGAG AGTGATTTT TAATCGGTGA CTACAGTCT TTACAGTGA ATCATGTACT AACTTATTA AGCTGATGAA TATATAAAT ATGGTATCG
661 GCTGTGACG TTATACATTC TTTTGCAGTA TCTACCTTAG GTATCAGGT AGAGAAGCTG CAGCTGTGTA TCGAGTGTG TATTTCTCT CCAATATTC AACATATAC
771 GGTCAATGA GTGAATATG TGGTGTCTA CATGGATTA TGCCTATAGT TATTGTGTT ATATAGTAT GTAATCAAA ATAAAGGGG AAGAAGGAG TGACTCGAT
881 TTTGATTTA TTGTGTGTA GAAGTATGA TTTTATTTA TGATGATTTG ATTTAGATT TATATATAT GATTTGTAT TTGACTTTG CGTATGTA ACTTTTAT
991 TTGTGTTGT TTAGGTTTT TTTTACGTA TTTTITTAG TTTGTTTTT GCTGTGTAT TTATGTGT ATTTGGTGA TTTTGGTGA TTTTCTTAG CTTAAAGTT TACTGGCTAT
1101 TATATTTAT ATATTTATAT ACTTTAATAT TTTATCTGTT TTTTITTTG TTTTGGTGT AGTATCATAT TATATTTAT AGAGTTTTT ACATATGTT CATTTTTTT
1211 ATTTTTGAT TTTGTATCAT TTTCCAGTCA CCTAACAACT TTTTGGGT TAACATAATA TTTTACGCT ATTTTTGTT CATATTTAT TATTTTAT TATTTATG
1321 TTTGTTTTT ATTTGCTTT ATATTTTTG TAATTCGCTG TTTATTTGTT ATTATTATG ATTTTTTAT TTTTATTT GATTATATA TTTGATTTT AATGTGTAT
1431 TTATTTATG TCGATTTTAT TTGTTTTTA TTATATACT TTGTTTTTAT ATTTGTTTT ATTTCAGGGT TTTTCTGTT TTTTCTGTT CTAACACTG TTTTTFACT
1541 TTTGTTTTT GTTTAGCTT TATTTTTG TTTTATTTT TTATCTATG GTTTAGCTT ATTTTTATGT TGTATAGCT TTTGATTT TATGATAT TACAGAGTT
1651 GTTATGAT ATGCCAAGT GTACTAATAT TTTTAAAT TTGTATTT AATGCTTCT TTACTTTGT ATTTTATTA ATTTTATTA TAGTGTTT TTTGTTTT
1761 TTTCTAAGG ACTTTTGTG TCTGAACCTC TTTTGTATA TGTTTACATC GTTCATAAAT ATGATGTTCT TCTGCTATAA TGGATTTAT AGACAGTACA ACGATTTTG
1871 COTGACTCAA CTTTTATCG TTATATATA AAAAAATAA AACAAAGAT AACAAAAAAA AATAAAAAA ACAAGACAAA AGCATAAGT CAAAAATAAG TAATCAAGTA
1981 CAATATCGCC AAATCTACA AGAAGAGGT ACAACCCAT AACACAGGA ATTC
    
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Acknowledgements

Part of this sequence (about 900 nucleotides) has been published in a preliminary form which contained one error (underlined in the figure) (Ref 2).

References

1. Benne, R. (1989) *Biochim. Biophys. Acta* **1007**, 131-139
2. Benne, R., van den Burg, J., Brakenhoff, J., De Vries, B.F., Nederlof, P., Sloof, P. and Voogd, A. (1985) in: *Achievements and Perspectives of Mitochondrial Research*, Vol. II Biogenesis, eds. Quagliariello, E., Slater, E.C., Palmieri, F., Saccone, C. and Kroon, A.M. (Elsevier, Amsterdam), pp 325-336