

**Nucleotide sequences of the *Rana catesbeiana* mitochondrial small (12S) and large (16S) ribosomal RNA genes**

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The entire mitochondrial genome of *Rana catesbeiana* was cloned into a plasmid vector pBR322 at the unique Bam HI site (1) and the nucleotide sequences of the small (12S) and large (16S) rRNA genes were determined (Fig.1). The sequence of the 12 S rRNA gene showed 68% and 75% homologies, and that of the 16 S rRNA showed 69% and 74% homologies, to their counterparts of the human and *Xenopus laevis* mitochondrial genomes, respectively. Analysis of the contiguous genes revealed that the 5'- and 3'- ends of the 12 S rRNA gene were flanked by the tRNA genes for phenylalanine and valine, while those of the 16 S rRNA gene were flanked by the tRNA genes for valine and leucine (UUR), respectively (not shown).

**A**

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CAAGGTTTG GTGCTAGCCT TATTATCAAC TGTTTCTCAA CTTACAGATG CAAGTATCAG CACAGCCGTC AGAAGGCCCT TTAATCTTGA CCGAGATAAA 100
GGAGCTGGTA TGAGGCACAA AC0CT0C0CC CACAGAACCT AGCTC0C0CA CAC0C0CAAG G0TAATCAAT TTG0G0TATG AGC0GTACCT 200
TGACTCAGTT AGAGAACAAG G0G0G0G0CTA A0C0G0T0CC AG0C0G0C0G GCTACAC0GT G0G0C0C0AG TTGATAGCTA TCG0G0TATG G0G0TATTA 300
AGTTATTAACA AATTAAG0TT AAATTAATAC TTAGTAGT0T TTATG0T0TT ATTAAGA0AT CCACAA0AGA A0GTTA0CCT AATTAATATG CTTGAATACA 400
CGACAGCTAG GAAACA0AAC TGGGATTA0A TAC0C0ACTA TG0C0TAG0C TA0ACAATTA ATTTACACCA ATAG0G0CCA G0GAATTAGC AGCAATG0CT 500
AA0AC0C0AA G0ATTTG0AG GTC0C0ACC C0ACTG0AGC AGC0CTGT0T ATAT0G0AT ATC0C0C0ATA TAC0C0ACCA TTTC0T0C0T ATCAGTCTGT 600
ATA0C0T0C0T C0AA0G0CTTA C0AT0TGA0C G0TTC0G0TA G0C0T0A0TGA C0TAACAG0T C0ATAG0TCA G0TCAAG0TG CAG0CTTAGA AAT0G0A0G 700
AATGG0CTAC AATTTCTAAT CTAGACA0AA C0GA0GACTA TATGAAATTA TAATCATGAA G0TG0GATTA GTAGTAAAAA GAAATAGAG TGTCTTTTT 800
AA0C0G0C0T TGGAC0C0T ACACAC0CC C0TCA0C0CT C0GATAGTA TCTCA0C0G TCT0TA0CC ACTATTACAT TTTAGAAGAG C0AAGT0CTA 900
ACATG0TAG T0ACT0GAA AGT0C0ACTG G0TTTATA
    
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**B**

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GC0C0AAATC TAG0CTACAC ACATT0GCAT GAC0C0C0TGA C0C0TAG0CT CTAACA0AAT CATTTTAACA TTATAGTACA G0GCAT0GAA AAATTTCTAA 100
GC0C0TTCAGA CAAAGTAC0G CAA0G0GAA0G ATGA0ATAGA AATGA0ATAA TCTTAA0GCC CTAATCAGCA GAGATA0CCT C0GTGAC0TT TTGCATC0ATG 200
GTCTAG0CAG TCTACTCA0G CAA0A0TAAA C0TFTT0AGTT TG0C0T0C0G A0ACTA0G0T AGCTACTTCA GACAGCT0CT ATGGAC0CAA C0CATCT0CTG 300
TT0C0AA0A0A GTC0G0ANGT TCTTAGTAG AGGTGATA0G C0TAC0G0A0C TTAGAGATAG CTG0T0T0TC AGGAA0AGAG TCTTAG0CTT AC0TTA0GCT 400
C0TCT0TATTA A0CTA0GAA0A T0C0A0K0CT T0AG0C0TAT T0A0AT0AG0 C0AG0CTTAT TTA0A0AG0C A0A0CA0C0T T0AC0C0G0G T0A0ATTATG 500
TAATCTCAAT AA0GTGG0C TAA0AG0AGC CACCTT0CAA AA0G0C0TAA AGC0TAACTA TAAATTA0CTA AAT0A0C0T AAT0ATTAAT TAA0C0CTTCA 600
TCTCTACTGA C0ATTTTAT AT0C0TATAA A0GGA0TAT C0TGA0ACTA G0TAACA0AGA ATTGATTTTC TCTA0A0CT A0G0TATA0A0 C0C0AG0G0C 700
CATCT0T0TG TGATTA0ACC AA0T0C0AAA TCTATAGCAA CATA0ACTA AA0C0C0TAA ACTACA0ACC TTA0C0CTTAC ACTAGA0A0AT TCCAG0A0AG 800
ATTA0A0AGC AA0GA0GAA C0T0G0CAAAT TTTAG0C0TC C0T0T0T0AC AAA0A0CAT0C C0CTT0G0TA AA0CATA0AGA G0T0C0G0C0T C0C0AG0TAC 900
AA0CTTCA0C G0C0G0G0GTA C0C0T0A0C0T G0G0AG0TAG CATA0TCA0T T0T0C0T0TAA ATAGG0ACTT GATTCAG0GG C0C0AG0AGG C0TATACT0T 1000
C0C0T0T0TC C0ATCA0CTA A0CT0AT0CT C0C0T0A0GA A0G0G0G0ATT ATATAT0AG AC0A0A0AGC C0C0AT0G0C TTTA0A0CTA T0ATCA0C0T 1100
C0TAT0C0CTA TATCA0CTTA CACA0AGA0C C0T0TAT0CTA G0T0T0AG0TT G0G0G0G0A0CA C0GACTAT0A TTA0A0C0TCC AT0A0C0CTAG C0C0TA0AG0C 1200
TCTTACT0AG AGATCA0CCT CTA0GA0ATTA CTA0A0A0AT G0T0A0T0AG CCA0TA0ATT GATCA0T0GA C0A0G0T0ACC C0T0G0G0ATA C0G0C0GA0T 1300
TAT0CTCA0GA C0C0C0TAT0C ACA0AGT0GT TTAC0A0C0CT GAT0T0G0AT CAGG0TAT0C T0AGT0G0TGA C0C0C0TACTA AT0G0T0C0T T0TTC0A0CGA 1400
TTAA0A0C0CT A0C0T0T0CTG AGTTCAG0AC G0A0T0AT0C A0G0T0G0T0T C0TATCT0TAA AGT0G0T0CC C0T0AGT0G0A AGC0A0C0G0G CAA0CAT0G0C 1500
AAT0T0T0T0T AA0CA0G0CAT ATTCT0T0C0C TA0TGA0ATA ATCTTAA0TG GACA0A0C0T ATTATATAG TCTA0A0T0AG AA0AT
    
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Fig.1 Nucleotide sequences of *Rana catesbeiana* mitochondrial 12S (A) and 16S (B) genes. The sequence of the L-strand (5' to 3') is shown.

**References**

1. Fujii, H. et al. (1988) J. Biochem. 103, 474-481.