Primary structure of the *Leishmania donovani* small subunit ribosomal RNA coding region

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The small subunit ribosomal RNA coding region for the Sudan I strain of *Leishmania donovani* is contained within three EcoRI/EcoRI restriction fragments 3.7 kb, 1.0 kb, and 56 bp in size. The 3.7 kb and 1 kb fragments were cloned into PTZ 18U plasmids and a 450 bp HindIII/PstI which contains the 56 bp fragment and overlaps the 3.7 kb and 1.0 kb EcoRI fragments was directly cloned into M13 phage mp18. Complete sequences for both strands of the coding region were determined by initiating the dideoxynucleotide chain termination sequencing protocols (1) with oligonucleotide primers that are complementary to highly conserved regions in eukaryotic small subunit rRNA genes (2). The *L. donovani* sequence is 2204 nucleotides long and is more closely related to *Crithidia fasciculata* (97%) (3) than to *Trypanosoma brucei* (84%) (4).

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1 GAUCUGGUUG AUUCUGCCAG UAGUCAUUG CUUGUUUCAA GGACUUAGCC AUGCAUGCCU CAGAAUCACU GCAUUUUCAG
81 GAAUCUGCGC AUGGCUCAUU ACAUCAGACG UAAUCUGCCG CAAAAAUCUU GCGGUUUCGG CAAAAUUGGA UAACUUGGGC
161 AAACGCCAAG CUAUACAUUG AACCAACCGG GUGUUCUCCA CUCCAGACGG UGGGCAACUA UCGUCGUGAG ACGCCACGCG
241 AAUGAUAUGAC AGUAAAACCA AUGCCUUCAC UGGCAGUAAC ACCCAGCAGU GUUGACUCAA UUCAUUCGGU GCGAAAGCCG
321 GCUUGUUCGG GCGUCUUUUG ACGAACACU GCCCUAUCAG CUGGUGAUGG CCGUGUAGUG GACUGCCAGU GCGUUGACGG
401 GAGCGGGGGA UUAGGGUUGG AUUCCGGAGA GGGAGCCUGA GAAAUAGCUA CCACUUUCAC GGAGGGCAGC AGGCGCGCAA
481 AUUGCCCAAU GUCAAAACAA AACGAUGAGG CAGCGAAAGG AAAUAGAGUU GUCAGUCCAU UUGGAUUGUC AUUUCAUUGG
561 GGGAAUUAUA AACCCAUCCA AUAUCGAGUA ACAAUUGGAG GACAAGUCUG GUGCCAGCAC CCGGGUUAU UCCAGCUCCA
641 AAAGCGUAUA UUAUUGCUGU UGCUGUUAUA GGGUUCGUAG UUGAACUGUG GGCUGUGCAG GUUUGUUCU GGUUCGCCCG
721 UCCAUGUGCG AUUUGGUGAC CCAGGCCCUU GCAGCCCGUG AACAUUCAAA GAAACAAGAA ACACGGGAGU GGUUCCUUUC
801 CUGAUUUACG CAUGUCAUGC AUGCCAGGGG GCGUCCGUGA UUUUUUACUG UGACUAAAGA ACGGUGACUA AAGCAGUCAU
881 UUGACUUGAA UUGAAAGACA UGGGAUAACA AAGGAGCAGC CUCUAGGCUA CCGUUUCGGC UUUUGUUGGU UUUAAAGGUC
961 UAUUGGAGAU UAUGGAGCUG UGCGACAAGU GCUUUCCEAU CGCAACCUCG GUUCGGUGUG UGGCGCCUUU GAGGGUUUAU
1041 GUGCGUCCGG UACGAGCUCC GGUUCGUCGG GCGCUAACCG CUUUUCAACU CACGGCCUCU AGGAUUGAAG GAGGGUAGUU
1121 CGGGGGAGAA CGUACUGGGG CGUCAGAGGU GAAAUUCUUA GACCGCACCA AGACGAACUA CAGCGAAGGC AUUCUUCAAG
1201 GAUACCUUCC UCAAUCAAGA ACCAAAGUGU GGAGAUCGAA GAUGAUUAGA GACCAUUGUA GUCCACACUG CAAACGAUGA
1281 CACCCAUGAA UUGGGGAUCU UAUGGGCCGG CCUGCGGCAG GGUUUACCCU GUGUCCAGCA CCGCGCCCGC UUUUACCAAC
1361 UUACGUUAUCU UUUUCUAUUC GCUUUUACCG GCCACCCACG GGAAUUAUCU CAGCAGCUUU UCUGUUUUUU CACGCGAAAG
1441 CUUUGAGGUU ACAGUCUCAG GGGGGAGUAC GUUCGCAAGA GUGAAACUUA AAGAAUUGA CGGAAUGGCA CCACAAGACG
1521 UGGAGCGUGC GGUUUAUUUU GACUCAACAC GGGGAACUUU ACCAGAUCGG GACAGGAUGA GGAUUGACAG AUUGAGUGUU
1601 CUUUCUGCAU UCCUGAAGU GUGGUGCAUG GCGGCUUUUG GUCGGUGGAG UGAUUUUUUU GGUUGAUUCC GUCAACGGAC
1681 GAGAUAACAAG CUGCCCAUGA GAAUUCAGAA UUGCCCAUAG GAUAGCAAAC UCAUCGGCGG GUUUUACCUU UCGGUGGGCC
1761 GCAUUCGGUC GAAUUCUUCU CUGCGGGAUU CCUUUGUAAU UGCACAAGGU GAAAUUUUGG GCAACAGCAG GUCUGUGAUG
1841 CUCCUCAUUG UUCUGGGCGA CACGCGCACU ACAUUGUCAG UGAGAACAAG AAAAACGACU UUUUGCAAC CUACUUGAUC
1921 AAAAGAGUGG GGAACCCCG GAAUCACUA GACUCACUUG GAGCCGAGGA UUGCAAUUUU UGGUCGGCA ACGAGGAUUG
2001 UCUCGUAGGC GCAGCUCAU AAACUGUGCC GAUUAUGUCC CUGCCAUUUG UACACACCGC CCGUCGUGU UUCGCAUGAU
2081 GGUGCAUAC AGGUGAUCGG ACAGGCGGUG UUUUAUCCGC CCGAAAGUUC ACCGAUUAU CUUCAUAGA GGAAGCAAAA
2161 GUCGUACAA GGUAGCUGUA GGUGAACCG CAGCUGAUC AUUU

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REFERENCES

1. Messing, J. (1983) *Methods Enzymol.* 101:20-78.
2. Elwood, H.J., Olsen, G.J., and Sogin, M.L. (1985) *J. Mol. Biol. and Evol.* 2:399-410.
3. Schnare, M.N., Collings, J.C., and Gray, M.W. (1986) *Curr. Genet.* 10:405-410.
4. Sogin, M.L., H.J. Elwood, and Gunderson, J.H. (1985) *Proc. Natl. Acad. Sci. USA* 83:1383-1387.