Sequence of human 5-aminolevulinate synthase cDNA

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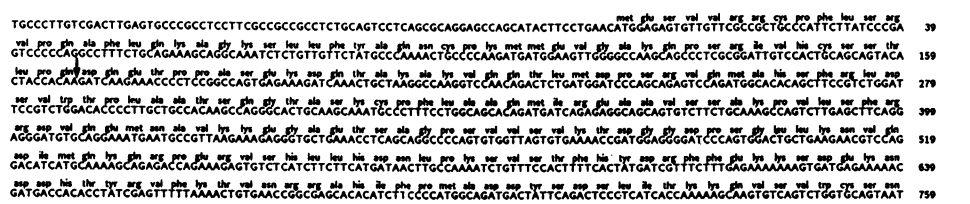
The mitochondrial enzyme, 5-aminolevulinate synthase, catalyses the first step in the heme biosynthetic pathway and is one of the few animal genes shown to be subject to end product repression (1). We have isolated 5-aminolevulinate synthase clones from a λgt10 library of human liver cDNA by cross-hybridization with a rat 5-aminolevulinate synthase cDNA clone. A comparison with the cDNA sequences of chicken (2) and rat (unpublished) 5-aminolevulinate synthases, facilitated the assignment of the correct reading frame for the human liver 5-aminolevulinate synthase precursor. The 3' untranslated region of the mRNA contains a long poly(A) tail with an AATAAA polyadenylation signal (boxed). The predicted mature protein contains 586 amino acids and has an N-terminal transit sequence of 56 amino acids (arrowed). This sequence shows strong homology with the mature protein sequences of rat (83%) and chicken (78%), but somewhat less (45%) with that of mouse (3). Similarly, the transit sequences of human, rat, and chicken share a high degree of homology (97% and 89% respectively) in the first 38 amino acids. In contrast, the mouse transit sequence bears no homology to the other three.



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