Sequence of a cDNA encoding human ribosomal protein L26 and of a cDNA probably encoding human ribosomal protein L6

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Mammalian ribosomes consist of 82 different proteins and four RNA molecules. Sequence analysis of ribosomal proteins is essential for structural and functional studies and for understanding the evolution of ribosomes (1).

In a search for genes related to non-P-glycoprotein mediated multidrug resistance in human lung cancer cell lines (2), we isolated three full-length cDNA clones corresponding to mRNAs present at lower levels in drug-resistant than in drug-sensitive cell lines. One was derived from the mRNA for ribosomal protein L7a (3). The other two are described here.

The first had a 0.8 kb insert containing a continuous open reading frame of 145 codons (Figure 1). At the DNA level this open reading frame shows 87% identity with that of rat ribosomal protein L26 (4); the amino acid sequences are identical in 143 of 145 positions (Figure 1). On the basis of this close identity, we conclude that we isolated a cDNA encoding human ribosomal protein L26.

The second had a 1.0 kb insert containing a continuous open reading frame of 288 codons. Comparison of the deduced amino acid sequence with the entries of the Swiss-Prot data base revealed a match of 15 out of 20 consecutive amino acids with the amino terminal fragment of ribosomal protein L6 of rat (Figure 2). (This is the only sequence information available for ribosomal protein L6.) The calculated molecular weight for the putative peptide encoded by the cDNA is 32,840, close to the 30 kDa reported for rat ribosomal protein L6 (5). Furthermore, the open reading frame contains a high content of basic amino acids (Arg and Lys: 24%). All these properties are in agreement with those found for ribosomal protein L6 (5). It is therefore plausible that this cDNA encodes ribosomal protein L6.

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REFERENCES

Figure 1. Longest open reading frame of putative human L26 cDNA and comparison with coding sequence for rat ribosomal protein L26 (4).

Figure 2. Comparison of the amino terminal ends of the deduced amino acid sequence of the putative human L6 cDNA and rat ribosomal protein L6.