

Nucleotide and derived amino-acid sequence of a cDNA encoding a new mouse carbonic anhydrase

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While screening a mouse (B10.HTT) liver cDNA library with a genomic probe containing B1 and B2 repetitive sequences, we isolated a cDNA clone encoding a carbonic anhydrase sequence (1). The carbonic anhydrases (CA) are zinc metalloenzymes that catalyse the reversible hydration of CO_2 (2). Indeed, 16 out of 17 residues common to all known animal sequences (1) are perfectly conserved in our sequence. Nevertheless, comparison with available carbonic anhydrase sequences does not allow us to assign this cDNA to one of the known isozymes (1). Northern blot analysis (not shown) indicates that this 'new' gene seems to be expressed only in the liver as a 20S transcript (other mouse tissues analysed were: testis, kidney, heart, muscle, lung, spleen). In vitro transcription-translation experiments (using rabbit reticulocyte lysate programmed with synthetic RNA transcribed from our cDNA clone) demonstrate the existence of a 34 kDa protein (fig. 2), which is in good agreement with the molecular weight deduced from the sequence.

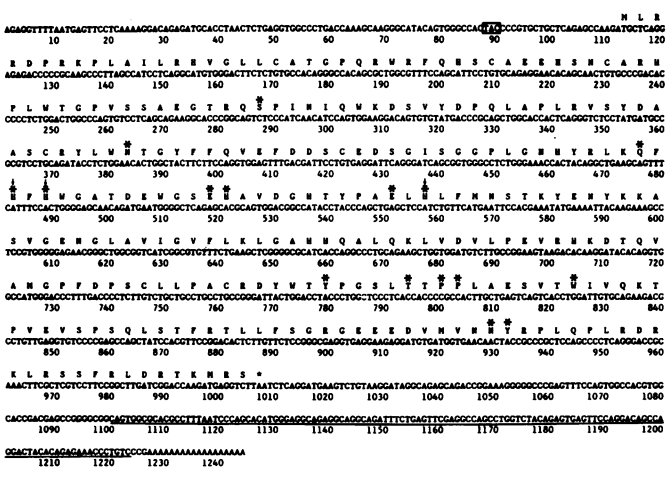

Figure 1. Nucleotide and derived amino acid sequence of a 'new' carbonic anhydrase cDNA (preliminary sequence data, named 'CAY', have been used in ref. 1). Residues common to all animal CA sequences are designate by an asterisk (including the three Zn-ligated His residues which are marked by an arrowhead). The B2 repetitive element is underlined. Note that 1) the initating methionine is preceeded by an in frame stop codon (boxed), suggesting that it corresponds to the amino-terminal end of the protein and 2) a typical poly(A) site is lacking.

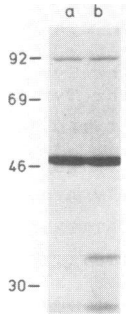

Figure 2. SDS-PAGE analysis of in vitro translation products obtained using rabbit reticulocyte lysate programmed with synthetic antisense (lane a) and sense (lane b) RNA transcribed from the cDNA clone.

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REFERENCES

1. Tashian,R.E. (1989) *Bio Essays* **10**, 186–192.
2. Tashian,R.E. and Hewett-Emmet,D. (1984) *Ann. N.Y. Acad. Sci.* **429**, 1–840.

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