Nucleotide sequence of a full length cDNA clone encoding
the deoxyribonuclease I from the rat parotid gland

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Monomeric actin interacts with bovine pancreatic DNase I with high affinity (Kb = 5 × 10^8 M^-1) thus forming a stoichiometric 1:1 complex (1). The parotid DNase I has a lower affinity to actin (5.5 × 10^6 M^-1) and exhibits no immunologic crossreactivity with the bovine enzyme (2). A parotid specific λgt11 cDNA library has been constructed and screened with a synthetic oligonucleotide sequence deduced from the amino acid sequence of the bovine pancreatic DNase I kindly supplied by Dr. D. Suck (EMBL, Heidelberg). 8 cDNA clones were isolated and the sequence of a full-length clone is shown below. The translated protein is 284 amino acids long with a signal peptide of 22 residues and an extension of the C-terminus of two amino acids compared to chemically analysed amino acid sequence of the bovine DNase I. At the amino acid level the proteins share a homology of 77%. Northern blot hybridisation indicates that the analysed sequence is a single copy gene. Interestingly, exchanges at position 13 and 67 exist between the DNase I of the bovine and rat sources (13 Asp versus Glu and 67 lie versus Val) which are known to participate in the DNase I-actin contact (3) and might thus explain the observed differences of their affinity to actin (2).

REFERENCES