PROXIMAL PART OF HUMAN TYROSINE HYDROXYLASE GENE BINDS NUCLEAR MATRIX IN TISSUE SPECIFIC MANNER

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The tyrosine hydroxylase (TH) gene encodes key enzyme in the catecholamine synthesis. Its expression is regulated in a very precise way on many levels beginning from tissue specificity. The -515/+2351 sequence of the human TH gene was computer searched (MarFinder, http://www.ncgr.org) for potential M/SARs. Three candidates for matrix binding sites were found - one in the promoter, two in the first intron. Variable number TCAT repeat creates one of intronic M/SARs. Fragment of the human DNA containing proximal 3.5 kb of the TH gene and 2.5 kb of its 5' region were cut by PstI into 5 pieces. All of them were bound in vitro by the nuclear matrix from the bovine adrenal medulla in which the TH gene is active. In contrast no binding was observed when nuclear matrices from the bovine liver (TH-negative tissue) were applied. Involvement of nuclear matrix attachments in regulation of the human TH gene and new role of its tetranucleotide repeat is postulated.