

Partial cloning of SOX-11 and SOX-12, two new human SOX genes

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Received May 6, 1993; Accepted May 10, 1993

EMBL accession nos X73038 and X73039

When first described in 1990, the most striking feature of the human sex determining gene SRY was the presence in its sequence of an ~80 amino-acid domain related to the DNA binding motif known as the HMG box (1). Since then, this motif has been shown to confer DNA binding properties on the SRY protein (2, 3), and has also allowed the description of a new class of HMG box-containing genes, the so-called SOX ('SRY-box') genes. Although many SOX genes have been now described in different species (4, 5), the function of most of them is unknown.

As a first step was cloning new human SOX genes we used a degenerate PCR approach using PCR primer sequences previously described (5) (forward primer, 5'AAGCGACCCATGAA(C/T)GCNTT and reverse primer, 5'GTACTT(G/A)TA(G/A)T(C/T)N-GG(A/G)TA). Using this strategy followed by subcloning of the PCR product into Sma I-digested pBLUESCRIPT vector, two new clones named SOX-11 and SOX-12 were isolated. Their amino-acid homology with the other human SOX genes (Figure 1) is very high. Furthermore, the 56 amino-acids of the SOX-11 sequenced so far are identical with Sox-11, a recently described murine homologue (6), and with Lf6 a bird homolog (5).

With such a high degree of homology it would now be interesting to compare the DNA binding activities of the diverse SOX proteins with that of the SRY protein. The next step will be now to search for SOX-11 and SOX-12 full length cDNAs, to define their chromosomal localization and to characterize their expression profile.

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ACKNOWLEDGEMENT

This research was supported by a grant MRE no. 92-C-0321 to PB.

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HUMANSRY :-----IVWSRDQRRK MALENFRMRN SEISKQLGYQ WKGLTEAEKW PFFQEAQKIQ AMHREKYPN

SOX-11: -----MVWSKIERRK IMEQSPDMHN AEISKRLGKR WKMLRDSSEKI PFIREAERLR LKHMADYFD
SOX-12: -----MVWSSAQRKQ MAHENFKMHN SEISKRLGAQ WKLLDEDEKR PFEVEAERLR ARHLRDYFD

SOX-4:-----SPTERRK IMEQSPDMHN AEISKRLGKR WKLLRDSSEKI PFIREAERLR LKHMADY--
SOX-5:- -----AKDERRK ILQAFPDMHN SNISKILGSR WKAMNLEQK PYYEQARLS KQHLEKY--
SOX-6: -----AKDERRK ILQAFPDMHN SNISKILGSR WKSMSNQERQ PYYEQARLS KIHLEKY--
SOX-8: -----AKDERRK LAQNFPLHN AVLSKRLGKA WKELNAAEKR PFEVEAERLR VQHLDH--
SOX-9: -----SRGQRRK MAQENFKMHN SEISKRLGAE WKLLTDAEKR PFIDEAERLR AVHMKDY--
SOX-10: -----SRAQRRK MAQENFKMHN SEISKRLGAE WKLLTESEKR PFIDEAERLR AMHMKER--

CONSENSUS:-----R-- ----P--HN ---SK-LG-- WK----- P---E--RL- --H-----

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Figure 1. Amino acid sequence of SOX-11 and SOX-12 compared with the others human SOX HMG box published so far. In the consensus sequence are denoted residues absolutely conserved in all the human SOX genes shown.

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