Isolation and analysis of chick homeobox cDNA clones

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Homeobox-containing clones were isolated from a Lambda-ZAP cDNA library derived from somites of 2.5 day old chick embryos. The clones were identified by hybridization to the homeobox-containing *Xenopus* gene *Xhox1-A* (1). Fourteen clones isolated from a screen of 3.3×10^5 plaques of an amplified library contain homeobox sequences and some are highly conserved homologues of murine Hox genes.

Sequence analysis of these clones has shown three to be highly homologous, within their homeodomains, to the murine genes A. Hox1.4 (2), B. Hox 2.4 (3) and C. Hox2.7 (Robb Krumlauf, personal communication), and we have named them accordingly A. Chox1.4, B. Chox2.4 and C. Chox2.7 (Fig. 1, homeoboxes boxed and conserved hexapeptide motif underlined). Comparison with the sequences of chick homeobox clones so far isolated by others show that Chox2.4 and Chox2.7 described here are new chick isolates while Chox1.4 has also been isolated recently by Sasaki *et al.* (4).

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REFERENCES

1. Harvey, R.P., Tabin, C.J. and Melton, D.A. (1986) *EMBO J.* 5, 1237–1244.
2. Featherstone, M.S., Baron, A., Gaunt, S.J., Mattei, M.-G. and Duboule, D. (1988) *Proc. Natl. Acad. Sci. USA* 85, 4760–4764.
3. Blatt, C., Aberdam, D., Schwarz, R. and Sachs, L. (1988) *EMBO J.* 7, 4283–4290.
4. Sasaki, H., Yokoyama, E. and Kuroiwa, A. (1990) *Nucl. Acids Res.* 18, 1739–1747.

A	Gly	Glu	Pro	Lys	Arg	Ser	Arg	Thr	Ala	Tyr	Thr	Arg	Gln	Gln	Val	Leu	Glu	Leu	Glu	Lys
	GGG	GAG	CCC	AAG	CGG	TCC	CGC	ACC	GCC	TAC	ACC	CGA	CAG	CAG	GTC	CTG	GAG	CTG	GAG	AAG
	Glu	Phe	His	Phe	Asn	Arg	Tyr	Leu	Thr	Arg	Arg	Arg	Arg	Ile	Glu	Ile	Ala	His	Thr	Leu
	GAG	TTC	CAC	TTC	AAC	CGC	TAC	CTG	ACC	AGG	AGG	CGA	CGC	ATC	GAG	ATC	GCG	CAC	ACC	CTG
B	Cys	Leu	Ser	Glu	Arg	Gln	Val	Lys	Ile	Trp	Phe	Gln	Asn	Arg	Arg	Met	Lys	Trp	Lys	Lys
	TGC	CTC	TCC	GAG	CGC	CAG	GTC	AAG	ATC	TGG	TTC	CAG	AAC	CGG	CGC	ATG	AAG	TGG	AAG	AAG
	Asp	His	Lys	Leu	Pro	Asn	Thr													
	GAC	CAC	AAG	CTG	CCC	AAC	ACC													
C	Tyr	Thr	Asp	Cys	Lys	Leu	Ala	Ala	Ser	Gly	Leu	Gly	Glu	Glu	Ala	Glu	Ser	Ser	Glu	
	AG	TAC	ACG	GAC	TGC	AAG	CTT	GCT	GCC	AGC	GGC	CTT	GGA	GAG	GAG	GCG	GAG	AGC	TCG	GAG
	Gln	Ser	Pro	Ser	Pro	Thr	Gln	Leu	Phe	Pro	Trp	Met	Arg	Pro	Gln	Ala	Ala	Ala	Gly	Arg
	CAG	AGC	CCT	TCT	CCG	ACC	CAG	CTT	TTC	CCC	TGG	ATG	CGA	CCG	CAA	GCA	GCC	GCT	GGA	CGG
C	Arg	Arg	Gly	Arg	Gln	Thr	Tyr	Ser	Arg	Tyr	Gln	Thr	Leu	Glu	Leu	Glu	Lys	Glu	Phe	Leu
	AGG	AGG	GGG	AGG	CAA	ACC	TAC	AGC	CGC	TAC	CAG	ACG	CTG	GAA	CTG	GAG	AAG	GAA	TTT	CTA
	Phe	Asn	Pro	Tyr	Leu	Thr	Arg	Lys	Arg	Arg	Ile	Glu	Val	Ser	Arg					
	TTT	AAT	CCC	TAC	CTG	ACC	CGC	AAA	CGG	AGG	ATC	GAG	GTC	TCG	CGT					
C	Met	Lys	Glu	Ser	Arg	Gln	Asn	Ser	Lys	Gln	Lys	Ser	Ser	Ser	Pro	Ser	Thr	Glu	Thr	Cys
	ATG	AAA	GAA	TCG	AGG	CAA	AAC	TCG	AAA	CAG	AAA	AGC	AGC	TCC	CCT	AGC	ACA	GAA	ACC	TGC
	Ser	Gly	Glu	Lys	Thr	Pro	Pro	Gly	Ser	Ser	Ala	Ser	Lys	Arg	Ala	Arg	Thr	Ala	Tyr	Thr
	AGC	GGC	GAG	AAA	ACG	CCT	CCA	GGC	TCC	TCG	GCC	TCC	AAG	AGA	GCC	CGC	ACA	GCT	TAC	ACC
C	Ser	Ala	Gln	Leu	Val	Glu	Leu	Glu	Lys	Glu	Phe	His	Phe	Asn	Arg	Tyr	Leu	Cys	Arg	Pro
	AGC	GCG	CAG	CTG	GTG	GAG	CTG	GAG	AAG	GAA	TTC	CAC	TTC	AAC	CGC	TAC	CTG	TGC	CGG	CCC
	Arg	Arg	Val	Glu	Met	Ala	Asn	Leu	Leu	Asn	Leu	Ser	Glu	Arg	Gln	Ile	Lys	Ile	Trp	Phe
	CGG	CGC	GTG	GAG	ATG	GCC	AAC	CTG	CTG	AAC	CTC	AGC	GAG	AGG	CAG	ATC	AAG	ATC	TGG	TTC
C	Gln	Asn	Arg	Arg	Met	Lys	Tyr	Lys	Lys	Asp	Glu	Lys	Ser	Lys	Gly	Met				
	CAG	AAC	AGG	AGG	ATG	AAG	TAT	AAG	AAA	GAT	GAG	AAG	TCA	AAA	GGG	ATG				

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