

Conserved structural motifs among mammalian *junB* genes

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We cloned a rat genomic DNA fragment containing the *junB* gene from a liver library using a mouse *junB* cDNA (1) as a probe and determined the nucleotide sequence. At the nucleotide level, the rat and mouse *junB* sequences showed 92% homology in the 5' promoter region, 98% in the open reading frame, and 96% in the 3' untranslated region. The predicted amino acid sequences of rat *junB* share 99.5% and 95.3% identity with those of mouse (1) and human (2, 3) counterparts, respectively (Figure 1). The product of *junB* gene forms a homodimer or heterodimers with the products of other members of *jun* and *fos* family genes (4, 5). These complexes regulate transcription of their target genes by binding to specific DNA sequence, TGAC/GTCA (4, 5).

The expression of the *junB* gene is induced by serum, growth factors and tumor promoters (TPA) (1, data not shown). The inverted repeat (IR) element between -91 and -44 can mediate induction by TPA and Protein kinase A (6). This *cis*-regulatory element, in addition to G-C rich region, CAAT box and TATA box are also conserved among rat, mouse and human *junB* promoters (Figure 2). The expression of the *junB* gene is also induced by the product of adenovirus type 5 E1A and the growth factors such as EGF, FGF and IL6 (data not shown). This high degree of similarity of the promoter region and the coding sequences further corroborates the previous finding that the function of *junB* gene product is conserved in vertebrates (2, 7).

Rat	MCTKMEQAFYHDDSYAAAGYGRSPGSLSLHDYKLLKPTLALNLADPYRGL ⁵⁰
Mouse	.....P.....L.....
Human	.....P.....T.T.....A.G.....S.....
Rat	KGFGARGPGEPSGAGSYFSGQSDTGASLKLASTELERLIVPNSNGVIT ¹⁰⁰
Mouse	.....
Human	..A.....G.G.....S.....
Rat	TTTPPPGQYFYPRGGSGGGT---GGVTEEQEGFADGFVKALDDLQKMN ¹⁵⁰
Mouse	.....H.....
Human	.....AGGA.....H.....
Rat	HVTFPNVSLGASGGPQAGPGGVYAGPEPPVYTNLSSYSPASAPSGSGT ²⁰⁰
Mouse	.....
Human	.....T.P.....S.A.A
Rat	AVGTGSSYPTATISYLPHAPPFAGGHPAQLGLSRGSAFKEEPQTVPEAR ²⁵⁰
Mouse	.....
Human	.....T.....G.T.....
Rat	SRDATPPVSPINMEDQERIKVERKRLRNLAATCKRKRKLERIARLEDKV ³⁰⁰
Mouse	.....
Human	.....
Rat	KTLKAENAGLSAAGLLREQVAQLKQKVMTHVSNQCQLLGVKGHAF*344
Mouse	.....344
Human	.....T.....347

Figure 1. Amino acid sequence of rat *junB* and its comparison with mouse and human *junB*. Nonidentical residues are indicated.

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Rat	-101 TAGGAGGGGGCCCGGGGGCCCTGGCTCCCGCGTCCGCCAATCGGAGTGCAC ¹
Mouse	-102G.....
Human	-98 G.....G.....C.....G.A.....C.....
Rat	-50 TCCGCAGCTGACAAATTCAGTATAAAATGCTTGGGGCTGGGGCCGAACA-CT ⁺¹
Mouse	-50 .....G.....
Human	-46 .....TG.....T.GCG.G.....GGCG...T...CA...T.G.GG..

Figure 2. Comparison of promoter region of *junB* genes. The following regulatory elements such as G-C rich region, IR (6) and CAAT and TATA boxes were indicated as open squares and underlines, respectively. The major transcription start site, which was determined by comparison with that of the mouse gene (1), was assigned position +1. Differences among the species are indicated (1, 2, 6).

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