

## Nucleotide sequence of a human 5S rRNA gene

Pernille Dissing Sørensen, Henrik Simonsen and Sune Frederiksen

Department of Biochemistry B, Panum Institute, University of Copenhagen, Blegdamsvej 3C, DK-2200 Copenhagen N, Denmark

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A gene for human 5S rRNA has been cloned and sequenced. The gene was isolated on a 638 bp fragment (Fig. 1) from human placenta DNA by digestion with BamHI and SacI and cloning into a Bluescript M13 plasmid. A <sup>32</sup>P-labelled SP6-transcript of a mouse pseudogene was used as a probe. The fragment has a restriction pattern identical to the pattern of the majority of human 5S rRNA genes, which are found in tandem repeats of 2.3 kb (unpublished results). The gene is transcribed in a HeLa cell extract. Comparative sequence analysis reveals only limited homologies to flanking regions of other eucaryotic 5S rRNA genes. In Fig. 2 is shown the comparison to position -1 to -60 of a hamster 5S rRNA gene (1) and the *Xenopus laevis* somatic and oocyte 5S rRNA genes (2, 3). The A and G at positions -15 and -14, which are conserved between human and *Xenopus*, is part of a *Xenopus* element suggested to bind an upstream stimulatory factor (4).

### ACKNOWLEDGEMENTS

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1  GGATCCAAAACGCTGCCCTCCGCGACAGGGCCGGAGGACCGGAGGGCGTCCCAGGATCGTGGGCCCTGGGCCCTGACGCCCTCGGAGCACTCC
91  CTGCTCCGAGCGGGCCCGATGTGGTGGAAAGCTCGGGAGCGCGGGAGCCCGGGGGAAGGCCGCGGGGCAAGCCGTGGGGGTCCCCGATCCGAG
181  CCCCAGGGCCCGGGCTGGCGGTGTGGCTGCAATCCGGCGGGCACGGCCGGGCGGGGCTGGGCTCTTGGGGCAGCCAGGGCCCTCCTTC
271  AGCGTCTACGGCCATACCACCCTGAACGCGCCCGATCTCGTCTGATCTCGGAAGCTAAGCAGGGTGGGGCTGGTTAGTACTTGGATGGG
361  AGACCGCCTGGGAATACCGGGTGTGTAGGCTTTTCTTTTGGCTTTTGTCTTTCTTTCTTTCTTTCCAGACGGAGTCTCGCCCTGTC
451  GCCCAGGCTGGAGTGCAGTGGCGCCATCTCGGCTCACTGCAAACTCCGCCCTCCGGGTTACGCCATTCCCAGGCTCAGCCTCCCGAGT
541  AGCTGGGCTACAGGCGCCCGCCACCACGCCCGGCTACTTTGTTCTATTTTCTTAGAGACGGGCTTTCACCCTGTTAGCCGGGATGGTC
631  TGGAGCTC

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Figure 1. Nucleotide sequence of the cloned fragment. The 5S rRNA gene is underlined.

	-60	-50	-40	-30	-20	-10
Hum	GCAATCCGGCGGGCACGGCCGGGCGGGGCTGGGCTCTTGGGGCAGCCAGGGCCCTCCTTCAGC					
Ham	G C GGCGGGC G C G G G				GG C G C CC C C	
Xls	GCA G G GC GGCC G G G				GG AG C C T C	
Xlo	CA T C G CG G G				G C AG C TTCA C	
Xlt	GCA T AC CG GG C GGC AG C CTTCA C					
Ham*	GC GGCGGGC G G GC G			GGCTCTTGGGGC GC GCG C C C GC		
	(-60)	(-50)	(-40)	(-30)	(-20)	(-10)

Figure 2. Sequence homology between 5' flanking regions of the human 5S rRNA gene, a hamster 5S rRNA gene (1) and *Xenopus laevis* somatic, oocyte and trace oocyte 5S rRNA genes (2, 3). The asterisk indicates that the 5'-flanking region of the hamster sequence has been shifted four nucleotides relative to the human 5S rRNA gene sequence.