Sequence of the human GATA-1 promoter

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The hematopoietic-specific transcription factor GATA-1 participates in control of erythroid-expressed genes (1) and is required for erythroid development in vivo (2). Recently Nicolis *et al.* (3) reported human GATA-1 gene promoter sequences. Homology to mouse GATA-1 sequences (2) was noted only in the proximal promoter and in an upstream region containing a double GATA-site implicated in autoregulation (4). Their sequence of the human GATA-1 promoter differs from that we have obtained with respect to the omission of 121 bp, which display substantial similarity with the mouse (Figure 1, bracketed region). Confirmation that this region is indeed part of the promoter was achieved by PCR (Figure 2) using two independent human GATA-1 genomic clones (lanes 1, 2, 8, 9) and total human DNA samples (lanes 3–7). The revised human promoter sequence brings the two mammalian sequences into closer alignment (Figure 2), and predicts strong functional similarities between human and mouse GATA-1 regulatory regions.

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H1GATA-1  TCTTATCCCAATGCTCTGGAGCTCCGAGGGAGTCCAGCTGTGGGTGTCACTTACGTTCCCGGCTCTAACGTAGTA -795
H2GATA-1  TCTTATCCCAATGCTCTGGAGCTCCGAGGGAGTCCAGCTGTGGGTGTCACTTACGTTCCCGGCTCTAACGTAGTA -786
H3GATA-1  TCTTATCCCAATGCTCTGGAGCTCCGAGGGAGTCCAGCTGTGGGTGTCACTTACGTTCCCGGCTCTAACGTAGTA -786
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H100GATA-1 TCTTATCCCAATGCTCTGGAGCTCCGAGGGAGTCCAGCTGTGGGTGTCACTTACGTTCCCGGCTCTAACGTAGTA -786

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Figure 1. Sequence comparison between the murine and human GATA-1 promoter. The bracketed region indicates the region which is not present in the sequence reported by Nicolis *et al.* (3). PCR primers (A, B, C) used for analysis in Figure 2 are indicated with arrows. Sequences are numbered with the end of exon-1 as position -1, as in ref. 4.

Figure 2. PCR products using specific primers to the human GATA-1 promoter after electrophoresis through a 2% agarose gel stained with ethidium bromide. Lanes 1–7: primer pair A and B; lanes 8, 9: primer pair A and C. DNA Templates: lanes 1, 8: cosmid containing human GATA-1 gene; lanes 2, 9: plasmid subclone containing human GATA-1 promoter; lanes 3–7: normal human DNA samples. Predicted PCR products are 290 and 360 bp from primers A + B and A + C, respectively. M = pBR322 DNA digested with HinfI. Blank lanes represent control PCR reactions without DNA template.

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