

A mouse Ulb-2 gene with extensive sequence similarity to a rat Ula gene for 670 nucleotides 5' to the gene

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We previously reported the isolation of two mouse Ulb-2 genes (1). We have completed the sequence 930 nucleotides 5' of the Ul.1 gene and 600 nucleotides bases 5' of the Ul.2 gene and find they are identical. In the figure we compare this sequence with the sequence 5' to one of two rat (R) Ula genes (Ul6-6B; ref. 2), which are present in a similar inverted orientation. The *'s mark nucleotides that differ and the dashes mark deletions or insertions.

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M -890 G C C C T G G C A T G C C T G G G G C T G T T C T G C T T T T C T C A G T C T C A G G C C G G G C A G T G R G C T C T T A A C C A C A C A A A T T A C A A T A T T T A T T T T T C T C A C A T G A G T C A C A G A G G T C A C A T
M -810 T C C C G A G C C T G G C C T A A A G G T A G A A T T T T G C T T T A T A T T T T C A C A G A C A C C A T T A T T A T A T G T T G A G G C A C A C T G T T C A G A G C C T G A A G A T A G T C G T C T G A G C C A T C
R -690 T C C C A A T C C C G A A C T A A C T G C T G T G A G C C A T C T C C A A T C C C G A A C - - - - - A T G T G C A C C A C A C A C T G T G C T G C T C T C A C A C A C T T T T T A A A A A A T A T T - - - - - A T T A T T A C T C T G T G C A T
R -610 G A C - - - - - T G T T T T G C T T C A T G T G T G T G C G G C A C - - - - - A T G T G C A C C A C A C A C T G C T G C T G C T G A A G C T G A A G G A G T G G T A A C C C T C C A T G T G G A T G C T T G A A G G A A T G A C C C G - A G T T L
M -588 G A G G C T G T T T T C - C T T C A T G T G T G T C A C C A C A C A T G C T A T - - - - - G C T - A A G A A G T G G T A A C C C T C C A T G T G G A T G C T - G G A A - - - - - C G T A G G T C
M -499 T T T G C A A C G A G A - - - - - G G A A C C A A G T C T C A G G C C T A G T A T A G T A A A C C T T C A G A G C A C A A T T T T T C T A C T T G G A A G T T T C T G C A T C A G A T C A G C A G C
M -501 T T - G C A A T G A A G T C C T T G C T C T A A C T A C T G A A C C A A C T C C C C G C C T - - - - - A T A A G T A A A T C T T C A G A G C A C A A T C A T C A T T A T C A C T T C - A A G T T T C - C T G C A T C A G A T C A G G C A G C
R -396 C G G A G C - - - - - C A C A C G G A T A C C C C C C C C T C C C T C C A A A G G G G A A A A A T A A G G A T C A G G T G A A A A T G C T T G A A A T T A C A A T C G T A G A C T A C A A C A A A A G A A T C C G A A G G C G G C C A G G
M -388 T G G A G C A G A G C T A C A C G G T T A C C C C C - T C C T C C - - - - - C A A G G G G - - - - - A A A A T A A G G A T C A G G T G A A A A T G T T G A A A T T A C A - T A G T A G A A T A A A G A A A G A T A T G A A G G C G G C C A T G
M -281 A A G G G C C A G A A A G A T A G A T A C C A G A C G T C A T C T T G A A G T C A C G G - T C C T G G C G T G G C T A T G C A G A T G A G C G G C G C G A G G G T C C C G G G T C C G C T C T G C G A A A C C G G A G G G
M -275 A A G G G G T A G A A A G T A G A T A C C A G C A G G C T A C T C - T G A T G T C A C G G G T A - T G G C G T G G T G T A T G C A A T A A G C G - - - - - C G C A G G G T C T C C G G G C C G T C C G T C C G T A G A A A T G T G A G G
R -162 A T T T C G T - - - - - C G C G G C C A G G A A G G G A G C C G G G T C C G G G T G T C A G A G G A G C A C - A G G - T A T G C C A A T A G A C A G G G G T G G T A T G G C A T C G T C T G A C T T A G C T T A G T G A C C C G T C - G T T A A
M -160 G T T T - C T C C C T C G G C G A G G A G G G A G C G G A T A G C - - - - - G T G T A C C A G A G C C A A G A A T G T - - - - - T G T G C A C A G G G G A C C C A G A T C G G C A G G T A A B T A A B T A C C C G T C T T T T A A
R -47 G A G T G G A G T G G C G G C T C C G - T G A G T C G G G C T G T G G G T A G A A A A A G A T A C T T A C C T G G C A G G G G A G A T A C C A T G A T C A T G A A G G T G G T T T T C C A G G G C A G G C T A T C C A T T T G E A C T
M -48 G A G T G T A G C G C C A G G T G A T G A C C C G G G C G G G A C T G G G A A A A G C A T A C T T A C C T G G C A G G G G A G A T A C C A T G A T C A T G A A G G T G G T T T T C C A G G G C A G G C T A C C C A T T T G C A T
M -48 G C C G G - A T G T G C T A C C C C T G G G A T T T C C C A A A T G C G G G A A A C T C G A T C A A A T T T G T G T A G T G G G G A C T G G T T C G C G C T C T C C C T G
M -78 G T T G G G G T G C T G A C C C C T G C G A T T T C C C A A A T G C G G G A A A C T C G A T C A A A T T T G T G G T A G T G G G G A C T G C G T T C G C G C T C T C C C T G
R +1 G C A T T T C T G G A T G A G A A A G T A A G A G T T T C T A A G C T G T C T G C C G T T T G T C A C C T T T G G C G C T A
M +1 A T T T T T G T G T C T A - A A A B T A B A T G C A T T C T G C T C T C T C A T G T C T T T A C A T G T T G T T T G
    
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Salient features. There is about 85% similarity between the two sequences for 670 nucleotides 5' to the gene, with the exception of a region close to the gene (-6 to -120) which is much more divergent. The conserved regions in all mammalian Ul genes are underlined (1,3). This sequence is very similar (98%) for the 350 nucleotides 5' to a mouse Ulb-2 gene reported by Howard et al. (3) and differs from the mouse Ulb-6 and Ula-1 genes (3). The rat and human do not contain Ulb RNA while the mouse and hamster do (4). These results suggest that the Ulb genes which were presumably present in the forebears of the rat underwent gene conversion with the coding sequence of the Ula gene and that the rat Ula gene compared here may be the result of that gene conversion.

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