Sequence and structure of U5 snRNA from *Schizosaccharomyces pombe*

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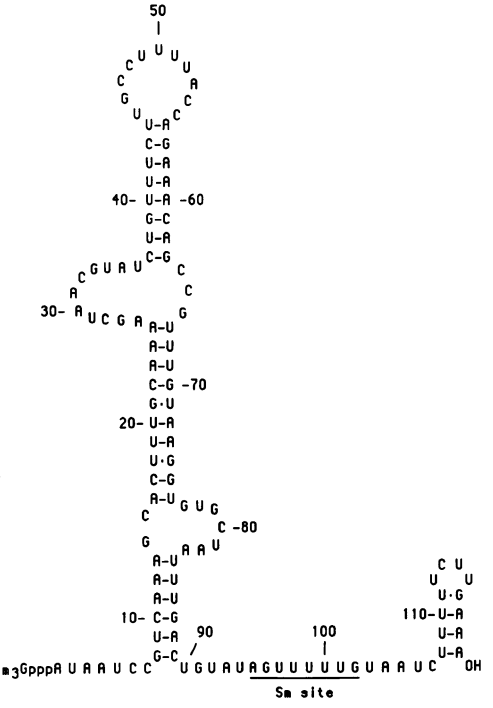
U5 small nuclear RNA is part of a ribonucleoprotein particle which recognizes the 3' splice site during pre-mRNA splicing (1,2). We determined the primary structure of the first 38 nucleotides of the S. pombe homolog by primer extension RNA sequencing (3) using U5a, a 13-mer complementary to the only highly conserved region of the RNA (4). Based on this data, an oligonucleotide complementary to residues 6-28 was synthesized and used to isolate a gene encoding U5 from a fission yeast genomic library (5). Southern blot hybridization indicates that the U5 locus, designated snu5, is present at single copy in the S. pombe genome (data not shown).



The figure depicts the sequence and proposed secondary structure of fission yeast U5. This RNA can fold into a structure similar to those of homologous RNAs from other organisms, consisting of a long compound helix near the 5' end and a short 3'-terminal stem-loop separated by a single-stranded stretch containing the Sm binding site. The 3' stem of the S. pombe RNA is shorter by several base pairs than that of any previously identified U5; this structure appears to be dispensable in budding yeast U5 (4). Fission yeast U5 lacks stem-loop I.1 (4) present in the S. cerevisiae homologue, but does contain at the same position several extra nucleotides relative to mammalian U5. S. pombe U5 contains all of the major conserved primary sequence elements present in the U5 cnsensus derived by Guthrie and Patterson (4); however, it lacks certain minor features previously thought to be universal, thereby reinforcing the status of this snRNA as the least conserved among the spliceosomal species. We note also that the Sm site of S. pombe U5 deviates from the consensus in that the run of U's is immediately preceded by a G rather than an A, as in U2 snRNA from this organism (6).

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