Volume 16 Number 23 1988 Nucleic Acids Research

The U6 small nuclear RNA from *Trypanosoma brucei*

Christian Tschudi, Adrian R.Krainer[1] and Elisabetta Ullu

Yale MacArthur Center for Molecular Parasitology, Department of Internal Medicine, Yale University School of Medicine, 333 Cedar Street, New Haven, CT 06510 and [1]Cold Spring Harbor Laboratory, PO Box 100, Cold Spring Harbor, NY 11724, USA
Submitted October 24, 1988 Accession no. X13017

A genomic library of Trypanosoma brucei gambiense (1) was screened with 3' end labeled small RNAs purified by immunoprecipitation with the mouse monoclonal antibody K121 against the 2,2,7-trimethylguanosine cap structure. DNA sequencing and computer analysis (2) of the relevant coding regions revealed that one of these genes codes for the trypanosome U6 small nuclear RNA which is 98 nucleotides in length. Comparison of the trypanosome U6 with that of yeast (3) and rat (4) reveals about 54% and 62% identity, respectively. Most of the differences are located in the 5' and 3' third of the molecule. Comparing the middle third of the RNAs, the homology between the trypanosome and the yeast and rat U6 RNA increases to 70% and 78%, respectively.

```
          1                 10          20          30          40          50
          .                 .           .           .           .           .
yeast     GTTCGCGAAGTAACCCTTCGTGG--ACATTTGGTC-AATTTGAAACAATACAGAGATGATCAGCA
          *   **          ***** **  ****        ** * ****    ******* *** ****
tryp      GGA-GCC--------CTTCGGGG--ACATCCAC--AAACTGGAAATTCAACAGAGAAGATTAGCA
          *   ***         ******    ****  **  *** *****     ****************
rat       GT--GCCTG------CTTCGGCAGCACATATACTAAAATTGGAA-CGATACAGAGAAGATTAGCA

                60          70                80          90
                .           .                 .           .
yeast     GTTCCCCTGCATAAGGATGAACCGTTTTACAAA----GAGATTTATTTCGTTTT
           *  ******  **** ***   **    ***     ****  ***  *
tryp      CTCTCCCTGCGCAAGGCTGAT--GT----CAATCTTCGAGAGATATAGCTTT
              ************ ***   *     ***  **** **    *  *
rat       TGGCCCCTGCGCAAGGATGACACG-----CAAA-TTCGTGAAGCGTTCCATATTTT
```

Fig. Nucleotide sequence of the trypanosome U6 snRNA and comparison with yeast (3) and rat (4) U6 snRNA. Gaps were introduced to obtain an optimal alignment and asterisks denote homology between trypanosome U6 RNA and the yeast or rat molecule, respectively. The sequences are numbered with respect to the first nucleotide of the trypanosome U6 RNA.

References

1. Tschudi, C., Young, A.S., Ruben, L., Patton, C.L. and Richards, F.F. (1985) Proc.Natl.Acad.Sci. USA, 82, 3998-4002.
2. Devereux, J., Haeberli, P. and Smithies, O. (1984) Nucl. Acids Res., 12, 387-395.
3. Brow, D.A. and Guthrie, C. (1988) Nature, 334, 213-218.
4. Epstein, P., Reddy, R., Henning, D. and Busch, H. (1980) J.Biol.Chem., 255, 8901-8906.