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determination of sequences in RNA

G. G. BROWNLEE

DETERMINATION OF SEQUENCES IN RNA

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Dedicated to my mother

Determination of sequences in RNA

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Preface

The aim of this monograph is to survey the methods that have recently been developed for the determination of the sequence of small RNA molecules. I have attempted to give the necessary experimental details for a reader to reproduce these methods in the laboratory and apply them to his own particular sequence problem. The chapter on electrophoresis equipment and technique will, I hope, be especially useful to those envisaging setting up the equipment for sequence determination. In this book, I have covered both the classical methods and the newer radioactive methods. However, my emphasis is naturally towards the latter as it is with these methods that I am most familiar. The recent spate of reports in scientific journals of the sequence of various transfer RNA molecules by radioactive methods have shown that this is a powerful and rapid approach. However, here I have not concerned myself with discussing the results of sequence work and they are only discussed in so far as is necessary to illustrate the methodology of sequence determination. Nor is any reference made to the methods of sequence determination of DNA, in which there has been less progress than with RNA. At the time of writing the longest known RNA sequence is that of the 6S RNA determined by the radioactive approach. It is certain, however, that larger sequences will be established by using these methods. Perhaps we may conjecture that the time will not be too distant when we may know the entire RNA sequence of the ribosome.

List of abbreviations

(excluding those defined in appendix 1 and table 7.2, p. 205)

tRNA	Transfer RNA.
rRNA	Ribosomal RNA.
mRNA	Messenger RNA.
G*	Unknown derivative of guanosine.
Py	Any pyrimidine nucleoside.
Pu	Any purine nucleoside.
R_u	Chromatographic or electrophoretic mobility of an unknown compound relative to uridine 2′(3′)-phosphate = 1.00.
P_i	Orthophosphate.
P-RNase (RNase A)	Pancreatic ribonuclease.
T_1-RNase (RNase T_1)	Takadiastase T_1 ribonuclease.
T_2-RNase (RNase T_2)	Takadiastase T_2 ribonuclease.
U_2-RNase (RNase U_2)	Ustilago U_2 ribonuclease.
DNase	Pancreatic deoxyribonuclease.
mA	Milli-ampères.
C	Curie.
dpm	Radioactive disintegrations per minute.
p.f.u.	Plaque-forming units.
u	Units.
EDTA	Ethylenediaminetetraacetic acid.
Tris	Tris-(hydroxymethyl)-aminomethane.

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