

RNA Polymerase and the Regulation of Transcription

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Edited by W.S. Reznikoff, R.R. Burgess, J.E. Dahlberg, C.A. Gross, M.T. Record
and M.P. Wickens

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The RNA polymerases are central to the selection of genetic information from DNA. This crucial role is reflected in the structural complexity of these enzymes in both the bacterial cell and the eukaryotic nucleus. In part it is this very complexity that has made the elucidation of the molecular interactions involved in the initiation, elongation and termination of transcription such a fascinating and unyielding problem in biology. This volume reports the proceedings of the first major meeting in a decade to be devoted, almost in its entirety, to RNA polymerases. The result is a collection of papers which together provide a comprehensive and impressive overview of the subject and point the way towards future directions of research.

This is not, however, a volume for the uninitiated. It is a weakness of compilations from meetings that contrasting conclusions can be drawn in different papers without adequate cross-referencing. One example of this in the present volume are two articles (McClure and Hoopes; Bujard et al.) which, on the basis of *in vitro* results, suggest that variations in the concentration of active RNA polymerase molecules in the bacterial cell could regulate the differential rate of transcription initiation from different promoters *in vivo*, whereas a third article (Nomura et al.) concludes that this mode of control does not apply to the rRNA transcription units. In my view the scientific utility of this type of volume would be greatly increased by an objective review article that brings

together the disparate strands of evidence presented and highlights unresolved questions. In the complex world of RNA polymerase such a device would have been invaluable.

The other disadvantage of symposium volumes is the occasional lapse from scientific rigour. In the present volume there are perhaps three articles whose conclusions are not supported by the data presented. Indeed, in one case the experimental evidence points to the opposite conclusion from the one drawn by the authors. Whilst the value of symposium volumes must be related to the rapidity of publication I believe that greater editorial vigilance should be a *sine qua non* for publication.

Nevertheless these caveats are minor matters in the context of the book as a whole. There are many impressive articles and careful reading reveals hidden nuggets of significant information. The way forward – in fields as diverse as the three-dimensional structure of promoters, the physical chemistry of RNA polymerase and the molecular mechanism of eukaryotic transcription initiation – is well pointed. The editors – and organisers – are to be congratulated on producing a compilation that will be a standard reference work for hopefully the next decade. There is no doubt in my mind that this volume is essential reading for all who study transcription – in whatever organism – and, as such, should be found in every relevant library.

Andrew Travers