

Seventh Symposium on the Chemistry of Nucleic Acid Components

Nucleic Acids Symposium Series No. 18

IRL Press; Oxford, 1987

294 pages. £ 29.00, \$ 55.00

Bechyně Castle, set in romantic Southern Bohemia, has become the preferred location for the well-established, triennial Symposia on 'The Chemistry of Nucleic Acid Components'. There, East European meet Western chemists (Brits in characteristic short supply) with a leavening of visitors from Japan and North America. This volume presents some seventy articles based on lectures delivered at the Seventh Symposium, held in September 1987 and organised under the able Chairmanship of Anton Holý. (As an optional supplement to the Journal 'Nucleic Acids Research', it will unfortunately be bypassed by some library subscriptions). Short talks are the norm, so these articles are uniformly brief, being 4 ± 1 pages long with the majority originating in Eastern Europe.

Much of the work described in nucleoside chemistry seems to have been spurred on by a Jason-like search for the 'Golden Fleece', which has here taken the shape of an improved antiviral agent which might possibly outperform AZT or Acyclovir and so free its inventor of the chores of Grant Applications for life! There are few signs of success here, though there is a good contribution from the Prague team on phosphonmethoxy derivatives of acycloadenosine species which have promising activity against herpes and adenovirus (Holý). For the rest, I noted predictable studies on new protecting groups, rather classical work on enzyme inhibition by nucleoside analogues, and some accurate NMR and MS work from the industrious Uppsala group (which comfortably takes the prize for the largest number of papers).

I found the standard of both chemistry and writing improved in the nucleotide contributions. One of the most readable articles is generous in devoting previous space to discussing the rationale

of H-phosphonate diester chemistry (Strömberg en Stawinski). Though there is much present use of this and phosphoramidite technology, a timely reminder that we are far from understanding the essentials of phosphotriester chemistry appears in a stereochemical study of 3'-5'-cyclic nucleotide formation (Stec). I might have expected to read more on new developments in oligoribonucleotide synthesis. It is true some are there (Happ, Markiewicz, Pfeleiderer), but it felt a little like reading 'Rosenkranz and Guildenstern', with the real action taking place elsewhere.

Large molecules are no longer the hardest to make, but studies on their behaviour remain proportionately stimulating. Four highlights from this area are all linked to phosphodiester cleavage problems in nucleic acids. The use of a synthesis deoxynucleotide as a DNA 'splint' gives RNase H a valuable site-specificity for cleavage of oligoribonucleotides (Ohtsuka). Selective *S*-alkylation of phosphorothioate residues in DNA and RNA is creatively applied to devise a new sequencing method (Eckstein). A useful study of the mode of action of the *MvaI* restriction enzyme says something about how it works and what changes it can tolerate (Cech and Kubareva). Lastly, the self-splicing behaviour of *Tetrahymena* RNA is illuminated by insertion of thiophosphate residues at and near the splice sites (Potter).

The production is generally good, though some of the dot-matrix Mss are hard work and one or two authors clearly never intended their diagrams to be read without a magnifying glass! IRL Press did the whole job in a couple of months from the end of the Meeting – necessarily so, since many of these articles will be (or are already) in print elsewhere. That is one of the three, major, typical, shortcomings of such books: the other two being

the lack of editing and refereeing and the shortage of (space for) hard data. Some of the claims made here are not likely to be substantiated elsewhere!

Overall, the volume is a good browse for the skeptical chemist and gives an interesting, if tran-

sient, 'spy satellite' picture of what's going on in nucleic acid chemistry in Europe. If your library doesn't subscribe to these NAR Supplements, it should!

G.M. Blackburn

DNA Cloning-A Practical Approach (Vol. III)

Edited by D.M. Glover

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This volume of the DNA Cloning series describes a further set of techniques essential to the analysis of the structure, regulation and expression of genes. The 10 chapters in this book deal broadly with the handling of large pieces of DNA in cosmids, the expression of genes in heterologous systems and purification and analysis of the resulting proteins, and finally, the introduction of DNA into mammalian cells.

All of the chapters in this book presume a basic knowledge of cloning which has allowed each of the contributors to provide the degree of experimental detail necessary for the reader to use this book as a teach-yourself manual. In contrast to many cloning manuals this book describes the fundamental steps of procedure without neglecting to include those small details which can be the difference between success and failure. For example, in the chapter on the use of phage encoded RNA polymerase promoters the authors provide a strong argument against the widespread use of UTP as the radiolabelled nucleotide, pointing out that CTP is a much better choice for the production of full-length RNAs.

The first three chapters of the book deal with the analysis of large pieces of genomic DNA in cosmids. Although chapter 1 is largely devoted to the manufacture of RNA probes this fits into this section because of the use of the SP6,T7 and T3 promoters in chromosome walking. The role of cosmids in walking along chromosomes is clearly

outlined and the manner in which genetic recombination can simplify screening procedures is dealt with in depth. The following four chapters deal with the expression of eukaryotic genes in prokaryotic and yeast cells. Recovery, rather than production, of bacterially synthesised proteins is frequently a major problem and this is addressed by means of a series of examples. This theme is extended in chapters describing how antibodies can be raised to the non-bacterial portions of fusion proteins and how yeast can be used as an alternative system for solving problems of expression which were intractable in bacteria. The middle and final sections of the book are neatly linked with a chapter on expression of genes in mammalian cells using vectors with amplifiable sequences, and this is followed by a chapter on the use of retroviruses and how to make transgenic mice. In this final chapter the authors have included clear photographic material to help describe the surgery necessary to remove and implant eggs. They have also taken the space to address the problems of animal welfare and legal requirements which must be fulfilled before transgenic technology and be undertaken.

Throughout, this book is clearly illustrated and well referenced and will become as common in cloning laboratories as the two previous volumes.

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