
Book Reviews

Broda, P.: Plasmids.

Oxford, San Francisco: Freeman 1979. 197 pp., 26 figs. Hard bound £ 6.90.

It is a pleasure to go through this book as it written by one author, a man who is actively involved in plasmid research. This has resulted in a work being presented as a unity and devoid of the repetitions characteristic of a collection.

In such a rapidly evolving field as plasmid biology, it is important for the newcomer, as well as the specialist, to have a summary of actual knowledge as well as a condensed history of plasmid research at his disposal. The different chapters correctly stress the highlights in the field and particular care is taken to give ample references to the original literature.

The isolation and sizes of plasmid molecules is discussed first (Chapter 2). For the real preparative methods, the author outlines the rationale behind the different procedures and points out the molecular biology principles which each are based on. The author does not take the risk of promoting one method over the other, since it is good practice to test (and retest) several methods for individual cases. Trivial strain differences or mutations may very well lower the yield of a current method sufficiently to urge a shift towards another procedure.

The importance of methods allowing rapid screening for the presence of plasmids is referred to and six such procedures are indicated in Table 2.3, without discussing their respective merits.

Since the publication of this book several other methods have appeared, one important for the study of extra large plasmids (350 Md) (Casse et al. 1979: J. Gen. Microbiol. 113, 229-242) and another for the isolation of small amounts of plasmid cloning vectors (Klein et al. 1980: Plasmid 3, 88-91). The third chapter deals with the structure and evolution of plasmids. Methods for identifying partial homology between plasmids with the help of electron microscopy heteroduplexes, as developed by Sharp and Davidson, or by solution or filter molecular hybridization (but not by Southern blotting) are well described. The role of insertion sequences and transposons in plasmid evolution and in plasmid chromosome interaction is analysed. Also documented is the possibility of studying plasmid encoded functions by transposon insertion and deletion mutagenesis. However, the fundamental importance of these for studying newly isolated plasmids could have been stressed more strongly. Information is provided on the use

of restriction endonucleases and the cloning techniques for detail analysis of plasmid segments.

The fourth chapter summarizes the studies on plasmid replication. As in all other chapters only basic concepts are advanced, each time with references to the relevant publications. This can be appreciated since a vast literature exists on this topic which is continuously being added to. More details can be found in the 1979 Cold Spring Harbor Symposium book (Vol. 43) or by following the journal 'Molecular and General Genetics.'

Chapter five reviews present knowledge on plasmid conjugation. All essential information is presented, although the paragraphs on plasmid mobilization could have been expanded. The different techniques now available to mobilize a non-conjugational plasmid (or cloning vector) with an autotransferable plasmid by activating the *mob* site or by co-integrate formation are not well documented.

Interestingly, a separate chapter (six), is devoted to plasmids of medical and veterinary importance. Cooperation between the molecular biologist and the medical microbiologists will indeed be of utmost reciprocal benefit. Not only the structure and general properties of R plasmids and ways to study the spreading of the antibiotic resistances are discussed but attention is drawn to the plasmids conferring pathogenicity or contributing to the virulence of bacterial strains.

To stimulate the interest of researchers in general and applied microbiology, the ubiquity of plasmids is stressed by presenting, in chapter seven, a series of plasmids known for the unusual phenotype they bestow on the strains into which they are introduced.

Consecutively the bacteriocin production plasmids, the catabolic (or degradative) plasmids and even the tumor-inducing plasmids of *Agrobacterium* are presented.

In conclusion, this clearly written monograph contains a wealth of information, and is definitively recommended not only to the established microbial geneticist but to all who are involved in recombinant DNA research. They should keep in mind that transfer of plasmid cloning vectors and in vivo recombination are procedures which are important supplements to the in vitro techniques. Basic plasmid biology, essential for proceeding in an inventive way with these in vivo techniques, is didactically presented in Broda's book.

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