BOOKS RECEIVED

Recombinant DNA

This is the 15th volume in the Benchmark Papers in Microbiology series and consists of a collection of 38 reprinted papers that describe the development and exploitation of in-vitro recombinant techniques. The book is divided into five parts, each consisting of 4-10 papers covering a particular topic. Each part is introduced by 5-10 pages of masterly editors' comments that are lucid, instructive, jargon-free and give perspective to the papers that follow. For the non-specialist they should be of immense value and for the specialist they make enjoyable and useful reading.

Part I (Foundations) consists of papers that describe the two basic tools for in-vitro recombinant research, namely, the making of recombinants in vitro, by use of the cohesive ends generated by restriction endonucleases or by "tailing" the reactant molecules with complementary homopolymers, and the introduction and propagation (i.e., cloning) of such recombinants in cells. Parts II and III describe the types of hosts and vectors that have been used and the basic ancillary technology for obtaining and recognising recombinant clones. Parts IV and V describe how specific DNA sequences can be isolated from complex eukaryote genomes and how their expression has been obtained in Escherichia coli.

As the editors admit, the choice of papers is somewhat arbitrary—partly a reflection of their prejudices and partly a reflection of what papers had been given permission to be reprinted. Nevertheless, in general, coverage of the subject is exhaustive, though description and discussion of plasmid vectors is somewhat skimpy while that of lambda vectors is very extensive indeed and presumably reflects the viral background of the editors.

Here, then, is a comprehensive portfolio of many key papers in the field of in-vitro recombinant technology, bound together with 34 pages of instructive editorial comment. Though it should find a useful and used place on library shelves, I do not foresee it being bought by many individuals, partly because of its fairly high price and partly because scientists wishing to use in-vitro recombinant techniques will almost certainly be more attracted by the many currently available monographs and books that provide background and detailed "recipes" in easily digestible form.

D. SHERRATT

The medical mycology handbook

The contents are subdivided into Part I with the heading "Understanding it" and Part II, "Doing it". After a brief historical introduction, Part I introduces the reader to the general characteristics and taxonomy of fungi, fungal toxins, allergies and infections, and gives brief descriptions of the infectious fungal diseases. Under "Getting ready: equipping a mycology laboratory", the authors state that "A laminar flow safety hood will be needed for work with systemic pathogenic fungi. (Yeast and dermatophyte identification can be done without a safety hood)". In the United Kingdom an exhaust-ventilated safety hood would be needed for work with what are currently classified as category B1 fungal pathogens and when such fungi as Histoplasma capsulatum are cultured at blood temperature it is the yeast form that grows.

The "Clinical laboratory methods" of Part II together with "Identification of individual fungal isolates" are commendable as concise, simple-to-follow sources of most of the mycological information needed in the diagnostic laboratory. There is a table on the "Setting up of clinical specimens", and there are flow charts for "Initial steps in identifying cultures".
"Yeast identification", "Dermatophyte identification", "Major monomorphic pathogenic fungi and actinomycetes" and "Dimorphic systemic pathogens". Although there are only five plates the handbook is well illustrated with simple line drawings showing the microscopic features of the fungi described. In common with some other American writers the authors use a technical jargon that I find unnecessary and at times irritating. The term dimorphic is well used to emphasise that some fungal pathogens have more than one growth form; it is in this handbook that I have first seen use of the term monomorphic. In adopting the term blastoconidia the authors appear uncritical and too respectful of the views of academic taxonomists who apply the descriptive principles of conidium ontogeny to the vegetative cells of yeasts.

There is a good index and a useful appendix giving details of stains and culture media. There are bibliographies dealing with the fungi in general, classification and medical mycology, but these are open to the criticism that too great a prominence is given to other manuals and text books that may be less readily available than original papers in established journals.

With the CDC Laboratory Manual for Medical Mycology published by the US Department of Health, Education, and Welfare Public Health Service out to print, this Medical Mycology Handbook is recommended to medical technologists as one of the best available. It is reasonably priced and is in a spiral binding with thin board covers.

R. R. Davies

Microbial testers—probing carcinogenesis


This book is designed for scientists interested in genetic toxicology, oncology, teratology, and environmental protection monitoring. It consists of four parts arranged to lead the reader from consideration of molecular and cellular mechanisms to the rationale and design of microbiological assays and their inherent problems. Finally, their application under practical conditions in the study of the role of dietary factors in human and animal cancer is described. This is covered in 10 chapters by different authors; as is common in this type of compilation, this leads to a certain amount of unevenness and repetition.

The marked increase in interest in microbiological mutagenesis tests in the last decade has arisen partly from attempts to establish them as short-term tests for carcinogens to replace tedious and expensive classical animal tests. As perhaps could have been anticipated, it is now clear that no single short-term test is likely to achieve this end. While it now appears that virtually all known carcinogens can be shown by appropriate tests to possess mutagenic, DNA-damaging, or DNA-modifying, attributes, the reverse is not generally true. Compounds that are mutagens but that have not been shown to be carcinogens in man or animals are now recognised. Also, because short-term tests can be done quickly, this has already led to the situation in which more than a few compounds have been studied extensively in short-term tests but have not been adequately tested for carcinogenicity in animal models. For this reason, the number of "false positives" is liable to decrease as animal tests are repeated and extended. The high sensitivity of most microbiological tests may mean, however, that they are in fact ultra-sensitive vis-à-vis carcinogenesis. In animal studies it is commonly found that the latent period for the appearance of tumours is strongly dose-dependent, implying that the failure to induce tumours with a small dose of a carcinogen may simply mean that the corresponding latent period is longer than the natural lifespan of the animal. Moreover, the capacity for DNA repair has been deleted from most microbiological tester organisms to improve their efficiency in detecting mutations. From the practical point of view, "false negatives" are more serious. At least some of the substances in this category exert their effects at the chromosomal level, and therefore cannot be detected in tests with procaryotes. Much ingenuity has been used to devise tests in eucaryotes, yeasts and fungi as well as mammalian cells in culture, to overcome this problem.

This book provides a useful overview of progress in this field and considerable food for thought at the conceptual and the practical levels. Some of the methods described are already well established and enjoy widespread use in genetic toxicology testing; their use for the detection of carcinogens is still at the experimental stage, the results of which must be treated with