

that by Low *et al.* These workers used a small reiterated sequence in human DNA and applied methods of DNA sequencing adapted to allow the sites of the DNA lesions to be pinpointed and their amounts to be estimated. The method could be used to compare the same DNA treated in a purified form as well as in the intact cell. Coupled with the post-labelling technique developed by Haseltine and independently by Randerath these techniques must constitute some of the most significant developments described in the book.

In Section 3 also, three papers are presented which describe the use of haemoglobin binding methods to estimate exposure *in vivo*. The stability of haemoglobin and its freedom from the repair effects which can affect the number of lesions remaining in DNA at the time of the assay makes this a useful cumulative measure of exposure in spite of the effect of background levels of alkylated aminoacids in lowering sensitivity.

Session 5 deals with cytogenetics and sister chromatid exchange in a variety of systems and from several points of view. The usefulness of rodent lymphocytes for studying cytogenetic damage and the possible role of metabolic differences in determining species, tissue and strain response specificities to mutagens and carcinogens are dealt with by Kligerman *et al.* and Allen *et al.* respectively. The use of sister chromatid exchange and other cytogenetic endpoints in human lymphocytes derived from populations exposed to a number of agents (cigarette smoke, ozone, ionizing radiation, cytostatic drugs) is dealt with in papers by Carrano, Evans, Sorsa and others, and they demonstrate how much is still being learnt about the behaviour of the lymphocyte system and the influence of this behaviour on the yield of SCEs, to say nothing of the effects of treatment.

The two final sessions deal with recent developments in mutagenicity tests in lymphocytes and questions of risk evaluation in man. There were few new developments of note here. However, one important report was that a major artifact in the detection of thioguanine-resistant mutants, the expression of TG<sup>R</sup> phenotype by cycling sensitive cells, can be avoided if the cells are frozen (Albertini).

The last section reviews techniques for studying germ-cells of mammals. Methods for the measurement of repair activity in mouse spermatocytes and the study of chromosome aberrations in de-condensed sperm DNA are presented and are important parts of attempts to achieve a clearer estimation of risks to man. Lastly, the sperm morphology test is described and used in a specific monitoring context. Although the results of the latter were suggestive, additional data are required. Evans also correctly points out the possible involvement of several other non-mutagenic factors in producing sperm morphology changes.

All in all the volume is a useful summary of the general position in the field of ascertaining the consequences of exposure to mutagenic agents.

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*Drug Resistance in Bacteria: Genetics, Biochemistry and Molecular Biology*, Third Tokyo Symposium. Edited by SUSUMU MITSUHASHI. Japan Scientific Societies Press, 6-2-10 Hongo, Bunkyo-ken, Tokyo 113, Japan; Thieme-Stratton Inc. – 381 Park Avenue South, New York, NY 10016, U.S.A. (1982). 429 pages, DM 148.00. ISBN 0 86577 085 9.

This book contains the 57 papers given at the Third Tokyo Symposium, and has a slightly misleading title since it by no means presents a balanced picture of recent developments in this field. Rather, it gives a sample of the work of those able to attend the symposium, including that of a few major Western research teams and of probably

everyone studying related problems in Japan. The papers are arranged under group headings which are not very illuminating – e.g. GENETICS AND MOLECULAR BIOLOGY, with subheadings ‘Replication and Others’, ‘Transposition’, ‘Vector and Plasmid’, ‘Pseudomonas’; and again the main heading BIOCHEMISTRY with subheadings ‘ $\beta$ -lactamase’, ‘Penicillin Binding Proteins and Outer Membrane’, ‘Resistance Mechanism’, ‘New Drug’. There is no unified theme to the papers within each group or subgroup – e.g. the last subheading above contains papers on two new drugs, DL-8280 (interesting because it is active against bacteria resistant to nalidixic acid) and E-0702 (a new semi-synthetic cephalosporin derivative); but the same subheading includes a paper on novel mutations to nalidixic acid resistance and one on the mode of action of viomycin (hardly a new drug).

So the book is much more like a sample of papers from a recent bacteriological journal than a planned symposium volume designed for the benefit of the reader. The papers are almost entirely research reports with often little background information, and some of them are too short to be easily comprehensible. One can assume that all the significant research described will be published more fully in regular research journals, where it will be more easily accessible to all those who do not have a friend who attended the Tokyo meeting.

The book does have an additional interest in that it gives an indication of the current scope of research in this field in Japan, where the first R-factors evolved and were identified. Among the papers from Japan is one by 13 authors who have followed changes in the incidence of antibiotic resistance and R plasmids among clinical isolates of non-typhoid *Salmonella* from Japan, over the years 1966–79. This survey covered more than 3000 bacterial isolates, and the results are potentially of great interest in showing the response of the incidence and patterns of resistance to changing antibiotic usage over this long period. Graphs of annual Japanese production of several antibiotics from 1958 to 1978 are plotted against the annual incidence of resistance to the same antibiotic, but unfortunately the report is so brief ( $4\frac{1}{2}$  pages) that it leaves many important questions unanswered. Thus the authors claim (without tabulating the evidence) that overall resistance decreased from an average of 87 % during 1966–73 to 53 % during 1974–9, due to a drastic decrease in the incidence of singly Sm-resistant strains since 1974, which was itself associated with a sharp decline in home Sm production after 1964 (from 80 to less than 10 tons per year between 1964 and 1978). However, a lag of 9 years is shown between the drop in Sm production and the drop in Sm resistance, which is difficult to explain. Cm production, in contrast, rose sharply from 10 tons in 1959 to nearly 200 tons in 1974, but was accompanied by very little increase in Cm-resistance. One would like to know how production of each drug was spread between clinical, veterinary and animal husbandry use, and whether Japanese production can be equated to Japanese consumption. Also, these statistics need to be published in much greater detail, and to be compared with data on other pathogens, such as *Shigella*, and to be related to data on earlier years. As it is, the paper may lead to hasty judgements to the effect that any dangers from over-use of antibiotics can be discounted.

To summarize, there are a number of interesting papers in this volume, as there are in most current numbers of major journals covering the field of R-factors and related molecular genetics; but the book's price is high and it does not make essential reading.

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