BOOKS RECEIVED

Progress in Medical Virology, volume 38

Edited by J. L. MELNICK. 1991. ISBN 3-8055-5229-7
S. Karger AG, Basel. Pp. 208. £84.80.

This volume of the successful series "Progress in Medical Virology" spans a wide spectrum of reviews on recent research relating to herpesviruses, polioviruses, influenza viruses and HIV.

Bruggeman and van Dam Mieras discuss the possible role of cytomegalovirus (CMV) in the pathogenesis of atherosclerosis. In 1983, Melnick *et al.* found CMV antigen in tissue-culture cells derived from smooth muscle cells of arterial walls; later, CMV DNA and antigen were also detected in the coronary arteries of patients without atherosclerosis. No CMV replication could be demonstrated. Experimental infection of endothelial cells with viruses of the herpes family increased adherence of granulocytes. Overall, at this stage the experimental evidence does not seem to be sufficient to support a secured causal relationship between viral endothelial infection and the development of atherosclerosis.

The construction and initial use of pseudorabies virus (PRV) deletion mutants as vaccines in pigs are described by S. and M. Kit. Whereas challenge virus was found replicating intranasally in both vaccinated and control pigs, it was only found in the internal organs of controls. Differential diagnostic kits are described which allow vaccinated animals to be distinguished from those infected with field strains. A section on cell-mediated immunity response is loosely appended to this chapter but its informative value is rather limited. A concluding section, outlining lessons to be learned from PRV vaccines for the development of a human HSV-2 vaccine, is useful but its inclination towards live attenuated vaccines has to be considered critically.

D. I. Bernstein reviews the evidence which suggests that genital HSV 2 infection is significantly attenuated by previous HSV 1 infection. Unfortunately, as yet, no serious attempts seem to have been made to unravel the molecular mechanism(s) of this phenomenon.

A chapter by Inoue provides an update on recent advances in the characterisation of the Inoue Melnick virus, originally obtained from meningioma and colorectal carcinoma cell lines. The virus is apparently a member of the herpesvirus family but there seems to be a remarkable lack of molecular data to support this classification.

Geelen and Goudsmit describe the elements of pathogenesis following infection with HIV on the basis of molecular events. Different cell types can be infected *in vivo* via various receptors (CD4 and non-CD4) and may become HIV reservoirs. Different HIV variants (quasi-species) can be isolated at varying stages of infection and at different frequencies. There is more recent evidence that parts of the *env* gene products of certain variants may determine tissue tropism. Acute and chronic HIV infection are described as seemingly separate entities which is slightly confusing. The significance of large amounts of unintegrated HIV cDNA persisting during infection remains unclear. Unfortunately, the influence of various regulatory elements on HIV gene expression is dealt with in a rather rudimentary way.

The "programme of global eradication of poliomyelitis by the year 2000", declared by the WHO in 1988, is reviewed by Lemon and Robertson. This will be carried out as part of the "expanded programme of immunization" (EPI) which focuses its efforts on six preventable diseases: diphtheria, pertussis, tetanus, tuberculosis, measles and poliomyelitis. Strategies and problems of vaccination against poliomyelitis

are discussed lucidly. A mention of the prospects of vaccine viruses constructed from cDNA clones would have been useful. This chapter overlaps slightly with Hovi outlining the problems which form obstacles to polio eradication (partial immunity, survival of virus particles, vaccine stability, reversion to virulence, antigenic variation, etc).

Polioviruses "made to order" are discussed in the excellent chapter on "Antigen chimaeras of poliovirus" by Burke, Almond and Evans. Intertypic poliovirus chimaeras and poliovirus-foreign antigen chimaeras are described. The analysis of conformational antigenic sites is mentioned and the potential of these powerful techniques to elucidate determinants of pathogenicity is outlined.

A chapter by Rotbart covers the molecular techniques for rapid enteroviral diagnosis, concentrating on hybridisation of radiolabelled probes to denatured RNA, but also briefly mentioning the polymerase chain reaction. The author recommends applying this technology as a rapid diagnostic tool but the clinical context is of paramount importance if the finding of viral nucleic acid is to provide the diagnosis of acute infection.

In an article on influenza viruses, Oxford reports on the genomic and antigenic variability of influenza viruses isolated during community epidemics and describes differences in the antigenicity of influenza viruses of identical source depending on whether they were propagated in embryonated hen's eggs or in MDCK cells. "Cell-grown" rather than "egg-grown" viruses seem to represent the viruses mainly replicating in man. Data from the author's group and from others indicate that these different viruses are in essence receptor mutants and the finding that a virus of the antigenicity of the cell-grown virus could also grow in eggs confirms this conclusion. This new virus, on which the development of a new vaccine is based, still awaits detailed characterisation. The claim, in a separate section, that the virulence of an influenza B virus is strongly determined by a single-amino-acid change at the tip of the HA molecule seems to be premature as back crosses have yet to be carried out.

In summary, this volume contains reviews of a number of virological topics which not only represent accepted knowledge but also lead the reader into more remote corners of the field, which contributes to the attraction of the book. Principle readers will be clinical virologists, interested physicians and research workers in various areas of biomedical science.

U. DESSELBERGER

Developments in Biological Standardization, volume 73. Pertussis: Evaluation and Research on Acellular Pertussis Vaccines

Edited by Y. SATO, H. SATO, M. TIRU and F. BROWN. 1991.
ISBN 3-8055-5457-5. S. Karger AB, Basel. Pp. 278, £104.40.

This volume summarises the proceedings of an international symposium on pertussis held in Shizuoka, Japan on 14–15 September 1990. It is an indication of the speed of development in this field that such a meeting should have been held so soon after several other symposia on this topic. Nevertheless, the volume contains a substantial amount of new information, as well as some which overlaps previous publications. The proceedings are divided between 10 sections. The first is introductory and contains a unique and informative chapter on the history of the development of pertussis vaccine by Margaret Pittman whose experience in this field extends over a half a century.

The section of "Clinical studies on efficacy" includes papers which summarise Japanese experience with acellular vaccines and recent clinical trials in Sweden and the USA. The section on "Molecular biology and genetics of *Bordetella pertussis*" concentrates on pertussis toxin and attempts

to produce genetically detoxified material. The paper by Sato *et al.* on mutant strains expressing pertussis toxin cross-reacting materials is particularly interesting; it describes a mutant, 79G, which expressed a non-toxic material with good protective activity. The next section on "Pertussis antigen and antibody" also deals with pertussis toxin. The paper by Askelöf *et al.* on the immunogenic activity of a synthetic peptide corresponding to sections of the S1 subunit of pertussis toxin complements previous reports by these authors which suggest a potential role for peptide-based vaccines. It is notable, however, that the protective activity in some assays was dependent upon the mouse strain used.

No papers were presented under the heading of "Biological Standardisation for acellular pertussis vaccines" but discussion on this aspect is summarised briefly. Interestingly, the intracerebral challenge assay still seemed to be favoured as a measure of potency. On the composition of future vaccines, emphasis was placed on the use of pertussis toxoid alone rather than multi-component vaccines. This view is likely to be questioned by many involved in vaccine development. Some of these issues recur in the section on "Pertussis assay and detection systems". A useful paper by Sato *et al.* describes an improved ELISA method for measuring pertussis antibody. Aoyama *et al.* reported over 90% isolation rates of *B. pertussis* from nasopharyngeal swabs stored in Amies transport medium and inoculated on modified Bordet Gengou agar, charcoal agar or cyclodextrin solid media. This is a substantial improvement over the general experience of isolation from cases. It is not stated if the cases were selected to include only those at the earliest stage of the disease.

Subsequent sections deal with the production and properties of acellular pertussis vaccines, the human response in clinical trials and the epidemiology of the disease in Japan, Germany and Hungary. Papers of particular significance include that by Novotny *et al.*, which provides experimental evidence in support of the protective role of the 69-kDa protein (pertactin), and that by Klein on a phase II evaluation of various formulations of acellular vaccines containing from one to four components to be conducted in the U.S.A. This trial has now been completed but the results were not available at the time of the meeting. Other interesting observations include a study by Yabiku *et al.* which failed to find any evidence of a connection between vaccination with acellular pertussis vaccines and an increased susceptibility to bacterial meningitis, and an investigation of an outbreak of mixed infection with *B. pertussis* and *B. parapertussis*. The latter was only isolated from children vaccinated with pertussis vaccine or given antibiotics. This raises the possibility of an increased incidence of *B. parapertussis* infection following the suppression of *B. pertussis* in recipients of acellular vaccines.

Overall, this volume contains information which will interest the specialist reader. Its price will ensure that it is unlikely to be purchased by individuals, particularly as its contents will date very rapidly.

M. J. CORBEL

Quality Control. Principles and Practice in the Microbiology Laboratory

Edited by J. J. S. SNELL, I. D. FARRELL and C. ROBERTS. 1991. ISBN 0 901144 31 2. Public Health Laboratory Service. Pp. 172. A5 Paperback £12.50.

As stated in this paperback's foreword, quality control and assessment are essential aspects of laboratory medicine. The consequences of an incorrect laboratory report in microbiology, as in any other pathology discipline, are

potentially serious for the patient. The need for quality control and assessment is underlined by the very nature of the science of microbiology, concerned as it is with living organisms that often display a great capacity for genetic variation. Although this book primarily covers quality control and assessment of clinical microbiology techniques, water and food microbiology—including an industrial perspective—are also covered.

The book is divided into 15 chapters each covering either general or specific areas of a microbiology laboratory. The chapters are well laid out for easy reference, in particular, the culture media section contains a very useful table giving details of a wide range of organisms that may be used to control commonly used culture media. In the chapter on the quality control of antibiotic susceptibility testing there is no mention of automated techniques and how they should be controlled. Under breakpoint dilution techniques, discussion is restricted to agar dilution methods and there is no mention of control procedures for broth dilution assays. The parasitology chapter lists the routine methods used in parasitology, and disappointingly provides little information regarding quality control. The chapter on quality control in mycology might have been better included elsewhere, as it consists of only four pages, one of which is an appendix!

The book has been written primarily with United Kingdom laboratories in mind, and might have benefited by a section on the international aspects of quality control and assessment. Nevertheless, it is comprehensive and contains a wealth of information that will be valuable to staff working in clinical microbiology laboratories. At its economical price, it should find a place as a standard reference book in every microbiology laboratory.

P. F. WHEAT

Current Topics in Clinical Virology

Edited by P. MORGAN-CAPNER. 1991. ISBN 0 90114430 4. Cambridge University Press. Pp. 304. £24.95.

This is the second of a series of reviews in clinical virology published by the Public Health Laboratory Service. The topics include discussions of clinical problems, such as varicella-zoster in pregnancy, treatment of CMV infections and diagnosis of EBV-associated disease; public health problems, such as human viruses and water, and mumps vaccination; and sections on individual viruses, such as HTLV1 and Hantavirus. In addition, there are three articles on non-viral pathogens that normally come within the scope of the virology laboratory: Q-fever, chlamydia and mycoplasma. Some of the articles have appeared previously in part or whole in the PHLS Microbiology Digest, but many are newly produced.

The articles are well written and comprehensive updates. The references are generally up to date with a sprinkling of citations from 1990 and even 1991 (although these tend to be of the authors' own works). The book is produced as a paperback with good quality paper and readable print. It has a few black and white illustrations, some of which have not printed too well, but has a good collection of tables, graphs and line drawings.

The topics encompassed provide interesting reading for virologists and non-virologists alike. That the hepatitis virus and HIV are not included is acknowledged by the editor who hopes they will be included as subsequent volumes. In general, I feel it is an interesting and useful book which I would commend especially to those working for MRCPath examination.

C. A. HART