

citations, such as misspellings and omission of citations given in the text from the reference list, and it might also have gained from additional illustrations.

Altogether, the book is a welcome addition to the review literature

on human retroviruses. It should be found on the shelves of all libraries of virology and in the offices of active researchers in this field.

F.S. Pedersen

Vaccines Against Virally Induced Cancers, Ciba Foundation Symposium 187; edited by D.J. Chadwick and J. Marsh, John Wiley & Sons; Chichester 1995, xi + 281 pp. £ 47.50. ISBN 0 471 95026 2

This remarkable book is based on a symposium held at the Ciba Foundation in London, 15–17 March, 1994. Viruses are believed to be causally involved with a number of human malignancies including, but not limited to, cervical cancer (human papilloma virus), liver cancer (hepatitis B), as well as a number of cancers in which Epstein Barr Virus plays a role like Hodgkin's, Burkitt's, T cell and immunoblastic lymphomas and nasopharyngeal carcinoma. This volume reflects a confluence of advances in basic virology, tumor immunology and molecular biology has created an extraordinary window of opportunity for the development of vaccines against virally induced cancers.

Ian Frazer, who proposed the meeting, opens the book with a thoughtful and succinct chapter framing the central issues that lie at the heart of tumor immunology. Each subsequent chapter is followed by discussion, which consists of lively debate and often leads to the clarification of both concepts and data. The book is assembled in a somewhat haphazard way, but this is a minor sin for book of such concision.

The potential antigenic targets expressed by tumors that are encoded by Epstein-Barr viruses are discussed in considerable detail by Moss, et al., and Milich describes efforts to target Hepatitis B virus. A great deal of attention, by a number of investigators, is given to the very exciting prospects of immunotherapy of human papilloma virus proteins.

Cresswell and colleagues give a clear basic science description of the

assembly and transport of class I MHC-peptide complexes. Another chapter addressing basic immune processes is by Liew, in which CD4⁺ T cell immunoregulation is reviewed. Levitsky and his colleagues describe interesting findings concerning the functions of bone marrow-derived cells in the priming of anti-tumor T cell responses.

Other cogent papers that describe related scientific areas include a discussion of immunity to *HER-2/neu*, by Cheever and his group, the growing of anti-tumor CD4⁺ T cells by Cohen. Greenberg and colleagues give a provocative description of their work using the adoptive transfer of T cell clones as a prophylaxis for CMV disease.

The bright prospects for vaccines against virally induced cancers are conveyed by this volume. One hopes that the immunotherapists worst fears are not realized. These are expressed in the final chapter of the book by Doherty et al., in which the mechanisms whereby tumors evade host immune responses are described. Such mechanisms of escape could undo the most sophisticated attempts at anti-tumor immunotherapy.

Unfortunately, viruses appear to be responsible for a minority of cancer deaths. Immunotherapists whose sights are set upon more common malignancies like those of the lung, colon or breast, are many steps behind their co-workers working with virally induced cancers, since they must identify antigenic targets on these tumors against which effective therapeutic immune responses can be generated.

Nicholas P. Restifo

Methods in Molecular Biology, Vol. 38, Cryopreservation and Freeze-Drying Protocols; Edited by J. Day and M. McLellan, Humana Press; Totowa, New Jersey, 1995, ix + 254 pp. \$ 79.50 ISBN 0-89603-296-5.

Volume 38 of Methods in Molecular Biology is a compilation of protocols for freezing and freeze-drying a variety of living biological materials ranging from viruses, to seeds and mammalian embryos. The chapter authors, representing laboratories primarily from Europe, but with contributions, from Japan and the US, present protocols developed and used successfully in their own laboratories. Although each of the 23 chapters is a unique discussion of a particular group of organisms or cells, the protocols are presented in a similar format. Beginning with an introduction of the topic, the authors follow with sections on needed materials and methods used for successful preservation of the biological materials. A unique and useful aspect of each chapter is a set of notes, referenced in the methodology, but listed separately for easy referral. This arrangement avoids encumbering the specific protocols with ancillary information, but is a bit cumbersome for the general reader. References specific to the discussion are listed at the end of each chapter. The volume is compact and spiral bound, a useful structure for use in the laboratory.

The importance of low temperature preservation as the optimum methodology for conservation of living biological materials is presented in the overview by the editors, with references to classical papers on cryopreservation. Discussion is general and centers primarily on freezing of cells and organisms. While discussion of freeze-drying is weak, criteria for acceptable biostorage are presented. The contention of the editors that most literature on cryopreservation and freeze-drying is scattered and encumbered with theory, making development of recipe methodology difficult, is valid. However, the minimal discussion of theory, and basic understanding of the preservation processes presented in this volume, make understanding of the protocols by the uninitiated difficult. Some of the later chapters do attempt a more in depth discussion, as evidenced by the review of freezing phenomenon in the introduction to the chapter on plant protoplasts.

In some instances terminology, such as the vitrification process for

the preservation of plant cells, is adequately defined. However, for the most part terminology throughout the book is not defined. The term 'snap freezing' in the chapter on virus cryopreservation may not be familiar to the general reader, and in the methods portion on freeze-drying of bacteria the use of both 'secondary drying' and 'thermal desorption' without definition is confusing. The book is designed primarily to assist those needing to preserve living materials by low temperature preservation, but who are not necessarily experts in cryopreservation. Therefore, the volume would benefit from a glossary of terms used throughout.

Materials and methods are generally well organized and straight forward. There are some cumbersome sections such as the description in the chapter on preservation of viruses of three methods for -70°C storage. Some of the technical statements may be misleading without explanation. For example, in the introductory section on cryopreservation of bacteria the temperature of liquid nitrogen vapor is noted as -140°C . This temperature is completely dependent upon the configuration of the liquid nitrogen freezer, and the depth of the inventory space, and can range from -196°C to greater than -100°C . The discussion of the glass bead technique may also be misleading as the author describes a method for avoiding defrosting of beads not being used, but fails to caution that repeated warming without defrosting could result in loss of viability, as evidenced by his previous discussion of the problems with temperatures above -30°C .

The notes in Chapter 5 on yeast cryopreservation are somewhat misleading as the author discusses the hazards encountered when using plastic cryotubes in liquid nitrogen, and suggests however that for long term storage submersion in liquid nitrogen is preferable. The modern design of liquid nitrogen freezers provides adequate temperatures in vapor storage, and the current recommendation is not to submerge cryotubes in the liquid, especially when they contain pathogens. The chapter on free-living amoebae suggests that the methods are useful for

all free-living amoebae. However, the author may be referring only to small free-living amoebae since the methods described are not to the reviewer's knowledge easily applied to the large amoebae.

Despite the shortcomings noted, the volume is a valuable reference that is comprehensive in its coverage of a wide range of living materials. Collecting the expertise of the authors into one ease-to-use manual

designed for direct laboratory application is attractive. The volume offers easy access to a variety of useful protocols without the need for a cumbersome search of the voluminous and scattered literature on low-temperature preservation, as the editors aptly point out.

Frank P. Simone

Human Basophils and Mast Cells: Biological Aspects; Chemical Immunology, Vol 61; Edited by G. Marone, Karger, Basel, xi + 242 pp. \$ 228.00. ISBN 3-8055-6127-X

This volume is one of two; the other deals with clinical aspects of mast cells and basophils. There are a number of recent publications dealing with both basic and clinical aspects of these cell types. Although unlike the present volume, most represent conference proceedings, this account differs in one important way; it attempts to deal with mast cells in a wide range of organs and systems of the body, areas often neglected in other treatises.

The first chapter on ultrastructural morphology of human mast cells and basophils describes results using a modified immunogold technique for localising enzymes involved in the eicosanoid pathways and histamine secretion. This, together with a chapter on the portfolio of cytokine and other receptors expressed by mast cells and basophils by P. Valent provide a useful structural and molecular basis to the functional studies which come later. One of the major advances in understanding of the growth and differentiation of mast cells and basophils and the importance of the micro environment in the phenotype of mast cells had been the discovery of the role of Stem cell Factor (SCF) (C-kit ligand) derived from fibroblasts and certain other cell types. The importance of synergy of SCF with other cytokines in enabling culture of mast cells *in vitro* is mentioned although the important role of interleukin-6 (IL-6) and of TH1 and TH2 cytokines might have received more emphasis.

The present state of knowledge on signal transduction following FCεRI cross-linking in mast cells and basophils is well reviewed by Scharenberg, Kinet and MacGlashan. However the opportunities for therapeutic intervention offered by insights into the stimulus - secretion coupling events seem limited. The human mast cell as a source of immuno regulatory cytokines is well reviewed by M. Church and colleagues. Students of the pathogenesis of human disease in which mast cells appear to be involved (asthma, psoriasis, atopic eczema chronic arthritis) may well feel that the pathogenetic importance of these cells in the aforesaid diseases has received insufficient attention. The authors also make the important point that the tissue micro environment of the mast cells may have a major influence on the pattern of cytokines produced by mast cells. Whilst the arachidonate

transformation pathways in mast cells and basophils are quite well covered in the chapter by Marone and colleagues, the reader is left wondering about the role of cytokines as described in earlier chapters and including IL-10, on modulation of these important pathways as previously described elsewhere by Austen and colleagues.

One of the two most important chapters in the book is that by Grant and Alam dealing with histamine releasing factors. Although the chemokines as histamine releasing factors are described in some detail, presumably because the authors themselves have been involved in their evaluation, there is a surprising omission of mention of other workers' findings in this field including histamine releasing cytokines (Claveau and colleagues (Quebec) and anti FCεRI auto antibodies (discovered by Hide and colleagues (London)). The modulating role of stem cell factor on mast cell activation is also not discussed.

The second important chapter is on the neuro immune connection. Most people believe there is an important functional relationship between the nervous system and the tissue mast cells but no one seems to have a clear idea of exactly how it works. Bienenstock makes a worthy attempt to clarify this fascinating area beginning with evidence on the close relationship between tissue mast cells and peripheral nerve endings. He also emphasises the role of neuropeptides and nerve growth factor in mast cell regulation; the former acting via the axon reflex flare and the latter leading to mast cell proliferation. However the crucial pathways whereby information from higher centers can feed down to tissue mast cell populations, leading to activation remains to be elucidated.

Overall this book can claim to be the most comprehensive treatise currently available on the rapidly developing topics of the biology of mast cells and basophils. Individual chapters integrate together well enough to give the reader a feeling of a continuous and logical journey through this complex field. The volume should form an excellent introduction to the more clinically oriented second volume.

Malcolm W. Greaves

Oncogenes (2nd. edn.); Edited by G.M. Cooper. Jones and Barlett Publishers, Boston, 1995. xiv + 384 pp. \$ 52.50. ISBN 0-86720- 937-2.

The author was one of the pioneers in isolating activated oncogenes from human cancers in the early 80ies. He presents an overview mainly aimed at advanced undergraduates, medical student, doctors and scientists. Out of the vast literature he has selected what he considers as highlights and has concentrated this in short descriptive chapters follow by an extensive list of references. These are organized after topic making it easy to find relevant papers.

In a brief introduction basic concepts of cancer research are presented in order to create a background for the following chapters. Thereafter follow a description of tumorvirus where the general theme for DNA tumor virus is the interference between viral proteins and p53 and pRb disturbing the control of the cell cycle. In contrast to these stand the retrovirus where the understanding of retroviral oncogenes gave the first understanding of disorders in cell proliferation related to cancer as summarized in chapter 4.

Chapters 5 to 8 relate to the cellular oncogenes. How they were identified showing that all of those isolated from cancer cells carried mutations in contrast to their normal counterpart the protooncogenes.

How they could become targets for viral integration or insertional mutagenesis. Finally how many of these were involved in chromosomal translocation or amplifications in tumors. In each chapter clear tables help to provide the overview out of which comes the general picture that several of the oncogenes have been activated by several different mechanisms in different tumors and therefore show a gain of function in tumors.

The tumor suppressor genes are exemplified by the discovery of the retinoblastoma gene. It started with somatic cell hybridization where the normal counterpart dominated over the tumorigenic cell. This was followed by the recognition that when hybrids lost some chromosomes they regained tumorigenicity. Combined with the occasional loss of chromosome 13 in retinoblastomas lead step by step to the identification and cloning of the retinoblastoma gene. This in turn showed loss of function in many common types of tumors and not only in the rare hereditary disease in children. This has lead to the general concept that tumor suppressor genes show loss of functions in cancer. Table 10.1 and 10.2 give a summary of the most common tumor