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Book Reviews

Biological and Molecular Aspects of Mast Cell and Basophil Differentiation and Function; Edited bij Y. Kitamura, S. Yamamoto, S.J. Galli and M.W. Greaves, Raven Press, New York, 1994; x + 270 pp. ISBN 0-7817-0314-X.

This book consists of 21 invited papers given at an international symposium entitled 'Biological and Molecular Aspects of Mast cells and Basophil Differentiation and Function' that was held on June 16–18, 1994 in Hiroshima, Japan. It brings together contributions from many of the leading investigators in this field of research and provides a detailed and, in part, excellent impression of current topics and progress in the immunobiology of mast cells and basophils ranging from the development of mast cells and basophils to their role in some human disease. These are however, not essays for the lay reader but, rather, a collection of detailed and timely up-to date articles in certain aspects of mast cells and basophils.

The monograph is divided in four parts. The first part, occupying about a third of the book, contains articles on the role of cytokines in mast cell and basophil development and function. This section includes seven independent communications on the role of both the c-kit receptor and cytokines in the regulation of mast cell growth, differentiation, survival and function. It also addresses signal transduction mechanisms induced by cytokines. The second part deals with developmental processes in mast cells and basophils. It consists of five articles which stress the role of the c-kit receptor and adhesion molecules as well as the modulatory function of cytokines during differentiation of mast cells from their committed progenitors. Part three contains two reviews on the molecular characterization of mouse and human mast cell proteases and the factors involved in regulating their expression in different mast cell populations. The final part of the book is a chapter containing seven articles which emphasise the physiological roles in the activation process of mast cells and basophils. Here again, the topics are rather heterogeneous ranging from mast cell interaction with neuronal structures, mast cell hyperplasia and activation in the context of helminthic infestation, to the role of autoantibodies, interleukin-2 and the fibronectin receptor integrins in mast cell activation. In addition, this part includes an excellent review on the pharmacological modulation of basophil and mast cell function.

There is considerable overlap of certain topics, which is not uncommon in such symposium proceedings. For instance, data on the stem cell factor, the ligand for the c-kit-receptor, are reported in parts one, two and four with partially redundant information. Another major recurring topic in this book is the interaction of cytokines with mast cells and basophils. Although some articles may be relevant to immunologist, molecular biologists, dermatologists, and pharmacologists, the book omits chapters on the relevance of mast cells in airway disease and gastronintestinal disease. This may be the major draw back of the book considering the heterogeneity of mast cells in different organs.

The book provides an update of recent developments in this ever moving field of research. Because it is essentially a series of essays, the monograph lacks cohesiveness and flow and no attempt has been made to refer the reader to other relevant pages or chapters. Most chapters are concise and well organised with excellent figures and tables, though some papers have a dense print, are difficult to read, and contain no figures. Each article is heterogeneous, not only in structure but also in quality and in the form of presentation. Only half of the articles have a concluding summary or address future perspectives in the particular field of research and possible therapeutic applications are rarely mentioned. Further, a closing summary at the end of the book integrating the information presented would have been extremely helpful in attracting a broader audience.

All-in all this compendium is a collection of essays for the person who is either already working in this field or who wishes to delve deeply into a specific topic. It makes a valuable updated reference book for researchers in immunology and molecular biology and the orientation is facilitated by the extensive subject index. Despite some omissions, the book covers important topics in this field and may foster future efforts elucidating the molecular basis for basophil and mast cell development and function.

Claus Kroegel

Transacting Functions of Human Retroviruses (Current Topics in Microbiology and Immunology 193); Edited by Irvin S.Y. Chen, Hilary Koprowski, Algarsamy Srinivasan and Peter K. Vogt; Springer-Verlag; Berlin, Heidelberg, 1995; x + 236 pp. DM 177.50. ISBN3-540-57901-X.

This issue of Current Topics in Microbiology and Immunology contains a series of comprehensive reviews on the function of the regulatory genes of human retroviruses. All known exogenous human retroviruses carry complex sets of genes encoding transacting proteins that regulate viral or cellular functions. Of the eleven chapters, eight are devoted each to the function of a specific regulatory gene of either HTLV-1 (*tax*), HIV-1 (*tat, rev, vpu, vif, nef and vpr*) or HIV-2 (*vpx*), while the remaining three cover regulation of foamy virus gene expression, transactivation of cellular genes by human retroviruses, and the use of transgenic mouse models to study the pathogenic role of HIV accessory genes, respectively.

This research area is characterized by an immense experimental activity and, for several of the genes, as of yet no general agreement on their biological role. This makes the field particularly difficult to follow, and there is a great need for reviews at different levels. By combining detailed reviews written by different authors, the editors have succeeded in covering basically all aspects of regulatory genes in human retroviruses up to around the end of 1993, which should make the book quite valuable as a specialist resource for selective reading and reference purposes. On the other hand, this composition has resulted in a book that will provide heavy reading for non-specialists, be it students or newcomers to research or specialists from related fields. However, some of the chapters, such as that on transactivation of cellular genes by Rosenblatt, Miles, Gasson and Prager, that on Tax and cellular transcription factors by Yoshida, Suzuki, Fujisawa and Hirai, and that on transgenic mouse models by Tinkle, Ueda and Jay may provide inspiration to a more general readership.

The book is not free of general printing errors and errors in literature

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citations, such as misspellings and ommission 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 Hodkin'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