Molecular Biology of RNA Tumor Viruses

This volume is a detailed and almost comprehensive compilation of essentially all that was known at the end of 1978 about the structure, genetics, replication, and virus-host all interactions of retroviruses. There have been major technical advances in the field in recent years – notably restriction endonuclease analysis of DNA, cloning and improved nucleotide sequences methods. Most of the 12 chapters of this book illustrate how great their impact has been on RNA tumor virology at the molecular level. The emphasis in the majority of the contributions is on the mammalian retroviruses. The following chapters which illustrate this point: chapters 2, Interspecies transmission of mammalian retroviruses (G.J. Todaro); 3, The endogenous murine type C viruses (T. Pincus); 4, Germ line integration and Mendelian transmission of exogenous type C viruses (R. Jaenisch) and chapter 11, Type B and D retroviruses (J. Schlom) are well written and contain valuable information. Chapter 10, which deals with the ‘Electron microscopic analysis of the structure of RNA tumor virus nucleic acids’ by Y.-H. Chien, R. P. Junghans, and N. Davidson is outstanding in style and contents. This chapter exemplifies how new and profound insights into the structure of virus genomes can help our understanding of their behavior. Excellent contributions are chapters 5, Type C RNA transforming viruses (P.J. Fischinger); 6, Structural analysis of retroviruses genomes (J. M. Coffin); 9, Retroviruses reverse transcriptase (G. F. Gerard and D.P. Grandgenett); 7, Type C virus structural and transformation-specific proteins (J.R. Stephenson); and chapter 8, Primary structure analysis of retrovirus proteins (S. Oroszlan and R. V. Gilden). All these contributions are written by one of the active research groups on the different subjects in the field of retroviruses and include the avian retroviruses. These chapters present a wealth of important and relevant information and should be in the collection of researchers and teachers in the area. The last chapter deals with the problem of the viral etiology of human tumors, //. S. Kaplan deserves credit for his courage to discuss this controversial question in depth at a time when most researchers in the field seem to have given up on this exciting problem. The first chapter (Historical Background by M.B. Gardner), although well written, seems to be of interest only to science historians. In addition, the influence of microbiology on animal tumor virology which is emphasized in some of Dulbecco’s reviews is not considered, not even mentioned.

In summary, this volume will be of great help not only for experts and graduate students. It will be useful as a comprehensive handbook condensing an ever-increasing amount of valuable data on retroviruses. The literature is covered until 1978, so that some of the recent developments, like the analysis of the functions of the sarcoma-specific gene products and the molecular cloning of RNA tumor viruses are covered. Individually the contributions are excellent, but there is no editorial coordination. But despite of the resulting fragmentary nature and corresponding redundancies, the book captures the current work in the field and should be part and parcel of every
M. W. Stearns, Jr.
Neoplasms of the Colon, Rectum, and Anus

Neoplasms of the Colon, Rectum and Anus, edited by Dr. Maus W. Stearns Jr., is an excellent consulting and bibliographical book which brings up-to-date knowledge on cancer of the terminal colon. The constant changing of information on biology, epidemiology, diagnosis and treatment of the several tumors makes updating very important for oncologists. Outstanding experts, each one in his specific area, have contributed. They are: Fadi F. Attiyeh, Robert Golbey, Ralph E. L. Hertz, Nancy Kemeny, Charles S. La Monte, Robert Learning, Stuart H. Q. Quan, Paul Sherlock, Stephen S. Sternberg, Harold J. Wanebo, Horace W. Whiteley and Sidney J. Winawer.

As it occurs with other sites, a preciseness about the etiology of neoplasms of the colon, rectum and anus does not exist. In chapter I, Epidemiology and Pathogenesis, substantial clues recently emerged on etiology and their corresponding research are well described. Special treatment has merited the genetic factors, cellular and molecular changes, presently being investigated in the highest scientific level and bringing up to date information on carcinogenesis. Epidemiology, which has acquired a great significance during the last 20 years, is also comprised, emphasizing everything related to migratory populations. Chapter II deals with Early Diagnosis, giving special attention to the asymptomatic patients. Both alternatives are widely analyzed. Chapter III not only contains pathologic aspects of this disease, but also medical considerations in its surgical management; it is remarkable that both considerations mentioned are clearly described and updated. The heading, ‘Polyps and adenomas’, in permanent revision, will be really useful for the readers of this book.

Dr. Stearns and his contributors compiled their experiences in respect to the consideration of surgical management. A good surgeon is evaluated in accordance with his criterion about the necessity or not of surgical treatment for cancer, as well as the extension and type of surgery. All these concepts are clearly, concisely and particularly stated. Advanced cancer is given a separate chapter, taking into consideration the actual necessity of submitting information about advances achieved in treatment, such as adjuvant radio- and chemotherapy. Immunology which became one of the most important achievements in cancer biology is treated regarding a complete and profound analysis of its updating, including biological markers. Concluding, the high scientific level of this editor and the qualifications of contributors makes this excellent essay on cancer a fundamental consulting book for oncologists, surgeons and even general practitioners.

Salomon Barg
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J. Aisler and P. Chang (eds.) Cancer Treatment Research

This book, derived in part from a past continuing education symposium organized by the Baltimore Cancer Research Program, has brought together a group of clinical investigators in order to review their research areas from the standpoint of actual and anticipated advances in cancer treatment. It is the second volume of a series entitled ‘developments in oncology’. Jaffe and coworkers summarized recent progress in the diagnosis and classification of non-Hodgkin lymphomas. In this chapter cell surface markers play a leading role in distinguishing various disease entities. The chapter written by Diggs contributes to the staging and treatment of
these malignancies. Re-staging, adjuvant chemotherapy and total body irradiation are topics of critical discussion. Current issues in the management of patients with Hodgkin’s disease are analyzed by Wiernik. Among them, complications of treatment are of major importance. Head and neck cancer is discussed in the next two chapters. Success and failure of radiotherapy is reviewed by Scott, those of systemic chemotherapy by Muggia and Rozenweig. Recent studies showed that cisplatinum is active in this disease. Carcinoma of the thyroid is the topic of the chapter written by Schimpff. This malignancy, although not encountered very frequently, is now in the focus of clinical interest; especially hormonal and genetic aspects of medullary carcinoma are widely investigated.

The role of computed tomography in the diagnosis and staging of abdominal tumours is shown by Stephens and Sheedy. This imaging procedure is gaining more and more importance not only in localizing malignancies but also in establishing extent of the disease. Gullo and coworkers review recent progress in the therapeutic management of gastric and pancreatic cancer. Both radiotherapy and chemotherapy were successful and modest gain in survival could be obtained. Combination chemotherapy of bladder cancer based on the use of platinum compounds is discussed by Higby in the subsequent chapter.

The following sections of the volume deal with the diagnosis and treatment of breast cancer. Four chapters are devoted to these problems. McCrea describes the current status of mammography, while Wolfe relates this procedure to aspects of classification and pathology. Prosnitz lists the principles and results of primary radiotherapy, Margolese reviews history, present status, and future perspectives of surgical procedures. Adjuvant chemotherapy is a topic of many controversies. Nevertheless, it is ample evidence to state that in selected patient group it could be of great value.

Clinical application of cell kinetics to chemotherapy of human malignancies are summarized by Mauer. One of the important aspects of this research area is the scheduling for normal and tumor cell response. Based on experimental findings, adjuvant therapy became widely studied in childhood tumours, such as Wilms tumours, rhabdomyosarcoma, and osteosarcoma. Treatment results achieved by this method proved the value of this approach as stated by Sutow. Analysis of the current status of adjuvant therapy of adults with malignancies by Freireich shows also certain positive features, at least in acute leukaemia.

The last chapter of the volume is devoted to an overview of unconventional treatment of cancer by Martin. Misinformation on nutritional factors, the use of placebos as well as various aspects of cancer psychology are critically discussed.

This book is highly recommended not only to medical oncologists but also to all involved in cancer patient care. The amount in new information found in the volume as well as its critical assessment make the contribution of the authors important even for those working in comprehensive cancer centers.

S. Eckhardt
Perinatal Carcinogenesis
National Cancer Institute Monographs, vol. 51, 282 pp., 1979
The book informs about a conference held in Tampa, Fa., USA, January 19-21, 1976. At this meeting, 67 participants discussed the relevance of both hormonal and nonhormonal carcinogens in pre-and perinatal carcinogenesis.
Distributed to five sessions, 28 papers together with the concise, final discussions are included, the book ending with a summarizing survey on the current knowledge concerning pre- and perinatal susceptibility to carcinogenic agents (chemicals, hormones, viruses).

Session I, four chapters: a brief historical survey on the experiences with teratogenesis and carcinogenesis in man due to transplacental exposure is followed by two reports dealing with clinical and genetic aspects of pediatric neoplasms from pathogenic, etiologic, and mutagenic points of view. In the last chapter, abnormalities of the genital tract associated with intrauterine exposure to diethylstilbestrol are discussed.

Session II, eight chapters: the entire session is devoted to the importance of exposure to hormones during fetal and neonatal life, studied experimentally as possible contributors to cancer development. This session is both opened and closed by critical remarks on the relevance of animal models for clinical problems, especially whether highly significant and potentially fatal effects after hormone treatment and exposure in animals are of value for clarifying such developments in man.

Session III, eight chapters: compiles comprehensively our knowledge on teratogenic and carcinogenic effects of chemical agents in several animal species (three chapters). In two more chapters the dependency of susceptibility to tumor induction on degree and stage oft issue differentiation is discussed. One chapter deals with the remarkable fact that exposure to chemical carcinogens during pregnancy results in an increased risk of tumor incidence in the next generations of mice and rats and two chapters are devoted to the problems of viral leukemogenesis in connection with the protective role of the immunization of the mother animal and of the carcinogenic effect (medulloblastomas) of a human polyoma virus in Syrian golden hamster.

Session IV, three chapters: the topic of this session is the dependency of neurogenic tumors on host factors, animal species, and the degree of methylation of the chemical applied.

Session V, 5 chapters: several points of view concerning practical aspects of adopting transplacental and neonatal carcinogenesis as a routine toxicology assay for the detection of carcinogens are presented.

To bring many hours of discussion into a few pages requires selection of topics and main points of interest. Although some time has passed between the meeting and the publication, the book is of great interest, allowing an insight into a field of high actuality.

L. Elbling

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This book comprises the reports on recent knowledge on immunodiagnostic methods presented at a symposium held in Bethesda by the most outstanding scientists in this field.

This special issue deals with three major complex fields: (a) depressed immunologic competence associated with cancer; (b) humoral immune response to tumor-associated antigens, and (c) cell-mediated immunity to tumor-associated antigens.

The observation that cancer patients have a depressed immune reactivity led to the hypothesis of immunosurveillance, assuming that cancer develops in immunodepressed individuals. Although this hypothesis has recently been challenged by several investigations, there is little doubt that – with advancing disease – especially cell-mediated immune reactions are impaired.
The first section of the book offers examples of three test methods which can be used to define the general immune reactivity of patients, giving an insight not only into experimental work but also into the clinical relevance of these test methods. A most critical review on immunosuppression in cancer patients – especially on the mechanisms this phenomenon is based up on – and methods to detect it are also included in this part.

In the chapter devoted to humoral response to tumor-associated antigens, evidence is given that human tumors induce an antibody response in the patients and that such antibodies can be detected in the serum.

Burkitt lymphoma and nasopharyngial carcinoma represent tumors carrying the viral genome and having well-defined antigens. Further antigens which seem to be virus-associated have been detected in neoplastic cells of the cervix uteri and can also be defined serologically.

The complex field of antibody response and demonstration of possibly tumor-associated antigens are discussed extensively regarding sarcoma, melanoma and leukemia, giving ample evidence that antigens do exist on these malignant cells.

Another section deals with immune complexes, i.e. circulating antigen-antibody complexes which seem to be present in up to 50% of patients investigated and to interfere with cell-mediated tumor immunity. Several test methods which have been applied to detect these complexes are discussed.

The chapter on cell-mediated immunity to tumor-associated antigens is the section devoted to methods demonstrating that patients with malignancies react against autologous or allogeneic tumor cells or tumor cell preparations. These methods include in vivo skin tests and in vitro assays such as lymphocyte migration inhibition, lymphocyte stimulation or tests for cell-mediated cytotoxicity and, furthermore, macrophage electrophoretic mobility test and leucocyte adherence inhibition assay. All these tests are performed in order to study the reactivity of cancer patients against autologous or allogeneic-tumor-associated antigens. The present book is a comprehensive compilation of work on methods which might be applied in the immunodiagnosis of cancer. Although none of the techniques described seems to allow early diagnosis, most of them contribute to the knowledge on tumor biology. There is hope that some of these methods will be developed into an immunodiagnostic test for malignancy in the future.

This book is important reading for oncologists and immunologists.

M. Micksche, Vienna

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