

cytokines or through the measurement of the more robust, cytokine-induced acute-phase proteins.

The book is not without flaws; there is a fair share of typographical errors and the outline and content of the individual chapters differ widely. There are many directly opposing conclusions, as well as overlaps and omissions, and a general lack of cross-referencing between chapters. A substantial proportion of the chapters contain no references after 1992. There is no list of abbreviations (which are widely used in the cytokine and immunology fields). Some chapters contain factual errors, some mentioned above. This all points to a lack of editing that decreases the readability of the book. Concerning the contents, the background/cytokine chapters generally fail to familiarize the reader with any feeling of the cytokine network; molecular details of cytokines from the most investigated species (man and mouse) are described, instead of concentrating on useful generalizations. A small introductory review, simply introducing cytokines and relating their actions in a physiological setting in a general way would have aided the non-specialist reader (of which some should be expected with a multi-discipline text like this). One does also miss an introductory, critical and comprehensive chapter on methodology, as methodological development has been implicitly linked to the advance in cytokinology and as methodological knowledge is crucial when applying cytokine assays to a new species. Finally, this reviewer finds it frustrating that none of the numerous descriptions of recombinant therapeutics provide

a single warning on the inherent dangers of using heterologously expressed proteins for therapy (abnormal bioactivity with respect to levels and side-effects, reactions with antibodies (either preformed or induced)). There is one example given in which the bioactivity of the same IL-2 seemingly differs 200-fold with two different expression systems, but this goes largely unmentioned upon.

This said, the volume quite accurately reflects the state of affairs in the veterinary cytokine field and presents a very interesting plethora of application examples. The book is timely, as the research on infectious diseases and health surveillance in domestic animals increases in sophistication and is becoming the occupation for molecular biologist and immunologists as well as for biochemists and veterinarians. And it is the only comprehensive volume on the subject available at this time. The big number of references and the inclusion of titles in the references add to the usability of the book. The index is quite good, and makes the otherwise not so homogeneous book quite usable for the general reader and for the critical veterinary clinician as a reference handbook compiling data from many different areas in veterinary cytokinology at least up to 1992. The book clearly meet a demand in this field. Investigators concerned with human and/or rodent systems only may also find it useful both concerning inter-species cytokinology and the increased number of animal models becoming available.

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In Situ Polymerase Chain Reaction and Related Technology; Edited by Jiang Gu, Birkhauser, Boston, 1995. 143 pp. \$29.00 (hc). ISBN 3-7643-3870-9.

This book consists of 8 invited chapters ranging in size from 8 to 34 pages. Most chapters have 1–3 figures. Two of the 8 chapters provide detailed protocols. Ten color plates are provided at the end of the book.

The strength of this book is that it demonstrates to the reader that many groups have achieved success with in situ PCR. Several of the 8 groups that have written a chapter for the book have also published in situ PCR data in peer review journals. This is especially true of Bagasra et al., whose group has published extensively in peer review publications on their data with in situ PCR, primarily as it relates to HIV-1 related disease. It is not surprising, perhaps, that Bagasra et al. also provide the most detailed protocols and illustrations.

This book has two main weaknesses: (1) as would be expected for any book in a rapidly emerging field, some important information is omitted and (2) its small size and multi-author format does not allow for a discussion of the theoretical foundation of in situ PCR. With regards to the first point, a thorough discussion of the various DNA synthesis pathways that may be operative inside a cell during in situ PCR is not well covered. This information, in my opinion, is very important especially to the newcomer in this field in understanding and interpreting his/her data. This book also perpetuates the misconception that diffusion of the amplicon is a serious problem with in situ PCR and that the robustness of the reaction inside the cell is poor. Under proper

conditions of fixation (cross linking) and protease digestion, amplicon migration is strikingly limited inside the cell. Also, a 200-fold amplification inside a nucleus 4 μ in size is equivalent to a 10⁶ fold amplification in a 100 μ l reaction chamber, and easily visualized under the microscope. With regards to point 2, a beginner to in situ PCR is presented in this book with a variety of protocols, with no discussion of the pros and cons of these different methodologies. A section comparing different protocols (e.g., different fixatives, +/- protease, DNase digestion, etc.) would have aided this book for the person wishing to start doing in situ PCR.

In summation, this book is useful for the person who wishes a single source to see how this important new field -- PCR in situ hybridization (for DNA) and RT in situ PCR (for RNA) is now being used. The chapter by Bagasra et al. is the most comprehensive for those wishing to do in situ PCR. However, in general the book will not be of much utility to the person who wishes to begin doing the technique, as the various, non-integrated protocols and lack of a strong theoretical discussion on in situ PCR, including the various synthesis pathways, use of Dnase and protease digestion, and effect of different fixatives, are not well covered, due to the book's brevity.

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