

Lyme Disease: Molecular and Immunologic Approaches. Edited by S. E. SCHUTZER. Current Communications in Cell and Molecular Biology. Cold Spring Harbor Press. 1992. Price \$49.00. ISBN 088779693770.

Lyme disease is the most common and widespread arthropod-transmitted disease affecting humans in Europe, and the second most highly funded area of infectious disease research in the United States. This contribution to the rapidly growing literature on Lyme disease evolved from a Cold Spring Harbor Laboratory Conference and is a compilation of chapters written by the participants, who were invited to update and expand their original presentations. The chapters are arranged under the headings Pathogenesis, Neurologic Aspects, Molecular Biology, Immunology, Animal Models and Vaccines, and Diagnosis. The preface explains that Lyme disease is caused by the spirochaete *Borrelia burgdorferi*, which is transmitted to humans by tick bite, and then goes on to provide a brief description of the course of the disease. It is not always made clear that the information in the book relates to the situation in North America and in some instances may be different for Europe.

The book provides a very useful review of the complex immunological aspects of Lyme disease, including the involvement of immune mechanisms in neuroborreliosis and arthritis. One enigma of Lyme disease is the low numbers of spirochaetes associated with pathogenesis. Possible explanations cover the roles of immune complexes, autoantibodies, cytokines, dendritic and T cells, and host genetics in the development of the disease. Several chapters describe the application of studies on immune complexes found in patients to the understanding of pathogenesis.

The value of such a publication is that new ideas can be developed and comparisons made between systems that could not otherwise be dealt with in published papers. Examples are the chapter comparing the central nervous system involvement in syphilis and Lyme disease, and the fascinating studies on the molecular architecture of spirochaetes and implications *vis-à-vis* immunogenicity. The neuroimmunologic parallels drawn between Lyme disease and Sindbis virus-induced encephalomyelitis are less convincing.

The obvious disadvantage of a book of this kind is that the work can quickly become outdated. This particularly applies to chapters on the genetics of *B. burgdorferi*, and vaccine development. In addition, there are problems in interpreting the significance of experimental data based on artificial inoculation of laboratory-bred animals with high doses of spirochaetes. Studies referred to in the book have revealed a marked difference in immune response of vertebrate hosts infected by the natural route of tick bite

compared with the artificial method of syringe inoculation. This observation poses unanswered questions for the chapters dealing with various aspects of pathogenesis, and the development of diagnostic reagents and vaccines, based on artificial inoculation of laboratory-bred animals. Although the role of skin in the pathogenesis of Lyme disease is acknowledged, the part played by the skin-associated lymphoid tissue is not considered.

The book concludes with three chapters on diagnosis, which is currently based on the demonstration of an immune response against *B. burgdorferi*. Problems caused by the high number of false positives and developments to increase the specificity of diagnostic serological tests are discussed. An alternative approach is the use of the polymerase chain reaction but, as very nicely illustrated, this method also is prone to false positives.

The quality of the figures and presentation of tables is generally good, and the style is very readable for those with a basic knowledge of immunology.

On the whole, this book is recommended for an overview of immunological approaches to Lyme disease, but with the above-mentioned provisos.

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Introduction to Basic Cell Culture: Animal Cell Culture.

By S. J. MORGAN and D. C. DARLING. BIOS Scientific Publishers. 1993. 162 pages. Price £15/US \$30. ISBN 1 872748 16 3.

This book belongs to the *Introduction to Biotechniques* series, and it covers a wide range of instrumental techniques. Lots of excellent books are already available in this field, but authors recognize the need for an inexpensive, introductory book for the inexperienced cell culture worker. It appears to be aimed primarily at those who are new to cell culture. According to the authors, this book sets out to 'explain why and how the basic techniques are used, and their applications in [modern] cell and molecular biology' – and I feel it has succeeded.

The very useful introductory chapter includes a short overview of the purpose of cell culture, general aspects of cell culture and safety considerations. Originally the major purpose of cell culture was to understand the cells themselves. However, cell culture has become the central technology in not only classical cell biology and molecular biology, but also developmental biology and genetical approaches in animals. Animal cell culture is thus becoming an important tool for a growing number of scientists from diverse branches of biology and medicine.

The initial part describes the basic methodology. Each chapter in this section contains sufficient