

BOOK REVIEW

Microbiology reviews

Annual Review of Microbiology 1989. Vol. 17. Ornston L. N, Balows, A, and Greenberg, E. P. eds. Annual Reviews, Palo Alto, USA 1989. 682 pp. \$ 38.

The twenty-three well-organized, up-to-date and stimulating articles in the book cover microbial ecology, molecular biology, microbial metabolism and immunology. I shall only mention a few that are of general interest.

'The mounting interest in bacterial and viral pathogenicity' is the title of the first article, by H. Smith. Identification of virulence determinants by biochemical and genetic methods is receiving increasing attention, and these are dealt with in detail. However, more work needs to be done on the mechanism of mucosal invasion and interference with host defence mechanisms.

A topic of great interest to molecular biologists is the subject of the article 'Role of the DNA/membrane complex in prokaryotic DNA replication' by W. Firschein, especially since the last detailed review of DNA/surface interactions was written in 1975. It has become clear from studies carried out since then that the DNA/membrane complex is an important cellular component of prokaryotic cells involved in DNA replication and segregation. The location of specific *dna* gene products in the membrane and/or their possible

dependence on a membrane environment for activity constitute important studies in this area.

A somewhat related topic is 'DNA packaging in dsDNA bacteriophages', by L. W. Black. In addition to its interest as the prokaryotic equivalent of chromosome condensation it has recently been proved useful *in vitro* in recombinant DNA work.

In the same general area of DNA and DNA elements the article 'Transcription and reverse transcription of retrotransposons' by J. D. Boeke and V. G. Corces can be included. The authors have defined retrotransposons as 'all noninfectious DNA elements that have structural features suggestive of a role in transposition via an RNA intermediate'. The mechanism and regulation of biosynthesis of their nucleic acids, which can serve as intermediates in transposition, are fascinating subjects and are dealt with in detail in this article.

'Serodiagnosis of infection with the AIDS virus and other human retroviruses' by G. Schochetman, J. S. Epstein and T. F. Zuck deals with the advancement of technology for diagnosis of retroviral infections in general and specifically of the human immunodeficiency virus type 1 (HIV-1), the aetiologic agent of acquired immunodeficiency syndrome (AIDS). This is of obvious importance in current clinical practice.

'Molecular mechanisms of immunoglobulin A defence' by N. K. Childers, M. G. Bruce and J. R. McGhee deals with the structure of immunoglobulin A (IgA) and with mucosal immunology. Since many

bacteria and viruses, including HIV-1, are encountered through the mucous membrane, the specific functions of IgA antibodies in host defence dealt with in this article are very relevant.

Two articles, 'Organization and expression of genes involved in the biosynthesis of antibiotics and other secondary metabolites' by J. F. Martin and P. Livas, and 'How antibiotic-producing organism avoid suicide' by E. Cundliffe are important in the areas of development of newer antibiotics and of resistance mechanisms used by antibiotic producers to avoid self-intoxication. The latter has obvious relevance to antibiotic resistance in clinical practice.

Allied to the above is the article 'The evolution of fluorinated quinolones: Pharmacology, microbiological activity, clinical uses and toxicities' by C. Siporin. The second and third-generation quinolones have high activity against both gram-positive and gram-negative bacteria, especially those that are resistant to the currently available antibiotics. These various quinolones are dealt with in detail in this article and are worth serious study.

Other subjects dealt with in this volume relate to scrapie prions, human herpesviruses, gonococci, influenza virus, staphylococcal plasmids and *Clostridium difficile*.

T. RAMAKRISHNAN

Department of Microbiology &
Cell Biology
Indian Institute of Science
Bangalore 560 012