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Book review

Molecular mechanisms of bacterial virulence. Edited by C.I. Kado and J.H. Crosa. 1994. 672 pp. Kluwer Academic Publishers (Developments in Plant Pathology Series, Volume 3) ISBN 0-7923-1901-X Dfl 535.00/ $325.00

This book evolved out of the presentations delivered at a conference held in September 1992 in Fallen Leaf Lake, California, USA. The content is not simply a series of abstracts, but represents a collection of peer-reviewed papers summarising and expanding the individual talks and posters. That very successful meeting was highly innovative in that it brought together, for the first time, groups of workers on various aspects of virulence in plant, animal and human bacterial pathogens. Because of the diversity of bacterial systems discussed at the meeting, Kado and Crosa were presented with the very difficult task of compiling a text which highlighted the diverse, major themes of bacterial virulence in an intelligible way. Clearly, multi-author texts can never be perfect in that they always suffer unavoidably from the wide differences in style of presentation. Nevertheless, to a large extent, Kado and Crosa have succeeded admirably in clustering together aspects of bacterial phytopathology and animal pathogenicity into common themes, where possible.

The book is organised into five main sections with eight to ten chapters in each section. All sections have examples of multiple plant and animal pathogens. The five section themes are: 1) Host recognition and attachment mechanisms; 2) Pathogen ingression and invasive mechanisms; 3) Elaboration of pathogenic factors; 4) Regulation of virulence genes and signal transduction; and 5) Mechanisms against host defences. The treatment of the topics discussed is a balance of physiological and molecular aspects of virulence in a very wide range of pathogens, including *Salmonella*, *E. coli*, *Pseudomonas*, *Xanthomonas*, *Agrobacterium*, *Neisseria*, *Bacillus*, *Erwinia*, *Vibrio*, *Bordetella*, *Streptococcus*, *Proteus*, *Actinobacillus*, *Pasteurella*, *Yersinia*, *Shigella*, *Nocardia* and *Dichelobacter*. This is a broad sweep of bacterial pathogens and the individual chapters are presented in a variety of different styles, ranging from short review-type articles to papers on very specific virulence factors. Perhaps one thing that could have enhanced the book slightly would have been to have an introductory summary chapter at the beginning of each section, giving an overview of the themes of each of the five sections. However, the text is already long (46 chapters in 672 pages) and so the editors may have felt that this was not essential. In terms of overall content this book is a 'gold mine' of information on the structure, mechanisms of action, secretion and

regulation of many different virulence determinants. There are papers on the roles of bacterial surface structures such as membrane proteins, pili, extracellular polysaccharides and lipopolysaccharides on attachment to host cells. There are also papers on the structure, function and secretion of various extracellular products including toxins, enzymes and siderophores. In addition, there are several chapters devoted to regulation mechanisms involved in virulence factor synthesis and to genes involved in pathogen-host interaction and recognition.

This book will be a very useful addition to any University or Research Institute library and a good source of information for plant pathologists or animal pathologists who need access to molecular information "from the other camp." Indeed I have already plundered this book repeatedly for background information for a final honours degree course that I teach on "Bacterial Pathogenicity" (though, unfortunately the price of such a hardback book is likely to be well beyond the means of an undergraduate student!). The general standard of the presentation is good; the printing is clear and the diagrams and tables are clearly reproduced. There is an adequate table of contents and the index is sufficiently detailed to cover most needs. The peer reviewing of each chapter, plus the editorial comments have helped, no doubt, to keep the text relatively free of errors. There was a significant need for such a book and, to my knowledge, this book represents the first, pioneering attempt to satisfy that need. Given the rapidly growing evidence for the emergence of common mechanisms in bacterial virulence, it seems highly likely that other texts will appear in the near future, reinforcing this "unified" view of bacterial virulence. However, Kado and Crosa's book will continue to serve as an excellent source of detailed information on diverse, molecular aspects of bacterial pathogenicity of plants and animals.

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