

## CONTENTS

|   |           |
|---|-----------|
| Preface   | v         |
| <b>Introduction</b>   |           |
| Questions about the Behaviour of Bacterial Pathogens <i>in Vivo</i><br><i>H. Smith</i>  | 3         |
| DNA Topology and Adaptation of <i>Salmonella typhimurium</i><br>to an Intracellular Environment<br><i>D. G. Marshall, C. J. Dorman, F. Bowe, C. Hale<br/>and G. Dougan</i>        | 39        |
| <b>New Methods for Studying Bacterial Behaviour <i>in Vivo</i></b>  | <b>61</b> |
| The Pathogenesis of <i>Shigella flexneri</i> Infection: Lessons from<br><i>in Vitro</i> and <i>in Vivo</i> Studies<br><i>D. J. Philpott, J. D. Edgeworth and P. J. Sansonetti</i> | 63        |
| Detection and Analysis of Gene Expression During Infection<br>by <i>in Vivo</i> Expression Technology<br><i>D. S. Merrell and A. Camilli</i>                                      | 95        |
| Measurement of Bacterial Gene Expression <i>in Vivo</i><br><i>I. Hautefort and J. C. D. Hinton</i>  | 127       |
| Identification and Analysis of Bacterial Virulence Genes <i>in Vivo</i><br><i>K. E. Unsworth and D. W. Holden</i>   | 155       |
| <i>Salmonella</i> Interactions with Host Cells: <i>In Vitro</i> to <i>in Vivo</i><br><i>B. B. Finlay and J. H. Brummell</i>   | 180       |

|  |            |
|--|------------|
| <b>Impact of the New Methods</b>   | <b>199</b> |
| <i>In vivo</i> Gene Expression and the Adaptive Response: From Pathogenesis to Vaccines and Antimicrobials                                     | 201        |
| <i>D. M. Heithoff, R. L. Sinsheimer, D. A. Low and M. J. Mahan</i>   |            |
| Challenge of Investigating Biologically Relevant Functions of Virulence Factors in Bacterial Pathogens   | 226        |
| <i>R. Moxon and C. Tang</i>  |            |
| Virulence Gene Regulation Inside and Outside   | 260        |
| <i>V. J. DiRita, N. C. Engleberg, A. Heath, A. Miller, J. A. Crawford and R. Yu</i>  |            |
| <b>Evidence for Operation <i>in Vivo</i> of Aspects of Pathogenicity Revealed by Recent Work <i>in Vitro</i>: Potential Use of New Methods</b> | <b>281</b> |
| Quorum Sensing and the Population-dependent Control of Virulence   | 283        |
| <i>P. Williams, M. Camara, A. Hardman, S. Swift, V. J. Hope, K. Winzer, B. Middleton, D. I. Pritchard, B. W. Bycroft and D. Milton</i>         |            |
| Type III Secretion: A Bacterial Device for Close Combat with Cells of Their Eukaryotic Host  | 317        |
| <i>G. R. Cornelis</i>  |            |
| Evolution of Microbial Pathogens   | 349        |
| <i>J. Morschhäuser, G. Köhler, W. Ziebuhr, G. Blum-Oehler, U. Dobrindt and J. Hacker</i>   |            |
| The Immune Responses to Bacterial Antigens Encountered <i>in Vivo</i> at Mucosal Surfaces  | 374        |
| <i>G. Dougan, M. Ghaem-Maghami, D. Pickard, G. Frankel, G. Douce, S. Clare, S. Dunstan and C. Simmons</i>                                      |            |
| Index  | 395        |