
BOOK REVIEW

Prokaryotic Genomics

(in *Methods and Tools in Bioscience and Medicine*, Blot, M., ed.,
Birkhäuser Verlag, Basel-Boston-Berlin, 2002, 208 p.)

Recent advances in prokaryotic genome sequencing have made accessible immense amounts of genetic data. This information prompts the development of new methods in molecular biology (or adaptation of historical methods of bacterial genetics) that allow full genome analysis. This book is devoted to detailed description of a few such methods of bacterial genomics.

The book consists of 15 chapters written by distinguished experts in the field.

The chapter "Physical analysis of chromosome size variation" (C. Dale, W. Smith, H. Ochman) describes investigation of genome-size variations and genetic polymorphism within enteric bacteria using pulsed-field gel electrophoresis.

The chapter "Genetic mapping in *Salmonella enterica*" (J. Casadesus, E. M. Camacho) describes rapid mapping with locked-in Mud-P22 hybrid prophages and genetic mapping by duplication segregation in P22-sensitive *Salmonellae*.

The chapter "Insertion sequences as genomic markers" (D. Schneider, M. Blot) describes the use of IS elements during experimental evolution of *E. coli* to measure genetic diversity through time.

The chapter "The use of noncoding microsatellite length analysis for bacterial strain typing" (D. Metzgar) is devoted to adaptation of this widely used method for bacterial strain typing in investigations in eukaryotic cells.

The chapter "How to amplify easily, on the bacterial chromosome, a desired DNA sequence" (R. D'Ari, D. Vinella) describes a very interesting method for creating precise tandem chromosomal duplications of essentially unlimited length. This technique has some advantages compared to conventional procedures (using multicopy plasmid) because it avoids possible problems caused by variation in plasmid copy number.

The chapter "Generalized transduction" (A. Thierauf, S. Maloy) describes methods of nonspecific transduction in bacteria. Special attention is given to the P22-mediated transduction in bacteria of the genus *Salmonella*.

The chapter "Use of conditional-replication, integration, and modular CRIM plasmids to make single-copy *lacZ* fusions" (L. Zhou, S. Kim, L. Avramova, K. Datsenko, B. L. Wanner) is devoted to methods of *lacZ*-fusion constructions using a set of specially made CRIM plasmids.

The chapter "Genetic footprinting for bacterial functional genomics" (S. S. Walker, C. Houseweart, T. J. Kenney) describes a method for determination of genes essential for viability using genetic footprinting.

The chapter "Gene transfer to plants through bacterial vectors" (B. Tinland) provides a simple experimental setup that allows monitoring of the transfer of the T-DNA from *Agrobacterium* to plant cell nuclei.

The chapter "Quorum sensing: approaches to identify signals and signaling genes in gram-negative bacteria" (S. Swift) describes methods of quorum sensing investigations. This article concentrates upon *N*-acyl homoserine lactone signaling.

The chapters "Transcriptional profiling in bacteria using microarrays" (M. T. Laub, R. F. Rosenzweig) and "Transcriptome analysis by microarrays" (C. Jourlin-Castelli, F. Denizot, P. Boulloc) describe a set of genomic protocols and Web-based resources for conducting global expression studies in microbial systems.

The chapter "Prokaryotic proteomics" (C. Lelong, T. Rabilloud) describes methods for protein extraction from bacterial cells and their analysis using 2D-gel electrophoresis.

The chapter "Intein-mediated protein purification" (S. Chong, F. B. Perler) describes the use of modified inteins in protein purification when the carboxy-terminus of the target protein is fused to an intein vector.

The chapter "Two-hybrid assay in *Escherichia coli* K12" (G. Di Lallo, P. Ghelardini, L. Paolozzi) describes methods for investigation of protein interaction using *cI* repressor of λ phage.

All methods described in the book are considered in the form of detailed protocols and are well illustrated.

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