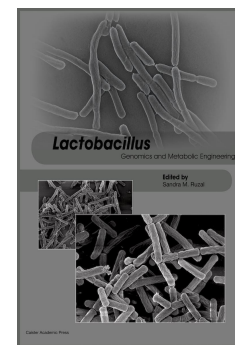


Lactobacillus Genomics and Metabolic Engineering



Edited by: **Sandra M. Ruzal**

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Lactobacillus is a highly phylogenetically and metabolically diverse genus comprising more than 200 species. As food-grade microorganisms, lactobacilli have long been exploited in the feed, food and beverage industries, with applications ranging from extending the shelf-life of food products to their use as probiotics with health-promoting properties. In addition lactobacilli are also important producers of industrial chemicals such as lactic acid and gamma-aminobutyric acid.

The considerable commercial importance has stimulated a plethora of research projects studying the genomics, molecular biology and metabolic engineering of these bacteria and prompted the need for this concise book which provides a timely overview of the field. Topics covered include: the genomic perspective on niche adaptability; catabolic pathways of complex carbohydrates metabolism; the production of lactate; genetics, biology of the cell envelope and applications of the S-layer proteins; lactobacilli bacteriophage; DNA transfer into *Lactobacillus* species; recombinant gene expression and genomics of antibiotic resistance in *Lactobacillus*.

This book is an invaluable source of information and essential reading for everyone working with lactobacilli, lactic acid bacteria and probiotics, from the PhD student to the experienced scientist, in academia, the pharmaceutical or biotechnology industries and those working in clinical environments.

Chapter 1. A Genomic Perspective on Niche Adaptability in *Lactobacillus* (Ewelina Stefanovic and Olivia McAuliffe)

Chapter 2. Genetics and Genomics of *Lactobacillus sakei* and *Lactobacillus curvatus* (Lucrecia C. Terán, Raúl R. Raya, Monique Zagorec and Marie-Christine Champomier-Vergès)

Chapter 3. Complex Oligosaccharide Utilization Pathways in *Lactobacillus* (Manuel Zúñiga, María Jesús Yebra and Vicente Monedero)

Chapter 4. Production of Lactate using *Lactobacillus* (Mariana C. Allievi, María Mercedes Palomino and Sandra M. Ruzal)

Chapter 5. Modifications of *Lactobacillus* Surface Under Environmental Stress Conditions (Mariana C. Allievi, Sandra M. Ruzal and María Mercedes Palomino)

Chapter 6. S-Layer Proteins from Lactobacilli: Biogenesis, Structure, Functionality and Biotechnological Applications (Mariano Malamud, Patricia A. Bolla, Paula Carasi, Esteban Gerbino, Andrea Gómez-Zavaglia, Pablo Mobili and María de los Angeles Serradell)

Chapter 7. Bacteriophages of *Lactobacillus* species (María E. Dieterle and Mariana Piuri)

Chapter 8. DNA Transfer in *Lactobacillus*: An Overview (María Mercedes Palomino, Joaquina Fina Martín, Mariana C. Allievi, Marie Eugenia Dieterle, Carmen Sanchez-Rivas and Sandra M. Ruzal)

Chapter 9. Recombinant Gene Expression in Lactobacilli: Strategies and Applications (Clemens Peterbauer, Stefan Heintl, Ales Berlec and Reingard Grabherr)

Chapter 10. Genomic Overview of Acquired Antibiotic Resistance Mechanisms in *Lactobacillus* (Cecilia Rodríguez, Lucía Petrelli, María Soledad Ramírez, Daniela Centrón, Elvira María Hebert and Lucila Saavedra)

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