

# Preface

Cheese is a familiar everyday item in our homes. Yet, cheeses represent complex dynamic ecosystems whose exact balance of microflora is determined by a range of physico-chemical characteristics, processing conditions and microbial interactions which then dictate the sensory characteristics of the product. The advent of modern molecular approaches to examine complex environments has allowed a greater opportunity for understanding the microorganisms present in cheese and the role they play in its production. This book focuses on the current status of understanding of one group of cheeses, the smear-ripened cheeses. The application of culture-dependent and -independent approaches in detecting and monitoring dynamics of actinomycetes, an essential component of smear microflora, is covered as a case study. It covers the basis of many of the methods now applied to their study, including metagenomics, transcriptomics and metabolomics, and how these have taken forward our understanding of the organisms associated with cheese production, their evolutionary adaptations to the cheese environment and the interactions between microorganisms within the flora which contribute to product quality and safety. Both the underlying theory and protocols for these approaches are included as well as case studies to demonstrate how these have been applied to smear cheeses. There are also forward-looking chapters on systems biology and solid-state fermentation which consider how the complex information that is now being generated may be integrated to be predictive and improve our understanding of both cheese microbiology and production systems. We would like to thank all our co-authors for their hard work and patience in contributing to this book.

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