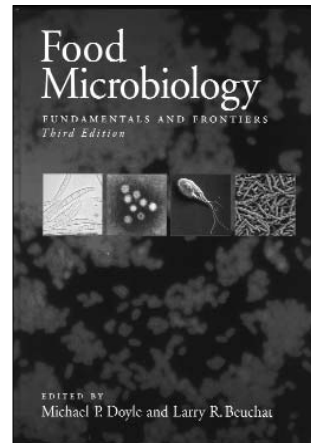


of summaries and a study guide. Part VIII is entitled “Summaries of medically relevant organisms”, while Part IX allows the reader to test his or her knowledge through fifty clinical cases of common infectious diseases that highlight the most relevant clinical manifestations needed for their diagnosis. Parts X and XI consist of over 600 USMLE-format questions and a complete USMLE-style exam with case-based questions. As Vicente Ausina, Professor of Clinical Microbiology at the Germans Trias i Pujol Hospital, Badalona (Autonomous University of Barcelona, UAB) points out in his prologue to the Spanish edition of the book, these are also a useful learning tool for Spanish and Latin American students in the medical sciences and laboratory technicians as they provide an efficient format for testing one’s knowledge of infectious diseases and of the clinical applications of microbiology and immunology to their diagnosis and treatment. *Microbiología e inmunología médicas*, the Spanish version of the book’s eighth edition, has been translated by a team of experts in bacterial molecular genetics and microbiology, under the excellent guidance of Isidre Gibert, from the Institute for Biotechnology and Biomedicine, UAB. One of Levinson’s goals was “to provide students who are presently taking medical microbiology courses with a brief and flexible source of information.” The book offers the reader a wealth of knowledge in a concise format thanks to clear, interesting, and up-to-date presentations; summaries of the most important aspects of the main microorganisms—which have also been classified according to their pathogenic importance; tables, figures, and diagrams containing the most relevant information; and finally, multiple choice questions and practical cases intended for self-testing.

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Food microbiology. Fundamentals and frontiers. 3rd edn.

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Uncontrolled and unwanted microbial growth destroys vast quantities of food, causing significant losses both economically and with respect to nutrient content. Moreover, the consumption of food contaminated with particular microorganisms or microbial products can also cause serious illness, such as food-mediated infections and food poisoning. Every minute, there are over 50,000 cases of gastrointestinal illnesses, and many individuals, especially children, die from these infections. The most important preventive measures are aimed at the continuing development and implementation of effective interventions to improve the overall safety of foods. The third edition of *Food microbiology. Fundamentals and frontiers* will contribute significantly to detecting, and perhaps even to solving, the problems arising from food contamination and spoilage.

Food microbiology offers updated and detailed scientific information on food microbiology. The book is organized in ten major sections, five of which focus on food-borne microorganisms. Each section consists of a detailed study of a food-borne microbe: pathogenic bacteria, molds and yeast, viruses, prions, and parasites. The microbial diversity found in food is well-illustrated by the four cover photographs of a fungus, a virus, a protist, and a bacterium. Although the main topic discussed is microbial food-pathogens, the book also covers other important aspect of food microbiology, such as food ecosystems and measures to prevent and control food-borne disease microorganisms. This third edition also introduces several completely new chapters on foodborne pathogens, biodefense, antimicrobial resistance, and advanced molecular techniques in food microbiology.

Section I, *Factors of special significance to food microbiology*, examines several different topics. In the first, food ecology, the authors point out the differences between the contamination of food by microbes vs. chemical contamination. Microbes change in number (“concentration”) with time, as long as the growth conditions are favorable. Microbial growth in foods is a complex process governed by

genetic, biochemical, and environmental factors. By contrast, chemical products do not grow and their concentration is either stable or diminishes with time. Second, there is the problem of antimicrobial resistance. Food microbiologists must be aware of the prevalence and impact of microbial resistance to disinfectants and other antimicrobials used during sanitation practices. Third, a significant source of food contamination is due to spores. Heat-resistant bacterial spores (from *Clostridium botulinum*, *C. perfringens*, and *Bacillus cereus*, for instance) can cause food-borne illness and spoilage of foods. Investigation of the conditions that promote sporulation and the physiological characteristics of spore-formers have led to the development of methodologies to improve food safety and quality. Fourth, is the need for standardized and well-founded microbiological criteria, since the basis for ensuring food safety for consumer depends on adequate testing of foods for pathogens and spoilage-causing microorganisms. Microbiological criteria are used not only to distinguish between acceptable and unacceptable products but also between acceptable and unacceptable food-processing practices. Lastly, there is the issue of biosecurity. Foods can be used to deliver biological or chemical agents, resulting in significant morbidity and/or mortality. To date, "unintentional" food contamination provides striking examples of how the contamination of certain popular foods can affect enormous numbers of consumers. For example, the outbreak of *Salmonella enterica* ser. Enteritidis due to the contamination of ice cream in Minnesota, in 1994, affected ca. 225,000 individuals. In the USA, strategies to prevent bioterrorism through attacks on the food supply have been developed based on ORM (operational risk management) and CARVER (criticality, accessibility, recuperability, vulnerability, effect, and recognizability) measures adopted by federal and state agencies.

Section II deals with *Microbial spoilage and public health concerns*. Spoilage occurs when the formation of odors, slime, flavors, etc., changes the organoleptic properties of a food, making it unacceptable to the consumer. Spoilage incurs losses in terms of both financial profitability and consumer confidence. Thus, an important task of food researchers and food industries is to better understand spoilage mechanisms and to develop corrective actions aimed at minimizing economic losses and supplying higher-quality foods to consumers. In this section of the book, the ecology of spoilage microbiota and the interactions between the food environment and microbial populations are extensively explained through examples from the four major food categories, i.e., meat and seafood, dairy products, fruits and vegetables, and nuts and cereals.

Five sections, III to VII (*Foodborne pathogenic bacteria, Mycotoxigenic molds, Viruses, Prions, and Foodborne and waterborne parasites*), are devoted to pathogenic microor-

ganisms. The epidemiological and metabolic characteristics, pathogenicity mechanisms, and tolerance to preservation methods of several food-borne microbial pathogens are described.

Section VIII deals with *Preservatives and preservation methods*. Microorganisms can be inhibited or inactivated by heat, freezing, dehydration, UV radiation, other non-thermal treatments, or through the addition of antimicrobial compounds. Also, as conveyed by the wisdom of "fighting fire with fire," microorganisms (including bacteriophages) and/or their metabolic products, as well as bacteriocins can also be used to preserve food quality.

Section IX, *Fermentations and beneficial microorganisms*, emphasizes the importance of microorganisms that have practical applications in the food industry, e.g., dairy fermentation, the production of fermented meats and vegetables, the processing of cocoa and coffee, and, of course, in the making of wine and beer. In each of these cases, the use of selected microorganisms or their enzymes yields a significantly altered final product, one that is desirable for human consumption. Also, this section describes the use of "harmless" bacteria to combat "dangerous" bacteria. Probiotics can be defined as a live microbial food-supplement that beneficially affects the host. The best-known examples are lactobacilli, bifidobacteria, and streptococci, which are used to prevent or treat gastrointestinal infections. Another strategy is the use of prebiotics. These are non-digestible food ingredients that beneficially affect the host by selectively stimulating the growth and/or activity of a limited number of indigenous bacteria. It has been suggested that a combination of probiotics and prebiotics can benefit human health by staving off many types of gastrointestinal infections.

Section X discusses *Advanced techniques in food microbiology*, including state-of-the-art methods to detect food-borne pathogens. The use of genomic and proteomic techniques in food microbiology will provide us with an in-depth understanding of microbial properties, behavior, and interactions within food environments.

Food Microbiology. Fundamentals and frontiers is not only recommended but is essential for food-science undergraduates, graduate students, instructors, and researchers. It also makes for complementary reading by anybody interested in the field of microbiology in general, as its subject matters also pertains to microbial ecology, clinical microbiology, and modern molecular techniques.

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