

## EDITORS PREFACE

This book illustrates the major trends in applied microbiology research with immediate or potential industrial applications. The papers proposed reflect the diversity of the application fields. New microbial developments have been done as well in the food and health sectors than in the environmental technology or in the fine chemical production. All the microbial genera are involved : yeast, fungi and bacteria.

The development of biotechnology in parallel with the industrial microbiology has enabled the application of microbial diversity to our socio-economical world. The remarkable properties of microbes, inherent in their genetic and enzymatic material, allow a wide range of applications that can improve our every day life.

Recent studies for elucidating the molecular basis of the physiological processes in micro-organisms are essential to improve and to control the metabolic pathways to overproduce metabolites or enzymes of industrial interest. The genetic engineering is of course one of the disciplines offering new horizons for the « fantastic microbial factory ».

Studies of the culture parameter incidence on the physiology and the morphology are essential to control the response of the micro-organisms before its successful exploitation at the industrial scale. For this purpose, fundamental viewpoints are necessary.

Development of novel approaches to characterise micro-organisms would also facilitate the understanding of the inherent metabolic diversity of the microbial world, in terms of adaptation to a wide range of biotopes and establishment of microbial consortia.

Improvement of selection methods is a crucial step to initiate any research in applied microbiology. This is necessary both for traditional strains which are used as starter in the food industry and for more specific strains which are of interest in fine chemical synthesis and bioremediation. Since the two last decades, in the fermented food and beverage industry, micro-organisms have been regarded to increase shelf-life and to improve flavours and nutritional value of food. Antimicrobial activity against pathogens and spoilage micro-organisms is an important criteria for the selection of a strain as starter. Beside the development of starters, techniques of foodborne bacterial pathogens detection are in complete evolution with the introduction of molecular detection and new typing methods.

The constant apparition of novel applications is the driving force which allows the constant progress of applied microbiology. Recent development in enzymes production and discovery of new metabolic pathways related to food or environmental technology are representative examples .

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