Foreword

Despite the simplicity of the way of life, the microorganisms present an abundant genetic diversity in the nature coming from their chromosomal DNAs as well as plasmid DNAs, obtained through the evolution over time so that they could adapt to the conditions of all marine and terrestrial ecosystems.

There were billions of years of ecological adaptation to fulfill their function on planet Earth, which is to provide a balance of nutrients essential for the maintenance of global ecosystems. This high biological diversity of the world's microbiota has provided human beings with practical, economical, and/or ecological opportunities for most of the known microorganisms by exploiting their metabolic capacities at the biochemical and molecular levels and defining the multiple functions associated with the simplest cell. Their long history of evolutionary diversification has provided them with a variety of genes, proteins, enzymes, and metabolites (primary and secondary) that can be of great help for the sustainable use of the environment, agriculture, and bioindustry, as well as the health of living things in general.

In recent decades, research on microorganisms has been intensified, with substantial advances in the biotechnology area, reflecting new ideas, thoughts, approaches, methods, media, tools, techniques, and, in particular, biotechnological products from the global microbiota. Genetic sequencing techniques with the aid of computational methods have placed the research with microorganisms at a much higher level.

Furthermore, application-oriented research encompassing microbe-based products (live cells and metabolic bioformulations) has exclusively gone in favor of agriculture and the environment.

The book *Microbial Interventions in Agriculture and Environment* in its first volume *Research Trends, Priorities and Prospects* is presenting a consolidated account of the authenticated work from the renowned authors working worldwide to explore the myth tagged with the tiny, often unseen but functionally sound, living species. Structurally arranged chapters cover principles and mechanisms, methods and tools, approaches and illustrations, and practices and applications in the most updated but lively manner to make the volume workable for the existing as well as new readership. The subject is discussed in the simplistically narrative form, and the topics are covered in a precise manner to reflect an open account of the research area before the readers. My optimistic view takes me to state that the research community will surely be benefitted from this compilation as it explores many of the hidden

and undiscovered facts about microbial life to which the world is looking for. I am sure that this volume will certainly enlighten researchers, faculties, scholars, students, and professionals because of its collectively composed literature on a vast subject.

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