

# Preface

Over the last decades, the study of extremophiles has been providing ground breaking discoveries that challenge our understanding of biochemistry and molecular biology. In the applied side, extremophiles and their enzymes have spawned a multibillion dollar biotechnology industry, with applications spanning biomedical, pharmaceutical, industrial, environmental, and agricultural sectors. Taq DNA polymerase (which was isolated from *Thermus aquaticus* from a geothermal spring in Yellowstone National Park) is the most well-known example of the potential biotechnological application of extremophiles and their biomolecules. Indeed, the application of extremophiles and their biologically active compounds has opened a new era in biotechnology. However, despite the latest advances, we are just in the beginning of exploring the biotechnological potentials of extremophiles.

For this reason, I have chosen this topic to be the *premier* book of my series. In addition, I am motivated by the success of my previous special issues involving extremophiles and biotechnology. Another compelling reason to develop this project is because the successful commercial application of extremophiles is not well documented in the scientific literature, a consequence of the highly competitive nature of industrial R&D.

Aimed at research scientists and biotechnologists, this book is an essential reading for those working with extremophiles and their potential biotechnological application. Here, we provide a comprehensive and reliable source of information on the recent advances and challenges in different aspects of the theme. Written in an accessible language to the general public, the book is also a recommended reference text for anyone interested in this thriving field of research.

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Advances and Challenges

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