



edited by

Ananda M. Chakrabarty

Arsénio M. Fialho

Microbial Infections and Cancer Therapy

Recent Advances



A grayscale electron micrograph showing several cells with prominent, dark, oval nuclei. The cells are arranged in a somewhat regular pattern, with some showing internal structures like the nucleus and cytoplasm. The background is a textured, granular gray.

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Preface

The bacterial world is extremely diversified, evidencing the existence of bacteria able to successfully colonize the most varied environments, that is, from inhospitable places on the planet to their coexistence with humans. Such nature is based on the existence of unique and complex genetic systems, which is seen to be the key for the great success of their ubiquity. Nowadays, microbial biotechnology makes use of live microorganisms or derived products to find various industrial applications, particularly in health, food, and environment. Among those, in recent years, the use of pathogenic (attenuated) or non-pathogenic live bacteria and their purified products as new anticancer agents have gained prominence. In fact, based on a significant number of scientific publications, human clinical trials, and even clinical practice, it is found that bacteria can be successfully used as agents capable of stimulating the immune system and fight cancer. Furthermore, through genetic intervention, it is possible to modify bacteria and use them as gene delivery vehicles for anticancer proposals. In addition, it also deserves mentioning the fact that bacteria harboring this additional genetic information are able to show tropism, preferentially colonizing the tumor microenvironment. Besides live bacteria, the use of purified bacterial products as anticancer agents, namely proteins, peptides, and compounds derived from secondary metabolism, has also gained relevance. In this book, twelve chapters address the most recent developments regarding the success and limitations of the use of bacteria and their products as cancer therapeutic agents. Considering that we now face an era where the resistance of cancer cells to chemotherapy has become a global burden, the establishment of alternative anticancer therapies may add value in the definition of more efficient therapeutic protocols. As editors, we hope to be able to bring together in this book the most relevant and up-to-date information on this subject.

Ananda M. Chakrabarty

Arsénio M. Fialho

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