Editorial

Modern biotechnology is impacting different research areas in many different fields of human activities. These developments are based on the advance of fundamental science that is the basis of all biotechnological innovation. In this special issue of Biological Research, we present novel contributions in agricultural, aquicultural, environmental and biomedical biotechnology. We begin by reviewing the socioeconomic and regulatory impacts of genetic manipulation of organisms, and then present reviews that range from the development of more friendly plant breeding technologies such as cisgenesis, the use of new molecules for chemical control of plant viruses and biological applications of products developed from honey, to genomic approaches to improve the attributes of the fruit and to characterize marine diversity for aquaculture. In this issue we also include studies that show the genomic resistance to heavy metals in environmental microorganisms and the mechanisms used by Cyanobacteria to prevent the transfer of foreign DNA. Synthetic biology, a biotechnological tool that aims to revolutionize the work in genetic engineering in all of its fields including education, and a proposal to direct enzyme evolution for biotechnological applications are also reviewed.

An important part of this special issue of BR is focused on the development of vaccines and therapies that use biotechnology to face animal and human diseases. We present studies that examine new procedures based on nanoparticles and microparticles as carriers for fish vaccines, the use of dendritic cells as a vaccine for prostate cancer, clinical applications of osteogenic molecules associated with the collagen system and the use of stem cells in cartilage lesions. Finally, we present a study that shows how the composition of the growth medium can affect gene expression and development in bovine somatic cells that are potential nuclei receptors.

This special issue of BR does not aim to cover completely the most important areas of biotechnology nor those of greatest economic impact. Its purpose is to provide relevant contributions of researchers in a range of biotechnology areas of international impact. We are grateful to each one of the authors for their contributions.

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