
Preface

Modern research includes genetic engineering as well as cell- and tissue culture technologies. The concept encompasses a wide range of procedures (and history) for modifying living organisms according to human purposes - going back to domestication of animals, cultivation of plants, and "improvements" to these through breeding programs that employ artificial selection and hybridization. By comparison to biotechnology, bioengineering is generally thought of as a related field with its emphasis more on higher systems approaches (not necessarily altering or using biological materials *directly*) for interfacing with and utilizing living things. Biotechnology draws on the pure biological sciences (genetics, microbiology, animal cell culture, molecular biology, biochemistry, embryology, cell biology) and in many instances is also dependent on knowledge and methods from outside the sphere of biology (chemical engineering, bioprocess engineering, information technology, biorobotics). Conversely, modern biological sciences (including even concepts such as molecular ecology) are intimately entwined and dependent on the methods developed through biotechnology and what is commonly thought of as the life sciences industry.

Biotechnology has proved to be one of the more fruitful technological approaches sciences, being both very powerful and able to generate valuable intellectual property. This book aims to present examples in the application molecular biology and genetic engineering. This book shows how areas as diverse as agrofood technology, fine chemistry, detergents, bioremediation and biosensors receive significant contributions from biotechnology approaches. The fundamental principles that underpin all biotechnology are explained and a full range of examples are discussed to show how these principles are applied; from starting substrate to final product. The Challenges on this aspects and methodologies inspired us to edit the BOOK entitled "Microbial, Plant and Animal Research."