

PREFACE

Genetic engineering involves the genetic modification or manipulation of any organism's genes/DNA using molecular biology techniques. This manipulation involves various kinds of manipulations of the DNA, including changing the base pairs, deletion or addition of the DNA base pairs or cloning. Cloning techniques use molecular biology laboratory techniques to produce offspring that are genetically identical to the donor parent. Clones of adult animals are created by a process called somatic cell nuclear transfer. In this process, the nucleus from a somatic cell is removed and placed into an egg cell that has had its nucleus removed. Besides cloning, genetic engineering is used to enhance or modify the characteristics of an organism for industrial production or purification or characterization of a genetically modified product. This book deals with the principles of genetic engineering and its applications in animals, plants and drosophila, or for that matter any organism, from a virus to a sheep. For example, genetic engineering can be used to produce plants that have a higher nutritional value or can tolerate exposure to herbicides or crops resistant to insects. Genetic engineering can also be used to produce insulin for diabetic patients use in a yeast or bacteria.