

Genetic Basis of Growth and Development

It is believed that most cells in an organism carry the same genetic information. This is known as genetic equivalence. This leaves gene expression to represent all the differences in the cells of a multicellular organism. Cloning is the use of a somatic cell of an organism to generate an identical organism. Under cell culture, the roots of a carrot plant can develop into a genetically identical carrot plant. Cells that can retain and maintain a zygotes ability to differentiate and develop into a whole multicellular organism are referred to as totipotent. Stem Cell Research is a very important field of study on development. It can act as permanent treatment for permanent injuries (like nerve damage) and for disorders/diseases (like diabetes). This is because stem cells are undifferentiated somatic cells. The development of a new life is a spectacular process and represents a masterpiece of temporal and spatial control of gene expression. Developmental genetics studies the effect that genes have in a phenotype, given normal or abnormal epigenetic parameters. The findings of developmental biology can help to understand developmental abnormalities such as chromosomal aberrations that cause Down syndrome. An understanding of the specialization of cells during embryo-genesis has provided information on how stem cells specialize into specific tissues and organs. The book is an endeavour to present latest information about the physiological and molecular bases of productivity enhancements. The book will be useful for students and research workers in acquiring in depth knowledge in the field of physiology, agronomy, plant breeding, horticulturists, biotechnologists and botanists.

About the Editor

Allan Healey worked with the Charles Sturt University, Australia for the past 18 years has immensely contributed to the world of Biotechnology



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