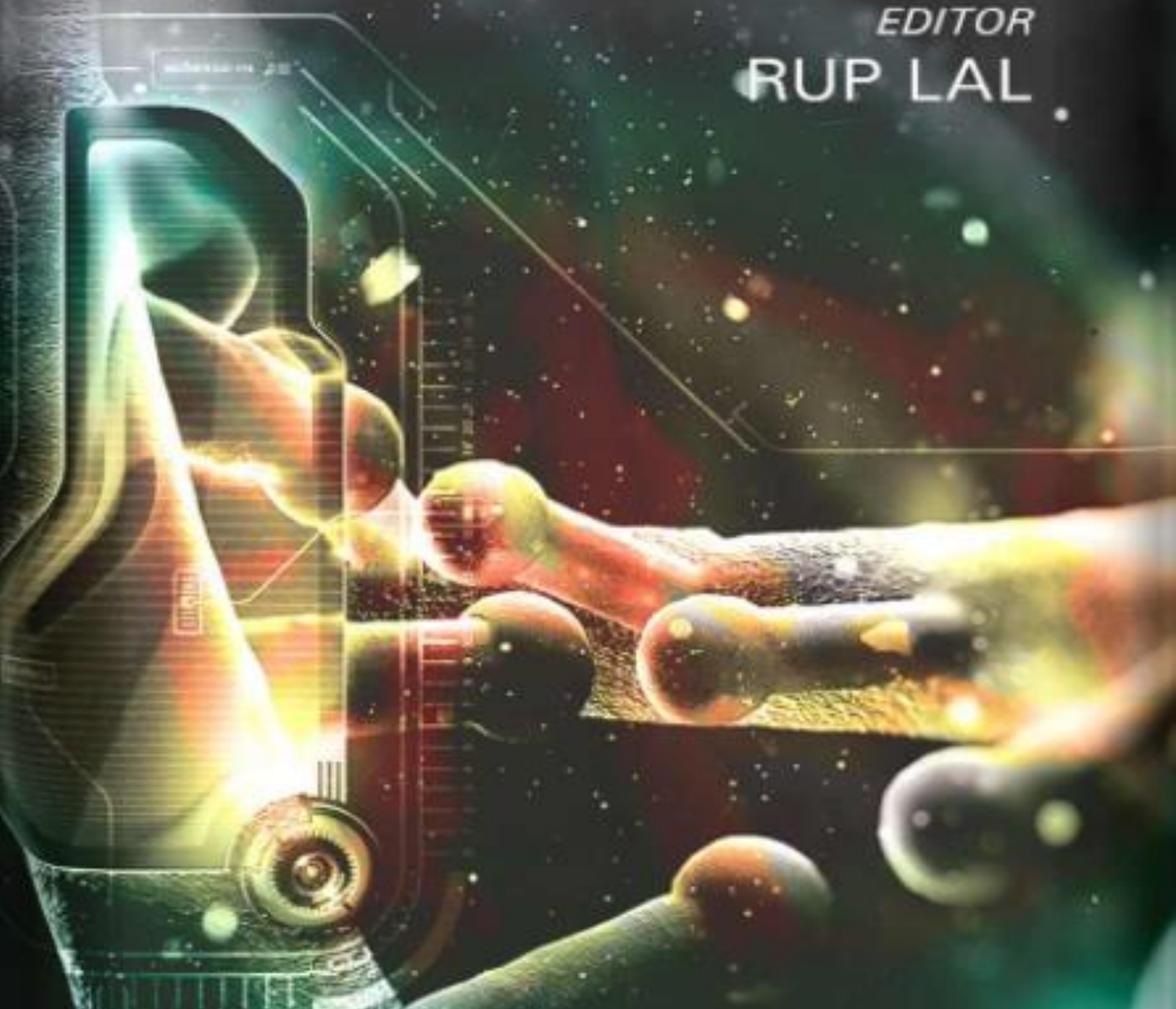


AN INTRODUCTION TO BIOTECHNOLOGY A GENETIC MANIPULATION PERSPECTIVE

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Introduction to Biotechnology

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The term 'biotechnology' was coined by a Hungarian engineer, Karl Ereky in 1919. At that time the term biotechnology meant the production of raw materials with the aid of living organisms especially microorganisms. Biotechnology is not new to humanity and man has been manipulating living things for his own concern. In the late eighteenth century and the beginning of nineteenth century, vaccination, crop rotation and selective animal breeding were practiced. However, the discovery of microorganisms, followed by Mendel's laws of genetics during the end of nineteenth century provided further impetus to biotechnology. Initial focus was on the use of microorganisms for the production of antibiotics and other products through fermentation processes. The progress in biotechnology was slow during the first half of the twentieth century. Even after the discovery of double helical structure of DNA by Watson and Crick in 1953 (Table 1), there was not much progress until 1970. The era of modern biotechnology began in early 1970s with the discovery of simpler tools for manipulating DNA. This was eventually followed by the discovery of a number of newer tools that virtually provided a strong momentum to the growth of biotechnology.

Significant Biotechnology Milestones

Table 1 Significant Milestones in the History of Biotechnology and Its Major Tools from 1953 Onwards

Year	Milestones
1953	- Discovery of the molecular structure of DNA by James Watson and Francis Crick.
1966	- The genetic code is "cracked" - showing that a sequence of three nucleotide bases determines each of 20 amino acids (two more amino acids have since been discovered).
1973	- Stanley Cohen and Herbert Boyer performed the first experiments in genetic engineering by developing a technique to clone segments of DNA molecules.
1976	- Genentech, the first company devoted to producing genetically engineered products, established in San Francisco, California.
1977	- Sanger's dideoxy method of DNA sequencing developed. - Maxam-Gilbert's method of DNA sequencing by chemical synthesis of DNA developed.

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