

21st Century Biotechnological Research and Development Advancements for Industrial Development in India

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Abstract : Biotechnology is a discipline which explains the use of living organisms and systems to construct a product, or we can define it as an application or technology developed to use biological systems and organisms processes for a specific use. Particularly, it includes cells and its components use for new technologies and inventions. The tools developed can be further used in diverse fields such as agriculture, industry, research and hospitals etc. The 21st century has seen a drastic development and advancement in biotechnology in India. Significant increase in Government of India's outlays for biotechnology over the past decade has been observed. A sectoral break up of biotechnology-based companies in India shows that most of the companies are agriculture-based companies having interests ranging from tissue culture to biopesticides. Major attention has been given by the companies in health related activities and in environmental biotechnology. The biopharmaceutical, which comprises of vaccines, diagnostic, and recombinant products is the most reliable and largest segment of the Indian Biotech industry. India has developed its vaccine markets and supplies them to various countries. Then there are the bio-services, which mainly comprise of contract researches and manufacturing services. India has made noticeable developments in the field of bio industries including manufacturing of enzymes, biofuels and biopolymers. Biotechnology is also playing a crucial and significant role in the field of agriculture. Traditional methods have been replaced by new technologies that mainly focus on GM crops, marker assisted technologies and the use of biotechnological tools to improve the quality of fertilizers and soil. It may only be a small contributor but has shown to have huge potential for growth. Bioinformatics is a computational method which helps to store, manage, arrange and design tools to interpret the extensive data gathered through experimental trials, making it important in the design of drugs.

Keywords : biotechnology, advancement, agriculture, bio-services, bio-industries, bio-pharmaceuticals

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