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"Biotech is the way to future "

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"Biotech is the way to future "



The Biotechnology sector today possesses the ability to provide crucial leads, which can help not only in curing critical diseases but also reduce widespread hunger. With a strong and consistent research and development thrust, the sector is increasingly being viewed as an answer to diseases, such as cancer and AIDS; as an instrument to enhance agricultural productivity and in providing solutions to climate change and promoting sustainable development through the use of biofuels.

Immense application and opportunity in biotechnology field led me to choose 'Industrial Microbiology' as my honours subject in my undergraduate studies. This course opened up the large number of ramifications in biology in front of me and I was exposed to the world of fundamental biology; Molecular Biology, Genetics, Immunology, Biochemistry as well as applied aspects of biotechnology; applications of genetically modified organisms, applications of microbes in pharmaceuticals, bioremediation, textile industry, agriculture, food industry. This vastness that, I was exposed to intimidated as well as excited me.

A Masters degree in 'Molecular and Human Genetics' from Banaras Hindu University was the result of interest developed during under-graduation to gain insight into the various techniques used at molecular and cellular level. My Masters course, with its immense emphasis on in-depth theoretical knowledge, also helped me know about the latest research and product development in the field of biotechnology. Moreover, an exposure to the real scientific environment helped me develop some scientific outlook of my own. My educational background in field related to biotechnology and exposure to various on-going researches in the area during under-graduation/post graduation/internship/training developed a deep desire to gain knowledge, solve basic scientific questions and impart knowledge to young minds led me to pursue my career as teaching-cum-research fellow at biotechnology Division, Netaji Subash Institute of Technology, New Delhi.

The area of my research is 'Development of biological tool for bioremediation of pesticides'. Till date pesticide residue and waste are treated by Physical and chemical methods such as incineration, land filling, burning or composting and chemical amendments. These methods are costly and less efficient. My research would help in development of alternative technology and product for remediation of pesticides.

Bioremediation is a natural process alternative to such methods, It would provide more aesthetic and environmental friendly processes and products. One of such technologies is 'Probiotic technology' based on beneficial and effective microorganisms, which can be deployed for bioremediation of Persistent pollutants. The microbes in such technology are non-harmful, non-pathogenic and non-genetically-engineered (non-GMO).Â India is recognised as a mega bio-diversity country. Microbial diversity of India can be potentially utilized in this technology. Besides that, plants, genetically modified microbes, enzymes can also be utilized for bioremediation of persistent pollutant. Various plant species has been reported to accelerate the bioremediation via bioaccumulation or enrichment of microbes, which can utilize persistent pollutant as sole source of carbon. These microbes synthesise enzyme which transform these pollutants into non toxic product. Such enzymes can be harvested and applied directly for remediation process. Instability problem associated with such enzymes can be solved by nanotechnology. With the help of environmental biotechnology we can manage and utilize our resources judiciously and can keep our environment clean for coming generations.

India has been ranked among the top 12 biotech destinations worldwide and third largest in the Asia-Pacific region.The benefits of biotechnology are immense for a developing country like India. The growing population, limited land for cultivation and the growing demand for alternative energy sources has led to greater application of biotechnology in India. With a huge base of talented,skilled and cost competitive manpower, and a well developed scientific infrastructure, India is poised to become a leading global player in the biotechnology arena.