

**Inaugural address by Smt. D. Purandeswari, MoS-HRD on
International Conference on Bio-Informatics and Drug discovery
to be held at DST auditorium, University of Hyderabad on 20-12-
2007**

I am glad to be called upon to deliver the inaugural address on International Conference on Bioinformatics and Drug Discovery. Bioinformatics has become a frontline applied science and is of vital importance to the study of new biology, which is widely recognized as the defining scientific endeavour of the twenty first century. The genomic revolution has underscored the central role of bioinformatics in understanding the very basics of life processes.

Growth of biotechnology has accelerated particularly during the last decade due to accumulation of vast sequence and structure information as a result of sequencing of genomes and solving of crystal structures. This coupled with advances in information technology, has made biotechnology increasingly dependent on computationally intensive approaches. This has led to the emergence of a super specialty discipline, called bioinformatics.

India's predominantly agrarian economy, the vast biodiversity and ethnically diverse population makes biotechnology a crucial determinant in achieving national development. As India's population crossed one billion figure, the country is faced with newer challenges of conservation of biodiversity to ensure food security, healthcare tackling bio-piracy and safe guarding IPR of Plant Genetic Resources

(PGR) and associated knowledge systems, environment protection and education. The liberation and Globalization of the economy pose further challenge to society and the government to modernize and respond to the increasingly competitive international environment.

In recognition of its importance, the Department of Biotechnology, Government of India has identified bioinformatics as an in area of high priority during the tenth plan period in order to ensure that this sector attains levels demanded in the international arena. This can be achieved through organizational and functional restructuring; integration and optimal utilization of the available resources; planned expansion based on actual market demand; increasing autonomy of the system; transfer of technology from laboratory to the industry; sustainable development of human resources; and finally, enhancing accountability of the participating institutions.

The Bioinformatics Policy of India (BPL-2004) has been formulated against a backdrop of our experience; building up on the successes and learning from the shortcomings. The primary objective is to make India competitive in the changing global scenario.

The principal aim of the bioinformatics programme was to ensure that India emerged a key international player in the field of bioinformatics; enabling a greater access to information wealth created during the post-genomic era and catalyzing the country's attainment of lead position in medical, agricultural, animal and environmental

biotechnology. India should make a niche in Bioinformatics Industry and would work to create bioinformatics industry with US\$ 10 billion by the end of 10th Plan period. It was felt that these could be achieved through a focused approach in terms of information acquisition, storage, retrieval and distribution. Transformation of a knowledge resource to economic development is dependent on the rate at which the technology developed is absorbed by the industry. This push-pull synergy between technology and market is the hallmark for sustainability of any technologically intensive programme. Synchronization of this approach requires progressive yet sustained liaison with the industry. Fostering a closer cooperation with the industry and building a meaningful academia-industry interface could optimize the success of the bioinformatics. The Industry and academia cooperation can be in two ways- (i) The academic institutions can outsource the expenditure for the finishing and packaging of any databases & software development for which the academic institutions should retain the copy right/ patent, and (ii) The collaboration can be for the entire project in which the academic institutions and the industry shall share the copy right/patent.

The bioinformatics industry being a high technology area requires venture capital funding for active participation of private and public sector organization. There is a strong need to create such a fund. A separate centre shall be established for the promotion of public-private partnership with sufficient autonomy in decision making. Globalization refers to the process that enables integration of the national economy with

the world economy. In technologically intensive sectors, this is achieved by free flow of technology across state boundaries and mutual resource sharing that caters to the interest of the international community. The Indian bioinformatics programme is likely to become more competitive through technology diffusion, assistance in capital formation and innovation from its overseas brethren.

Bioinformatics is a fast growing discipline and therefore, the knowledge gathered by an individual, tends to become obsolete within a very short period of time. As such there is an acute requirement of continuous training of the scientists, teachers and researchers in the newly emerging areas and concepts. In view of this, the BTIS programme should take necessary measures to provide continued education to the practicing bioinformaticians of the country. Bioinformatics is an emerging interdisciplinary area of Science & Technology encompassing a systematic development and application of IT solutions to handle biological information by addressing biological data collection and warehousing, data mining, database searches, analyses and interpretation, modeling and product design. Being an interface between modern biology and informatics it involves discovery, development and implementation of computational algorithms and software tools that facilitate an understanding of the biological processes with the goal to serve primarily agriculture and healthcare sectors with several spin-offs. In a developing country like India, bio-informatics has a key role to play in areas like agriculture where it can be used for increasing the nutritional content, increasing the volume of the agricultural produce and implanting disease resistance etc.. In the pharmaceutical sector, it can be used to reduce the time and cost involved in drug discovery process

particularly for third world diseases, to custom design drugs and to develop personalized medicine. Time and cost required for designing a new drug are immense and at an unacceptable level. According to some estimates it costs about \$880 million and 14 years of research to develop a new drug before it is introduced in the market. Through a meaningful intervention, it could be possible to bring down the cost and time required drug recovery process.

The Indian pharmaceutical industry including contract research, domestic and export sales now valued at \$5.5 billion, can touch \$10 billion or more by 2008, provided certain institutional frameworks and guidelines are put in place. Owing to the well acknowledged IT skills and a spate of upcoming software, biotech and pharma industries and active support from Government organizations, the field of Bioinformatics appears promising.

I hope all the issues which are cognate to the discipline of Bioinformatics particularly relating to pharmaceutical sector would be discussed comprehensively in this conference by experts and specialists who will no doubt arrive at meaningful conclusions which would provide inputs to the policy-framers for taking appropriate decisions commensurate with the country's interests.

With these words, I have great pleasure inaugurating this Conference.

JAI HIND