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Bioinformatics, the emerging technology for developing new drugs

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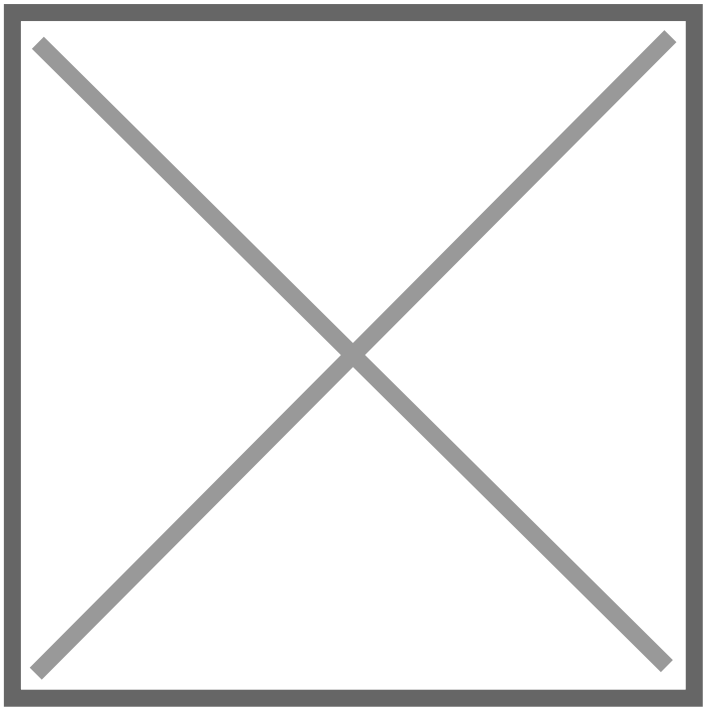

The increasing pressure on life science companies to generate more drugs in less time is creating remarkable interest in bioinformaticsÃ¢â?¬â?•the storage, organization and analysis of biological data. Bioinformatics is also referred to as a marriage of computer science and molecular biology. In keeping with the importance of Bioinformatics in the coming days and months, InBios, a non-profitable organization conducted 'Brainstorm 2003', a platform for students and the industry to interact with each other at Hyderabad.

The event saw a number of participants from different biotech players within the region including Hyderabad based Ocimum Biosolutions and Ingenovis. "The major factors driving the growth of bioinformatics include the pharmaceutical industry's need for more efficient drug discovery and development, coupled with an emphasis on the rapid generation of sequence data," said Ashwin Padmanabhan, product specialist at Hyderabad based Ingenovis - a division of I-labs.

Other reasons for the expansion of the technology include the emergence of gene expression data, the generation of new proteomics data and the need for information systems those store and process large amounts of biological data. Bioinformatic analysis basically involves the use of computer algorithms to compare newly sequenced genes with databases containing genetic sequences that have known functions. Since the advent of bioinformatics, large public and private databases have been formed that contain a variety of data, including gene and protein sequences, and even the 3-D structure of proteins and cellular components.

Currently, most bioinformatics data are genetic sequence data. Private enterprises and public efforts have created DNA sequence databases that can be used to infer the functions of an unknown gene. The analysis of proteins through automated data collection, database formation and data analysis using computers (proteomics) is not yet as established as genomics research because proteins are more complex than DNA. However, proteomics research is expected to flourish because proteins do the actual work for genesÃ¢â?¬â?•whether that work results in maintaining health or causing disease.

"The technology is versatile and can be applied whenever gene, protein and cell research are used for the discovery of a new drug or a new herbicide/herbicide-resistant crop combination. Drug toxicology, pharmacogenetics and clinical trial studies can also benefit from this technology, which can even be used to genetically engineer crops and livestock that have enhanced nutritional qualities and the ability to produce harmaceuticals," said Anuradha Acharya, CEO, Ocimum Biosolutions. One thought which came out of the event was that by offering higher productivity in drug discovery and development, bioinformatics can also enable companies to obtain patents earlier, reducing the loss of revenue caused by generic competition once patents expire. The InBios event was well attended by a large group of students from Pulla Reddy college of Pharmacy. In the future, InBios plans to provide professional solutions and services dedicated to improve efficiency, competitiveness, and profitability to aspiring people who want to make a career in bioinformatics.