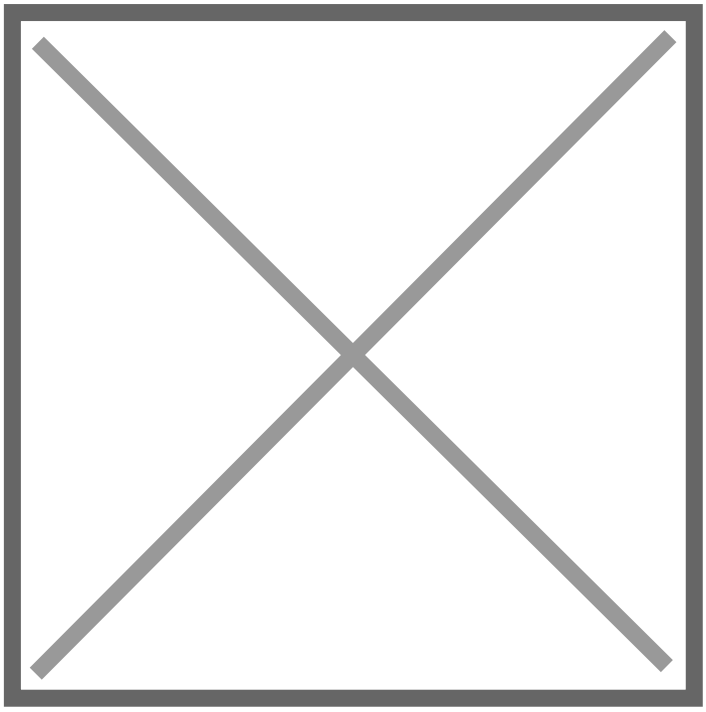
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A new ray of hope

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The human genome project signals a paradigm shift for the global pharmaceutical industry in its search for critical drug discoveries. The drug discovery process will be transformed dramatically in the post genome-sequencing era and will occupy center of attention in the modern biological research. This will have far reaching implications in the area of health care and molecular medicine in coming century.

Earlier, the drug discovery research has been traditionally driven by chemistry. In effect, it has been a case of compounds--painstakingly synthesized one at a time--looking for biological targets. But all that's changing. Today, drug research is driven by biology - molecular genetics, genomics, and bioinformatics.

The area of drug development through genomic research promises development of new diagnostic procedures and therapeutic products that will enable the doctors to prescribe the required drugs selectively to the patients for whom they will be effective and safe. Genomics might bring back the concept of customized medicine, as practiced in ayurveda.

To take advantage of the opportunities opened by genomics, several well-established Indian pharmaceutical companies such as Nicholas Piramal India Ltd, Ranbaxy, and Dr Reddy's Lab., are in this fast growing sector. In addition to pharmaceutical companies, genomics is providing a great scope for another fast growing field such as bioinformatics. The global bioinformatics industry clocked an estimated turnover of $2 billion last year and this figure is expected to grow to $60 billion in the next three years.

Rapid progress in genomic research and its potential applications have opened up new vistas for the twenty first century. The post genome era promises to identify genes responsible for both single disorders and complex multi-factorial diseases at a much faster rate than ever. Further technology and resources generated by the human genome project and other genomics research are already having a major impact on research across life sciences.

Programs

Looking at the potentiality of genomics, the government of India has launched a program called Human Genetics and Genome Analysis. The main objectives of this program are to identify, map and characterize genes related to genetic disorders prevalent in India for diagnosis, prevention, and management of genetic disorders and to develop new methods for the analysis and interpretations of genomic DNA sequences.

The department of biotechnology (DBT) has established 16 genetic diagnosis cum counseling units. These units are providing patient service since 1990-91, in reducing genetic disorder in the country. So far about 16,500 affected families were benefited from these units. The genetic clinics have been established for molecular diagnosis and counseling for common genetic disorders prevalent in the country. These centers are developing new diagnostic kits and also using the exiting

diagnostic kits for molecular diagnosis of the genetic disorders. Also they provide diagnosis and counseling services to the affected people. The diseases diagnosed in these centers include thalessemia, haemophilia, Down's and Turner's syndrome, and others.

Prospects

The Indian geneticists say that the country could become a world leader in Ã¢â?¬Å?functional biological genomicsÃ¢â?¬? with the country's diverse ethnic race gene pool, provided that the scientist take up the issue seriously and work systematically. However the only real challenge before the scientists is to set up an inter-disciplinary research program under which molecular biologists, geneticists, clinicians, computer scientists and even theoretical physicists and synthetic chemists would work together.
Since there exists a gap between the development of interconnectivity of computers through internet and framing of cyber laws, the scientists urge that the geneticists along with legal experts and politicians should make sure that the information generated is not misused. Hence it is high time for the Indian science managers to work on ethical and legal issues involved simultaneously.

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