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## **Department of Biotechnology**

### **GenomeIndia Initiative: mapping India's genetic diversity**

New Delhi, February 07: India, with 1.3 billion population with prominence of several ethnic and linguistic groups along the vast geographical spread, has remarkable genetic diversity. It is a treasure trove providing unique opportunity wherein we can document the genetic structure of the nation's population and create a resource for researchers and clinicians that will help unravel the genetic underpinnings of chronic diseases currently on the rise in India, example, diabetes, hypertension, cardiovascular diseases, neurodegenerative disorders, and cancer. Such a resource for the country will also help filter variations or mutations conferring risk of monogenic disorders.

**GenomeIndia:** Cataloguing the Genetic Variation in Indians is a Pan India initiative focused on Whole Genome Sequencing of representative populations across India. The goal is to start with and execute whole genome sequencing and subsequent data analysis of 10,000 individuals representing the country's diverse population. This will help build an exhaustive catalogue of genetic variations in Indian population, and aid in the designing of a genome wide association chip for Indian population which will facilitate further large-scale genetic studies in a cost-effective manner. In the second phase, another 10000 disease based population will be sequenced. Major target diseases are Maternal and child health, Rare and genetic disorders, Cancer, Cardio and Brain disorders.

This is a mission-mode, multi-institution consortium project, first of its kind in India supported by Department of Biotechnology, Government of India. Twenty institutions are involved in this endeavor. They are Centre for Brain Research of Indian Institute of Science, Bangalore; AIIMS Jodhpur; CSIR- Centre for Cellular and Molecular Biology, Hyderabad; Centre for DNA Fingerprinting and Diagnostics, Hyderabad; CSIR - Institute of Genomics & Integrative Biology, Delhi; Gujarat Biotechnology and Research Centre, Gandhinagar; Indian Institute of Information Technology, Allahabad; Indian Institute of Science Education and Research, Pune; Indian Institute of Technology, Madras; Indian Institute of Technology, Delhi; Indian Institute of Technology, Jodhpur; Institute of Bioresources & Sustainable Development, Manipur; Institute of Life Sciences, Bhubaneswar; Mizoram University, Aizawl; National Centre for Biological Sciences, Bangalore; National Institute of Biomedical Genomics, Kalyani; National Institute of Mental Health & Neurosciences, Bangalore; Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram; Sher-e-Kashmir Institute of Medical Sciences, Srinagar. The team includes geneticists, statisticians, computational scientists and clinicians.

The results from this project would be a valuable national resource. This project has initiated a national level capacity building in sequencing and computation for high throughput human

genomics. Several dovetailed efforts of additional whole genome sequencing would happen that will facilitate understanding of diseases in the Indian population and open up avenues for precision medicine in the country. This would be a great example of convergence of technologies to generate results paving the way for precision medicine and promote better health and wellness in India.

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