

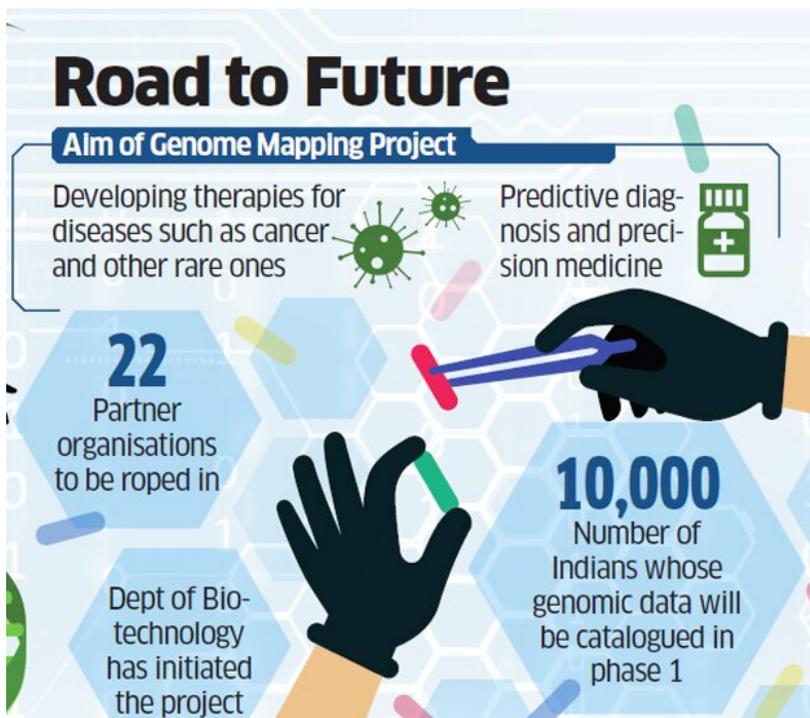


Genome India Initiative

drishtiias.com/printpdf/genome-india-initiative

India is planning to launch its first **Human Genome Mapping project**.

- Project involves scanning of 20,000 Indian genomes (in the next five years) in order to develop **diagnostic tests** and effective therapies for **treating diseases** such as cancer.
- It is to be implemented by **The Department of Biotechnology (DBT), Ministry of Science and Technology**.



Cancer Incidence in India

- According to the study, as India continues to age, cancer cases will **double** every 20 years.
- **Uttar Pradesh, Bihar, Jharkhand** and **Odisha**, will bear the biggest cancer burden in the next 10-20 years.

- According to **Epidemiological Transition Level** concept (**ETL**), number of patients with cancer started to increase as the life expectancy of Indians started to increase.
- The States with high ETL have a better development index and higher cancer rates. ETL is highest in Kerala and is lowest in Uttar Pradesh.
- Government should consider **Bhore committee** and **Mudaliar committee** report recommendations for cancer that include creation of a multidisciplinary cancer treatment unit in all medical colleges and setting up of a stand-alone cancer speciality hospital.
- The project is to be carried out in two phases:
 - The first phase of the project involves sequencing the **complete genomes** of 10,000 **healthy Indians**.
 - Second phase, involves genome sequencing of 10,000 **diseased individuals**.
- Data on human sequencing would be accessible to researchers through a proposed **National Biological Data Centre** envisaged in **Biological Data Storage, Access and Sharing Policy**.
- **National Centre for Cell Sciences** will collect samples of the microbiome from the human gut.

National Centre for Cell Science

- The National Centre for Cell Science is a national level, biotechnology, tissue engineering and tissue banking research center located at Savitribai Phule Pune University, Maharashtra.
- It is one of the premier research centers in India, which works on cell-culture, cell-repository, immunology, chromatin-remodelling.

Significance

- **Healthcare:** For new advancements in medical science (like predictive diagnosis and precision medicine, genomic information) and in disease management, **genome sequencing** can play a crucial role.
 - Through genome sequencing methodology, researchers and clinicians can easily detect the disease related to **genetic disorder**.
- **Genetic Screening:** The genome project will lead to improved techniques of genetic screening for **diseases** prior to the birth.
- **Evolution Puzzle:** The genome project may answer questions regarding evolution by comparing human DNA with primate DNA.

Concerns

- **Discrimination:** Discrimination based on genotype is a possible consequence of genome sequencing. For example, employers may obtain genetic information on employees prior to hiring them. If a certain employee is shown to be genetically susceptible to undesirable workforce traits they may be discriminated against their genotype.
- **Ownership and Control:** Apart from the issue of privacy and confidentiality, questions of ownership and control of genetic information becomes critical.
- **Fair Use of Genetic Data:** For insurance, employment, criminal justice, education, adoption, and military is necessary.

Source:TH