Genome Technology and Prospects for India

What is the issue?

\n\n

\n
- Genome technology is revolutionising the medical industry.
\n

\n\n

\n
- India need to use of its scientific resources for genetic research to leverage them.
\n

\n\n

What is a genome?

\n\n

\n
- A genome is an organism’s complete set of DNA, including all of its genes.
\n
- Each genome contains all of the information needed to build and maintain that organism.
\n
- In humans, a copy of the entire genome more than 3 billion DNA base pairs is contained in all cells that have a nucleus.
\n

\n\n

What are recent developments in this technology?

\n\n

\n
- DNA stores a person’s hereditary information and gets transmitted from parents to children over generations.
\n
- Recent developments in genome technology has led to Personalised medicine by extracting particular information from one’s DNA.
\n

- This technology helps in building individualised medicine based on the precise information stored in each human’s DNA (their genome).
\n
- At present the cost of building such treatments are very affordable due to well reformed gene editing techniques and the age of genomics-informed medicine is now within sight. Click here to know more about gene editing
\n

\n\n

How India can make use of these developments?

\n\n

\n
- The fact is that both genetic data and biological samples are easily transported across borders and if Indian regulation on this technology is short-sighted, it will cause Indian genomics to move abroad.
\n
- Thus India need to collect information about the genetics of its population and train manpower capable of interpreting it.
\n

\n\n

\n
- The information can be gathered from a large and sustained collection of data fully sequenced individual genomes along with medical histories for the individuals.
\n
- A data bank needs to be established which can collects and store kind of information on Indian genomes.
\n
- Government need to push academic institutions, the existing health-care industry, the IT industry and the nascent biotechnology industry to explore these avenues.
\n

\n\n

What are the prospects for India?

\n\n

\n
- India is more genetically diverse with something like 5,000 ethno-linguistic and religious groups all of which probably have some degree of genetic distinctiveness.
\n

- The genetic implication of this is that there are likely to be many recessive diseases stemming from single genes specific to individual groups that can be identified.
  \n
- This knowledge could then also be quickly applied to the task of managing diseases in these groups as well as be used for genetic counselling that could reduce their incidence in future generations.
  \n
- With large samples genomes genetic risk factors related to common diseases (such as heart disease that stem from many genes) that affect the health of many more individuals can be understood and cured.
  \n
- The data collected as part of these efforts will also help to uncover the basic biological function of genes and their interactions, which are not yet fully understood.
  \n
- This knowledge will be useful to humanity worldwide and also offer India a chance to claim a piece of the global medical and scientific frontier.
  \n

\n\n

\n\n

Source: The Hindu

\n

