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Whole genome data will be important for building the knowhow

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The Council of Scientific & Industrial Research (CSIR) has conducted Whole Genome Sequencing of 1,008 Indians from different populations across the country. Announcing details of the IndiGen Genome project, the Union Minister for Science & Technology, Earth Sciences and Health & Family Welfare, Dr Harsh Vardhan said that the whole genome data will be important for building the knowhow, baseline data and indigenous capacity in the emerging area of Precision Medicine. The outcomes of the IndiGen will have applications in a number of areas including predictive and preventive medicine with faster and efficient diagnosis of rare genetic diseases, he added.

The IndiGen initiative was undertaken by CSIR in April 2019, which was implemented by the CSIR-Institute of Genomics and Integrative Biology (IGIB), Delhi and CSIR-Centre for Cellular and Molecular Biology (CCMB), Hyderabad. This has enabled benchmarking the scalability of genome sequencing and computational analysis at population scale in a defined timeline. The ability to decode the genetic blueprint of humans through whole genome sequencing will be a major driver for biomedical science.

Dr Harsh Vardhan said that the benefits of this initiative include epidemiology of genetic diseases to enable cost effective genetic tests, carrier screening applications for expectant couples, enabling efficient diagnosis of heritable cancers and pharmacogenetic tests to prevent adverse drug reactions.

On the occasion, Dr Harsh Vardhan unveiled the IndiGenome card and accompanying IndiGen mobile application that enables participants and clinicians to access clinically actionable information in their genomes. He emphasized that it ensures privacy and data security, which is vital for personal genomics to be implemented at scale. Dr Harsh Vardhan elaborated that this is being pilot tested in individuals across India and has evinced interest from several Indian commercial organisations.

The outcomes of the IndiGen will be utilized towards understanding the genetic diversity on a population scale, make available genetic variant frequencies for clinical applications and enable genetic epidemiology of diseases. The whole genome data and knowhow for the analysis of largescale genomic data is expected to enable evidence and aid in the development of technologies for clinical and biomedical applications in

India.

Director General, CSIR and Secretary, Department for Scientific & Industrial Research, Dr Shekhar C. Mande said that it is important to ensure that India, with its unparalleled human diversity, is adequately represented in terms of genomic data and develops indigenous capacity to generate, maintain, analyze, utilize and communicate large-scale genome data, in a scalable manner.

CSIR has led human genomic sciences in India and has made major contributions in understanding the “Indian Genome Variation”. Pioneering collaborations in genomics has been fostered by CSIR both nationally and internationally. Furthermore, CSIR contributed towards the first personal human genome in India and in understanding ancestral population in India and early migrations that led to what we know today on distinct ethnic groups. CSIR also pioneered the application of genomics in clinical settings in the area of rare genetic diseases in India by means of DNA/Genome based diagnostics and interaction with large number of clinical collaborators.