

Global South Matters



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India's Genome Initiative: Advancing Global South Genomics

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Human genomics is transforming healthcare by enabling precision-based interventions and personalized treatments that enhance outcomes and disease prevention. The Genome India Project (GIP), led by the Department of Biotechnology (DBT), marks a significant milestone in this field. The announcement was made during the Genome India Data Conclave at New Delhi on January

9, 2025, marking India's transition to self-reliance in genomic research. Since its launch in 2020, GIP has sequenced 10,000 genomes, capturing the genetic diversity of representing 99 population groups, or about 2% of the country's 4,600 population groups as a database. The genomic data, housed in the Indian Biological Data Centre (IBDC), supports cutting-edge research into genetic predispositions and paves the way for precision medicine tailored to India's population. The project is governed by the Framework for Exchange of Data (FeED) Protocols under Biotech-PRIDE Guidelines, ensuring secure and ethical data-sharing practices to build trust and transparency in genomic research.

During the release of Genome India data, the transformative potential of genomics was highlighted. It was emphasized that indigenous genomic data will provide the foundation for disease-associated single nucleotide polymorphism (SNP) studies and drive the development of drugs specific to Indian genetic profiles. Leveraging AI and quantum computing, genomic analysis and drug discovery will accelerate, enabling innovations like digital genetic twins—virtual biological replicas of individuals that facilitate highly personalized healthcare solutions. This technological convergence is poised to revolutionize precision healthcare and predictive diagnostics.

The GIP offers a scalable model for Global South countries to strengthen their healthcare systems. By investing in local genomic infrastructure, developing bioinformatics talent, and adopting cost-effective technologies, nations can advance genomic medicine affordably. India's emphasis on ethical data governance provides a replicable framework for responsible genomic research. Global genomic initiatives, including the UK's 100,000 Genomes Project and the US-based All of Us Research Program, reinforce the growing momentum for integrating genomics into public health to improve healthcare outcomes globally.

The GIP exemplifies how genomics can power innovation, economic development, and healthcare transformation. By adopting similar approaches, Global South nations can enhance healthcare equity, tackle shared disease burdens, and foster sustainable medical breakthroughs through regional collaborations and knowledge-sharing.