BHARAT Study

Prelims: Current events of National and International Importance | science and technology.

Why in News?

Recently, the Indian Institute of Science (IISc), Bengaluru, has launched the BHARAT study under its Longevity India Program.

> *Longevity IndiaPrograme is a initiative launched by IISc in 2024 to support ageing research in India.*

- **BHARAT –** It stands for Biomarkers of Healthy Aging, Resilience, Adversity, and Transitions.
- **Aim** – It is the pan-India research that aims to create the country's first comprehensive database to understand **ageing patterns unique to the Indian population**.
- It will be identified through identification of biological, physiological, environmental, and lifestyle factors that influence healthy ageing among Indians.
- **Bharat baseline development –** It will create India's first population-specific database defining "**normal**" **health parameters** for Indians.
- The reference values tailored to Indian genetic, socio-economic, and environmental conditions.

Key Features of BHARAT Study

- **Multi-Omics analysis –** Comprehensive biological profiling, including,
  - **Genomics –** Detection of disease-linked genetic variants.
  - **Proteomics –** Analysis of serum proteins.
  - **Metabolomics –** Study of metabolites indicating health status.
  - **Lipidomics –** Examination of lipid composition.
  - **Epigenomics –** Exploration of gene expression regulation.
  - **Metagenomics –** Gut microbiome analysis.
- **Health assessment –** Physical examinations to track functional decline and cognitive tests to monitor mental health.
- It will also do immune system analysis for resilience indicators.
- **Lifestyle & environmental factors –** Mapping of diet patterns, physical activity, and environmental exposures.
- **AI and Machine Learning integration –** Use of AI to analyse complex, multi-dimensional datasets.
- Simulation of interventions to predict their impact on ageing and health outcomes.

Significance of BHARAT

- It provides reliable, Indian-specific health benchmarks.
- It enables early detection of age-related diseases.
- It helps design better diagnostics and treatments for Indians.
- It bridges the gap between global research and India's healthcare needs.
- It positions India at the forefront of global ageing and longevity research.

Reference

The Hindu| The Indian Institute of Science launches BHARAT study

