

High-Performance Biomanufacturing Platforms

Prelims - Current events of National and International importance| Science and Tech, Biotechnology.

Why in news?

Recently, Union Minister of State for Science and Technology launched the High-Performance Biomanufacturing Platforms under the BioE3 (Biotechnology for Economy, Environment and Employment) Policy.

India's bioeconomy has grown from about \$10 billion to nearly \$100 billion today, with a target of reaching \$300 billion by 2030.

- **High Performance Biomanufacturing Platforms (HPBP)** - It is a network of 21 advanced bio-foundries and biomanufacturing hubs .

High-Performance Biomanufacturing Platforms

Emerging Technologies <ul style="list-style-type: none"> ■ Dedicated facility for large scale manufacturing of marine biotech products (KIIT TBI, Bhubaneswar) ■ Nation's first animal stem cell repository (NIAB with HiMedia, Hyderabad) ■ Biomanufacturing hub for mRNA-based precision medicine (Genova Biopharmaceuticals, Pune) ■ Bio-foundry for the development and production of high-quality precision biotherapeutics (TSHTI, Faridabad) ■ State-of-the-art Cell Therapy Manufacturing Hub (ACTREC, Mumbai) 	Agri-Food <ul style="list-style-type: none"> ■ State of the art biofoundry for the process development and optimization for pilot scale production of biopesticides from plant and microbial sources (IPFT, Gurugram) ■ Biofoundry in the area of agri-food, nutrition, and biomanufacturing (NABI, Punjab) ■ Plant to scale up the production of Gluconates (Agilent Bioplus, Ahmedabad) ■ QMS compliant facility for commercial production of Fructo- oligosaccharides (FOS) (Revelations Biotech Pvt Ltd, Hyderabad) ■ Fermentation facility at 1 KL scale for food based products, food additives, probiotics and cell growth stimulators (HiMedia Laboratories, Mumbai) ■ QMS compliant facility for commercial production of probiotics and smart proteins (Sundhya Numadis Probiocuticals Pvt Ltd, Ahmedabad)
Healthcare <ul style="list-style-type: none"> ■ Biofoundry for the development of indigenous monoclonal chassis for bioproduction (NCCS, Pune) ■ Pilot scale facility at 100 L, to scale up specialty chemicals and enzymes and to provide scale up services (FSID with TATA Chemicals, Bangalore) ■ GMP Grade Facility for Gene Delivery Vector (Immunoadoptive Cell Therapy Pvt Ltd, Mumbai) ■ Fermentation facility (at a scale of 10 KL) and to produce drug intermediates and bio-energy starter cultures at commercial scale (HiTech Biosciences, Pune) ■ Facility with pilot scale and large scale fermenters for the precommercial production of APIs (Embio Ltd, Mumbai) ■ Fermentation Facility for Functional Foods, Smart Proteins, Bio-based Chemicals, Enzymes and Precision Biotherapeutics (Laurus Bio Pvt Ltd, Vishakhapatnam) ■ State of the art facility for commercial production of monoclonal antibodies and biosimilars (Virchow Biotech Pvt Ltd) 	Energy/Green Chemistry <ul style="list-style-type: none"> ■ Biofoundry for Microbial Biomanufacturing (ICGEB, New Delhi) ■ Facility to support development and scale-up of products used in cosmetics, food, pharma and bioplastic industry (IIT Madras with TICEL Bio Park, Chennai) ■ Sequestration of CO₂ and its utilization for growing engineered microalgal strains (Jindal Steel & Power Ltd, Angul)

- **Launched by** – It is an initiative of the Department of Biotechnology (DBT) and the Biotechnology Industry Research Assistance Council (BIRAC).

The Bio Foundries and Biomanufacturing Hubs will aim at setting up of infrastructure/ facilities for augmenting scale up of technologies for bio-based products.

- **Objective** - They are designed to provide state-of-the-art infrastructure, technology, and expertise for scaling up bio-based innovations from the laboratory to pilot and pre-commercial stages.
- **Features of HPBP** – The platform integrates tools such as synthetic biology, artificial intelligence, machine learning, and omics technologies to accelerate the development of sustainable solutions in health, agriculture, food systems, clean energy, industrial biotechnology, and climate resilience.
- **Bio infrastructure** - By offering shared facilities to start-ups, SMEs, industries, and academic researchers, the initiative aims to fast-track innovation and position India as a global leader in the bioeconomy.
- **National Bio-Enablers** - The newly launched hubs, which are also called

National Bio-Enablers or Mulankur (roots of new growth), will support innovation across health, agriculture, energy, environment, industrial biotechnology, and AI-driven bio-manufacturing.

- **Stem cell repository** - These hubs include cutting-edge projects such as a state-of-the-art cell therapy facility, the nation's first animal stem cell repository, a hub for mRNA-based precision medicine, and advanced CO2 sequestration systems.
- **India's current Bio-capacity** - India already has over 21 bio-foundries, compared to just around 100 worldwide, and more than 4,000 biotech start-ups.

BIRAC

- Biotechnology Industry Research Assistance Council (BIRAC) is a not-for-profit Schedule B, Public Sector Enterprise, set up by Department of Biotechnology (DBT), Government of India.
- It acts as an Interface Agency to strengthen and empower the emerging Biotech enterprise to undertake strategic research and innovation, addressing nationally relevant product development needs.

Reference

1. [PIB | High-Performance Bio-manufacturing Platforms](#)
2. [BIRAC | High Performance Biomanufacturing Platforms](#)
3. [The Hindu |Advanced biomanufacturing hubs](#)