

## Biotechnology & Health:

### I. Key Developments in Biotechnology

#### World Bioproduct Day 2025 and India's BioE3 Policy:

World Bioproduct Day was organized by the Department of Science & Technology (DST) along with BIRAC (Biotechnology Industry Research Assistance Council) and iBRIC+. The focus was on "Equity, Environment, and Economy" (BioE3), emphasizing inclusive public participation in biotechnology.

India reiterated its goal of achieving a USD 300 billion bioeconomy by 2030 under the BioE3 framework.

The BioE3 Policy (Biotechnology for Economy, Environment, and Employment), launched by the Department of Biotechnology (DBT) in 2024, aims to promote high-performance biomanufacturing. Key features include boosting R&D, entrepreneurship, creating Biomanufacturing & Bio-AI hubs, supporting sustainable biomanufacturing, and workforce expansion, particularly in Tier-II and Tier-III cities.

The policy's core themes include Bio-Based Chemicals & Enzymes, Functional Foods & Smart Proteins, Precision Biotherapeutics, and Climate-Resilient Agriculture.

iBRIC+ (Indian Bioeconomy Research and Innovation Consortium Plus) is a strategic DBT initiative to accelerate India's bioeconomy through multi-stakeholder collaboration.

#### Advancements in Gene Therapies and Personalized Medicine:

Lingyi Biotech announced significant clinical milestones at the 2025 American Society of Gene & Cell Therapy (ASGCT) annual meeting (July 22, 2025).

Their lead investigational programs, LY-M001 for Gaucher disease and LY-M003 for Wilson disease, are built on a next-generation AAV2.0 platform. LY-M001 showed encouraging results with normalized glucocerebrosidase activity and improved biomarkers in clinical trials. LY-M003 demonstrated an excellent safety profile in preliminary observations for Wilson disease.

Lingyi's proprietary AAV2.0 platform includes AI-assisted capsid engineering (LY-Capsid), a regulatable gene expression system (CREATE™), and a next-generation manufacturing process (LY-293RSS).

The concept of gene editing to restore lost genetic diversity in endangered species using DNA from museum specimens and related species is gaining traction.

Precision medicine and gene editing are enabling personalized healthcare solutions. The FDA approved 48 precision medicine indications in 2024, including biomarker-indicated drugs, autologous cell therapies, and gene therapies.

Whole-genome sequencing and targeted molecular tools are crucial for diagnosing diseases and uncovering genetic underpinnings, paving the way for new therapeutic strategies.

Mitochondrial Donation Treatment and the first personalized gene-editing therapy are also topics of discussion (July 23, 2025; May 20, 2025).

### AI and Digital Health Integration:

AI and Machine Learning (ML) are increasingly influencing diagnostics and treatments. Deep learning algorithms are matching or surpassing radiologists in diagnostic accuracy for medical imaging.

Flebo.in introduced free AI-powered digital health record storage (July 24, 2025).

Lissun, an Indian mental health platform, acquired a US-based tech mental wellbeing startup, Being Cares Inc. (July 24, 2025), indicating growth in digital mental health solutions.

Maharashtra launched its first operational AI-powered heart disease prevention model (July 21, 2025).

### II. Major Health News and Initiatives

India-UK Free Trade Agreement (FTA) and Health Sector:

A landmark India-UK Free Trade Agreement signed on July 24, 2025, is expected to significantly boost bilateral trade in the pharmaceutical and medical devices sectors.

The agreement aims to reduce tariffs on UK medical equipment imported into India, making advanced technologies more affordable.

It also promotes closer collaboration on regulatory frameworks for medical technologies, pharmaceuticals, and health products, and expands cooperation in

biotechnology, biomanufacturing, cell and gene therapies, and digital health innovation.

Enhanced mobility for qualified Indian medical professionals (doctors, nurses) to work in the UK is also part of the agreement.

### Global Health Concerns and WHO Initiatives:

**Malnutrition Crisis:** The WHO reported a deadly surge in malnutrition-related deaths, particularly among children under five, in conflict zones like Gaza, due to aid pipeline collapse and access restrictions (July 23, 2025).

**Immunization Gaps:** Despite modest growth in vaccine coverage, 14.3 million children globally still miss out on basic immunizations. Over 30 million children did not receive the full course of measles vaccines, leading to significant outbreaks in 60 countries in 2024.

**HIV Prevention Breakthrough:** WHO launched a new guideline on the use of Lenacapavir, an injectable medicine that provides HIV protection for six months and prevents over 96% of new infections (July 23, 2025).

**Disease Elimination Efforts:** WHO certified Suriname as malaria-free and validated the elimination of trachoma in Burundi and Senegal.

World Drowning Prevention Day was observed on July 25, 2025, highlighting the preventable nature of hundreds of thousands of annual drowning deaths.

World Brain Day 2025 was celebrated on July 22, 2025, with the theme "Brain Health for All Ages," emphasizing lifelong commitment to neurological well-being, especially given that neurological disorders are the leading cause of disability-adjusted life years globally.





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### Other Notable Health News:

Research indicates that even low levels of air pollution may quietly scar the heart (July 3, 2025).

Scientists discovered a "secret code" hidden in junk DNA that plays an active role in controlling gene expression (July 21, 2025).

A new study cracked the "tissue code" revealing five simple rules that shape organs (July 16, 2025).

Weight-loss drugs like Mounjaro/Zepbound (Tirzepatide) are showing promise in shrinking breast cancer tumors and leading to significant weight loss after menopause (July 15, 2025).

Concerns were raised about the rapid increase in child poisonings due to candy-like nicotine pouches (July 14, 2025).

### III. Biotechnology and Health in India

Bengaluru Tech Summit (BTS) 2025 is scheduled for November 18-20, 2025, at BIEC, indicating a continued focus on technological innovation, including biotechnology.

MedGenome raised \$47.5 million in Series E funding to expand access to genomics offerings in India (July 21, 2025).

IIT Madras-incubated startup Plenome secured Rs 6.5 Cr in seed funding (July 21, 2025).

The DBT-BIRAC Joint Call for Proposals continues, with deadlines in July and August 2025 for "Biomanufacturing of Bio-Based Chemicals, Biopolymers and Active Pharmaceutical Ingredients (APIs)" and "Futuristic Marine Research" under the BioE3 Policy.

Bharat Biotech is reportedly working to reduce the cost of the malaria vaccine RTS,S to less than \$5 (June 25, 2025).

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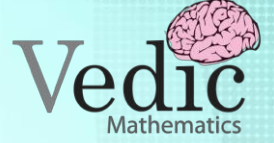
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### MCQs

1. What is India's target for its bioeconomy by 2030, as reiterated under the BioE3 framework?

- a) USD 100 billion
- b) USD 200 billion
- c) USD 300 billion
- d) USD 500 billion

**Answer:** c) USD 300 billion

The text states under "World Bioproduct Day 2025 and India's BioE3 Policy": "India reiterated its goal of achieving a USD 300 billion bioeconomy by 2030 under the BioE3 framework."

2. Lingyi Biotech's investigational program LY-M001 is designed to treat which disease?

- a) Wilson disease
- b) Gaucher disease
- c) Alzheimer's disease
- d) Parkinson's disease

**Answer:** b) Gaucher disease

Under "Advancements in Gene Therapies and Personalized Medicine," it says: "Their lead investigational programs, LY-M001 for Gaucher disease and LY-M003 for Wilson disease..."

3. What is the new injectable medicine, providing HIV protection for six months and preventing over 96% of new infections, for which WHO launched a new guideline on July 23, 2025?

- a) Dolutegravir
- b) Cabotegravir
- c) Lenacapavir
- d) Tirzepatide

**Answer:** c) Lenacapavir

In the "Global Health Concerns and WHO Initiatives" section, it states: "WHO launched a new guideline on the use of Lenacapavir, an injectable medicine that provides HIV protection for six months and prevents over 96% of new infections (July 23, 2025)."

4. Which sectors are specifically expected to see a significant boost in bilateral trade due to the India-UK Free Trade Agreement signed on July 24, 2025?

- a) Automotive and textiles
- b) Pharmaceutical and medical devices
- c) Agriculture and food processing
- d) Information technology and software services

**Answer:** b) Pharmaceutical and medical devices  
Under "India-UK Free Trade Agreement (FTA) and Health Sector," it notes: "A landmark India-UK Free Trade Agreement signed on July 24, 2025, is expected to significantly boost bilateral trade in the pharmaceutical and medical devices sectors."

5. What was the theme for World Brain Day 2025, celebrated on July 22, 2025?

- a) "Brain Health for a Sustainable Future"
- b) "Understanding Neurological Disorders"
- c) "Brain Health for All Ages"
- d) "AI and the Brain"

**Answer:** c) "Brain Health for All Ages"

The text, under "Global Health Concerns and WHO Initiatives," mentions: "World Brain Day 2025 was celebrated on July 22, 2025, with the theme 'Brain Health for All Ages,'"







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