

## Biotechnology & Health:

### 1. Functional Foods and Therapeutic Plants:

**Next-Generation Functional Foods:** Researchers from the University of Queensland, in collaboration with biotechnology company Phyllome and health and wellness business Pharmacare, are developing "next-generation plants" or "functional foods." These plants will contain therapeutic peptides, which are compounds designed to potentially relieve pain, reduce cholesterol, or suppress appetite. This initiative leverages Phyllome's AI-powered robotic plant production facility to cultivate plants with these bioactive peptides. (UQ News, July 30, 2025)

### 2. Advances in Diagnostics and Medical Devices:

**3D-Printed DNA Analysis Device:** University of Queensland researchers have developed an affordable, open-source DNA measurement tool that can be built using a home 3D printer, making advanced diagnostics more accessible. (UQ News, July 30, 2025)

### AI for Medical Diagnostics: Several AI-powered innovations are making strides:

**Tumor Stemness Prediction:** AI is being used to predict tumor stemness, an indicator of cancer aggressiveness and recurrence risk, aiding in precision treatment planning.

**Retinal Image Analysis:** Mediwhale has developed an AI platform that analyzes retinal images to detect heart, kidney, and eye diseases, offering a non-invasive diagnostic method.

**AI-Designed Drugs:** Isomorphic Labs, a DeepMind spinoff, is on the verge of human trials for its AI-designed drugs, marking a significant milestone in AI-assisted pharmaceutical innovation.

**AI in Supply Chain:** Global Healthcare Exchange (GHX) has launched AI capabilities to improve healthcare supply chain efficiency by predicting supply needs and minimizing shortages. (Crescendo.ai, July 2025)

**Rapid Immune Response Microchip:** Scripps researchers have unveiled a microfluidic microchip that can profile how a person's antibodies attack viruses in just 90 minutes, requiring only a drop of blood. This significantly speeds up the analysis of antibody evolution after vaccination or infection. (ScienceDaily, July 23, 2025)

### 3. Pharmaceutical Developments & Approvals:

**HIV Prevention:** The FDA has approved lenacapavir as a twice-yearly injectable for HIV pre-exposure prophylaxis (PrEP), showing high effectiveness in trials and promising to improve PrEP adherence. (Pharmacy Times, July 29, 2025)

**Over-the-Counter Allergy Spray:** Nasacort Allergy 24-Hour Nasal Spray (triamcinolone acetate) is now available over-the-counter in the US, expanding access to a potent, long-acting allergy treatment. (Pharmacy Times, July 29, 2025)

**Generic HIV Treatment:** The FDA has approved generic raltegravir potassium tablets, a cost-effective alternative for HIV-1 infection treatment. (Pharmacy Times, July 29, 2025)

**Alzheimer's Research:** Johnson & Johnson is presenting new data at the Alzheimer's Association International Conference (AAIC) focusing on how tau impacts brain function in early Alzheimer's and the predictive strength of plasma biomarker pTau217. They are also introducing findings from the Global Neurodegeneration Proteomics Consortium. (Johnson & Johnson, July 24, 2025)

### Cancer Therapies:

**Novel Cancer Cell Destruction:** Scientists have discovered a sugar compound from deep-sea bacteria that can destroy cancer cells. (ScienceDaily, July 23, 2025)

**Radiation and Immune System:** New research shows radiation therapy can activate the immune system to fight cancer in surprising ways. (ScienceDaily, July 23, 2025)

**Targeted Therapies:** The FDA granted accelerated approval to linsoseltamab for heavily pretreated relapsed/refractory multiple myeloma and sunvozertinib as the first targeted oral therapy for advanced NSCLC with EGFR exon 20 insertion mutations. (TS2 Space, July 22, 2025)

**CAR T-cell Therapy for Glioblastoma:** Orphan Drug designation was granted to MB-101, a novel CAR T-cell therapy for glioblastoma, highlighting an innovative approach for this aggressive brain cancer. (TS2 Space, July 22, 2025)

### 4. Biotechnology Industry Trends:

**Market Challenges:** The biotech and pharma sectors faced policy pressures in Q2 2025, with tariffs and drug pricing policies impacting M&A activity and IPOs. The industry has seen a

contraction in new company funding compared to the COVID-era "sugar rush." (Investing News Network, July 24, 2025; BIO.news, July 25, 2025)

**Focus on AI, Gene Therapy, and Precision Medicine:** These areas continue to be key drivers of innovation, with AI becoming more mainstream in drug discovery and development. Advances in CRISPR technology and gene therapy delivery methods are also expected to expand their reach to more prevalent conditions. (Labiotech.eu, January 13, 2025 - Note: While published earlier, these are identified as 2025 trends.)

**Biotechnology Conferences:** The BTIG Virtual Biotechnology Conference is being held on July 29-30, 2025, bringing together over 70 healthcare company management teams for investor meetings and panel discussions on various therapeutic areas and technological advancements. (BTIG, July 22, 2025)

### 5. Global Health Initiatives:

**2025 Global Conference on Climate and Health:** Taking place in Brasília, Brazil from July 29-31, 2025, this conference, hosted by the Government of Brazil, WHO, and PAHO, highlights the role of ambitious climate action in global health. (WHO, July 29, 2025)

**2nd Global Convening on Digital Health:** A virtual event from July 14-18, 2025, focusing on strengthening digital health systems in low- and middle-income countries, with discussions on governance, interoperability, and equitable access to patient-centric technologies. (WHO, July 18, 2025)



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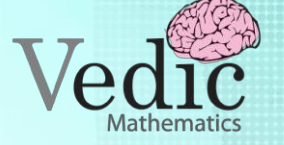
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## MCQS

1. What type of compounds will the "next-generation plants" or "functional foods" developed by the University of Queensland and its partners contain?

- A) Vitamins and minerals
- B) Therapeutic peptides
- C) Essential amino acids
- D) Antioxidants

**Answer:** B) Therapeutic peptides

The text states, "These plants will contain therapeutic peptides, which are compounds designed to potentially relieve pain, reduce cholesterol, or suppress appetite."

2. What technology is being leveraged by Phyllome to cultivate plants with bioactive peptides for functional foods?

- A) Hydroponic systems
- B) CRISPR gene editing
- C) AI-powered robotic plant production facility
- D) Traditional selective breeding

**Answer:** C) AI-powered robotic plant production facility

The text mentions, "This initiative leverages Phyllome's AI-powered robotic plant production facility to cultivate plants with these bioactive peptides."

3. What is the primary benefit of the 3D-printed DNA analysis device developed by University of Queensland researchers?

- A) It can sequence entire genomes.
- B) It makes advanced diagnostics more accessible due to its affordability and open-source nature.
- C) It can identify new DNA mutations.
- D) It can be used for extraterrestrial DNA analysis.



**Answer:** B) It makes advanced diagnostics more accessible due to its affordability and open-source nature.

The text states, "University of Queensland researchers have developed an affordable, open-source DNA measurement tool that can be built using a home 3D printer, making advanced diagnostics more accessible."

**4. Which of the following is NOT an application of AI in medical diagnostics mentioned in the text?**

- A) Predicting tumor stemness
- B) Analyzing retinal images to detect diseases
- C) Designing new surgical instruments
- D) Improving healthcare supply chain efficiency

**Answer:** C) Designing new surgical instruments  
The text lists AI for tumor stemness prediction, retinal image analysis, AI-designed drugs, and AI in supply chain. Designing new surgical instruments is not mentioned.

**5. What is the key advantage of the new microfluidic microchip developed by Scripps researchers for immune response profiling?**

- A) It requires a large blood sample.
- B) It takes several days to analyze antibody evolution.
- C) It can profile how antibodies attack viruses in just 90 minutes.
- D) It can only detect bacterial infections.

**Answer:** C) It can profile how antibodies attack viruses in just 90 minutes.

The text states, "Scripps researchers have unveiled a microfluidic microchip that can profile how a person's antibodies attack viruses in just 90 minutes, requiring only a drop of blood."

**6. What new approval did the FDA grant for HIV prevention that is a twice-yearly injectable?**

- A) Raltegravir potassium tablets
- B) Triamcinolone acetonide
- C) Lenacapavir
- D) MB-101

**Answer:** C) Lenacapavir

The text says, "The FDA has approved lenacapavir as a twice-yearly injectable for HIV pre-exposure prophylaxis (PrEP)..."

**7. What is the primary focus of Johnson & Johnson's new data presentations at the Alzheimer's Association International Conference (AAIC)?**

- A) Developing new vaccines for Alzheimer's.
- B) The impact of tau on brain function in early Alzheimer's and the predictive strength of plasma biomarker pTau217.
- C) Surgical interventions for Alzheimer's.
- D) The role of diet in preventing Alzheimer's.

**Answer:** B) The impact of tau on brain function in early Alzheimer's and the predictive strength of plasma biomarker pTau217.

The text states, "Johnson & Johnson is presenting new data at the Alzheimer's Association International Conference (AAIC) focusing on how tau impacts brain function in early Alzheimer's and the predictive strength of plasma biomarker pTau217."

**8. What new type of cancer therapy received Orphan Drug designation for glioblastoma?**

- A) Traditional chemotherapy
- B) Radiation therapy
- C) CAR T-cell therapy (MB-101)
- D) Sugar compound from deep-sea bacteria

**Answer:** C) CAR T-cell therapy (MB-101)

The text mentions, "Orphan Drug designation was granted to MB-101, a novel CAR T-cell therapy for glioblastoma..."



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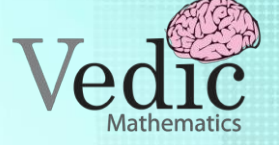
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**9. What are the key areas continuing to drive innovation in the biotechnology industry, as identified in 2025 trends?**

- A) Classical genetics, organic chemistry, and public health.
- B) AI, gene therapy, and precision medicine.
- C) Agricultural biotechnology, food processing, and environmental remediation.
- D) Mechanical engineering, robotics, and fluid dynamics.

**Answer:** B) AI, gene therapy, and precision medicine.

The text states, "Focus on AI, Gene Therapy, and Precision Medicine: These areas continue to be key drivers of innovation, with AI becoming more mainstream in drug discovery and development."

**10. Where and when is the 2025 Global Conference on Climate and Health taking place?**

- A) New York City, USA, July 29-31, 2025
- B) Geneva, Switzerland, July 14-18, 2025
- C) Brasília, Brazil, July 29-31, 2025
- D) London, UK, July 22, 2025

**Answer:** C) Brasília, Brazil, July 29-31, 2025

The text specifies, "Taking place in Brasília, Brazil from July 29-31, 2025, this conference, hosted by the Government of Brazil, WHO, and PAHO..."

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