

Biotechnology & Health:

India's Biotechnology Sector Growth

National Biofoundry Network: India's Science and Technology Minister, Dr. Jitendra Singh, launched the country's first National Biofoundry Network. This initiative is a part of the BioE3 Policy (Biotechnology for Economy, Environment, and Employment) and aims to accelerate indigenous biomanufacturing and create job opportunities. The network comprises six institutions to help scale up proof-of-concept developments.

Bioeconomy Target: The Minister also highlighted India's impressive bioeconomy growth, which has increased from \$10 billion in 2014 to \$165.7 billion in 2024. The government is now aiming for a target of \$300 billion by 2030.

BioE3 Challenge for Youth: A nationwide initiative has been launched to encourage young innovators to design safe and sustainable biological solutions for challenges in health, agriculture, the environment, and industry.

Cancer Research and Therapeutics

Brain Cancer Breakthrough: Researchers in Victoria, Australia, have conducted a world-first clinical trial using a new oral drug, Safusidenib, to treat low-grade gliomas (LGG), a type of slow-growing brain cancer. The trial, conducted through the "BrainPOP" platform, allowed scientists to observe the drug's effect on tumor samples before and after treatment, providing unprecedented insights into the drug's mechanism.

Precision Immuno-Oncology: ACROBiosystems and DAAN Biotherapeutics have signed a strategic Memorandum of Understanding (MOU) to collaborate on developing precision immuno-oncology drugs. DAAN Biotherapeutics is focused on a new immune-modulation platform that selectively activates T-cells within the tumor microenvironment to enhance efficacy and reduce toxicity.

AI in Oncology: The use of Artificial Intelligence (AI) continues to expand in cancer care. New AI tools are being developed to improve early cancer detection, streamline clinical trials, and create more personalized treatment plans.

Tumor-Homing Bacteria: A new study describes a groundbreaking cancer treatment that uses bacteria to smuggle cancer-killing viruses directly into tumors, effectively cloaking the viruses from the immune system and delivering a more targeted and powerful therapy.

Other Health and Medical Breakthroughs

Low-Plastic Lifestyle Trial: The PERTH trial, a randomized controlled study, has been outlined to test whether adopting a four-week low-plastic lifestyle can reduce exposure to endocrine-disrupting chemicals found in plastics.

mRNA Vaccine Advancement: Scientists at Yale have developed new technology to boost the power of mRNA vaccines, building on the success of the technology during the COVID-19 pandemic.

Novel Diagnostics: Arizona State University engineers have developed a new, inexpensive, and portable blood test called NasRED. This test uses gold nanoparticles to detect a range of



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deadly infections like COVID-19, Ebola, HIV, and Lyme disease with high sensitivity in just 15 minutes.

Gene Editing: Chinese scientists have created new tools that allow them to edit large sections of DNA with high accuracy and without leaving a trace, potentially leading to new breakthroughs in gene therapy.

Probiotics for Bone Health: Researchers are exploring the impact of gut health on other parts of the body, with a focus on how certain probiotics and foods like prunes can lead to stronger bones and potentially help with conditions like osteoporosis.

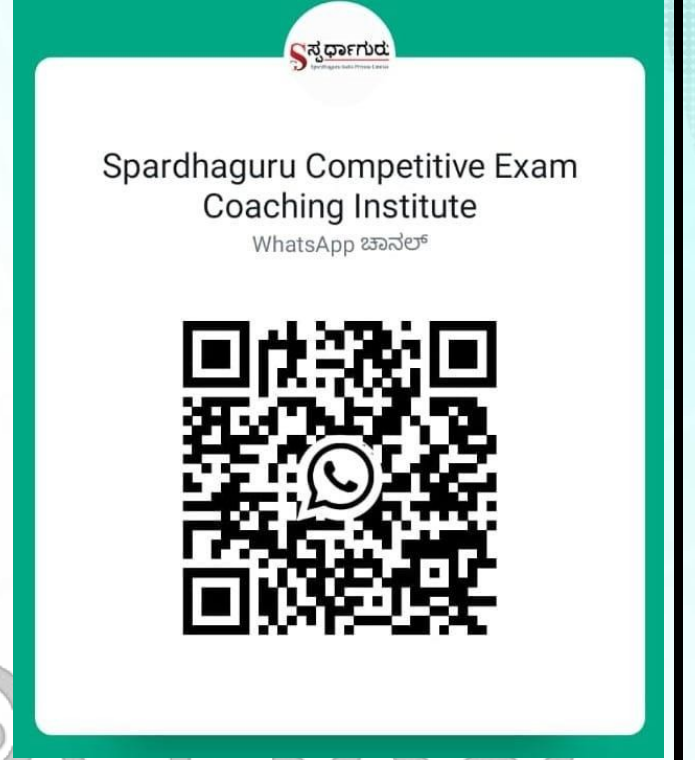
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MCQS

1. Which of the following is NOT an aim of the National Biofoundry Network launched in India?

- a) Accelerating indigenous biomanufacturing.
- b) Creating job opportunities.
- c) Reducing India's bioeconomy to \$10 billion.
- d) Scaling up proof-of-concept developments.

Answer: c)

The text states the National Biofoundry Network aims to accelerate biomanufacturing, create jobs, and scale up developments. The goal is to grow the bioeconomy, not reduce it.

2. What is the primary function of the new immune-modulation platform being developed by DAAN Biotherapeutics?

- a) To use bacteria to deliver cancer-killing viruses to tumors.





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- b) To use AI to create personalized treatment plans.
- c) To selectively activate T-cells within the tumor microenvironment.
- d) To use the oral drug Safusidenib to treat low-grade gliomas.

Answer: c)

The text states that DAAN Biotherapeutics' platform is focused on "selectively activat[ing] T-cells within the tumor microenvironment to enhance efficacy and reduce toxicity."

3.The new blood test, NasRED, developed by Arizona State University engineers uses what kind of nanoparticles for detection?

- a) Silver nanoparticles.
- b) Gold nanoparticles.
- c) Platinum nanoparticles.
- d) Carbon nanoparticles.

Answer: b)

The text explicitly mentions that the NasRED blood test "uses gold nanoparticles to detect a range of deadly infections."



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