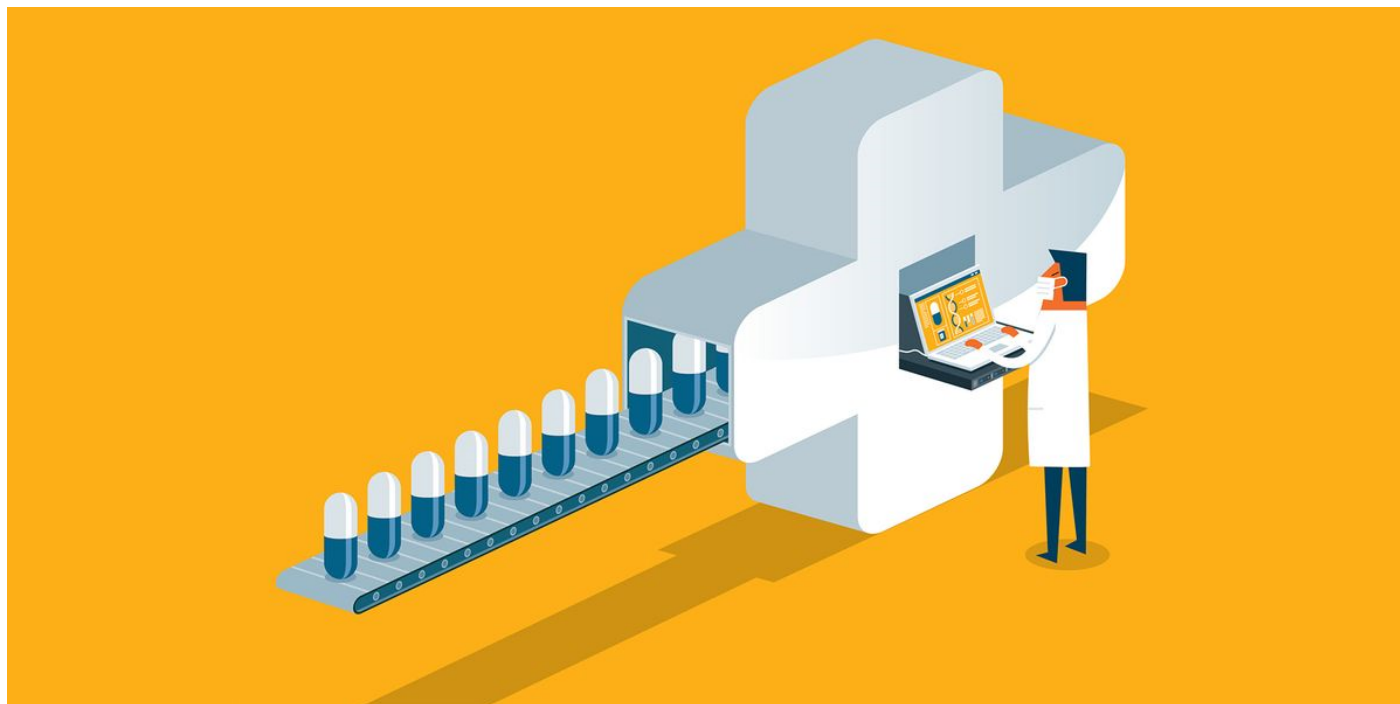


Biosensors to ease drug manufacturing

(GS Paper 3, Science and Tech)

Why in news?

- Scientists at the University of Texas in the US have developed a new tool that could improve drug manufacturing in bacterial cells.
- While using bacteria has been suggested as a good organic alternative, detecting and optimising the production of therapeutic molecules is difficult and time-consuming.



Sustainable alternative:

- Most of the medicine are made with ingredients extracted from plants and extraction is a complicated and resource-intensive work.
- Meanwhile, bacteria is a cheap, efficient and sustainable alternative and its genetic code can be easily manipulated to become factories for drug production. Bacteria's biological systems can be harnessed to produce specific molecules as part of the natural cellular process.

Biosensor system:

- They introduced a **biosensor system, derived from E. coli bacteria**, that can be adapted to detect all kinds of therapeutic compounds accurately and in mere hours.

How it will work?

- There are currently no biosensors for most plant metabolites. With this technique, it should be possible to create biosensors for a wide range of medicines.
- The biosensors quickly and accurately determine the amount of a given molecule that a strain of bacteria is producing. The team developed the biosensors for several types of common drugs, such as cough suppressants and vasodilators, which are used to treat muscle spasms.
- Molecular images of the biosensors show exactly how they tightly grab onto their partner drug. When the drug is detected by the biosensor, it glows.
- Additionally, they engineered their own bacteria to produce a compound found in several FDA-approved drugs and used the biosensors to analyze product output.

Way Forward:

- This research opens the door to more medicines being produced using biosynthesis.

Political and market economics determine global biodiversity crisis: IPBES9 report (GS Paper 3, Environment)

Why in news?

- The recent ‘**Diverse Values and Valuation of Nature**’ report suggests blending values of nature and economic benefits through policy making.
- Political and economic decisions drive the global biodiversity crisis and there is a crucial opportunity to address the issue, according to a new report released by the **Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES9)**.



Details:

- The report offered a detailed typology of nature’s values, highlighting how different perspectives of world representatives and knowledge systems affected the ways in which people interacted with nature and valued it.

Key Highlights:

- The report stated that the economic and political decisions made by national governments mainly prioritised values of nature, especially with respect to market demand, often associated with food produced intensively.
- Moreover, the policies associated with these market values did not effectively highlight **how the changes in nature affected the quality of life for humans**.
- Also, the policymaking exercise did not consider many **non-commercial activities associated with the role of nature in peoples’** lives like climate regulation and cultural identity.
- The Values Assessment provides decision makers with concrete tools and methods to better understand the values that individuals and communities hold about nature.

Leverage points:

- They have identified ‘leverage points’ that can help create the conditions for necessary transformations required for a better sustainable future. These are:
 - a) Recognising the diverse values of nature
 - b) Embedding valuation into decision-making
 - c) Reforming policies and regulations to internalise nature’s values
 - d) Shifting underlying societal norms and goals to align with global sustainability and justice objectives

Way Forward:

- The report paid specific attention to future pathways related to ‘green economy’, ‘degrowth’, ‘Earth stewardship’ and ‘nature protection’. Although each pathway is underpinned by different values, they share principles aligned with sustainability.
- The understanding of values will provide a strong basis for designing better economic policies and national planning by countries for sustainable development.

Iran will become full-fledged member of SCO in 2022

(GS Paper 2, International Relation)

Why in news?

- Iran will be admitted to the Shanghai Cooperation Organisation (SCO) in 2022, with a memorandum on the country's obligations to be signed at a summit in Samarkand in September.
- In 2022, within Uzbekistan's chairmanship, Iran will be admitted to the SCO **as an observer state**.



Shanghai Cooperation Organisation (SCO):

- The SCO was founded in Shanghai in 2001 by the leaders of Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Russia and China.
- It evolved from an earlier regional security grouping formed in 1996 after the collapse of the Soviet Union when the Central Asian states gained independence from Moscow.

- The historical meeting of the Heads of State Council of the Shanghai Cooperation Organisation was held on June 8-9, 2017 in Astana. At the meeting, the status of a full member of the Organization was granted to India and Pakistan.

Focus:

- Initially focused on regional security, including border conflicts, terrorism and militant Islam, its activities have expanded to cover economics and trade, transport and law enforcement.
- Security and economic cooperation remain priorities.
- China and Russia are the dominant members. Russia regards Central Asia as its sphere of influence but Chinese economic sway is growing.
- At an informal level, the SCO is a diplomatic platform that helps address and contain potential friction.

Pressing need for law in India to streamline grant of bails: SC
(GS Paper 2, Judiciary)

Why in news?

- Recently, the Supreme Court asked the government of India to consider the introduction of a separate enactment in the nature of the bail act to streamline the grant of bail.
- The SC Bench issued certain important directions with regard to the grant of bail.



Stakeholders:

- The bench clarified that the directions are for investigation agencies and also for the courts.
- The Court has directed all state governments and unions territories and high courts to file affidavits and status reports within a period of four months.
- The Registry has been directed to send a record of the judgement to the Government of India, the States and the UT's.

Key directions:

- Agencies and its officers are duty bound to comply with the mandate of **section 41,41A of the code**, directions of the Supreme Court in the Arnesh kumar case. Any dereliction on their part has to be brought to the notice of higher authorities of court followed by appropriate action.
- Courts will have to satisfy themselves on compliance of section 41, 41A of the Criminal Procedure Code, **any non-compliance will entitle accused for grant of bail.**

Follow directions for the constitution of Special Courts, fill up vacancies:

- The State and central government will have to comply with Supreme Court directions with regard to constitution of special courts.
- The **High Court in consultation with State government will have to undertake exercise for need of special courts.** The vacancies in position of presiding officers of special courts will have to be filled up expeditiously.

Appropriate action for release of prisoners who are unable to comply with bail conditions:

- The High courts are directed to undertake **exercise of finding out undertrial prisoners**, who are **not able to comply with bail conditions.** On doing so appropriate action will have to be taken to facilitate the release.
- An exercise will have to be done in similar manner, to comply with mandate of section 436A of the code both at District Judiciary level and the High Court, as earlier directed by this court.
- **Section 436A of CrPC provides for the maximum period for which an undertrial prisoner can be detained.**

Bail applications to be disposed of in 2 weeks, anticipatory bail applications in 6 weeks:

- Bail applications ought to be disposed of within period of 2 weeks except when provisions mandate otherwise with exception of interim applications.
- Applications for anticipatory bail are expected to be disposed of within period of 6 weeks.

Way Forward:

- All state and Union Territories are directed to facilitate standing orders on procedure to be followed under 41,41 A of the code while taking note of standing order passed by Delhi Police.
- These directions have been issued in the case where the Apex Court had in 2021 also issued guidelines for grant of bail to accused who are not arrested during investigation on charge sheet being filed.