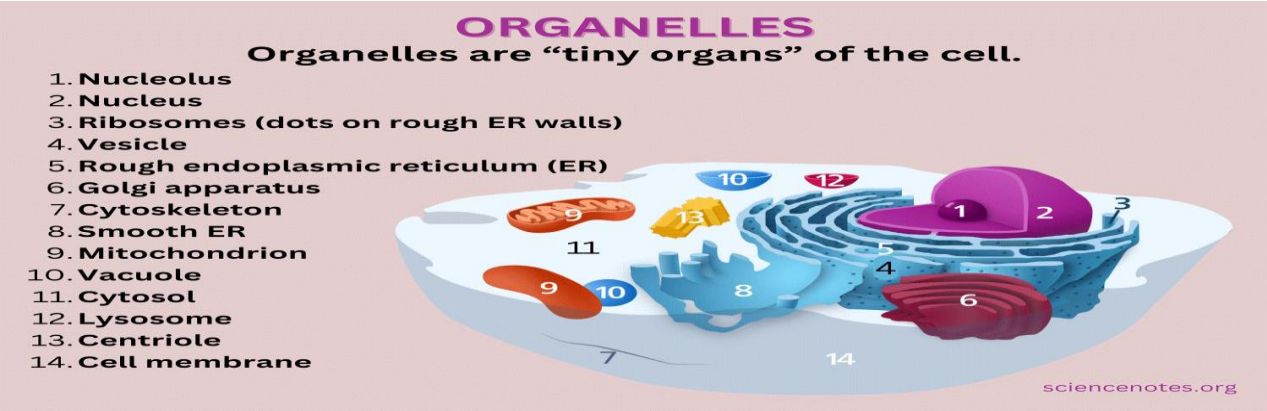
UPSC CURRENT AFFAIRS NOTES 05-04-2024

Nitrogen-fixing organelles

New studies have discovered nitrogen-fixing symbiotic organisms exhibiting behaviors similar to organelles.

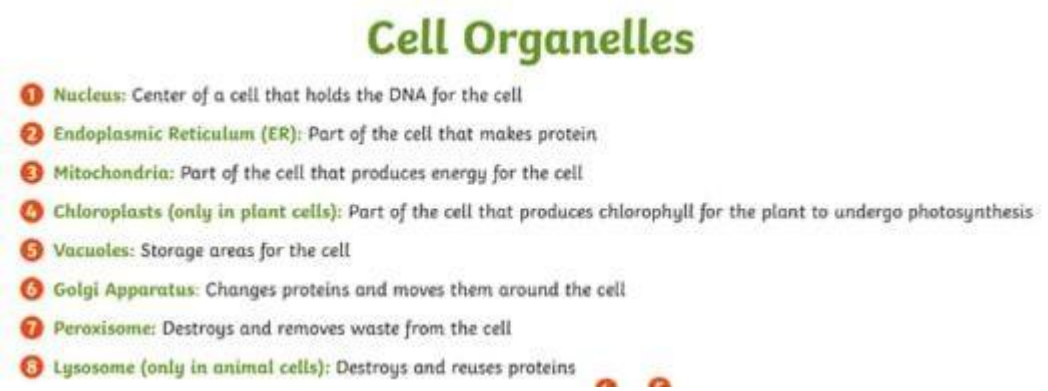
Researchers posit these symbiotic organisms UCYN-A, a species of cyanobacteria may be evolving organelle-like characteristics.



UCYN-A lives in a symbiotic relationship with a closely related group of marine algae, B. bigelowii, in areas of the open ocean that are often low in nutrients.

UCYN-A can fix nitrogen gas into ammonium even in nutrient-rich environments.

Findings are significant because If UCYN-A are moving along the evolutionary path toward developing into nitrogen-fixing organelles and we find cells aside from B. bigelowii also have such organelles or are evolving similarly, it could be a significant achievement.



An organelle is a subcellular structure that has one or more specific jobs to perform in the cell, much like an organ does in the body. Among the more important cell organelles are the nuclei, which store genetic information; mitochondria, which produce chemical energy; and ribosomes, which assemble proteins.

SAINIK SCHOOLS

The Indian government collaborates with private institutions to establish 100 new schools nationwide in its expansion of the Sainik Schools program.

About Sainik Schools

Sainik Schools were established in the 1960s under the Sainik Schools Society (SSS), which operates under the Ministry of Defence.

Sainik Schools Society (SSS) is a registered society under the Societies Registration Act XXI of 1860 and manages Sainik Schools located in various parts of the country.

Admission through the All India Sainik School Entrance Examination (AISSEE) at class VI and IX.

Offer scholarships and reserved seats for SC/ST, defence personnel children, and ex-servicemen wards.

The Union Cabinet approved a proposal in October 2021 to launch 100 new Sainik Schools under a public-private partnership model and affiliated with the Sainik Schools Society.

Selection Process

A School Evaluation Committee, chaired by the District Magistrate and comprising Principles of nearby existing Sainik Schools or Navodaya Vidyalayas, evaluates applications.

Criteria include physical inspection of the applicant's school and verification of credentials.

Final recommendations are made by an Approval Committee consisting of the Joint Secretary of the SSS as chairperson, the Secretary of the Central Board of Secondary Education (CBSE), and an eminent educationist.

Approval is provisional and subject to annual inspections by the School Inspection Committee to ensure continued compliance with standards.

Financial Assistance

The Central government provides financial support to deserving students, including:

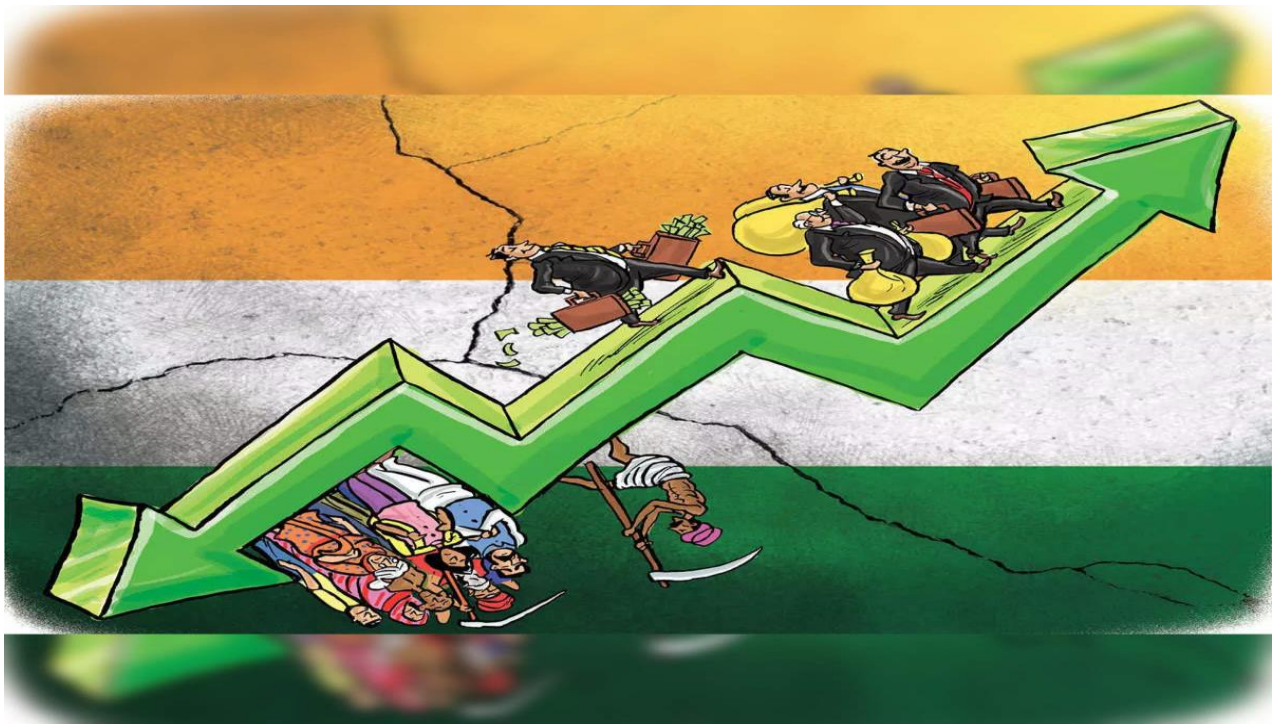
50% fee support, up to ₹40,000 per annum, transferred directly to eligible students' bank accounts on a merit-cum-means basis.

An annual training grant incentive of ₹10 lakh to schools based on the academic performance of students in Class 12.

The direct incentive to any school is capped at ₹10 lakh per an

Income and Wealth Inequality in India

In an interview with Lucas Chancel, co-director at the World Inequality Lab of the Paris School of Economics and lead editor of the "World Inequality Report 2022," key insights were shared regarding the trajectory of inequality in democratic countries post-colonization, with a focus on India's policies and their impact on bridging inequality.



KEY INSIGHTS

Democratic Policies and Inequality Reduction

Chancel highlighted the significant progress made by democratic countries emerging from colonization in addressing inequality, attributing it to interventions like economic regulation, high tax rates, and strategic economic management policies such as inheritance tax.

India's adoption of similar policies post-colonization, including the implementation of five-year plans and high tax rates, aimed to bridge inequality and regulate the economy.

Shift in Economic Ideologies

Post-1970s, there was a global shift in economic ideology, questioning the efficacy of high tax rates and regulations in wealth generation.

Chancel emphasized that inequality does not inherently challenge democracy but rather underscores the importance of policy choices made within democratic frameworks.

Impact of Inequality on Democracy

Inequality poses a threat to democracy, necessitating government intervention to rectify the trend.

Chancel stressed the need for governments to address rising inequality to safeguard democratic principles.

Insights from "Income and Wealth Inequality in India, 1922-2023: The Rise of the Billionaire Raj"

In collaboration with Thomas Piketty and Anmol Somanchi, Chancel released a working paper titled “Income and Wealth Inequality in India, 1922-2023: The Rise of the Billionaire Raj,” providing updated insights on inequality trends in India.

Historical Trends in Income Inequality

From 1951 to the early 1980s, India witnessed a decline in income inequality, with the top 10% share of national income decreasing from 37% to 30%.

However, post-1990s economic reforms, income concentration escalated, with the top 10% share soaring to 60% in recent years.

Factors Influencing Inequality

The paper attributes the decline in inequality during India's initial decades to socialist policy agendas pursued by the government till the 1980s.

Conversely, the onset of economic reforms in the 1980s, leading to liberalization in 1991, halted the decline in inequality and contributed to its subsequent rise.

Rise of Billionaires and Extreme Wealth Concentration

The paper highlights a surge in the number of billionaires in India, from just one in 1991 to 162 in 2022, alongside a dramatic increase in their total net wealth share, reaching 25% of India's net national income in 2022.

This level of inequality mirrors pre-1922 observations during the British Raj, leading to the aptly titled paper, "Billionaire Raj."

Through these insights, the complex interplay between democratic policies, economic reforms, and their impact on inequality in India is elucidated, underscoring the imperative for inclusive growth strategies and equitable distribution of wealth.

Quds forces and Iranian-Israeli hostility

Israeli war jets attacked an Iranian consulate building in Damascus, Syria, killing at least 13 people – including General Mohammad Reza Zahedi, who was a senior leader of the Iranian Quds Force.

Who are the Quds Force?

The Quds Force is the paramilitary and intelligence wing of the Iranian Revolutionary Guard Corps (IRCG). The IRCG was set up by the leader of the Islamic Revolution and Iran's first Supreme Leader, Ayatollah Ruhollah Khomeini, in 1979.

After the 1979 Islamic Revolution dislodged the ruling Shah from power, a theocratic state was established in Iran. For its protection, the IRCG was created to deal with both domestic and external threats.

IRCG has an army, naval, and air force wings, and its total membership numbers are around 125,000. Another branch, the Basij paramilitary force, "claims it can mobilize some six hundred thousand volunteers.

What is Israel's problem with the Quds Force?

Tehran has mobilized Quds Force units across the Middle East to secure its interests beyond Iranian borders.

The Quds Force has a significant presence in Syria, and Iran is said to operate dozens of military bases around the country.

The Quds Forces actively intervene in the Syrian war, fighting against ISIS on the side of Syrian government forces, and working with the Russians to keep President Bashar al-Assad in power in the face of strong US opposition to his regime. Damascus and Tehran are close strategic allies.

Israel- Iran Issues

Israel's strong alliance with the US increases the insecurity of Iran as there is unwanted Western interference in the Middle East, by the US which poses a direct threat to its security and interests.

Iran has been under various degrees of US sanctions since the Revolution of 1979. the United States and other countries have imposed unprecedented sanctions to censure Iran and prevent its further progress in prohibited nuclear activities, as well as to persuade Tehran to address the international community's concerns about its nuclear program.

Iran does not recognize the legitimacy of Israel, and the two countries have been openly hostile to each other since the early 1990s.

Each has engineered proxy conflicts and covert operations against the other. Both countries have been involved in proxy wars in Syria, Yemen, etc. Both control proxy organizations that are involved in the various ethnic and religion-based conflicts in the region.

Israel considers the Iranian nuclear program an existential threat. Operational since September 2011, the Bushehr I reactor marked Iran's entry into nuclear power with Russia's assistance. This became an important milestone for Rosatom to become the largest player in the world nuclear power market.

Israel is widely suspected of having carried out targeted assassinations of important Iranian figures, including nuclear scientists, and cyber attacks against the country.

Being a predominantly Shiite Muslim country in a region where Sunni Saudi Arabia is also a large, resource-rich, and influential nation, the two countries have been geopolitical rivals for a long.

CRIOLLO BREED OF CATTLE

Criollo breed of cattle developed in the New World can withstand climate change, say Irish scientists.

The term 'Criollo' originated in the 'Casta' system, a hierarchical social classification system used during the colonial period in the Hispanic and Lusophone Americas. It distinguished individuals born in the New World from those native to Iberia, who were known as 'Penninsulares'.

Notably, the term extended beyond human classification to encompass livestock, including cattle, sheep, horses, and goats.

Recent research by Irish scientists sheds light on the adaptability of Criollo cattle to a warming world, highlighting their potential resilience in the face of climate change.

Criollo Cattle and Climate Adaptation:

Research by UCD Scientists:

Scientists from University College Dublin (UCD) conducted research into micro-evolutionary changes in Criollo cattle.

Their findings revealed several distinct coat and skin coloration traits that provide advantages in hot and humid climates, with the Criollo's short, slick-hair coat enhancing thermotolerance.

Distinctive Traits: Criollo cattle exhibit specific genetic signatures associated with reproduction, fertility, and disease immunity, as identified through whole-genome sequencing data.

Historical Evolution and Spread:

Origin and Spread:

The first cattle in the Americas were brought from La Gomera in the Spanish Canary Islands to the island of Hispaniola (present-day Haiti and the Dominican Republic) during Christopher Columbus's second voyage in 1493.

While livestock farming quickly spread on the island, the expansion of cattle to the South American continent was more gradual.

Adaptations Over Time:

Initially adapted to Mediterranean climates, cattle brought from Iberia in the 15th and 16th centuries gradually evolved to thrive in tropical and arid environments over the ensuing centuries.

This evolutionary process led to the emergence of distinctive Criollo breeds with unique heat tolerance and disease resistance traits.

Implications for Climate Change:

Challenges Posed by Climate Change:

Climate change brings about various challenges, including higher temperatures, insufficient precipitation, abrupt temperature fluctuations, increased soil erosion, wildfires, pests, and diseases.

Cattle capable of withstanding hot weather are less likely to experience temperature-related stress, leading to improved body weight, food production efficiency, and animal welfare in warmer climates.

Threats to Criollo Cattle:

Modern Challenges:

Despite their adaptive advantages, Criollo cattle are undervalued in modern production systems, facing gradual replacement by more productive commercial breeds.

This trend poses a threat to the preservation of indigenous cattle genetic resources in Latin America.

The study underscores the remarkable adaptability of Criollo cattle and highlights their genetic richness and potential in the face of climate change, habitat flux, and disease challenges.

Indian Laurel Tree

Recently, forest department authorities in Andhra Pradesh's Alluri Sitharama Raju district cut the bark of an Indian laurel tree, with water gushing out.

About Indian laurel tree:

Scientific name: Terminalia elliptica (syn. T. tomentosa)

Other names: Asna; saj or saaj; Indian laurel; marutham (Tamil); matti (Kannada); ain (Marathi); taukkyan (Burma); asana (Sri Lanka); and casually crocodile bark because of the characteristic bark pattern.

Habitat: It is mainly found in both dry and moist deciduous forests in southern India up to 1000 m.

Distribution: It is principally native to southern and Southeast Asia in India, Nepal, Bangladesh, Myanmar, Thailand, Laos, Cambodia and Vietnam.

Application:

The wood of this tree is used for furniture, cabinetwork, joinery, paneling, specialty items, boat-building, railroad cross-ties (treated), decorative veneers and for musical instruments (e.g. for guitar fretboard).

Its leaves are used as food by Antheraea paphia (silkworms) which produce the tussar silk (Tussah), a form of commercially important wild silk.

The bark is used medicinally against diarrhoea. Oxalic acid can be extracted from it.

The bark and especially the fruit yield pyrogallol and catechol to dye and tan leather.

myCGHS App

Recently, the secretary of the Ministry of Health and Family Welfare launched the myCGHS app for the iOS ecosystem of devices.

About myCGHS App

It is designed to enhance access to Electronic Health Records, information, and resources for Central Government Health Scheme (CGHS) beneficiaries.

It is developed by the technical teams of the National Informatics Centre (NIC) Himachal Pradesh and NIC Health Team.

It is a convenient mobile application offering features aimed at enhancing information and accessibility for CGHS beneficiaries.

It facilitates a wide range of services, including booking and cancellation of online appointments, downloading CGHS card and index card, accessing lab reports from CGHS labs, checking medicine history, checking medical reimbursement claim status, accessing referral details and locating nearby wellness centers etc.

The app features security features like 2-factor authentication and functionality of mPIN ensuring the confidentiality and integrity of users' data.

Key Facts about Central Government Health Scheme

It gives healthcare facilities to registered employees and pensioners of the Central Government of India.

The enrolled members are provided reimbursement and cashless facilities under this scheme.

It covers health care under different systems of medicine, such as Allopathy, Homeopathy, Ayurveda and Unani.

CGHS beneficiaries can undergo treatment at any empanelled private hospital of their choice.

It is an identity and access management security method that requires two forms of identification to access resources and data. 2FA gives businesses the ability to monitor and help safeguard their most vulnerable information and networks.

Carbon Fibre

India is planning to manufacture carbon fibre for use in aerospace, civil engineering and defence as an alternative to metal which will help the country get around a proposed European Union carbon tax on steel, alloy and metal products.

About Carbon Fibre

It is a material consisting of thin, strong crystalline filaments of carbon, essentially carbon atoms bonded together in long chains.

Properties

It has a high stiffness and stiffness-to-weight ratio.

It has high tensile strength and strength-to-weight ratio.

It has high-temperature tolerance with special resins.

It consists of low thermal expansion.

It also has high chemical resistance.

The fibers are extremely stiff, strong, and light, and are used in many processes to create excellent structural materials.

Currently, India does not produce any carbon fibre, relying entirely on imports from countries such as the US, France, Japan and Germany.

Applications

It is essential for various applications such as fighter planes' noses, civilian airplanes, drone frames, car chassis and fire-resistant building material.

It is a critical material in technical textiles and is known for its high strength and lightweight properties.