DAILY PT POINTERS

23rd October, 2024

HEADLINES OF THE DAY

The Hindu-IR(GSII)-Page 1

Modi meets Putin, offers all help to end conflict

Prime Minister reiterates that such disputes should be resolved through peaceful means; in his meeting with Iran's President, he expresses deep concern over the escalating conflict in West Asia

Kallol Bhattacherjee
NEW DELHI

India supports restoration of peace between Ukraine and Russia and is committed to providing "all possible assistance" to end the crisis, Prime Minister Narendra Modi said on Tuesday during a bilateral meeting with Russian President Vladimir Putin.

Mr. Modi took part in the meeting soon after reaching Kazan, where Russia is hosting the 16th BRICS summit against the backdrop of the conflicts in the Gaza Strip and Ukraine.

Mr. Modi later met Iranian President Masoud Pezeshkian and called for the de-escalation of tensions in the West Asian region.

Continued engagement: Prime Minister Narendra Modi meets Russian President Vladimir Putin in Kazan, Russia on Tuesday. ANI

tinuous contact over the conflict between Russia and Ukraine. As I have said before, we continue to believe that these disputes should be resolved through peaceful means. We support restoration of peace and stability as soon

prioritise humanity. India is ready to provide all possible assistance in the upcoming period," Mr. Modi said in his remarks.

His participation in the BRICS events in Kazan comes months after he travelled to Moscow for the

mit in July. Mr. Modi was received by Rustam Minnikhanov, head of the Republic of Tatarstan, and given a traditional Tatar welcome at Kazan, capital of Tatarstan.

CONTINUED ON

Modi to hold bilateral meeting with Xi today

KAZAN

Prime Minister Narendra Modi and Chinese President Xi Jinping will hold a bilateral meeting on the sidelines of the ongoing BRICS summit in the Russian city of Kazan on Wednesday, Foreign Secretary Vikram Misri said on Tuesday, days after the two countries agreed on a border pact.

- India supports restoration of peace between Ukraine and Russia and is committed to providing "all possible assistance" to end the crisis, said Prime Minister Narendra Modi during a bilateral meeting with Russian President Vladimir Putin.
- The BRICS summit in Kazan is the first occasion when the grouping will convene in its expanded shape that it acquired after the Johannesburg summit in 2023. Iran, Saudi Arabia, Egypt, Ethiopia, and the UAE were cleared to join BRICS in Johannesburg and the process of new members' admission was completed on January 1, 2024.
- In his meeting with the new Iranian President, Mr. Modi discussed the Chabahar port, the North-South Transport Corridor and the situation in Afghanistan. "The Prime Minister expressed his deep concern over the escalating conflict and reiterated India's call for the protection of civilians and emphasised the need for dialogue and diplomacy.

HEADLINES OF THE DAY

The Hindu-Economy(GSIII)-Page 1

IMF retains India's growth projection at 7% for FY25

Sriram Lakshman
WASHINGTON DC

The International Monetary Fund (IMF) maintained its June growth rate projects for India in its latest World Economic Outlook (WEO) released on Tuesday, to kick off the World Bank and IMF Annual Meetings in Washington.

The multilateral lender expected India to grow at 7% in the current fiscal year ending March 31, 2025 and 6.5% in the next fiscal year (FY2025-26). World output was expected to grow at 3.2% in 2024 as well as 2025.

The drop in India's growth from 8.2% in 2023 [illegible]cause pent-up demand accumulated during the pandemic has been exhausted, as the economy reconnects with its potential," the report said.

The U.S. is projected to grow at 2.8% this year and 2.2% next year, an upward revision from the July WEO update.

Globally, inflation has been on the way down. "The global battle against inflation has largely been won, even though price pressures persist in some countries," the IMF said.

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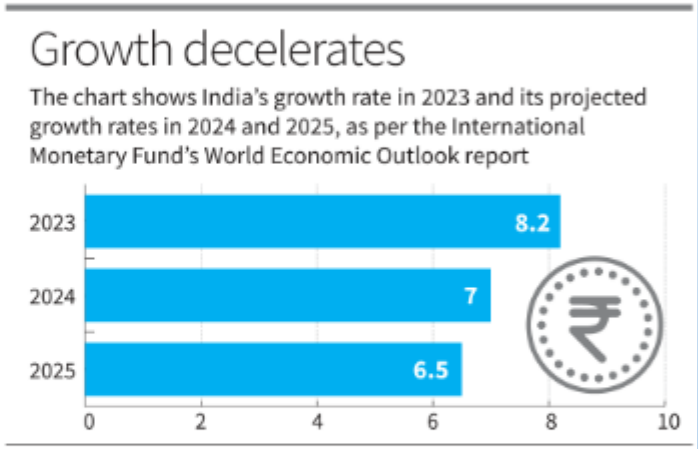

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HEADLINES OF THE DAY

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India, Pakistan renew pact on Kartarpur Corridor

Suhasini Haidar
NEW DELHI

India and Pakistan on Tuesday agreed to renew their agreement for another five years to operate the Kartarpur Corridor to facilitate pilgrims from India to visit the Kartarpur Sahib Gurdwara.

"The Agreement, signed on 24 October 2019 to facilitate the visit of pilgrims from India to Gurdwara Darbar Sahib Kartarpur, Narowal, Pakistan through the Kartarpur Sahib Corridor, was valid for a period of five years," the Ministry of External Affairs said in a statement on Tuesday, adding that the extension un-

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HEADLINES OF THE DAY

The Hindu –Defense (GSIII)-Page 10

India's fourth nuclear submarine launched with advanced arms

Dinakar Peri
NEW DELHI

India's fourth nuclear-powered ballistic missile submarine (SSBN), referred to as S4*, was launched into water at the Ship Building Centre in Visakhapatnam last week, official sources confirmed. This submarine is bigger and more capable than the first, *INS Arihant* (S2).

The S4* was launched into water on October 16 at SBC, multiple sources confirmed. It has significant indigenous content, with Indian industry being extensively involved, according to a source.

India currently has two SSBNs operational. *INS Arihant* was quietly commissioned into service in August 2016. The second SSBN, *INS Arighaat* (S3), was commissioned end-August. The third SSBN Aridhman (S4) is currently undergoing sea trials and is expected to be commissioned into service next year, sources said.

Responding to questions on the launch at a press conference on Tuesday, Vice Chief of the Navy Vice Adm Krishna Swaminathan, without directly commenting, said, "The SSBN programme is a successful one. Two submarines have been commissioned, and it is natural that others will follow."

INS Arihant is presently armed with 750 km range K-15 SLBM. The S4* carries the advanced 3,500 km range SLBM K-4, that was tested for the first time in 2020. The K-4 will be the mainstay of India's undersea nuclear deterrence as it provides standoff capability, to launch nuclear weapons while submerged in Indian waters, till a 5,000 km range SLBM is developed and fielded.

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India and Singapore to explore joint development, production of equipment for armed forces

The Hindu Bureau
NEW DELHI

The meet assumes significance against backdrop of India marking a decade of its Act East policy

India and Singapore on Tuesday agreed to extend the existing bilateral agreement on 'Joint Military Training-Army' for the next five years and also look at co-development and co-production of defence equipment. This was decided during the sixth India-Singapore Defence Ministerial Dialogue in New Delhi, co-chaired by Defence Minister Rajnath Singh and visiting Singaporean counterpart Ng Eng Hen.

"Recognising that both nations are natural partners for commencing co-development and co-production of defence equipment, both sides agreed to enhance industry cooperation, including exploring collaboration in niche domains such as automation and Artificial Intelligence. The two Ministers also decided to take forward the cooperation in emerging areas like cyber security," the Ministry said in a statement. Both Ministers acknowledged the deep and long-standing bilateral defence relations based on shared outlook on regional peace, stability and security, it stated.

This meeting assumes significance against the backdrop of India marking a decade of its Act East policy, in which Singapore has played a key role in promoting economic cooperation and cultural ties, and developing strategic connectivity with countries in the region, it said.

The two countries elevated their bilateral relationship to Comprehensive Strategic Partnership recently during the visit of Prime Minister Narendra Modi to the city-state.

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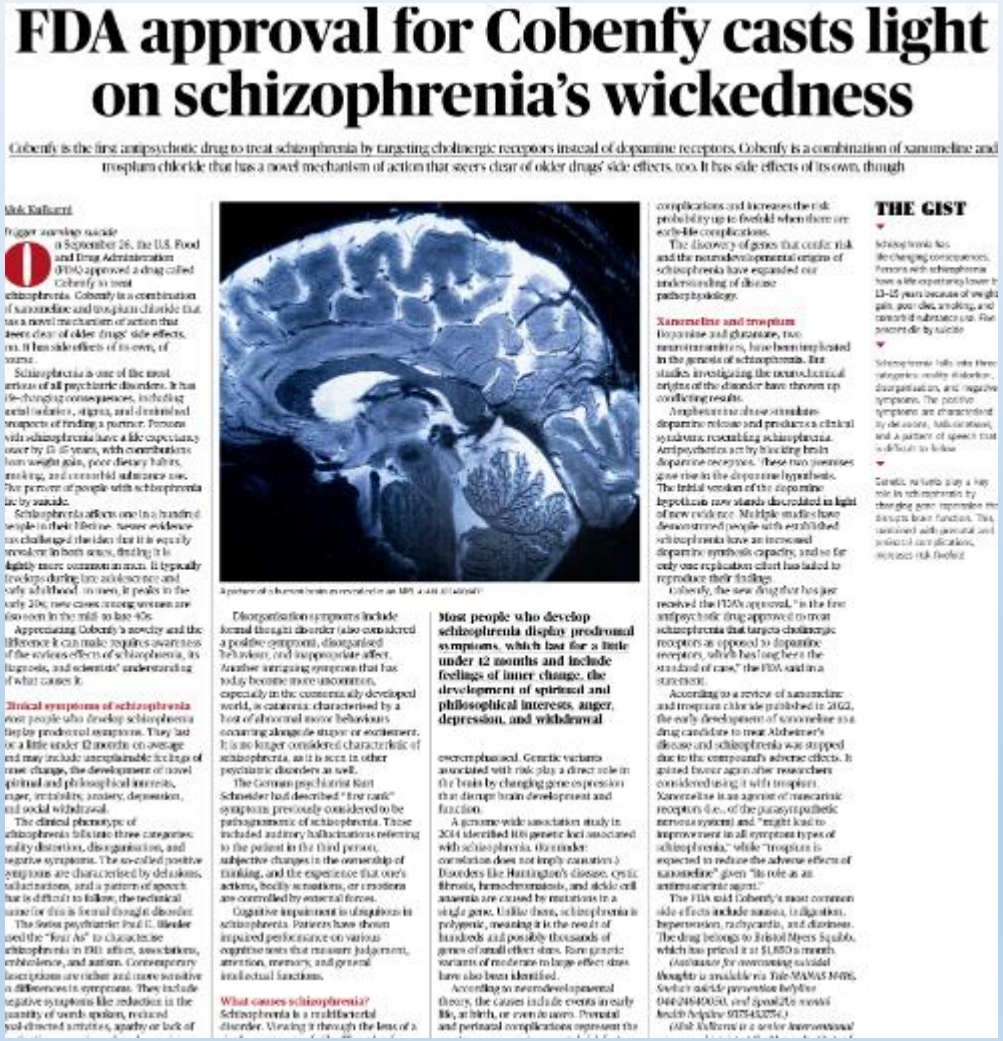
The Hindu –Science and Tech(GSIII)-Page 18



FDA approval for Cobenfy casts light on schizophrenia's wickedness

Cobenfy is the first antipsychotic drug to treat schizophrenia by targeting cholinergic receptors instead of dopamine receptors. Cobenfy is a combination of xanomeline and trospium chloride that has a novel mechanism of action that steers clear of older drugs' side effects, too. It has side effects of its own, though

Abi Kalkeri

Trigger warning: suicide

On September 26, the U.S. Food and Drug Administration (FDA) approved a drug called Cobenfy to treat schizophrenia. Cobenfy is a combination of xanomeline and trospium chloride that has a novel mechanism of action that steers clear of older drugs' side effects, too. It has side effects of its own, of course.

Schizophrenia is one of the most serious of all psychiatric disorders. It has life-changing consequences, including social isolation, stigma, and diminished prospects of finding a partner. Persons with schizophrenia have a life expectancy lower by 13–15 years, with contributions from weight gain, poor dietary habits, smoking, and comorbid substance use. Five percent of people with schizophrenia die by suicide.

Schizophrenia affects one in a hundred people in their lifetime. Severe evidence has challenged the idea that it is equally prevalent in both sexes, finding it is slightly more common in men. It typically develops during late adolescence and early adulthood. In men, it peaks in the early 20s; new cases among women are also seen in the mid- to late 40s.

Appreciating Cobenfy's novelty and the difference it can make requires awareness of the various effects of schizophrenia, its diagnosis, and scientists' understanding of what causes it.

Clinical symptoms of schizophrenia

Most people who develop schizophrenia display prodromal symptoms. They last for a little under 12 months on average and may include unexplainable feelings of mood change, the development of novel spiritual and philosophical interests, anger, irritability, anxiety, depression, and social withdrawal.

The clinical phenotype of schizophrenia falls into three categories: reality distortion, disorganisation, and negative symptoms. The so-called positive symptoms are characterised by delusions, hallucinations, and a pattern of speech that is difficult to follow, the technical name for this is formal thought disorder.

The Swiss psychiatrist Paul E. Bleuler used the "four As" to characterise schizophrenia in 1911: affect, associations, ambivalence, and autism. Contemporary descriptions are richer and more sensitive to differences in symptoms. They include negative symptoms like reduction in the quantity of words spoken, reduced goal-directed activities, apathy or lack of

Disorganisation symptoms include formal thought disorder (also considered a positive symptom), disorganised behaviour, and inappropriate affect. Another intriguing symptom that has today become more uncommon, especially in the commercially developed world, is catatonia: characterised by a host of abnormal motor behaviours occurring alongside stupor or excitement. It is no longer considered characteristic of schizophrenia, as it is seen in other psychiatric disorders as well.

The German psychiatrist Kurt Schneider had described "first rank" symptoms previously considered to be pathognomonic of schizophrenia. These included auditory hallucinations referring to the patient in the third person, subjective changes in the ownership of thinking, and the experience that one's actions, bodily sensations, or emotions are controlled by external forces.

Cognitive impairment is ubiquitous in schizophrenia. Patients have shown impaired performance on various cognitive tests that measure judgement, attention, memory, and general intellectual functions.

What causes schizophrenia?

Schizophrenia is a multifactorial disorder. Viewing it through the lens of a

Most people who develop schizophrenia display prodromal symptoms, which last for a little under 12 months and include feelings of inner change, the development of spiritual and philosophical interests, anger, depression, and withdrawal

complications and increases the risk probability up to fivefold when there are early-life complications.

The discovery of genes that confer risk and the neurodevelopmental origins of schizophrenia have expanded our understanding of disease pathophysiology.

Xanomeline and trospium

Dopamine and glutamate, two neurotransmitters, have been implicated in the genesis of schizophrenia. But studies investigating the neurochemical origins of the disorder have thrown up conflicting results.

Amphetamine abuse stimulates dopamine release and produces a clinical syndrome resembling schizophrenia. Antipsychotics act by blocking brain dopamine receptors. These two premises give rise to the dopamine hypothesis. The initial version of the dopamine hypothesis now stands discredited in light of new evidence. Multiple studies have demonstrated people with established schizophrenia have an increased dopamine synthesis capacity, and so far only one replication cohort has failed to reproduce their findings.

Cobenfy, the new drug that has just received the FDA's approval, "is the first antipsychotic drug approved to treat schizophrenia that targets cholinergic receptors as opposed to dopamine receptors, which has long been the standard of care," the FDA said in a statement.

According to a review of xanomeline and trospium chloride published in 2022, the early development of xanomeline as a drug candidate to treat Alzheimer's disease and schizophrenia was stopped due to the compound's adverse effects. It gained interest again after researchers considered using it with trospium. Xanomeline is an agonist of muscarinic receptors (i.e., of the parasympathetic nervous system) and "might lead to improvement in all symptom types of schizophrenia," while "trospium is expected to reduce the adverse effects of xanomeline" given "its role as an antimuscarinic agent."

The FDA said Cobenfy's most common side effects include nausea, indigestion, hypertension, tachycardia, and dizziness. The drug belongs to Bristol Myers Squibb, which has priced it at $1,850 a month.

Assistance for overcoming suicidal thoughts is available via Tele-MANAS 14416, Sneha's suicide prevention helpline 044-24640050, and iCall 22s mental health helpline 9152987821.)

Abi Kalkeri is a senior interventional

THE GIST

Schizophrenia has life-changing consequences. Persons with schizophrenia have a life expectancy lower by 13–15 years because of weight gain, poor diet, smoking, and comorbid substance use. Five percent die by suicide

Schizophrenia falls into three categories: reality distortion, disorganisation, and negative symptoms. The positive symptoms are characterised by delusions, hallucinations, and a pattern of speech that is difficult to follow

Genetic variants play a key role in schizophrenia by changing gene expression that disrupts brain function. This, combined with prenatal and perinatal complications, increases risk fivefold

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HEADLINES OF THE DAY

The Hindu –Species(GSIII)

Three scientists discover new genus of jumping spiders '*Tenkana*' in South India

The Hindu Bureau
CHENNAI

A team of arachnologists has discovered a new genus of jumping spiders, '*Tenkana*', found across southern India, encompassing two previously known species. It also introduced a new species, *Tenkana jayamangali*, from Karnataka.

The name Tenkana comes from the Kannada word for south, reflecting that all the known species are from southern India and northern Sri Lanka. This new group belongs to the *Plexippina* subtribe of jumping spiders and is different from related groups such as *Hyllus* and *Telamonia*. The research team included scientists from various institutions in India and Canada, and their findings were published in the journal *Zookeys*. They used both genetic studies and physical examinations to support their work.

The newly identified *Tenkana jayamangali* has been named after the Jayamangali river in Karnataka. SPECIAL ARRANGEMENT

Unlike related species that live in forests, Tenkana spiders prefer drier areas and ground habitats. They have been found in Tamil Nadu, Puducherry, Karnataka, Telangana and Andhra Pradesh.

Kiran Marathe and Wayne Maddison from the University of British Columbia, Canada, and John Caleb T.D. from Saveetha Institute in Chennai established this new genus. The genetic analysis was done with Krushnamegh Kunte from the National Centre for Biological Sciences in Bengaluru.

Two species that were previously in *Colopsus* – *Tenkana manu* (found in south India and Sri Lanka) and *Tenkana arkavathi* (from Karnataka) – have now been moved to the new genus. Interestingly, the former was named after a retired professor, Dr. Manu Thomas, in 2014.

The team also described *Tenkana jayamangali* for the first time, named after the Jayamangali river in Karnataka, where it was first seen.

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HEADLINES OF THE DAY

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EXPLAINED CLIMATE

WHY INDIA WILL BUILD A 'CLOUD CHAMBER' UNDER MISSION MAUSAM

ANJALI MARAR
BENGALURU, OCTOBER 22

THE GOVERNMENT'S Mission Mausam, launched last month, aims to not just improve weather forecasting but also 'manage' certain weather events — including enhancing or suppressing phenomena such as rainfall, hail and fog.

Doing so would require India to improve its cloud physics research. To that end, a first-of-its-kind cloud chamber will be established at the Indian Institute of Tropical Meteorology (IITM), Pune.

What is a cloud chamber?

A cloud chamber resembles a closed cylindrical or tubular drum, inside which water vapour, aerosols, etc. are injected. Under desired humidity and temperature conditions, a cloud can develop inside this chamber. The facility will allow scientists to study the seed particles that form cloud droplets or ice particles.

Many countries have basic cloud chambers with limited functionalities to perform specific studies. With Mission Mausam, India is building a cloud chamber with convection properties, as is required to study Indian monsoon clouds.

Understanding cloud physics involves the study of cloud behaviour during normal and extreme conditions, intra-particle interactions inside a cloud, and the formation of rain droplets and ice particles, among others. Establishing a convective cloud chamber can improve the Indian weather and climate.

"We have certain new ideas... Within a controlled environment, wherein we can apply various temperature, humidity, convective conditions, and other parameters, we plan to monitor and understand clouds to arrive at high-level scientific findings on how monsoon clouds behave," said Thara Prabhakaran, senior IITM scientist and an expert in cloud physics.

Over the next 18-24 months, the Indian team will focus on developing complex and highly advanced instrumentation and probes that will be deployed once the chamber is ready. The civil construction of the chamber will happen in the coming months.

"We will need highly advanced instrumentation backup, capable of monitoring the minute properties of the conditions under investigation. We will also have to perform seed particle injection into the chamber, which will offer us a scenario to look at different environmental conditions," Prabhakaran added.

How can weather be 'modified'?

In India, experiments have been done on cloud seeding, which helps generate rain. Under the Cloud Aerosol Interaction and Precipitation Enhancement Experiment (CAIPEEX) programme, trials were done over a limited geographical area along the rain-shadow regions of Maharashtra's Solapur district from 2016-2018. Such regions witness little rainfall, as they lie along the mountain side facing away from moisture-laden winds

- **Mission Mausam, launched by the government** last month, aims to not just improve weather forecasting in the country but also 'manage' certain weather events, and on demand, enhance or suppress rainfall, hail, fog and, later, lightning strikes.
- For effective weather modification, one of the most important areas is cloud physics, in which India will have to strengthen research. Towards this end, India is establishing a first-of-its-kind cloud chamber at the Indian Institute of Tropical Meteorology (IITM), Pune.
- **What is a cloud chamber?**
  - A cloud chamber resembles a closed cylindrical or tubular drum, inside which water vapour, aerosols, etc. are injected. Under the desired humidity and temperature inside this chamber, a cloud can develop.
  - The Pune facility will allow scientists to study the seed particles that form cloud droplets or ice particles in a sustained manner.
-