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ROMAN BATHS MAY HARBOUR NOVEL ANTIMICROBIAL NATURAL PRODUCTS

The Roman Baths house a diverse range of microorganisms that could be crucial in combating antimicrobial resistance, with a study highlighting the unique ecosystems of extreme ecological niches like hot springs for discovering novel antimicrobial products.

Scientists collected and analyzed water, sediment, and biofilm samples from the Roman Baths, identifying around 300 distinct types of bacteria, 15 of which demonstrated antibiotic activity against human pathogens including *E. coli*, *Staphylococcus aureus*, and *Shigella flexneri*.

The research emphasizes the urgent need for new antibiotic sources due to growing bacterial resistance, noting that further investigation is needed, but initial findings suggest significant potential for novel antimicrobial natural products in the Roman Baths' hot springs.



GST COLLECTIONS SLIDE TO ₹1.73 LAKH CR.

GST collections in May 2024 were ₹1.73 lakh crore, lower than April's ₹2.10 lakh crore but higher than May 2023's ₹1.57 lakh crore, indicating an average new normal of ₹1.7 lakh crore compared to ₹1.6 lakh crore in FY24.

The gross GST collections in FY 25 up to May were ₹3.83 lakh crore, showing an 11.3% year-on-year growth driven by a 14.2% increase in domestic transactions and a 1.4% rise in imports. The net GST revenue after refunds stood at ₹3.36 lakh crore, reflecting an 11.6% growth compared to the same period last year.

Experts suggest that the robust GST collections align with GDP estimates indicating a strong economy, with increased collections in certain regions attributed to election spending and higher purchases due to heatwaves. Recovery actions by GST departments also contributed to high collections.



INDIA'S FUEL USE IN MAY BROKE RECORDS

India's petrol and diesel consumption broke all records in May, aided by higher demand on campaigning and voting in the ongoing Lok Sabha elections and the beginning of summer vacations.

Besides, higher usage also reflects the world's third-largest crude oil importer's expanding industrial base and growing demand for personal and commercial mobility.

According to the Petroleum Planning and Analysis Cell, diesel consumption rose to a record 8.4 million tonne (mt) last month compared with the previous record of 8.2 mt in May 2023. Petrol usage rose to 3.5 mt against the previous high of 3.4 mt. Diesel usage rose by 2.4% y-o-y and 6.3% m-o-m in May, while petrol consumption was up 3% y-o-y and 6% m-o-m



TONGA VOLCANO COULD CAUSE UNUSUAL WEATHER FOR REST OF DECADE: STUDY

- **A large ozone hole that developed from August to December 2023 was caused by the Hunga Tonga eruption, which researchers predicted almost two years in advance.**
- **Hunga Tonga's impact on climate change was minimal, raising temperatures by only 0.015 degrees Celsius. Therefore, the high temperatures measured over the past year are not attributed to the eruption.**
- **Climate simulations predict that until 2029, the northern half of Australia will have colder and wetter winters, North America will experience warmer winters, and Scandinavia will have colder winters.**



DOES INEQUALITY LEAD TO GROWTH?

- **Rahul Gandhi's statements on redistribution and Prime Minister Narendra Modi's polarising rebuttal have highlighted the issue of inequality.**
- **Billionaires accumulate wealth through monopolies, allowing their businesses to dominate markets and set prices rather than being governed by market forces.**
- **These monopoly effects contribute to the cost-of-living crisis currently impacting developed economies.**



N. KOREA WILL STOP SENDING TRASH BALLOONS ACROSS TO SOUTH KOREA

- North Korea will stop sending trash-filled balloons to South Korea, calling it a response to anti-regime propaganda. South Korea called the action "irrational" and "low-class."
- South Korea warned of strong actions against the balloon attacks, which violate the armistice agreement. North Korea agreed to stop but threatened to resume if South Korea continued sending anti-regime leaflets.
- The balloons caused debris in northern South Korea, including Seoul, leading to clean-up efforts. South Korea may respond by restarting loudspeaker propaganda, which could increase tensions and risk conflict.



'GREEN-BEARD' GENES COULD EXPLAIN HOW ALTRUISM AROSE IN NATURE

- **Genetic basis for altruism:** Altruism in animals like honey bees, widow spiders, and meerkats is driven by "green-beard" genes, which promote helping relatives with the same genes and can harm those with different genes.
- **Altruistic amoebae:** The social amoeba *Dictyostelium discoideum* shows altruism when some cells sacrifice themselves to form a stalk, supporting the spores. Genes *tgrB1* and *tgrC1* help amoebae recognize and cooperate with kin, preventing cheating.
- **Research findings:** Studies reveal that *tgrB1* and *tgrC1* genes in *D. discoideum* vary greatly, allowing amoebae to tell kin from non-kin. Strong gene binding promotes altruism, while weak binding leads to separation. This supports the idea that organisms favour their relatives' survival.



THE MK PARTY'S RISE IN SOUTH AFRICA

- The MK Party received nearly 15% of the national vote, significantly reducing the ANC's majority to 40.18%.
- The MK Party was launched on December 16, 2023, in Soweto, with Jacob Zuma announcing his association and emerging as its leader, actively campaigning as its public face.
- Despite a strong electoral debut in the 2024 elections, the MK Party's prospects for long-term political success appear bleak.



CLAUDIA SHEINBAUM MAKES HISTORY AS MEXICO'S FIRST WOMAN PRESIDENT

- **Claudia Sheinbaum will become Mexico's first female president, succeeding Andrés Manuel López Obrador. She will continue his populist policies but aims to change Mexico's male-dominated political culture.**
- **Sheinbaum won with about 60% of the vote, far ahead of her main opponent, Xóchitl Gálvez, who had around 28%. Her Morena party will keep its majorities in Congress.**
- **Sheinbaum, the first Jewish leader of Mexico, starts her six-year term on October 1. She plans to focus on reducing economic inequality and providing social support, following her mentor López Obrador's approach**



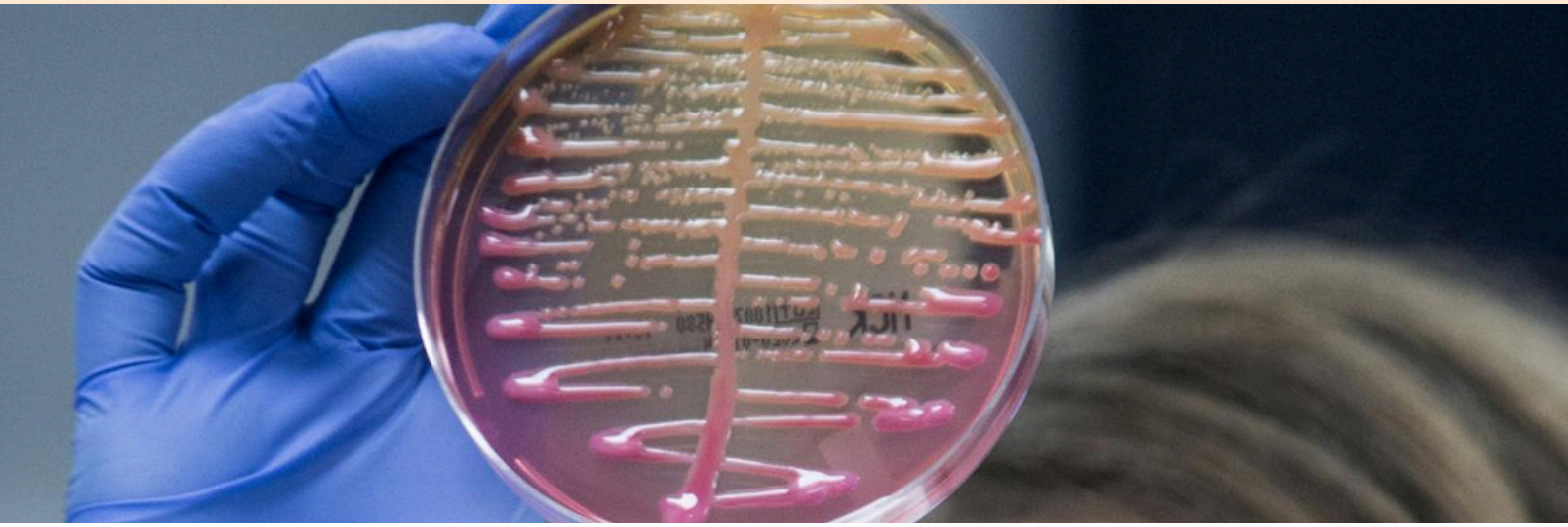
SEBI FORMS PANEL TO REVIEW ECONOMIC STRUCTURE OF CLEARING CORPORATIONS

- **SEBI has formed a temporary committee led by Usha Thorat to review and improve the ownership and operation of clearing corporations to ensure they are strong, independent risk managers.**
- **The 2018 Gandhi Committee recommended that clearing corporations should be widely owned, not 100% owned by a single exchange, due to their high-risk roles in the market.**
- **Current ownership by parent exchanges can create conflicts of interest. Clearing corporations need to operate independently to maintain market stability.**



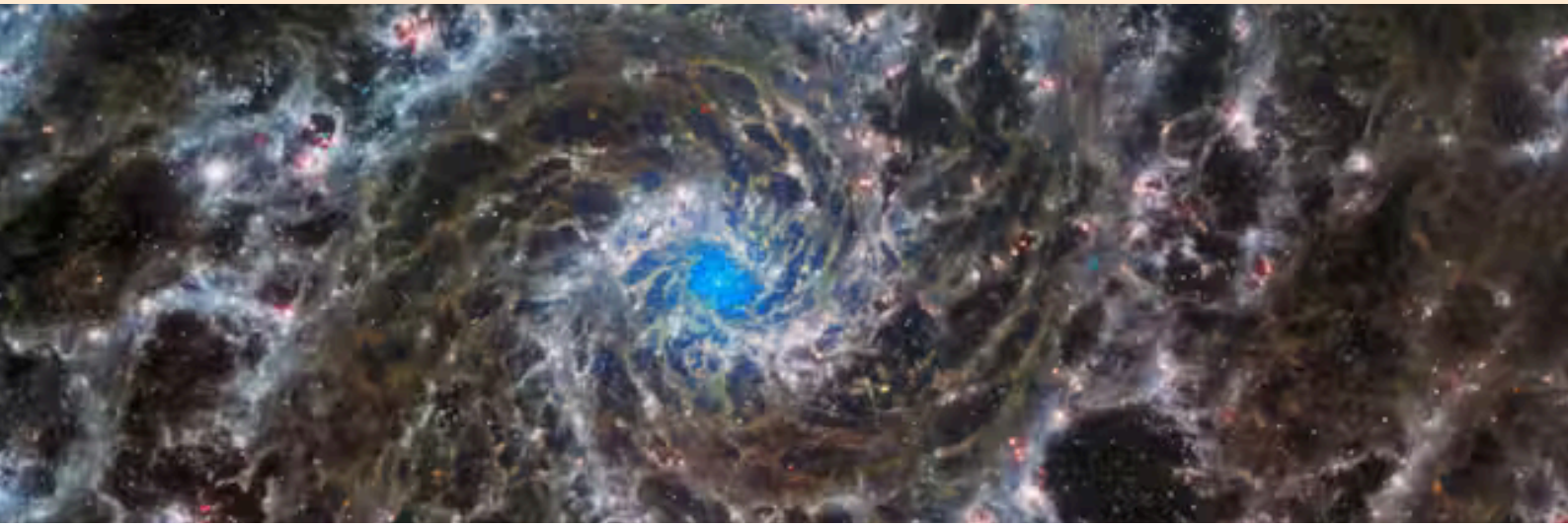
CHINESE BOATS SEIZED SUPPLIES TO THE OUTPOST

- **The Philippine military accused Chinese boats of seizing food and medicine airdropped to a Filipino outpost in the South China Sea on May 19.**
- **This incident occurred at the Second Thomas Shoal in the Spratly Islands, where Filipino troops were stationed to assert Manila's territorial claims.**
- **The military described the event as "aggressive and unprovoked interference" by China, marking the first time such supplies had been seized.**



THE BACTERIA THAT WRITE NEW GENES TO COPE WITH INFECTIONS

- The ability to create DNA from RNA revolutionized molecular biology, allowing researchers to reverse-transcribe messenger RNAs into DNA, clone it into bacterial vectors, and study gene functions.
- In the 1980s, reverse transcriptase significantly improved HIV management, with antiviral agents targeting this enzyme turning a deadly disease into a manageable one.
- Reverse transcriptase can uncover new mechanisms of genetic evolution and viral resistance, paving the way for new therapies and biotechnological innovations.



WITH BAD NEWS FROM CASSINI, IS DARK MATTER'S MAIN RIVAL THEORY DEAD?

- Galaxies rotate faster than Newton's laws predict, suggesting the existence of dark matter or a breakdown of Newtonian gravity. MOND (Milgromian dynamics) was proposed as an alternative but recent studies challenge its validity.
- Tests with the Cassini mission and wide binary stars show no anomalies that MOND predicts, making it unlikely to replace dark matter. MOND also fails to explain phenomena in the outer Solar System and within galaxy clusters.
- Dark matter remains the favored explanation, though its exact nature is uncertain and may not fit within the Standard Model of particle physics.



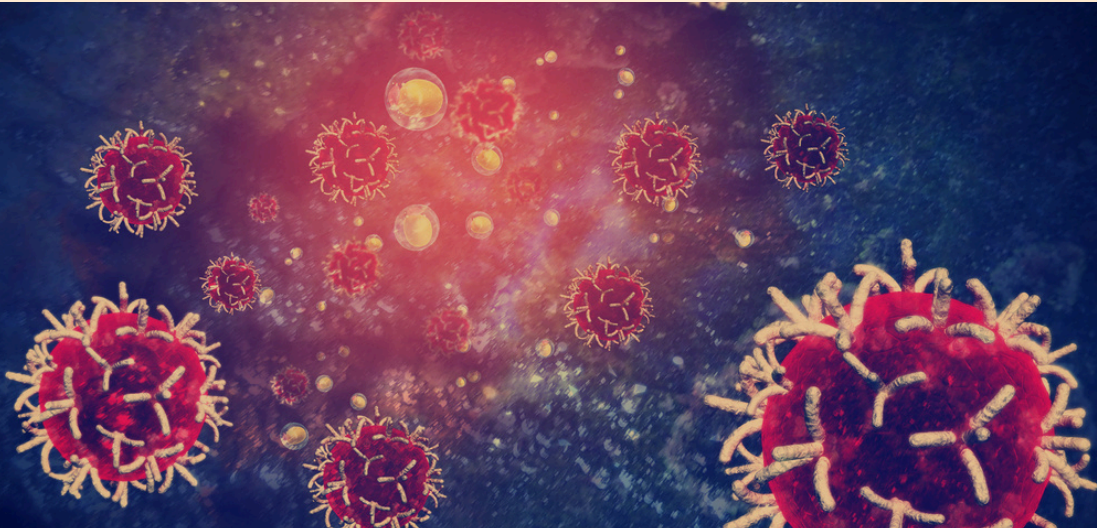
WILL NOT INVEST IN PLANES IF BILATERAL RIGHTS EXPANDED FOR WEST ASIAN RIVALS: AIR INDIA

- Air India will not buy new aircraft if the government grants more seats to West Asian hubs, as it would hinder non-stop international travel for Indians, said CEO Campbell Wilson. He highlighted that 90% of traffic to these hubs is for onward flights to destinations like the U.S. and Europe.
- Despite placing orders for 1,000 aircraft in 2023 with a nearly \$100 billion investment, the airline will not proceed if economic returns are not achievable.
- Air India plans to retrofit 100 planes by mid-2025 for deployment on major international routes, such as New York and London, enhancing these flights with new products and 25,000 new seats as part of a \$400 million investment



USE OF GERMAN-MADE WEAPONS BY UKRAINE A 'DANGEROUS STEP': PUTIN

- Russian President Vladimir Putin warned Germany that using its weapons to attack Russia would ruin relations between the two countries.
- Germany and the U.S. have allowed Ukraine to strike some targets in Russia with long-range weapons, which surprised many in Russia.
- Putin said Russia's relations with the U.S. won't change regardless of the next American president, and he called Trump's recent conviction part of U.S. political struggles.



WILL UNDERSTANDING CANCER BECOME A DATA PROBLEM?

- Ten years ago, my father's struggle with brain cancer showed me the difficulties families face with this disease. Brain cancer is still common, with 33,000 new cases yearly in India.
- This personal experience led me to cancer research, where I've seen great progress. New technologies like Next-Generation Sequencing (NGS) make cancer diagnosis less invasive by analyzing genetic information.
- NGS allows for liquid biopsies, using blood samples to find cancer markers without surgery. Advances in data analysis and AI help process genetic data quickly, offering new hope in the fight against cancer.



FOOD PRICE RISE LIKELY SPED UP IN MAY

- In May, the cost of a vegetarian meal increased by 9% year-on-year, compared to an 8% rise in April, due to surging prices of tomatoes, onions, and potatoes. Official retail food inflation was 8.7% in April.
- The cost of a non-vegetarian meal dropped by 7% as broiler prices fell by 16%, but it remained at ₹55.9, the second-highest in five months. In contrast, the average cost of a vegetarian meal was ₹27.8 per person, slightly up from April's ₹27.4.
- Prices for rice and pulses rose by 13% and 21%, respectively, while cumin, chili, and vegetable oil prices fell significantly, balancing out some of the cost increases in other meal components. The National Statistical Office will release May's CPI numbers on June 12.



SPAIN TO JOIN SOUTH AFRICA'S GAZA CASE AT TOP UN COURT

- Spain has become the first European country to seek permission from the UN court to join South Africa's case accusing Israel of genocide in Gaza, which South Africa filed late last year.
- The International Court of Justice has ordered Israel to stop its military offensive in Rafah, Gaza, but Israel has not complied. Other countries like Mexico, Colombia, Nicaragua, Libya, and the Palestinians are also waiting to join the case.
- Spain, along with Ireland and Norway, recognized a Palestinian state on May 28. Despite condemning Hamas's attacks and calling for the return of Israeli hostages, Spanish Prime Minister Pedro Sánchez continues to support peacemaking efforts in Gaza, reflecting general support in Sp



RAJKOT GAMING ARCADE FIRE: A TRAGEDY FORETOLD

- Pradipsinh Chauhan demands capital punishment for those responsible for the fire at TRP Game Zone in Rajkot, which killed his son and four relatives.
- The fire, which killed 27 people, occurred in a gaming zone lacking valid licenses and fire safety measures, highlighting local authorities' negligence.
- Widespread corruption in Gujarat's civic bodies has been blamed for repeated safety violations and tragedies, with officials often accepting bribes to overlook regulations.



DIGITAL PAYMENTS INTELLIGENCE PLATFORM SOON TO CURB FRAUD

- **RBI proposes a Digital Payments Intelligence Platform for network-level intelligence and real-time data sharing to combat digital payment frauds.**
- **A committee will be formed to explore setting up this platform and enhancing safety across the digital payments ecosystem.**
- **RBI suggests including recurring but irregular payments like Fastag and National Common Mobility Card (NCCMC) in the e-mandate framework for automatic balance replenishment and plans to bring UPI Lite under this framework for quick, small-value payments.**