# SCIENCE AND SOCIETY NEWSLETTER

Innovations and Contributions by CSIR labs

## In this issue:



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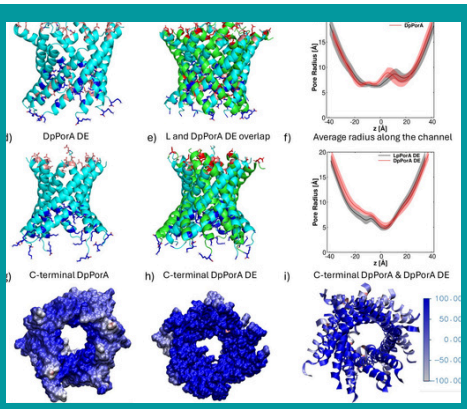
## Union minister inaugurates India's first 3D-printed rural house

- **Union Minister Chandra Sekhar Pemmasani inaugurated the country's first 3D concrete-printed rural house at the Central Building Research Institute (CSIR-CBRI) in Roorkee, Uttarakhand on Wednesday. The milestone innovation represents a significant step in India's rural housing journey, combining traditional construction knowledge with cutting-edge 3D printing technology, according to the Department of Science and Technology (DST).**
- **Addressing scientists, researchers and stakeholders, Pemmasani highlighted India's commitment to providing housing for all. "From mud walls to 3D printing, India has demonstrated its dedication to safe, strong and sustainable homes. These 3D-printed houses are not just about technology, they represent a future where housing is affordable, adaptable and environmentally responsible," he said.**

## Scientists Develop 'Mirror-Image' Nanopores for Early Cancer Detection and Personalized Diagnostics

- **Researchers at BRIC-RGCB (Bio-Innovation and Research Incubation Centre" at the Rajiv Gandhi Centre for Biotechnology), led by Dr. Mahendran K R, have created mirror-image nanopores called DpPorA, designed from flipped synthetic peptides that mimic natural protein tunnels.**
- **These nanopores are more stable and selective than their natural counterparts and can detect a wide range of biomolecules from small sugars to full-length proteins.**
- **The innovation could pave the way for early cancer detection and personalized diagnostics, offering a powerful new tool for healthcare. The study has been published in Nature Communications.**

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## India's first decaf black tea launched by CSIR-NEIST Jorhat using local technology

- The Council of Scientific and Industrial Research–North East Institute of Science and Technology (CSIR-NEIST), Jorhat has developed India's first decaffeinated black tea using indigenous technology.
- The tea was recently launched by Union Minister of State for Science and Technology, Dr. Jitendra Singh, highlighting a significant milestone in India's tea innovation.
- According to CSIR-NEIST officials, the new decaf tea retains the flavor and aroma of traditional black tea while removing caffeine, offering a healthy alternative for consumers.

## CSIR to develop non-invasive techniques for detecting Parkinson's, hepatitis

- The Council of Scientific and Industrial Research (CSIR) has launched a project to develop non-invasive diagnostic techniques for several hard-to-treat medical disorders by analyzing and manipulating gut microorganisms. The initiative, titled "Comprehensive Analysis of Niche Microbial Dysbiosis in Human Diseases," will focus on Parkinson's disease, acne, inflammatory bowel disease and severe alcoholic hepatitis.
- Institute of Microbial Technology (IMTECH), Chandigarh will serve as the nodal laboratory with five CSIR labs participating. The project, expected to be completed in three years, aims to identify microbial signatures in blood or stool samples and use them to devise more effective therapies tailored to Indian conditions.
- Dr. Rashmi Kumar, project head at IMTECH, said that integrating artificial intelligence models will allow non-invasive prediction of disease onset and progression simply by analyzing the patient's gut profile.

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## CSIR-NBRI' s 'Namoh 108' lotus to bloom across UP

- The National Botanical Research Institute (NBRI) is set to make its premium 'Namoh 108' lotus variety available for cultivation and religious offerings in Uttar Pradesh.
- Known for its 108 petals and pastel pink hue, the lotus will be grown in Bareilly following successful cultivation in Pune, Erode, Berhampur and Kolkata. Blooming in September–October in UP.
- CSIR-NBRI Director Ajit Sahsany said the lotus, identified by CSIR-NBRI scientists in 2023 is celebrated for its beauty and spiritual significance. The parent variety, collected from Manipur, was cultivated over three years in Lucknow's botanical garden. CSIR-NBRI also pioneered the sequencing of the Namoh 108 genome, a first in Indian botanical research.

## Through generics, India emerging as 'pharmacy of the world' : Pharmacologist

- Former CDRI Director Dr. Madhu Dikshit said India is becoming the pharmacy of the world through its production of generics.
- Speaking in Lucknow on "From Ancient Wisdom to Modern Science: The Journey of Drug Discovery in India," she highlighted that the generic era (1947–1990s) and the Patent Act of 1970 enabled affordable drug production, making medicines accessible across income groups.
- Dr. Dikshit noted that government labs play a key role in drug discovery, offering cost-effective, safe and efficacious alternatives to private pharmaceutical companies, which invest heavily in development and marketing.
- Generics have positioned India as a major innovation and manufacturing hub in the global pharmaceutical sector.

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## CSIR-NBRI' s 'Namoh 108' lotus to bloom across UP

- **Paleoseismology helps scientists understand the timing, magnitude and recurrence of large earthquakes especially in regions with limited historical records.**
- **By studying traces of ancient seismic activity preserved in the ground, researchers can track how geological faults evolve over time aiding in better building safety codes and earthquake mitigation strategies.**
- **Techniques like radiocarbon dating allow geologists to determine the age of organic materials in sediments, including features such as sand dikes, which mark past earthquakes.**
- **Dating these formations provides precise insights into ancient seismic events, improving preparedness for future disasters.**

## CBRI-Roorkee develops solar AC-cum-water heater for high-altitude regions

- **The Central Building Research Institute (CBRI), Roorkee has transferred its unique solar air conditioner and water heater to a Pune-based company for large-scale deployment.**
- **Designed for high-altitude regions, the affordable system combines heating and cooling, achieving up to 70% energy savings.**
- **Developed under the guidance of Dr. Chandan Swaroop Meena, the system has already been successfully installed in Kalpa, Himachal Pradesh and Leh. Priced at around Rs 75,000, about 40% lower than comparable technologies.**
- **It operates primarily on solar energy and can switch to fuel in extreme conditions, offering a sustainable alternative to conventional fossil fuel-based heaters.**
- **Dr. Meena emphasized that the innovation supports India's clean energy goals while providing a cost-effective, efficient and resilient solution for remote, high-altitude communities.**

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## MECL signs MoU with CSIR-National Metallurgical Laboratory

- **Recognizing the strategic need to strengthen quality, innovation and technical excellence in India's minerals and mining sector, Mineral Exploration & Consultancy Limited (MECL) and the CSIR–National Metallurgical Laboratory (NML) have signed a landmark Memorandum of Understanding (MoU) for joint initiatives in critical mineral exploration.**
- **The collaboration will focus on domain-specific research, technical gap assessments, analytical and implementation support**
- **The integration of AI and machine learning- all aligned with the Government of India's vision for sustainable and self-reliant mineral development.**

## Indian Ocean still least explored, say scientists

- **The Indian Ocean remains the least studied of the world's oceans, said Dr. Sunil Kumar Singh, Director of the CSIR–National Institute of Oceanography (NIO), Goa, during the GEOTRACES meet held at NIO from October 15 to 17. Covering over 71 million sq km, the ocean's vastness makes it crucial to understand its health and ecosystems.**
- **Researchers have found that most of the iron in the Indian Ocean comes not from the air but from sediments and hydrothermal vents deep underwater.**
- **Interestingly, the amount of iron here is lower than in other oceans. Iron is essential for the growth of phytoplankton, tiny marine plants that support fish populations and help absorb carbon dioxide from the atmosphere.**
- **Dr. Singh noted that adding iron to iron-deficient regions could help boost ocean productivity and contribute to climate balance.**

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## Rainfall isn't enough: scientists call for smarter groundwater management in Telangana

- **Scientists are urging better annual assessment of groundwater recharge to ensure sustainable management in hard rock terrains like Telangana. Despite 960 mm of annual rainfall, only 10–15% contributes to recharge due to geology, land use and erratic rainfall.**
- **A joint study by CSIR–Northeast Institute of Science & Technology (CSIR–NEIST) Jorhat and CSIR–National Geophysical Research Institute (CSIR–NGRI) Hyderabad estimated the State's average annual groundwater recharge at 14.3 billion cubic metres (bcm).**
- **The researchers stress that regular monitoring and data-driven management are key to safeguarding groundwater resources.**

## Eyantram Waste Management Opens ₹20 Cr Recycling Plant in Vizag

- **Visakhapatnam-based Eyantram Waste Management Pvt Ltd has launched an integrated medical and e-waste recycling plant at the Andhra Pradesh Medtech Zone (AMTZ) with an investment of ₹20 crore.**
- **Built using technology from CSIR–National Metallurgical Laboratory, the facility will serve Andhra Pradesh, Telangana, Odisha and Chhattisgarh.**
- **Director Ashish Lohia said the initiative will boost the recovery of precious, non-ferrous and rare earth metals, creating a high-value circular economy in the e-waste sector.**

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## Union Minister Dr. Jitendra Singh inaugurated North India's first BioNEST Incubator at the Industrial Biotechnology Park in Ghatti, Kathua

- In a major boost to biotechnology and innovation, Union Minister Dr. Jitendra Singh inaugurated North India's first BioNEST Incubator at the Industrial Biotechnology Park in Ghatti, Kathua. The event, Bioinnovation Connect at Kathua was organized by CSIR-Indian Institute of Integrative Medicine (IIIM), Jammu and saw enthusiastic participation from scientists, entrepreneurs, industry leaders and students.
- Calling it a historic milestone for Kathua and the Jammu region, Dr. Singh said the initiative will lead in a new era of scientific enterprise, innovation and economic self-reliance. The BioNEST Incubator will provide a platform for startups in biotechnology, agriculture, healthcare and allied sectors, helping young innovators transform ideas into successful ventures. This move is expected to strengthen the regional economy and position Kathua as a key driver of biotech-led growth in North India.

## CSIR Aroma Mission wins National award

- Team Aroma Mission of the Council of Scientific and Industrial Research (CSIR) has been selected for the prestigious Rashtriya Vigyan Puraskar – Vigyan Team Award 2025.
- Led by the Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow, the mission involves a network of CSIR laboratories across India.
- In a letter from the award committee chairperson Prof. Ajay Kumar Sood, the team was commended for its outstanding achievements, innovation and collaborative excellence.
- Which contributed to national development goals and opened new avenues for research and innovation. The award comprising a medallion and sanad will be presented at a ceremony to be announced soon.