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# INDIA SCIENCE AND INNOVATION WEEKLY

*Ask the right questions, and nature will open the door to her secrets*
*- Dr. C.V. Raman, The Nobel Prize in Physics 1930*

## IISc experts find alternative to block HIV in host's immune cell

Bengaluru-based Indian Institute of Science (IISc) researchers develop an alternative to natural enzyme, made from vanadium pentoxide nanosheets, which mimicks the natural enzyme called glutathione peroxidase, to help reduce oxidative stress levels in the host's cells, and thus keep the Human Immunodeficiency Virus (HIV) in check. The researchers found that by treating HIV-infected cells with nanozymes and treating HIV-infected patients through antiretroviral therapy (ART), subsequent reactivation of the virus was suppressed.

## NII experts find another process to solve mitochrondial disorder

Researchers at the Department of Biotechnology's National Institute of Immunology (DBT-NII) are figuring out a way to tackle autosomal dominant progressive external ophthalmoplegia (adPEO), which is one of the most-common Mitochondrial disorders. Researchers have found that along with the peptide that determines the transport into mitochnodria, called Mitochondrial Localization Signal (MLS), a process called ubiquitylation, also decides whether Polymerase Gamma A, which is responsible for the replication and removal of mismatches in Mitochondrial DNA, optimally enters mitochondria, which also shed light on the another protein called MITOL, present on the outer membrane of the mitochondria.

## IIT and International experts develop sweat senor on bandage

Researchers from Indian Institute of Technology Bombay (IIT Bombay) and Tufts University, United States, have developed a novel sensor to detect metabolite levels from sweat, which can be mounted on adhesive bandages and embedded on garments, in order to create eaily wearable sweat sensor. The researchers developed three types of sensors using carbon-coated polyester threads for sensing electrolytes like sodium and ammonium ions, carbon-coated stainless steel threads to test the acidity and polyester threads coated with an enzyme that oxidises and senses lactate.

## SBI Foundation to help deploy two indigenous innovation for COVID care

Bengaluru-based Centre for Cellular and Molecular Platforms (C-CAMP) has inked a pact with SBI Foundation for CSR (corporate social responsibility) support towards boosting existing public healthcare efforts in light of a resurgent COVID-19 pandemic. The C-CAMP-SBI Foundation partnership. The innovations developed by two of India's medtech startups, Coeo Labs and Turtle Shell Technologies will be deployed in several cities afected by the pandemic. The two products selected for the proposed field deployment are Saans Pro, a continuous positive airway pressure (CPAP) device that provides non-invasive respiratory support, by Coeo Labs and Dozee, India's first contactless vital monitoring device by Turtle Shell Technologies. Both are C-CAMP portfolio start-ups. C-CAMP is looking to deploy these technologies in public health care facilities including primary health centres, hospitals, and quarantine centres to provide better critical care for in-patients and continuous remote monitoring for asymptomatic patients, high-risk groups remotely.

## NITTR researcher develop self-propelled vehicle to clear railway tracks

An Associate Professor from National Institute of Technical Teachers' Training and Research (NITTTR), Bhopal, has developed a patented and cost-effective Multifunctional Railway Track Scavenging Vehicle with support from the Advanced Manufacturing Technologies programme of the Department of Science & Technology (DST), Government of India aligned with the 'Make in India' initiative. As this is a rail cum road vehicle, it can be used as a material/ garbage transport vehicle from track to the road by Indian railways. It requires only one person along with the driver to carry out the automatic cleaning of the railway track.

## IITB researchers unravel the anomalies in uranium

A study by researchers from the Indian Institute of Technology Bombay (IIT Bombay) and the Bhabha Atomic Research Centre (BARC), Mumbai, has explained, via extensive computer simulations, why uranium exhibit an ananomoly known as the Kohn anomaly or strong interactions between electrons and phonons, in a step towards understanding Uranium's superconductive behaviour at near absolute zero temperatures or -275 degress celsius. The researchers re-analysed the data from inelastic neutron scattering experiments on the uranium carried out in 1979. These experiments probed uranium's atomic vibrations in the Fourier space, which they were aiming to use to understand its heat dissipation under an extreme nuclear environment.

## Special Update: National Institute of Solar Energy

National Institute of Solar Energy (NISE) is an autonomous specialized institute under the Ministry of New and Renewable Energy (MNRE), Government of India, mandated for research and development, solar component testing and certification, capacity building, and development of solar products and applications. NISE includes world-class, well-equipped testing facilities and R&D rooms spaced at Aditya Bhawan. The basic function of NISE is to serve as a technical focal point in solar energy related areas. NISE is a technical hub for all solar linked activities, standardization, designing, consultancy, and skill development programs. The institution is committed to deliver quality in all the efforts put in to promote and grow solar energy in India.

Further details can be found at:
https://nise.res.in/