



Embassy of India, Berne 14 December 2020

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

IIT researchers boost protein production in cyanobacteria

IIT researchers in Bombay have boosted protein production in cyanobacteria by identifying and mutating a library of 36 mutant promoters present in cyanobacteria, which was then introduced into *Synechococcus elongatus* and noted their influence on the production of a protein called enhanced yellow fluorescent protein (eYFP). The researchers are trying to express different proteins in cyanobacteria for the production of biofuel and chemicals.

IIT Researchers's graded-poling technique to enhance power

Researchers from Indian Institute of Technology (IIT), Mandi have proposed a technique to enhance the power output of piezoelectric materials, which are used in floor tiles to generate electricity from human walking, or on roads, where the weight from the vehicles can power road lights and signals. Through a technique known as graded poling, researchers hope to utilize the enormous improvements possible for researchers to develop actual piezoelectric designs.

IIT researchers devise method to harvest drinking water from air

Researchers from Indian Institute of Technology (IIT) Guwahati produced a patterned hydrophilic Slippery Liquid-Infused Porous Surface (SLIP) by spraying a sponge-like porous polymeric material on top of a simple A4 printer paper, which could harvest water from foggy/water vapour laden air without the need for any cooling arrangement. SLIPS could be used for other purposes, such as easily cleanable household appliances, in underwater hulls of ships and submarines and anti-icing windows for aircraft.

Shrikhande – The Euler spoilers

Sharadchandra Shankar Shrikhande was an Indian mathematician, who was recognized for his achievements in combinatorial mathematics. He, along with R.C. Bose and E.T. Parker were famous for disproving the famous conjecture made by Leonhard Euler that there do not exist two mutually orthogonal latin squares of order $4n + 2$ for any n . Shrikhande graph is used in statistical designs.

Indigenous vaccine by Gennova receives approval for Phase I/II trials

India's first indigenous Messenger Ribonucleic acid (mRNA) vaccine candidate, named HGCO19, developed by Pune-based company Gennova in collaboration with HDT Biotech Corporation, Seattle in USA, has received approval from Indian drug regulators to initiate Phase I/II human clinical trials. The mRNA vaccine carries the molecular instructions to make the protein in the body through a synthetic RNA of the deadly virus. The host body uses this to produce the viral protein that is recognised and thereby making the body mount an immune response against the infection. The mRNA vaccine has already demonstrated safety, immunogenicity, neutralisation antibody activity in animals and is highly efficacious because of their inherent capability of being translatable into the protein structure inside the cell cytoplasm. Gennova has completed all preliminary work and should be initiating the Phase I/II Human clinical trial soon since the approval from the Drugs Controller General of India (DCGI) office has been received. The Department of Biotechnology (DBT), Ministry of Science & Technology, Government of India is implementing the IndCEP mission 'India Centric Epidemic Preparedness through Rapid Vaccine Development: Supporting Indian Vaccine Development' which is aligned with the Global Initiative of Coalition for Epidemic Preparedness Innovations (CEPI) and aims to strengthen the development of vaccines and associated competencies/technologies for the diseases of epidemic potential in India. The Ind-CEPI mission of DBT is implemented by its Public Sector Undertaking (PSU), Biotechnology Industry Research Assistance Council (BIRAC).

MoU between CSIR-NML and Indian Air Force

The Council of Scientific and Industrial Research-National Metallurgical Laboratory (CSIR-NML), Jamshedpur in the Indian state of Jharkhand has reportedly signed a memorandum of understanding (MoU) with the Indian Air Force. MoU outlines the research and development in the field of material science and engineering. Discussions were held on the areas of prime national interest in the field of materials, metals, corrosion science and other allied engineering domains with an aim to decide on aspects of collaborations between IAF and CSIR-NML.

C-CAMP sign MoU with IHMA

Bengaluru-based Centre for Cellular and Molecular Platforms (C-CAMP) has signed a Memorandum of Understanding (MoU) with International Health Management Associates (IHMA), a global organisation that has been involved in supporting anti-infective and diagnostic development studies for over 25 years. Both institutes will jointly facilitate microbiology-related studies for clinical studies, surveillance studies and mentorship programmes with view to promote new drug and vaccine discovery in the area of anti-infectives and foster new-age diagnostic device development.

Special Update: Department of Agricultural Research and Development (DARE)

Department of Agricultural Research and Development (DARE) provides the necessary government linkages for the Indian Council of Agricultural Research (ICAR), the premier research organisation for co-ordinating, guiding and managing research and education in agriculture including horticulture, fisheries and animal sciences in the entire country. DARE is the nodal agency for International Cooperation in the area of agricultural research and education in India.

Further details can be found at:
<http://dare.nic.in/>