**New biomolecules to fight drug resistance in Kala-azar**

Researchers at the Department of Biotechnology’s National Centre for Cell Science (DBT-NCCS) in Pune have explored ways to tackle the resistance of an anti-microbial drug called, miltefosine, in parasites which cause Kala-azar. The research group designed small molecules, called peptides, which could very specifically interact with the transporter proteins of Leishmania major alone, and not interfere with human proteins in any way thus showing promising results to develop long-run therapeutics against drug-resistant Leishmania parasites.

**IIT Guwahati develop point-of-care device to detect retinopathy**

Researchers at the Indian Institute of Technology (IIT) Guwahati, in collaboration with Shri Sankaradeva Nethralaya, Guwahati, have developed the first point-of-care testing device that can detect diabetic retinopathy at an early stage. The research team developed a microfluidic system, in which body fluid, was drawn into tubes, where they came in contact with gold-antibody nanoparticles, called peptides, which could very specifically interact with the transporter proteins of Leishmania major alone, and not interfere with human proteins in any way thus showing promising results to develop long-run therapeutics against drug-resistant Leishmania parasites.

**Bengaluru Airport’s locally developed weather monitoring system**

Bengaluru’s Kempegowda International Airport is now the first in India to own a ‘Made in India’ Aviation Weather Monitoring System (AWMS) developed by National Aeronautics Laboratories (NAL), Bengaluru. The new technology, developed by CSIR-NAL coupled with the Dristhi Transmission, will help calculate Runway Visibility Range (RVR) and help pilots with accurate data reporting. The new technology deployed at the Kempegowda International Airport records real-time data of wind speed, wind direction, temperature, humidity, and pressure. The system displays data on a single screen and is web-based which allows maintenance from any location.

**Scientists detects ionospheric irregularities that affect communication**

A multi-instrument based ionospheric study of space weather storms over India by the Scientists from the Indian Institute of Geomagnetism (IIG), Mumbai has found that the occurrence of equatorial spread F (ESF) irregularities and Global Positioning Systems (GPS) scintillations are significantly affected by the geomagnetic storms depending upon the time of the onset of the geomagnetic storm. These storms are brief disturbances in Earth's magnetic field and atmosphere (aka the magnetosphere) caused by bursts of radiation and charged particles emitted from the Sun. Scientists also found that enhanced winds during geomagnetic storms can either add or suppress the existing ion densities to produce either positive or negative storms that modify the electrodynamics of the ionosphere, thereby influencing navigation and communication that form a crucial part of our lives.

**IIT Gandhinagar scientists find COVID-19 in wastewater**

Scientists in IIT-Gandhinagar have for the first time detected genetic material of the SARS-CoV-2 virus in wastewater, a breakthrough that paves the way for using wastewater-based epidemiology (WBE) for real-time surveillance of COVID-19 in India. Scientists found that increased gene copies of the virus in Ahmedabad’s wastewater matched the incidence of the disease in the city. According to the Scientists, WBE was an effective tool during outbreaks of other viruses such as Poliovirus and Hepatitis A. The Ahmedabad study aims at assisting concerned authorities and policymakers to formulate or upgrade COVID-19 surveillance to have an explicit picture of the phase of the pandemic.

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**Special Update: Indian Institute of Geomagnetism [IIG], Mumbai**

IIG conducts basic and applied research in Geomagnetism and allied fields like Solid Earth Geomagnetism/Geophysics, Magnetosphere, Space and Atmospheric Sciences. IIG has a number of active research groups involved in theoretical, experimental, and observational work. The Institute has a modern laboratory for design and fabrication of instruments used in Geomagnetism and allied fields.

Geomagnetism is a multi-disciplinary science and thus provides research opportunities for Physicists, Geophysicists, and Earth Scientists. Geomagnetism, by its very nature, is also a global science and often involves collaboration with scientists from other countries. The Institute also supports a World Data Centre for Geomagnetism (WDC, Mumbai), which is the only International centre for Geomagnetic data in South Asia and caters to the needs of Space and Earth Scientists and researchers from various universities and research institutions.

Further details can be found at: http://iigm.res.in/

For more information, please visit our website www.indembassybern.gov.in or write to dcm.berne@mea.gov.in