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*Ask the right questions, and nature will open the door to her secrets.*

*- Dr. C.V. Raman, The Nobel Prize in Physics 1930*

## INCOIS study helps monitor trends in phytoplankton biomass

Scientists from Indian National Centre for Ocean Information Services (INCOIS) have closely been studying trends in phytoplankton biomass for 16 years by tracking the long-term trend of chlorophyll-a in the north-western Bay of Bengal through in-situ study and satellite data from NASA's Moderate Resolution Imaging Spectroradiometer) and VIIRS (Visible Infrared Imaging Radiometer Suite) as well as ISRO's OCM-2 (Ocean Colour Monitor-2). The study emphasised the continuous monitoring of the ocean system to devise mitigation system to encounter disruption caused by algal bloom because of excessive phytoplankton enrichment in the coastal water.

## IITians design gold nanoclusters for lysosome imaging

Researchers from the Indian Institute of Technology Mandi (IIT Mandi) have designed a bovine serum albumin protein conjugated red emissive gold nanoclusters as an efficient fluorescent nanoprobe for lysosome imaging, to understand the functional modalities of the extremely small lysosomes, which could in turn help to understand the functioning of lysosome in human diseases like cancer. The next step of this research is to make these gold nanoclusters as a universal probe for other multimodal and correlative bio imaging techniques, which will unveil a huge number of unresolved biological problems in live cell condition.

## Researchers make new discovery in battle against malaria

Researchers from Jawaharlal Nehru University and Shiv Nadar University have identified a novel anti-malarial peptide that could be used in combination with other antimalarials for blocking the Plasmodium falciparum parasite from infecting blood cells. The researchers were able to derive a shortened peptide from ZA1, named ZA1S, which was able to enter the parasite and bind to myosin A, thus blocking the parasite invasion before it entered the red blood cells as well as showing no signs of mutations in the Myosin A region.

## CSIR and Aurobindo Pharma to jointly develop COVID-19 vaccine

Council of Scientific and Industrial Research (CSIR) and Aurobindo Pharma Limited have joined hands to develop several novel COVID 19 vaccines. Three CSIR labs namely Center for Cellular and Molecular Biology (CCMB) Hyderabad, Institute of Medical Technology (IMTECH), Chandigarh and Indian Institute of Chemical Biology (IICB), Kolkata are developing vaccine candidates using different technology platforms. Aurobindo Pharma Limited will undertake clinical development and commercialization of the vaccines. Joining of hands of premier CSIR labs with industry for the development of vaccines will amplify India's efforts in indigenous vaccine development and also help in preparedness for future pandemics.

## New target regions in Typhoid Pathogen

A team of researchers from IIT-Indore in collaboration with a team from the Department of Biotechnology's Translational Health Science and Technology Institute (DBT-THSTI), Faridabad has identified three regions in the genome of the Salmonella enterica bacterium, the pathogenic bacterium that causes the fever, that can be used as drug targets to combat it. The target regions were located in various essential genes in the Salmonella enterica genome, especially genome regions that are rich in Guanine, since they can form special structures known as G-quadruplexes and these regulate various biological processes including DNA replication, recombination, and gene expression. The identification of conserved G-quadruplexes in the Typhoid-causing bacterium can be explored for the development of medicines for treating the disease.

## Delhi Metro develops indigenous signalling technology

The Delhi Metro Rail Corporation (DMRC) on Engineers Day (September 15) took a major step towards the development of an indigenously-built Communication Based Train Control (CBTC) signalling technology for metro railway with the launch of the Indigenous Automatic Train Supervision (i-ATS). Automatic Train Supervision (ATS) is a computer-operated system that controls and manages train operations. The system is vital for operations of the high-density metro rail, where services are scheduled every few minutes. The technology would be able to work with Train Control and Signaling Systems of various suppliers. It can also work with various technology levels of Train Control and Signaling systems. The technology is also suitable for introducing it in Indian Railways which will be coming up with the Centralized Train Control on a large scale.

## Special Update: National Institute of Epidemiology, Chennai

The National Institute of Epidemiology (NIE) was established on July 2, 1999 by merging the Central JALMA Institute for Leprosy (CJIL Field Unit), Avadi with the Institute for Research in Medical Statistics (IRMS), Chennai. The broad objectives of the Institute cover Development of human resources in epidemiology and bio-statistics, Networking of the various ICMR and non-ICMR Institutes at the national level for epidemiological purposes, and Consultancy. The Institute has the distinction of being the WHO Collaborating Centre for Epidemiology of Leprosy and identified as a Technical Resource Group for Epidemiology of HIV by National AIDS Control Organization. The Institute carries out a variety of research activities which include areas such as interventional studies, disease modeling, health systems research, evaluation of health schemes and disease control programmes, issues of statistical methodology, epidemiological investigations and clinical trials of traditional remedies.

Further details can be found at: <http://www.nie.gov.in/>