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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*

## Hyperelastic model to understand injuries

Indian Institute of Technology (IIT) Madras researchers developed an analysis-driven 'hyperelastic' model in calculating the stress and strain experienced by the brain due to blunt force injury and lesion (tumor) growth. The team has developed a mathematical form to provide useful inputs for a more general viscoelastic model of the brain tissue, thus providing clinicians with input for better prognosis as well as surgical intervention for a brain lesion.

## IITM highlights indirect effect of Aerosol on global warming

In a first-ever significant study conducted by Indian Institute of Tropical Meteorology (IITM), Pune, role of the droplet size on Cloud Droplet Size Distribution (CDS) and its effects on the radiation budget was examined. IITM team used ground-based in-situ measurements to study the Aerosol Indirect Effects (AIE) on cloud microphysical properties, and their effect on cloud albedo was quantitatively derived to shed light on how Aerosol content in clouds block solar radiation and hinders evaporation of water on land.

## Researchers develop battery-operated portable ventilators

To meet the escalating demand of rising ventilators, researchers from Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram (SCTIMST) have developed an Emergency Breathing Assist System (EBAS), called AirBridge, which is battery-operated and user-friendly. The knowhow and design of EBAS were transferred to Wipro 3D in April 2020 for further joint development.

## IIT Roorkee and WileyNXT start AI for banking programmes

Indian Institute of Technology (IIT) Roorkee, in collaboration with WileyNXT, India's innovative learning solution, has announced the launch of Artificial Intelligence (AI) in Banking Programme. The 4-month programme will focus on training IT professionals and graduates to implement Artificial Intelligence in the banking sector.

## NIMS begins human clinical trial of COVID-19 vaccine

The subject enrolment for Phase-I clinical trial of India's first indigenous vaccine for COVID-19 has begun at Hyderabad's Nizam's Institute of Medical Science (NIMS). On the direction of the Indian Council of Medical Research (ICMR), authorities at NIMS began the process to register 30-60 subjects for the trial. Blood and swab samples of the subjects will be collected and if found fit they will be administered the first dose of the vaccine after a week. The phase-I clinical trial would go on for 28 days, after which the ICMR and the Drug Controller General of India (DGCI) would accord permission for Phase-II trial with more subjects. NIMS is one of the hospitals selected by the ICMR to undertake clinical trials of Covaxin, which it is developing in partnership with Hyderabad-based Bharat Biotech International Limited (BBIL).

## IGIB and IIT Alumni Council sign MoU for research against COVID-19

Institute of Genomics and Integrative Biology (IGIB) and IIT Alumni Council announced a Memorandum of Understanding (MoU) for COVID-19 disease research and patient data analysis. The joint research by CSIR-IGIB & IIT Alumni Council will focus on catalysing the creation of an ecosystem for diagnostics and therapeutics for COVID-19 as well as flexible platforms for pandemic preparedness. IIT Alumni Council has handed over the first set of 8500 patient imaging data from Mumbai to IGIB, which will soon be made available in deidentified form, through a public open data platform co-hosted by IGIB and ICMR to enable research. The key element of this MoU is that IIT Alumni Council is generating a lot of data from their charitable work that they would like to make public in a secure and ethical way through CSIR-IGIB.

## CSIR-IMTECH to have bio-repository of COVID-19 samples

The Microbial Type Culture Collection and Gene Bank (MTCC) at the Institute of Microbial Technology, Chandigarh (IMTECH) will host the biorepository of COVID-19 samples. The blood samples collected will be stored at a designated biorepository centre. These blood samples may be used to assess the performance of antibody tests as well as immune markers of disease and disease severity for COVID-19. The biorepository will be critical to steer research towards innovating the development of new diagnostics, therapeutics, and vaccines.

## Special Update: Central Food Technological Research Institute (CFTRI), Mysore

CSIR-Central Food Technological Research Institute (CFTRI), Mysore (A constituent laboratory of Council of Scientific and Industrial Research, New Delhi) came into existence during 1950 with the great vision of its founders, and a network of inspiring as well as dedicated scientists who had a fascination to pursue in-depth research and development in the areas of food science and technology. Research focus of CSIR-CFTRI has been revolved around broadly into the following areas:

- Engineering Sciences
- Technology Development
- Translational Research
- Food Protection and Safety

Food Technology being inter-disciplinary in nature the mandate or vision of the Institute is fulfilled through various R&D Departments and Support Departments along with its Resource Centres at Hyderabad, Lucknow and Mumbai.

Further details can be found at: <https://cftri.res.in/>