



Embassy of India, Berne

# INDIA SCIENCE AND INNOVATION WEEKLY

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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*

## IISc Develop a New GPU-based Machine Learning Algorithm to Discover Human Brain Connectivity

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Researchers at the Indian Institute of Science (IISc) developed a new GPU-based machine learning algorithm that could help scientists to better understand and predict connectivity between different regions of the brain or to discover human Brain Connectivity. The algorithm, called Regularized, Accelerated, Linear Fascicle Evaluation, or ReAL-LiFE, could rapidly analyse the enormous amounts of data generated from diffusion Magnetic Resonance Imaging (dMRI) scans of the human brain. Researcher, by using the ReAL-LiFE, were able to evaluate dMRI data over 150 times faster than existing state-of-the-art algorithms. Researcher, with the improved algorithm, ReAL-LiFE, were also able to predict how a human test subject would behave or carry out a specific task.

## Scientists Discovered fossils of the New Genus and Species of Tree shrew

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Scientists at Wadia Institute of Himalayan Geology (WIHG), an autonomous institute of Department of Science and Technology (DST) found fossils of the new genus and species of tree shrew (known as Sivatupaia ramnagarensis n. gen. n. sp) from the middle Miocene (extends from about 23.03 to 5.333 million years ago) site of Ramnagar in Jammu and Kashmir. This tree shrew currently represents the oldest record of fossil tupaiids in the Siwaliks, extending their time range by 2.5–4.0 Million Years in the region and could help provide a more precise age estimate for Ramnagar locality.

## Inauguration of Earthquake Observatory at Udhampur

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Ministry of Science & Technology inaugurated a seismological (Earthquake) observatory at Udhampur in Jammu and Kashmir. Jammu and Kashmir is the westernmost extension of the Himalayas & Udhampur district lies between the two major seismogenic faults, namely Main Frontal Thrust (MFT) and Main Boundary Thrust (MBT), which are among the potential factors for generating earthquakes in the J&K region. Therefore the inauguration of the new seismological observatory would help further strengthen the region's earthquake monitoring. The inauguration of Earthquake Observatory at Udhampur also coincides with the objectives and goals of the National Centre for Seismology (NCS) in the Ministry of Earth Sciences (MoES), which has initiated several new measures to upgrade and strengthen the infrastructural facilities and to provide better scientific inputs required for improving disaster mitigation and preparedness measures. It has so far installed 152 permanent observatories throughout the country with state-of-the-art VSAT communication facilities.

## Researchers Developed a New Method to Help Develop Early Warning Systems for Earthquakes & Landslides

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Researchers at Bengaluru-based Raman Research Institute has developed a new method to help develop early warning systems for catastrophic structural failures, including natural phenomena like earthquakes and landslides. Researcher added that the new technique intended to better understand how a slurry, formed when sufficient amount of solid grains is mixed with a liquid, behaves

## Special Update: Researcher Developed N95 Mask with Nanoparticle Coating Using 3D Printing Technology

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Researchers under the Zetasizer Nano ZS, a facility supported by 'Fund for Improvement of Science & Technology Infrastructure' (FIST) project of the Department of Science & Technology (DST), GoI, which enables high temperature thermal analysis for ceramic materials and catalysis applications, developed reusable, recyclable, washable, odourless, non-allergic and anti-microbial N95 mask called as 'Nano Breath' by using 3D printing technology. The four-layer mask whose outer layer is made up of silicon has a shelf life of more than 5 years depending upon the use. A 4-layer filtration mechanism has been provided in the 3D printed mask & a trademark and a patent have also been filed for the mask called **Nano Breath**.