



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

Research on bipolar disorder

A study by researchers from the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) and the National Institute of Mental Health and Neurosciences (NIMHANS), in Bengaluru has identified two specific genes which may be related to bipolar disorder. The group identified regions within chromosome 1 and chromosome 6 and, subsequently, found that variants of two genes (KANK4 and CAP2) were the likely candidates.

Research on drug-resistant Leukemia

Researchers at Centre for Nanoscience and Nanotechnology at the Jamia Millia Islamia (Delhi) have fabricated a highly sensitive carbon nanotube-based sensor capable of detecting multidrug-resistant leukaemia cells in the bone marrow. The detection can take place at even a very low concentration of 10 cells per milliliter (ml). The carbon nanotubes were grown on a silicon wafer substrate. In order to miniaturise the sensor and make it flexible, moisture-resistant and stable even at 180 degree C, the researchers transferred the carbon nanotubes to a flexible substrate made of polyethylene terephthalate (PET).

Finding solution to food wastage problem

S4S Technologies, a Food startup in Aurangabad, has been able to increase the shelf life of perishable food items by a year without the use of preservatives and chemicals by using its patented technology, called solar dryer. The startup wants to raise funding by March 2020 to expand its farm supply chain from 1,200 farmers to over 10,000 and increase the production capacity to 70,000 tonnes per year.

Two wheeler e-vehicles

Hero Electric is planning to invest Rs 700 crore in plant and product development over the next 3-4 years. It currently has a 100,000 unit per annual capacity plant in Ludhiana and plans to increase the capacity to 500,000 units. Hero Electric is one of the oldest and biggest electric vehicle brands in India and has sold over 3 lakhs electric two wheelers in the country.

Promoting Innovation

To promote Innovation, the Government of India has expanded the scope of CSR 2% spending via Taxation Laws (Amendment) Ordinance 2019. Until now, contributions/funds provide to technology incubators located within academic institutions approved by the Government of India qualified as CSR expenditure. The CSR Fund can now be spent on incubators funded by Central/State Government or any agency or Public Sector Undertaking of Central/State Government, contributing to public-funded Universities, IITs, National Laboratories and Autonomous Bodies.

IIT Delhi and IIT Bombay produce most number of startups

Indian Institutes of Technology (IIT) Delhi and IIT Bombay have produced the highest number of technology entrepreneurs in the country over the past two decades. Since 2015, the top four engineering colleges; IIT Delhi, IIT Bombay, IIT Kharagpur and BITS Pilani have produced 1066 startups, compared with just 914 in the 15-year period between 2000 and 2015. IIT Delhi and IIT Bombay are well-known startup hubs. Flipkart was founded by IIT Delhi graduates, while Ola was founded by two IIT Bombay software engineers. IIT Kharagpur is a close third.

Solar Power Tree to help farmers run tractor on battery

Solar Power Tree has been developed by the Center of Excellence in Farm Machinery (CoEFM), Ludhiana, an extension centre of the Central Mechanical Engineering Research Institute (CMERI). is a traditional tree with branches of photovoltaic panels harnessing solar energy for producing electricity. The plan is to instal solar trees in farms from where the farmer will charge the battery of tractor and use the crop residue in the generation of bio-energy.

Special Update: Innovations for Defence Excellence (iDEX)

Innovations for Defence Excellence (iDEX) launched by the Government of India in April 2018, primarily aims at creation of an ecosystem to foster innovation and technology development in Defence and Aerospace by engaging Industries including MSMEs, start-ups, individual innovators, R&D institutes & academia, and provide them grants/funding and other support to carry out R&D which has good potential for future adoption for Indian defence and aerospace needs. iDEX is funded and managed by a 'Defence Innovation Organization (DIO)' which has been formed as a 'not for profit' company as per Section 8 of the Companies Act 2013 for this purpose, by the two founder members i.e. Defence Public Sector Undertakings (DPSUs) - HAL & BEL. iDEX will function as the executive arm of DIO, carrying out all the required activities while DIO will provide high level policy guidance to iDEX. The key Functions of iDEX are:

- Co-Innovation/co-creation
- Piloting of candidate technologies in important platforms
- Indigenization of various defence and aerospace related platforms being manufactured in the country based on ToT.

The Forge Incubator in Coimbatore is working with 12 of the 44 innovators who won the initial grant from iDEX. DIO came up with 11 requirements to kick off iDEX; these included unmanned underwater and airborne vehicles, see-through armour, body protection systems and new materials.

Further details can be found at:

<https://www.makeinindia.defence.gov.in/pages/innovations-for-defence-excellence-idex->