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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

Early diagnosis of brain tumour

Scientists at the Institute of Microbial Technology (IMTECH), Chandigarh, India found potential gene biomarkers in blood that can be used for prognosis and early diagnosis of brain tumour. The researchers identified two macrophages – M1 and M2, of which more of M2 than M1 leads to a suppression of the immune system and a high-grade glioma or brain tumour.

New technology to boost production of Geranium

Scientists from Central Institute of Medicinal and Aromatic Plants (CIMAP), Lucknow, India have developed a new low-cost technology to prepare Geranium saplings and make this available to the farmers. The plant has huge medicinal value and its essential oil works as an anti-inflammatory and anti-septic agent.

IIT-Hyderabad working on solution for sewage treatment

Indian Institute of Technology (IIT) Hyderabad, India researchers are developing an algal-bacterial hybrid system to reduce the cost of wastewater treatment and offer better quality recyclable water. The team combined bacteria that enable aerobic treatment with photosynthetic microalgae. The Carbon dioxide released during the process is used for cell synthesis. The algae used in sewage treatment plant can be used to produce biodiesel and other by-products.

Link between tissue-remodelling enzyme and hypertension found

Researchers at the Indian Institute of Technology (IIT) Madras, India have found an association between a particular tissue-remodelling enzyme called Matrix metalloproteinases (MMP7) and risk of hypertension. It was found that structural changes in MMP7 gene have showed a strong association with increased hypertension risk. The study was done in two distinct areas: North and South India.

ISRO: Achievements 2019 and Future Missions

During 2019, six launch vehicle and seven satellite missions were realised by ISRO. 50th launch of the Polar Satellite Launch Vehicle (PSLV) took place. Two new variants of the PSLV were introduced. For the first time, the spent fourth stage of the PSLV was successfully demonstrated as an experimental orbital platform. Indigenously developed Vikram processor by Semi-Conductor Laboratory was flight tested. International mobile standards body 3rd Generation Partnership Project (3GPP) approved India's regional navigation satellite system NavIC which would facilitate NavIC's use in mobile phones. A second Vehicle Assembly Building in SDSC SHAR Sriharikota was dedicated to the nation for increasing the launch frequency. In an effort towards horizontal expansion of ISRO, Space Technology Cells, Space Technology Incubation Centres and Regional Academic Centres for Space were established. A special programme for school children called "Yuva VIgyani KAryakram (YUVIKA)" aimed at imparting basic knowledge on Space Technology, Space Science and Space Applications was introduced. To carry forward the industry production of space systems, ISRO incorporated New Space India Limited (NSIL), under the Department of Space and efforts in realising PSLVs from industry initiated.

The Missions to look forward in future include: Chandrayaan-3 mission to the moon, Gaganyaan, SSLV, GSLV with 4m ogive payload fairing, GSAT-20 satellite, NavIC with indigenous atomic clocks, Indian Data Relay Satellite System, Aditya-L1 and XPOSAT.

Increase in IPRs filed by IIT Delhi

In 2019, Indian Institute of Technology (IIT) Delhi filed 150 intellectual property (IPs) in the form of patents, designs etc. The institute filed 20% more IPs in 2019 compared to 2018. Among the recently filed patents are a novel wearable device to measure pulse pressure, bullet-proof clothing that enables transmission and reception of electronic signals, water based method to produce Warfarin an anti-coagulant agent and process to produce fuel from e-waste. Other patents filed include redesigned elbow implant that reduces bone loss during implantation, production of liquid hydrocarbons from plastic waste, method to improve shelf-life of raw milk etc.

Special Update: National Institute of Plant Genome Research

The National Institute of Plant Genome Research (formerly known as National Centre for Plant Genome Research) is situated in New Delhi. The Institute started to function in the year 1998.

NIPGR is poised to contribute towards frontier areas of Plant Biology such as, Computational Biology, Genome Analysis and Molecular Mapping, Molecular Mechanism of Abiotic Stress Responses, Nutritional Genomics, Plant Development and Architecture, Plant Immunity, Molecular Breeding, Transgenics for crop improvement and other emerging areas based on plant genomics. The research programme aims to contribute to the understanding of the structure, expression and function of genes along with arrangement of genes on plant genomes and manipulation of plant genes / genomes to breed improved varieties of food and industrial crops for high yields and of better quality products.

Further details can be found at: http://www.nipgr.ac.in/