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PAR PANEL TO DISCUSS GM CROPS ISSUE WITH ACTIVISTS, SEED FIRMS

A parliamentary panel headed by Congress leader Renuka Chowdhury will discuss the issue of genetically modified (GM) crops with multinational seed firms and activists.

The Parliamentary Standing Committee on Science and Technology, Environment and Forests, headed by Chowdhury is reviewing the GM crops and their impact on environment and human health.

The panel will meet the activists and other farmer organisations who are against the genetically-modified seeds, a member said.

The committee is also deliberating upon the issue of GM mustard and has called officials from the environment ministry for the same, a member said.

The panel today discussed the issue of health hazards of GM mustard with the Secretary Council of Medical Research (ICMR) and officials from the Department of Animal Husbandry.

Last week, the Genetic Engineering Appraisal Committee (GEAC), under the Environment Ministry, recommended the GM mustard for commercial cultivation. The final approval is yet to be given by the environment minister.

The Centre for Genetic Manipulation of Crop Plants (CGMCP), Delhi University South Campus, had submitted an application to the GEAC for the environmental release of GM mustard (brassica juncea) hybrid DMH-11.

GM mustard is the second genetically modified food crop after Bt Brinjal that has obtained all required regulatory approvals and reached the environment minister's table for clearance.

Former Environment Minister Jairam Ramesh in Congress-led UPA government had refused clearance to Bt Brinjal and put an indefinite moratorium on the decision.

INDIA MULLING BUILDING TSUNAMI EARLY WARNING SYSTEM IN SOUTH CHINA SEA

The government is exploring the possibility of setting up a tsunami early warning system in the disputed South China Sea, which has been witnessing China's growing assertiveness.

M Rajeevan, the secretary of the Ministry of Earth Sciences, said India already has a system in place to provide tsunami warning to south-east and south Asian nations.

"India is the chairperson of RIMES (Regional Integrated Multi-hazard Early Warning System for Asia and Africa). We are also a major contributor in terms of resources. So, we are exploring the possibility of having a tsunami early warning system in the South China Sea," he said.

He, however, clarified that this project has not got official sanction yet.

"If the project materialises, then alerts will be provided through RIMES and it will benefit nations such as Vietnam and Thailand," Rajeevan said.

INDIA, GERMANY TO WORK TOGETHER ON ALTERNATIVE MEDICINE

India and Germany, which worked together on treating osteoarthritis with ayurveda, will collaborate further in the field of alternative medicine, the government said today.

"The Union Cabinet has approved a Joint Declaration of Intent (JDI) between Germany and India regarding cooperation in the sector of alternative medicine," an official statement said. The collaboration will also enhance employment, it said.

The Cabinet was also apprised of a pact, signed here in April this year, between India and Bangladesh on cooperation in the peaceful use of outer space.

While India has well-developed systems of traditional medicine which hold tremendous potential in the global health scenario, Germany has considerable interest in such a system of medicine, it said.

Noting that the AYUSH Ministry had taken many initiatives for promoting ayurveda in Germany, the statement referred to the collaborative research project between the Central Council for Research in Ayurvedic Sciences (CCRAS) and the Charite University in Berlin on osteoarthritis of the knee.

"The results of the trial are encouraging and the clinical trial demonstrates significant improvement in patients. The study has been completed successfully and is under publication," the statement said.

Initiation of collaborative research, training and scientific capacity building in the field of alternative medicine under the JDI between the two countries would contribute to enhanced employment opportunities in the AYUSH sector, it said.

The financial resources necessary to conduct research, training courses and conferences will be met from the existing allocated budget and existing plan schemes of Ministry of AYUSH.

A delegation led by AYUSH Minister Shripad Yesso Naik had visited Germany in October last year to participate in the second European World Ayurveda Congress.

During the visit, Naik met German Parliamentary State Secretary Ingrid Fischbach and the two sides agreed to begin the process of drafting and negotiating a JDI in the field of AYUSH and natural medicine.

On the Memorandum of Understanding (MoU) between India and Bangladesh, the statement said it would lead

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to cooperation in areas such as space science, technology and applications including remote sensing of the earth.

The pact would also enable cooperation in satellite communication and satellite based navigation, planetary exploration, use of spacecraft and space systems and ground system and application of space technology.

“The MoU would lead to a Joint Working Group, drawing members from the Department of Space and the Indian Space Research Organisation (DOS/ISRO), and the Bangladesh Telecom Regulatory Commission (BTRC),” it said.

NRI, FOREIGN SCIENTISTS TO WORK IN INDIAN INSTITUTES: GOVT

The Centre is all set to launch a first-of-its-kind programme next month wherein foreign and NRI scientists can work in the country’s scientific institutions for a period of one to three months.

The programme titled ‘Visiting Advanced Joint Research’ (VAJRA) is aimed at encouraging top scientists to work in India and guide doctorate and post-doctorate students.

“The aim of the programme is to expose the students to global research culture. The scientists selected under this programme will be a cut above the rest in their respective fields.

“The faculty will be physically available for 1-3 months in the Indian institutions, but will maintain an adjunct faculty status round the year,” said Ashutosh Sharma, secretary, Ministry of Science and Technology.

He was speaking at the sidelines of an event organised to publicise the ministry’s achievements since the NDA government came to power in 2014.

Union Science and Technology Minister Harsh Vardhan, who was also present at the event, said thousands of Indian-origin scientists working abroad have come back to India ever since the NDA came into power.

“The scientists are seeing a change in India. The scenario has shifted from brain drain to brain gain,” Vardhan said.

The scientists under the VAJRA programme would draw a salary of USD 15,000 in the first month and USD 10,000 each in the remaining months.

The number of scientists under the programme has been capped at 1,000.

Meanwhile, Sharma said it was for the first time that the government has initiated such a programme at a mass level to attract foreign scientists.

The government currently runs a programme under ‘Ramanujan Fellowship’. However, it is aimed at attracting Indian students and doctors working abroad. The period of the fellowship is five years.

MONSOON MAY HIT KERALA BEFORE MAY 30: IMD

The India Meteorological Department (IMD) has predicted the onset of the monsoon in Kerala on May 30 this year, but the seasonal rainfall may arrive a day before.

Ministry of Earth Sciences (MoES) Secretary M Rajeevan said the conditions look favourable for the arrival of the monsoon before the announced date.

“The date announced for the onset of the monsoon is May 30, but there is a possibility that it may hit Kerala a day before that,” Rajeevan told PTI.

The normal date for the start of the seasonal rains over Kerala is June 1, which marks the arrival of the monsoon in the country.

With chances of continuation of the El Nino effect, a phenomena associated with warming of Pacific waters, the IMD has predicted a normal monsoon this year.

Rajeevan said the ministry will also undertake a programme during the monsoon to study the viability of cloud seeding.

He was speaking at an event organised to highlight the ministry’s achievements since the NDA government came to power in 2014. Earth Sciences Minister Harsh Vardhan and his deputy Y S Chowdary attended the event.

The programme will be carried out using two research aircraft. One plane would undertake the exercise of cloud seeding while another one would take samples to study its viability.

Solapur in Maharashtra has been chosen as the area for conduct of the research.

“We intend to take 200 samples that can help us understand how effective is the concept of cloud seeding. The programme will be carried over a period of three years,” Rajeevan said.

Several states including Kerala have also been conducting research on cloud seeding.

CARA TO CREATE POOL OF CHILD CARE SPECIALISTS

The country’s apex child adoption body is for the first time getting ready to create a new pool of child care specialists.

A need was felt to infuse new blood in the central adoption resource authority (CARA) as the Juvenile Justice (Care and Protection), 2015, brought in new rules and processes in the adoption system.

“While, we have had interns here on and off, we have never done this in an organised manner like we are doing now,” said CARA chairperson Deepak Kumar.

CARA has decided to bring in interns, who are interested in social service or are planning to pursue it as a career to train with it, he said.

“We need people who study social services to know how the adoption system works because here, at every level, there is a need for welfare officers to be involved with children.

Training people is a move towards capacity building,” Kumar said. The interns will be trained to conduct home studies of prospective adoptive parents, research and documentation on post-adoption status of children, develop standards and modules related to the adoption procedure, quality childcare standards and on monitoring and supervision, among other aspects of child care.

CARA has called for applications from institutions as well as individuals and categorised its requirements under two heads - unpaid internships for students who have completed Class XII or are pursuing graduation and paid research students.

The paid interns, who will get Rs 10,000 per month, should be research scholars and post-graduate students pursuing a master’s degree in social work, sociology, psychology, management, law and social sciences.

“The plan is to get five interns per quarter and to place them in different departments,” said Kumar.

The move to create such a pool of experts in child protection and child care is to ensure that the new generation of social workers is in tune with the new laws and policies laid down by the government and aid in their smooth implementation.

WOMAN GETS A ‘GOLDEN’ KNEE AFTER SURGERY

A 60-year-old woman’s problem knee has been replaced with what what doctors call a golden knee at the All India Institute of Medical Sciences (AIIMS). The Gold Knee Replacement surgery was conducted at AIIMS on Wednesday.

“There is no gold in the implant but it is golden in colour. It is actually cobalt chromium with seven layers of special coatings which act as a barrier between the skin and the metal which ward off allergies and infection,” Dr Rajesh Malhotra, head of the department of Orthopaedics at AIIMS and Chief of its Trauma Centre, said.

The patient, who suffered from acute osteoarthritis, had undergone a conventional knee replacement surgery in 2015.

She had difficulty walking, and had come to AIIMS with severe pain and pus oozing out from an infected knee.

The implant had also loosened because of which her knees were not able to bear her body weight, he said.

The doctors first removed the old implant and treated the infection using antibiotics and then implanted the golden knee.

Cobalt chromium and titanium are among the most commonly used metals and alloys in implants. He said many people had allergic reactions to the various metals used in conventional joint implants, which could also lead to infection.

Cobalt chromium implants also have nickel in them which can cause health problems such as toxicity.

“Gold knee is one of the best implants as its wear and tear is very low and it also prevents any allergic reaction,” he said.

It was also capable of taking on extra weight, he said. “It can withstand corrosive environment strains that all artificial knees are exposed to,” he said.

The Gold Knee Replacement surgery is about three times more expensive than the conventional one which at AIIMS costs about Rs 1.5 lakh.

SIMULATOR REPLACES DEAD ANIMALS IN 3 MEDICAL COLLEGES

To learn medical science, the students of three medical colleges will no longer have to crudely dissect the dead animals, whose anatomy they can examine now on simulators.

The animal simulators, known as the Elsevier’s Animal Simulator education software, have been given by PETA to the Department of Pharmacology at Jawaharlal Nehru Medical College in Aligarh in Uttar Pradesh, Dr Rajendra Prasad Government Medical College Kangra in Tanda, Himachal Pradesh and Indira Gandhi Medical College in Shimla, Himachal Pradesh.

Ahead of International Day for Biological Diversity on May 22, People for the Ethical Treatment of Animals (PETA) said that the move will also help in conserving biodiversity.

“PETA India is pleased to announce that many students will now have the opportunity to learn medical science through methods that do not involve crudely cutting into dead animals and also help to conserve biodiversity,” a statement by PETA said.

The animal simulator is a locally developed computer-assisted learning tool that is designed for undergraduate and postgraduate students of medicine and pharmacology, and it can replace the use of animals to train the students.

Elsevier has also committed to donating software to more institutes through PETA India in the future.

Noting that population of frogs in India has plummeted in recent years, it said that to help prevent such biodiversity loss and to give students higher-quality education, the University Grants Commission (UGC) prohibited the use of animal dissection in life sciences and zoology courses.

The Medical Council of India (MCI) has also refused to allow the use of animals to train undergraduate students – favouring modern, non-animal techniques instead, it said.

“PETA India has since been on hand to assist institutions with the transition to sophisticated, non-animal

teaching methods, including by donating simulation software,” it said.

Comparative studies have repeatedly shown that non-animal teaching methods – including computer simulations, interactive CD-ROMs, films, charts, and lifelike models – are more effective for teaching biology than crude, animal-based ones.

“By providing students with the means to learn science with humane, modern, animal-free methods, these institutions are offering a more effective and far superior education while protecting wildlife and other animals.

“Students of medicine want to save lives, not be part of taking them away,” said PETA India Science Policy Adviser Rohit Bhatia.

HOMOEOPATHY, INDIAN MEDICINAL SYSTEMS PLAYING KEY ROLE IN HEALTHCARE: PREZ

President Pranab Mukherjee today highlighted the “important role” played by homoeopathy and Indian systems of medicine in the country’s healthcare sector.

Speaking at a homoeopathy award ceremony at the Science City Auditorium here this morning, he said the medicinal system was becoming more popular as it was cheaper compared to allopathy, besides having no side-effects.

Homoeopathy and systems of Indian medicine such as unani and siddha are playing an important role in the country, which faces a severe shortage of quality medical practitioners, he said.

The president said centres of homoeopathy and others have been opened at the Rashtrapati Bhavan and that these were attracting more and more patients.

Speaking just before the president, Ashok Kumar Das, executive director of the event’s organiser Allen Homoeopathy, said Mukherjee should be elected to a second term in office.

The president presented the 6th Dr Malati Allen Noble Award to some of the toppers of 196 homoeopathic medical colleges of the country and two toppers from two colleges in Bangladesh. The other toppers will be awarded later this month.

He also conferred the Dr Allen Mahatma Hahnemann Award, the Dr Sarkar Allen Swamiji Award and the Dr Malati Allen Memorial Award on several recipients.

G P Sarkar, managing trustee of the Dr Malati Allen Charitable Trust, said homoeopathy at present catered to 60 per cent of the country’s population and the aim was to make it more popular.

Earlier today, Mukherjee paid floral tributes at a portrait of former president Neelam Sanjiva Reddy on his birth anniversary at the Raj Bhavan. Reddy was the president between 1977 and 1982. West Bengal Governor K N Tripathi was present on the occasion.

Later in the day, he will inaugurate the Integrated Renewable Energy Smart Microgrid Centre and the Centre for Water and Environmental Research at the Indian Institute of Engineering Science and Technology (IIEST) at Shibpur in Howrah, before leaving for Delhi.

IMA RECORDS MAXIMUM ABPM READINGS OF DOCTORS

The Indian Medical Association (IMA) has recorded the maximum number of ambulatory blood pressure readings amongst the medical fraternity in a single day.

The exercise was conducted in collaboration with the Heart Care Foundation of India (HCFI) and Eris Lifesciences on the World Hypertension Day yesterday.

According to experts, hypertension is often misdiagnosed given the difference in blood pressure readings at home and in a clinic. Ambulatory Blood Pressure Monitoring (ABPM) can help in getting a more accurate picture of a person’s BP pattern in a span of 24 hours.

In the ABPM system, a person’s blood pressure is measured as he or she moves around doing their daily chores. A small digital blood pressure machine, which is attached to a belt around the body and connected to a cuff around one’s upper arm, notes the blood pressure readings at regular intervals over a period of 24 hours, typically after every 15 to 30 minutes.

“About 20,000 ABPM readings were taken from 533 doctors, including those of the IMA leadership, spanning 33 Indian cities. The exercise revealed that 21 per cent of the doctors surveyed had masked hypertension or isolated ambulatory hypertension. In simple terms, their BP readings were normal when evaluated through the conventional clinic measurement technique, but high through the ABPM technique,” said K K Aggarwal, national president of IMA.

Masked hypertension is associated with increased long-term risk of sustained hypertension and cardiovascular morbidity, he said.

In addition to this, 56 per cent of the doctors evaluated suffered from irregular BP pattern at night making them prone to future adverse cardiac events, while 37 per cent had nocturnal hypertension, which can never be diagnosed in clinic BP measurement.

Over 50 per cent physicians had uncontrolled hypertension despite taking medication, the official said.

“Evaluating both daytime and nighttime blood pressure is crucial for predicting all cardiovascular events,” Aggarwal said.

Shashank Joshi, president of Hypertension Society of India said, “Your doctor may suggest ABPM either to find out if your blood pressure readings are higher in the clinic than at home, to see the efficacy of your medicines in controlling blood

pressure throughout the day, or to note whether your blood pressure increases at night.

“Since there are no visible signs of masked hypertension, it is always good to let your doctor know if you have a family history of high blood pressure,” he explained.

Increasing your intake of fresh fruits, vegetables, olive oil and omega-3 foods can help lower high blood pressure levels. It is also a good idea to consume sprouted or whole grains.

“Try to reduce your sodium intake, which does not necessarily come only from table salt or salt added while cooking. Processed and ultra-processed foods are the real culprits behind increased sodium intake,” Aggrawal added.

ISRAEL CAN AID UP IN CLEANING GANGA: ENVOY

Israel today evinced interest in providing assistance to Uttar Pradesh in its implementation of ‘Namami Gange Programme’ - the Narendra Modi government’s ambitious programme to clean and rejuvenate the river Ganga.

Israel’s Ambassador to India Daniel Carmon who met Uttar Pradesh Chief Minister Yogi Adityanath at the latter’s official residence here also expressed Israel’s desire to cooperate with the state in various other sectors.

“Uttar Pradesh may be given assistance by Israel on the Namami Gange Programme of Prime Minister Narendra Modi that has been started for rejuvenation of Ganga,” said Carmon.

“Strengthening of bilateral ties with India is one of the priorities of the Israeli government,” the envoy said.

On his part, Adityanath said that the state government was interested in using Israel’s expertise in development of agriculture, irrigation, horticulture, energy, science and technology, smart cities and other sectors. The chief minister told the visiting envoy that owing to the depleting ground water, many regions have been declared dark zones in the state.

“In these areas, techniques developed by Israel to augment the ground water level can prove to be effective and a great help,” he said.

Israel is already extending support to the state government in the field of water conservation in Bundelkhand.

J&K GOVT BANS SALE OF PESTICIDE USED IN RIPENING FRUITS

The Jammu and Kashmir government has banned the sale of the pesticide Ethephon, widely used in ripening fruits and regulating plant growth, citing harmful effects on human and plant health.

The state’s horticulture department secretary M H Malik said the decision was taken after a recommendation by the Sher-

e-Kashmir University of Agricultural Sciences and Technology, Kashmir (SKUAST-K) and the law enforcement directorate.

The horticulture department had requested the SKUAST-K to examine the issue and advise on the pesticide’s effects.

“A detailed report received from SKUAST-K reveals that by use of such ripening agent, the quality of the crop gets deteriorated. Besides, such fruits cannot be stored for longer periods,” Malik said.

Ethephon, if used continuously year after year, may render the tree unproductive and also reduce the life of the plant. Ethephon-treated fruits are not recommended for consumption immediately after the pesticide’s application as it results in dehydration due to its diarrheal properties, Malik said.

He said the SKUAST-K report indicates the hazardous effects of use of Ethylene (Ethephon) especially on the plant health, fruit quality, shelf life and harmful effects on human health.

2 KGMU DOCTORS BOOKED ON KIDNEY THEFT CHARGE

Two doctors of the King George’s Medical University in the state capital have been booked after a man alleged that one of his kidneys was stolen during treatment in 2015, a charge denied by the hospital.

Prithviraj (23), a resident of Purebhawani village in Kothi area of Barabanki district, said in February 2015, he had visited the district hospital with complaint of stomach ache from where he was referred to the KGMU.

He said Dr Sandeep Tiwari and Dr Anand Mishra treated him and he was discharged from the hospital in March 2015.

He claimed when again the stomach ache started last month, after which he got ultrasound test done and he was informed that his right kidney is missing.

The FIR was registered yesterday against Dr Tiwari and Dr Mishra and a Barabanki-based unidentified doctor under various sections of the Transplantation of Human Organs Act and on the charge of cheating.

Superintendent of Police Vaibhav Krishan had issued directions to register the case.

Meanwhile, as the matter came to fore, Medical Education Minister Ashutosh Tondon ordered a probe into it.

A four-member committee headed by Prof R K Sharma, Head, Department of Nephrology, Sanjay Gandhi Post Graduate Institute of Medical Sciences (SGPGI) was constituted yesterday to probe the matter.

When asked, a KGMU spokesman told PTI that it was impossible to take out a kidney of a patient admitted in emergency at the Trauma Centre.

“The entire process is long and a series of tests are conducted before kidney is taken out for transplantation. It’s

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impossible to imagine kidney theft of patient admitted in Trauma Centre in emergency as a team of doctors is present,” the spokesman said.

“Also, the present case is of 2015. At that time the facility of kidney transplant was not available in KGMU and even in SGPGI. The patient, who has made the allegation, is ignorant of these facts and seems to have been misled,” the spokesman added.

GLOBAL RANSOMWARE VIRUS FOUND PROWLING IN INDIAN CYBERSPACE; MAHA POLICE DEPT PARTIALLY HIT

The country’s cyber security agency has alerted Internet users against damaging activities of a strong and globally active ransomware virus- ‘Wannacry’- that critically infects work stations and locks them remotely.

In the evening, the Maharashtra Police department said it was partially hit by the ransomware.

“Cyber experts have been engaged to fix the systems,” a senior police officer said.

The red-coloured ‘critical alert’ was issued by the Computer Emergency Response Team of India (CERT-In), the nodal agency to combat hacking, phishing and to fortify security-related defences of the Indian Internet domain.

“It has been reported that a new ransomware named as Wannacry is spreading widely. Wannacry encrypts the files on infected Windows systems. This ransomware spreads by using a vulnerability in implementations of server message block (SMB) in Windows systems.

“This exploit is named as ETERNALBLUE,” an advisory issued by the CERT-In, accessed by PTI, said.

It said the ransomware called ‘WannaCrypt’ or ‘WannaCrypt’ encrypts the computer’s hard disk drive and then spreads laterally between computers on the same local area network (LAN).

“The ransomware also spreads through malicious attachments to emails,” it said.

A huge extortion cyber attack had hit dozens of nations, holding computer data for ransom at hospitals, telecommunications firms and other companies.

Following the alert, the Gujarat government began equipping its state computer systems with anti-virus softwares and upgrading its Microsoft operating systems.

Computers linked to the Gujarat State Wide Area Network (GSWAN), one of country’s largest IP-based IT infrastructure connecting taluka-level government offices to the state capital with around 45,000 computers, are being monitored closely, said Science and Technology Department Secretary Dhananjay Dwivedi.

A cyber ransomware is a type of malicious software that blocks access to a computer system until a sum of money is paid through the online medium.

The cyber sleuths agency advised users to apply patches to their Windows systems in order to prevent its infection and spread.

The ransomware virus is such lethal and smart that “it also drops a file named ‘Please Read Me!.txt’ which contains the text explaining what has happened (to the computer) and how to pay the ransom.”

‘WannaCry’ encrypts files with the following extensions, appending .WCRY to the end of the file name like .lay6, .sqlite3, .sqlitedb, .accdb, .java and .docx among others.

The CERT-In has suggested some anti-ransomware measures:

Check regularly for the integrity of the information stored in the databases, regularly check the contents of backup files of databases for any unauthorised encrypted contents of data records, do not open attachments in unsolicited emails even if they come from people in your contact list and never click on a URL contained in an unsolicited email, even if the link seems benign.

“In cases of genuine (universal resource locators) URLs, close out the email and go to the organisation’s website directly through browser,” it said.

The most important advisory by the CERT-In stated “individuals or organisations are not encouraged to pay the ransom as this does not guarantee files will be released.

“Report such instances of fraud to CERT-In and law enforcement agencies,” it said.

GOOGLE DOODLE MARKS DISCOVERY OF WORLD’S 1ST COMPUTER

Google dedicated its doodle to honour the 115th anniversary of the discovery of the Antikythera Mechanism which is believed to be the world’s first computer.

“Today’s Doodle illustrates how a rusty remnant can open up a skyful of knowledge and inspiration,” Google said.

The archaic looking doodle depicts a stone like wheel predicting the Olympics, lunar and solar eclipse and tracking planetary positions.

The mysterious artifact was salvaged on this date in 1902 by Greek archaeologist Valerios Stais while sifting through some artifacts from a shipwreck at Antikythera.

The wrecked Roman cargo ship was discovered two years earlier, but Stais was the first to notice an intriguing bit of bronze among the treasures. It looked like it might be a gear or wheel.

The corroded chunk of metal turned out to be part of the Antikythera Mechanism, an ancient analogue astronomical

computer. The mechanism was used to track planetary positions, predict lunar and solar eclipses, and even signalled the next Olympic Games.

“It was probably also used for mapping and navigation,” Google said.

The mechanism initially dated around 85 BC, was suggested to be even older (about 150 BC) by recent studies.

The crank-powered device was way ahead of its time - its components are as intricate as those of some 18th-century clocks.

Historians continue to ponder the Antikythera Mechanism's purpose and inner workings, and visitors to the National Archaeological Museum of Greece marvel at its delicate complexity.

BOYS NEED TO BE SENSITISED ABOUT MENSTRUATION: MANISH SISODIA

At a time when the topic of menstruation continues to be discussed in hushed tones, sensitising boys, more than girls, is the need of the hour, Delhi Deputy Chief Minister Manish Sisodia said today.

Speaking at the inaugural edition of National Menstrual Conclave, he highlighted the role of education system in instilling awareness about menstruation and menstrual hygiene in young boys and girls alike.

“The schools have become places within four walls where kids consume education. But, schools can play an important role in normalising issues that have become taboos over the years.

“It shows our lack of communication that a simple bodily function has become a taboo. Boys, more than girls, need to be taught about it. So the girls and women can find a support system around them and not feel alienated,” Sisodia said.

The minister also said there was an urgent need for an overhaul of school system and mindset till the mention of menstruation is not frowned upon.

“The campaign will be a success only when we don't need more such campaigns and NGOs to address the issue. It will only be possible through creative and constructive participation of each member of the society,” the minister said.

Organised by a city-based NGO Sachhi Saheli in association with Aakar and Something Creative, the conclave aimed at eliminating taboos associated with menstruation and normalising discussions around the topic.

Sisodia's thoughts were echoed by Surbhi Singh, founder of Sachhi Saheli, who said that myths surrounding menstruation need to be busted and the subject needs to be brought out in the open.

“We want that discussion about menstruation should come out from the confines of closed doors to the open and

people can talk about it comfortably.

“We want all myths and taboos surrounding menstruation to be busted but in a scientific way. We need to explain with logic the relevance of certain ancient practices associated with menstruation. Every girl should be able to face it with confidence, not shame,” Singh said.

The inaugural session was preceded by several poem recitations, skits and a qawwali performance by girl students of government schools from across the capital.

The event also saw panel discussions with contributions from United Nations bodies, international and national NGOs and other organisations like Aga Khan Development Network, WaterAid, Goonj, and WASH-United India.

‘OFFICE SPACES MUST BE SENSITISED ABOUT MENSTRUATION’

While movements raising awareness about menstruation are catching pace, a group of working women here called for sensitisation of office spaces when it comes to issues like menstrual hygiene.

Speaking at the recently held National Menstrual Conclave, a group of working women urged for raising awareness among their male colleagues, besides emphasising on the need for office administration to ensure a safer and friendly environment while they are on periods.

For Paroma Roy Chowdhury, Vice President of SoftBank, having a comfortable place in offices for women during their periods is one of the basic needs that should be taken care of by the office.

“Having worked in corporate sector for decades, I have felt that there is a lack of women friendly policies when it comes to issues like menstrual hygiene. In several organisations women work during odd hours and it becomes difficult for them to manage everything.”

She suggested the availability of a visiting gynaecologist and counsellor to address any related queries. Introduction of pad vending machines and changing patriarchal mindsets are also imperative, she said.

“We must have policies that sensitise men and there must be a counsellor and a gynaecologist visiting offices every week to discuss such issues. It must be a core part of the human resources in any organisation,” said Chowdhury.

“Younger girls working in offices are more at the mercy of patriarchy. We need to have a strategic start like having a pad vending machine in office to change mindsets,” she said.

The panel also called for having special programmes focused on sensitising people in rural areas. Anika Parashar, COO of Fortis- La Femme (hospital range for women and children) said they have decided to open specific centers to help women with issues they cannot discuss openly.

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“I made this discovery that women in this country have special care centers only for pregnancy. We have also decided to start concrete menopause programmes in OPDs, schools and colleges. It will involve education related to hygiene and will cover other issues like depression,” said Parashar.

Organised by a city-based NGO Sachhi Saheli in association with Aakar and Something Creative, the panel also saw participation by Ananya Ghoshal, senior programme manager, WASH United, and Kamini Prakash from Water Supply and Sanitation Collaborative Council (WSSCC).

Prakash said that WSSCC wants to include menstruation hygiene in Swachh Bharat Abhiyan for a wider reach.

“By including menstrual hygiene in programmes started by the government, we will be able to reach out to groups that are usually left behind. We are also working closely with IITs to create diagrams that are highly interactive and will help children to understand these issues better,” she said.

IEST CREATES INDIA'S FIRST SMART GRID PROJECT

The Indian Institute of Engineering Science and Technology (IEST) has successfully created the country's first smart grid project, which will generate power from renewable sources of energy.

The project will soon be inaugurated by President Pranab Mukherjee, IEST Director Prof Ajoy Kumar Roy said.

“The smart grid will be synchronised to generate power from solar, wind and vegetable waste resources, depending on the weather conditions and availability of waste products. It is the first of its kind in the country,” Roy said.

“The power to be generated from solar energy depends on the availability of sunlight while wind energy will be produced during nor'wester and tropical storm. The power from biogas will be generated from vegetable waste collected from the campus kitchen and outside markets,” the professor said.

“In the integrated project, by the Centre for Excellence for Green Energy Systems (CEGESS) of the institute, we are aiming to generate 32 kw of power from whichever resource available and synchronise the smart grid to take the power in the system for use. Thus we will not be depending on one resource,” Roy said.

Roy added that the world will be faced with serious situation with the depletion of hydrocarbon source.

“Since coal-hydrocarbon based energy technology leads to environmental degradation, the future lies in renewable energy based technology,” he said.

The eminent scientist said, this being the age of smart technology, the institute needed to look forward.

“The government planners and academicians should be involved in big way as technology is changing very very fast.

“The next 50 years will witness unimaginable change in technology, which cannot be static,” he added.

IIT-KGP DEVELOPING SOLAR-POWERED 2-WHEELERS

IIT-Kharagpur has undertaken a project to develop solar-powered two-wheelers aimed at helping school children.

A team of faculty and students from the Rajendra Mishra School of Engineering Entrepreneurship at IIT-KGP along with the Institute's Science and Technology Entrepreneurs' Park (STEP) are at work to develop solar chargers, power saving devices, road safety sensors and trackers for vehicles to be used by school going children, STEP Managing Director Prof Satyahari Dey said today.

“The Arka Renewable Energy College led by Professor S P Gon Chaudhuri and IIT-KGP will soon launch the solar panel for charging vehicles called e-bike. The concept will be extended to three-wheeler e-rickshaws and can be of great help to the public,” Dey said.

The batteries will be charged at solar powered refuelling stations developed by the Renewable Energy Institute headed by eminent scientist S P Gon Chaudhuri.

With expertise in developing solar energy products and leading a multi-institutional UK-India project in clean energy, IIT-KGP has a strong history of promoting technology oriented start-ups, many aimed towards bringing down carbon footprint, creating eco-friendly products and devising low-cost technologies.

The Institute has been testing the two-wheeler, stated to be India's first 36V electric cycle, in the campus to create a user report, which the production company can use to further develop the product.

“The two-wheeler, Ampere Angel cycle, is India's first 36V trendy electric cycle completely designed in the country. Its elegant design will helped school children, senior citizens and as well as avid cyclists,” an IIT-KGP spokesperson said.

“One can seamlessly switch between two modes - pedal and battery. IIT-KGP will also develop a financial model for Ampere Vehicles,” the spokesperson said.

The two-wheeler initiative is supported under the Department of Science and Industrial Research's Make in India initiative - Promoting Innovations in Individuals Start-ups and MSME (PRISM) scheme.

PM LAUNCHES SAMPADA, AGRO-MARINE PROCESSING GETS A BIG PUSH

Prime Minister Narendra Modi today launched the agro-marine processing scheme SAMPADA to promote food processing and promised to make the North-East the economic hub of “new India”.

“There are immense possibilities for agro-product valuation and the Rs 6,000-crore SAMPADA (Scheme for Agro-Marine Processing and Development of Agro-Processing) will go a long way in developing the food processing industry and creating employment opportunities for the youth”, he said after laying the foundation stone of the Indian Agriculture Research Institute here in the Dhemaji district.

Modi, who kickstarted the celebration of 3 years of his government, said: “Initially, there will be investment of Rs 6,000 crore and later, we will go in for public-private partnership which will include foreign direct investment.”

The central government will work “shoulder to shoulder” with the state government to usher in development, he promised.

Modi urged the youth of the North-East to take advantage of this scheme, saying the region will be the “new engine for new India and the term NE will mean new economy, new energy and new empowerment”.

This will be achieved by following the ‘pancha path’ (five paths) with “the focus being on infrastructure development like highway, railway, waterway, airway and I(information)-way”.

He expressed hope that the North-East can emerge as a global hub of organic farming as there are huge possibilities in the region.

“Sikkim has already shown the way by becoming an organic state and if the seven other north-eastern states also follow in that direction, the region will become a global organic hub as there is huge market potential in this area,” the prime minister said.

Modi talked about his government’s aim to double agricultural income of farmers in the country and change the destiny of rural economy by giving thrust to the agricultural sector.

“I have a dream to double the income of farmers by 2022 when the nation completes 75 years of independence and we have five years to achieve this,” he said, stressing on the need to modernise the agriculture sector with the help of science and technology.

“We have to march ahead and we are not talking about a second Green Revolution, but Sada kal harit kal - Green Revolution always and for this, we are committed to modernise agriculture sector by adopting a holistic approach,” he said.

The country, according to the prime minister, is blessed with the advantage of varied seasons, diversity of land and agriculture methods. “Scientists of a particular region must conduct research and prepare a model taking into consideration the special features of the land,” he suggested.

There should be a seamless chain from seeds to market without any hitch along the way, Modi added.

In the last three years, more than 9,000 soil health card labs were set up across the country and there are plans to set up more as these have helped farmers understand the strength, weaknesses and fertiliser requirement of the soil.

Terming providing water for irrigation as a major thrust area of the BJP government, Modi said Pradhan Mantri Krishi Sinchai Yojana is a major step in this direction, which has helped farmers considerably.

The Fasal Bima Yojana has also come as “a big relief for farmers as they feel secure against all adversities” and will be soon implemented across the country.

He called upon the farmers to reduce expenses by installing solar panels in their farms to bring down electricity cost.

They could also take steps to increase their income by planting trees to get timber, besides opting for scientific milk production, pisciculture and poultry farming, Modi added.

HOW MOST ANTIMATTER IN THE MILKY WAY FORMS DECODED

Scientists have solved the mystery behind how most of the antimatter in the Milky Way forms.

Antimatter is material composed of the antiparticle partners of ordinary matter. When antimatter meets with matter, they quickly annihilate each other to form a burst of energy in the form of gamma-rays.

Scientists have known since the early 1970s that the inner parts of the Milky Way galaxy are a strong source of gamma-rays, indicating the existence of antimatter, but there had been no settled view on where the antimatter came from.

Researchers from Australian National University showed that the cause was a series of weak supernova explosions over millions of years, each created by the convergence of two white dwarfs which are ultra-compact remnants of stars no larger than two Suns.

“Our research provides new insight into a part of the Milky Way where we find some of the oldest stars in our galaxy,” ANU researcher Roland Crocker.

Researchers had ruled out the supermassive black hole at the centre of the Milky Way and the still-mysterious dark matter as being the sources of the antimatter.

The antimatter came from a system where two white dwarfs form a binary system and collide with each other.

The smaller of the binary stars loses mass to the larger star and ends its life as a helium white dwarf, while the larger star ends as a carbon-oxygen white dwarf.

“The binary system is granted one final moment of extreme drama: as the white dwarfs orbit each other, the system loses energy to gravitational waves causing them to spiral closer and closer to each other,” Crocker said.

Once they come too close the carbon-oxygen white dwarf rips apart the companion star whose helium quickly forms a dense shell covering the bigger star, leading to a thermonuclear supernova that is the source of the antimatter.

NEW SHAPE-SHIFTING NOODLES TO MAKE DINING MORE FUN

MIT scientists have developed ‘pop-up’ foods - flat sheets of edible pastas that sprout into 3D structures when submerged in water, an advance that would make the dining experience interactive and fun.

The ‘edible origami’ consists of flat sheets of gelatin and starch that, when submerged in water, instantly sprout into 3D structures, including common pasta shapes such as macaroni and rotini.

The edible films can also be engineered to fold into the

shape of a flower as well as other unconventional configurations.

Researchers from the Massachusetts Institute of Technology in the US created flat discs that wrap around beads of caviar, as well as spaghetti that spontaneously divides into smaller noodles when dunked in hot broth.

The shape-morphing creations are not only culinary performance art, but also a practical way to reduce food- shipping costs, researchers said.

For instance, the edible films could be stacked together and shipped to consumers, then morph into their final shape later, when immersed in water.

“We did some simple calculations, such as for macaroni pasta, and even if you pack it perfectly, you still will end up with 67 percent of the volume as air,” said Wen Wang, a research scientist at MIT.

“We thought maybe in the future our shape-changing food could be packed flat and save space,” said Wang.

Researchers created a number of different shapes from the gelatin films, from macaroni- and rigatoni-like configurations, to shapes that resembled flowers and horse saddles.

Curious as to how their designs might be implemented in a professional kitchen, the team showed their engineered edibles to the head chef of a high-end Boston restaurant.

The scientists and chef struck up a collaboration, during which they designed two culinary creations.

The created transparent discs of gelatin flavoured with plankton and squid ink, that instantly wrap around small beads of caviar.

They also long fettuccini-like strips, made from two gelatins that melt at different temperatures, causing the noodles to spontaneously divide when hot broth melts away certain sections.

GIANT UNDERWATER TOUCHSCREEN TO TEST DOLPHIN INTELLIGENCE

In a first, scientists have developed an eight-foot underwater computer touchscreen for dolphins to study the intelligence and communication skills of the highly social marine mammals.

The system features specialised dolphin-friendly “apps” and a symbolic keyboard to provide the dolphins - which are intelligent and highly social - with opportunities to interact with the system.

To make the system safe for the dolphins, the touchscreen has been installed outside an underwater viewing window, so that no parts of the device are in the pool: the animals’ touch is detected purely optically.

Researchers from the Hunter College and Rockefeller University in the US has embarked on studies aimed at understanding dolphin vocal learning and communication, their

capacity for symbolic communication, and what patterns of behaviour may emerge when the animals have the ability to request items, videos, interactions and images.

“We hope this technologically-sophisticated touchscreen will be enriching for the dolphins and also enrich our science by opening a window into the dolphin mind,” said Diana Reiss, a research scientist at Hunter College.

“Giving dolphins increased choice and control allows them to show us reflections of their way of thinking and may help us decode their vocal communication,” said Reiss.

“It was surprisingly difficult to find an elegant solution that was absolutely safe for the dolphins, but it has been incredibly rewarding to work with these amazing creatures and see their reactions to our system,” said Marcelo Magnasco, from the Rockefeller University.

“It has always been hard to keep up with dolphins, they are so smart; a fully interactive and programmable system will help us follow them in any direction they take us,” said Magnasco.

“The interactive system was designed to engage the dolphins without requiring explicit training. It is an open system in which the dolphins’ use of the touchscreen will shape how the system evolves,” said Ana Hocevar, a postdoctoral research scientist in Magnasco’s lab.

In addition to the touchscreen, the dolphin’s habitat at the US National Aquarium in Baltimore has been outfitted with equipment to record their behaviour and vocalisations as they encounter and begin to use the technology.

Already, the scientists have begun to introduce the dolphins to some of the system’s interactive apps, so the animals can explore on their own how touching the screen results in specific contingencies.

“Without any explicit training or encouragement from us, one of the younger dolphins spontaneously showed immediate interest and expertise in playing a dolphin version of Whack-a-Mole, in which he tracks and touches moving fish on the touchscreen,” Reiss said.

SMARTPHONES, TVS WITH THREE TIMES RESOLUTION IN THE OFFING

Researchers, including one of Indian origin, have developed a new colour-changing surface that could increase the resolution for TVs, smartphones and other devices by three times.

Video screens are made up of hundreds of thousands of pixels that display different colours to form the images.

With current technology, each of these pixels contain three subpixels - one red, one green, one blue.

Now, researchers from the University of Central Florida (UCF) in the US have come up with a way to tune the colour of these subpixels.

By applying differing voltages, they are able to change the colour of individual subpixels to red, green or blue - the RGB scale - or gradations in between.

“We can make a red subpixel go to blue, for instance,” said Debashis Chanda, Assistant Professor at UCF.

“In other displays that is not possible because they need three static colour filters to show the full RGB colour. We do not need that now; a single subpixel-less pixel can be tuned across a given colour gamut,” said Chanda.

Aside from the inherent value of an improved design for the pixel-based displays that are ubiquitous in today’s world, their findings have other advantages.

By eliminating the three static subpixels that currently make up every pixel, the size of individual pixels can be reduced by three.

Three times as many pixels means three times the resolution, researchers said.

That would have major implications for not only TVs and other general displays, but augmented reality and virtual reality headsets that need very high resolution because they are so close to the eye, they said.

“A subpixel-less display can increase resolution drastically. You can have a much smaller area that can do all three,” said Daniel Franklin, physics doctoral student at UCF.

Since there would no longer be a need to turn off some subpixels to display a solid colour - there would be no more subpixels, after all - the brightness of screens could be much greater, researchers said.

Franklin and Chanda created an embossed nanostructure surface resembling an egg crate, covered with a skin of reflective aluminium.

However, they needed several variations of this nanostructure to achieve the full range of colours.

In the latest research published in the journal *Nature Communications*, they found that modifying the roughness of the surface allowed a full range of colours to be achieved with a single nanostructure.

The nanostructure surface can be easily integrated with existing display technology, so the underlying hardware would not need to be replaced or re-engineered.

NASA’S JUNO PROBE UNVEILS EARTH-SIZED CYCLONES ON JUPITER

Jupiter is a complex, turbulent world, with Earth-sized cyclones at its poles and storm systems that travel deep into the heart of the gas giant, according to the first science results obtained from NASA’s Juno spacecraft.

“We are excited to share these early discoveries, which help us better understand what makes Jupiter so fascinating,” said Diane Brown, Juno programme executive at NASA.

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“It was a long trip to get to Jupiter, but these first results already demonstrate it was well worth the journey,” said Brown.

Juno was launched in 2011, and entered Jupiter’s orbit on July 4 last year.

The findings from the first data-collection pass, which flew within about 4,200 kilometres of Jupiter’s swirling cloud tops on August 27 last year, appear in the journals *Science* and *Geophysical Research Letters*.

“There is so much going on here that we didn’t expect that we have had to take a step back and begin to rethink of this as a whole new Jupiter,” said Scott Bolton, Juno principal investigator from the Southwest Research Institute in San Antonio.

Among the findings that challenge assumptions are images show both of Jupiter’s poles are covered in Earth-sized swirling storms that are densely clustered and rubbing together.

“We’re puzzled as to how they could be formed, how stable the configuration is, and why Jupiter’s north pole doesn’t look like the south pole,” said Bolton.

Researchers also found that Jupiter’s iconic belts and zones are mysterious, with the belt near the equator penetrating all the way down, while the belts and zones at other latitudes seem to evolve to other structures.

The data suggest ammonia clouds over the planet are quite variable and continue to increase up to a few hundred miles or kilometres - as far as the Juno’s instruments can observe.

Prior to the Juno mission, it was known that Jupiter had the most intense magnetic field in the solar system.

Measurements of the massive planet’s magnetosphere indicate that Jupiter’s magnetic field is even stronger than models expected, and more irregular in shape.

The magnetic field greatly exceeded expectations at .766 Gauss, about 10 times stronger than the strongest magnetic field found on Earth.

“Juno is giving us a view of the magnetic field close to Jupiter that we’ve never had before,” said Jack Connerney, Juno deputy principal investigator.

“Already we see that the magnetic field looks lumpy. It is stronger in some places and weaker in others,” said Connerney.

“This uneven distribution suggests that the field might be generated by dynamo action closer to the surface, above the layer of metallic hydrogen,” he said.

The next flyby is scheduled for July 11, when Juno will fly directly over one of the most iconic features in the entire solar system - Jupiter’s Great Red Spot.

AI SYSTEM BEATS WORLD CHAMPION IN ANCIENT BOARD GAME OF GO

Google’s artificial intelligence system ‘DeepMind AlphaGo’ has, for the second time, defeated the world’s top

player of the ancient Chinese board game of Go - considered to be more challenging for computers than chess.

AlphaGo secured the victory after winning the second game in a three-part match with Chinese Go player Ke Jie that took place in Shanghai. The system had won the first of the three planned games on Tuesday.

DeepMind founder Demis Hassabis said that Jie had played “perfectly” and “pushed AlphaGo right to the limit”.

In Go, players take turns placing stones on a 19-by-19 grid, competing to take control of the most territory.

It is considered to be one of the world’s most complex games, and is much more challenging for computers than chess.

AlphaGo has built up its expertise by studying older matches and playing thousands of games against itself, ‘BBC News’ reported. The eventual plan is to deploy artificial intelligence in areas of medicine and science, the company said.

Last year the system had defeated South Korean Go grandmaster Lee Se-Dol, winning a sweeping 4-1 series victory.

HUMAN BRAIN CAN SPOT DISEASE TO AVOID SICK PEOPLE: STUDY

The human brain is better than previously thought at discovering disease in others even before it breaks out, thereby helping us avoid sick people, a new study has found.

Our sense of vision and smell alone are enough to make us aware that someone has a disease even before it breaks out, researchers said.

By injecting harmless sections of bacteria, researchers from Karolinska Institutet in Sweden activated the immune response in participants, who developed the classic symptoms of disease - tiredness, pain and fever - for a few hours.

During that time smell samples were taken from them and they were photographed and filmed. The injected substance then disappeared from their bodies and with it the symptoms.

Another group of participants were then exposed to these smells and images as well as those of healthy controls, and asked to rate how much they liked the people, while their brain activities were measured in a magnetic resonance (MR) scanner.

The group was then asked to state, just by looking at the photographs, which of the participants looked sick, which they considered attractive and which they might consider socialising with.

“The study shows us that the human brain is actually very good at discovering this and that this discovery motivates avoidance behaviour,” said Mats Olsson, professor at Karolinska Institutet.

“We can also see that the brain is good at adding weak signals from multiple senses relating to a person’s state of health,” Olsson said.

The study was published in the journal Proceedings of the National Academy of Sciences (PNAS).

EARLY UNIVERSE GALAXIES CREATING STARS AT 'FURIOUS PACE' FOUND

Scientists have discovered extremely old galaxies - formed less than a billion years after the Big Bang - which create stars more than a hundred times faster than our own Milky Way.

The discovery could help solve a cosmic puzzle - a mysterious population of surprisingly massive galaxies from when the universe was only about 10 per cent of its current age.

After first observing these galaxies a few years ago, astronomers proposed that they must have been created from hyper-productive precursor galaxies, which is the only way so many stars could have formed so quickly.

However, astronomers had never seen anything that fit the bill for these precursors until now.

This newly discovered population could solve the mystery of how these extremely large galaxies came to have hundreds of billions of stars in them when they formed only 1.5 billion years after the Big Bang, requiring very rapid star formation.

Researchers led by Roberto Decarli of Max Planck Institute for Astronomy made this discovery by accident when investigating quasars, which are supermassive black holes that sit at the centre of enormous galaxies, accreting matter.

They were trying to study star formation in the galaxies that host these quasars.

"But what we found, in four separate cases, were neighbouring galaxies that were forming stars at a furious pace, producing a hundred solar masses' worth of new stars per year," Decarli said.

"Very likely it is not a coincidence to find these productive galaxies close to bright quasars. Quasars are thought to form in regions of the universe where the large-scale density of matter is much higher than average," said Fabian Walter, from Max Planck Institute for Astronomy.

"Those same conditions should also be conducive to galaxies forming new stars at a greatly increased rate," Walter said.

"Whether or not the fast-growing galaxies we discovered are indeed precursors of the massive galaxies first seen a few years back will require more work to see how common they actually are," said Eduardo Banados from Carnegie Institution for Science in the US.

The team also found what appears to be the earliest known example of two galaxies undergoing a merger, which is another major mechanism of galaxy growth.

The new observations provide the first direct evidence that such mergers have been taking place even at the earliest stages of galaxy evolution, less than a billion years after the Big Bang.

NASA TO LAUNCH MISSION TO METAL ASTEROID ONE YEAR EARLY

NASA has announced that it will launch its robotic spacecraft to a unique metal asteroid 'Psyche' in 2022 - a year ahead of the original schedule.

The mission will now take a more efficient trajectory to arrive at the main belt asteroid in 2026, four years earlier than planned, the US space agency said.

Psyche, an asteroid orbiting the Sun between Mars and Jupiter, is made almost entirely of nickel-iron metal. It offers a unique look into the violent collisions that created Earth and the terrestrial planets, researchers said.

"We challenged the mission design team to explore if an earlier launch date could provide a more efficient trajectory to the asteroid Psyche, and they came through in a big way," said Jim Green, from the NASA Headquarters in the US.

"This will enable us to fulfil our science objectives sooner and at a reduced cost," said Green.

The Discovery Mission programme - a series of lower-cost, highly focused robotic space missions that are exploring the solar system - had directed teams to propose missions for launch in either 2021 or 2023.

The Lucy mission - which will study a population of primitive asteroids called Trojans orbiting with Jupiter - was selected for the first launch opportunity in 2021, and Psyche was to follow in 2023.

Shortly after selection in January, NASA gave the direction to the Psyche team to research earlier opportunities.

Researchers designed a new, efficient trajectory that does away with the need for assistance of the Earth's gravity and shortens the cruise time.

In addition, the new trajectory stays farther from the Sun, reducing the amount of heat protection needed for the spacecraft.

"The biggest advantage is the excellent trajectory, which gets us there about twice as fast and is more cost effective," said Principal Investigator Lindy Elkins-Tanton of Arizona State University in Tempe.

The Psyche spacecraft is being built by Space Systems Loral (SSL) in the US.

In order to support the new mission trajectory, SSL redesigned the solar array system from a four-panel array in a straight row on either side of the spacecraft to a more powerful five-panel X-shaped design, commonly used for missions requiring more capability.

Much like a sports car, by combining a relatively small spacecraft body with a very high-power solar array design, the Psyche spacecraft will speed to its destination at a faster pace than is typical for a larger spacecraft.

“By increasing the size of the solar arrays, the spacecraft will have the power it needs to support the higher velocity requirements of the updated mission,” said SSL Psyche Program Manager Steve Scott.

The goals of the Psyche mission are to understand the building blocks of planet formation and explore firsthand a wholly new and unexplored type of world.

Scientists seek to determine whether Psyche is the core of an early planet, how old it is, whether it formed in similar ways to Earth’s core, and what its surface is like.

PEOPLE SEE IMAGES BASED ON THEIR CULTURAL BACKGROUND: STUDY

People only see what they have learnt to see, say scientists who found that our ability to perceive differences between similar images depends on our cultural background.

Scientists have long recognised that the mental processes behind thinking and reasoning differ between people raised in Western and Eastern cultures.

Those in the West tend to use ‘analytical’ processing - analysing objects independently of the context - while those in the East see situations and objects as a whole, which is known as ‘holistic’ processing.

Researchers from Kyoto University in Japan asked volunteers from Canada, US and Japan to look at groups of objects such as straight lines with varying properties and discern simple differences between them: angle and length.

They found that in looking for the one odd line out of a group, North Americans took more time when the line was shorter, rather than if it was longer.

Researchers noted that no such differences were seen in Japanese volunteers, who in contrast had a significantly harder time identifying a straight line among tilted ones.

Such a stimulus-dependent cultural difference cannot be explained simply by analytic-holistic theory, researchers said.

The ability to perceive differences between similar images depends on the cultural background of the viewer, they said.

“There are likely other differences in perceptual mechanisms that caused this discrepancy in visual processing,” said Jun Saiki from Kyoto University.

“Our next step is to find the cause of this discrepancy. One such reason may be the orthographical systems the subjects see regularly,” Saiki said.

“In East Asian writing, many characters are distinguished by subtle differences in stroke length, while in Western alphabets, slight angular alterations in letters result in remarkable changes in the reading of words,” Saiki added.

The study was published in the journal *Cognitive Science*.

NASA’S CASSINI BEAMS BACK IMAGES OF SATURN’S SOLSTICE

NASA’s Cassini spacecraft has beamed back images of a giant storm erupting on Saturn as the ringed planet’s solstice arrived today, marking a new milestone for the mission that is approaching the end of its 20-year-long journey in space.

A planet’s solstice is the longest day of summer in the northern hemisphere and the shortest day of winter in the southern hemisphere.

One Saturn, it occurs about every 15 Earth years as the planet and its entourage slowly orbit the Sun, with the north and south hemispheres alternating their roles as the summer and winter poles.

Reaching the solstice, and observing seasonal changes in the Saturn system along the way, was a primary goal of Cassini’s Solstice Mission - the second extended mission of the spacecraft .

“We have witnessed - up close for the first time - an entire season at Saturn,” said Linda Spilker, Cassini project scientist at NASA’s Jet Propulsion Laboratory in the US.

“The Saturn system undergoes dramatic transitions from winter to summer, and thanks to Cassini, we had a ringside seat,” said Spilker.

Cassini watched a giant storm erupt and encircle the planet. The spacecraft also saw the disappearance of bluer hues that had lingered in the far north as springtime hazes began to form there.

The hazes are part of the reason why features in Saturn’s atmosphere are more muted in their appearance than those on Jupiter.

Data from the mission showed how the formation of Saturn’s hazes is related to the seasonally changing temperatures and chemical composition of Saturn’s upper atmosphere.

Researchers have found that some of the trace hydrocarbon compounds there - gases like ethane, propane and acetylene - react more quickly than others to the changing amount of sunlight over the course of Saturn’s year.

They were also found that the changes Cassini observed on Saturn did not occur gradually. They saw changes occur suddenly, at specific latitudes in Saturn’s banded atmosphere.

“Eventually a whole hemisphere undergoes change, but it gets there by these jumps at specific latitude bands at different times in the season,” said Robert West, a Cassini imaging team member at JPL.

During the northern summer solstice, the Sun rose ever higher above the rings’ northern face. Light penetrates deeper into the rings, heating them to the warmest temperatures seen there during the mission.

The solstice sunlight helps reveal how particles clump together and whether the particles buried in the middle of the ring plane have a different composition or structure than the ones in the rings' outer layers.

Cassini was launched in 1997 and arrived at Saturn in 2004 for its four-year primary mission to study Saturn and its rings and moons.

It is currently in the final phase of its long mission, called its Grand Finale. Over the course of 22 weeks from April 26 to September 15, the spacecraft is making a series of dramatic dives between the planet and its icy rings.

The mission will end with a final plunge into Saturn's atmosphere on September 15.

WHY WE FOLLOW SOCIAL NORMS DECODED

Humans follow social norms to forge co-operation among peers, even though such unspoken rules of the society sometimes require them to make personal sacrifices, scientists say.

Social norms - unspoken rules of how we dress, talk, eat and even allow ourselves to feel - are often internalised to such a degree that we probably do not even notice them.

Following norms, however, can sometimes be costly for people if norms require sacrifice for the good of the group.

Researchers from the University of Tennessee in the US wanted to delve into why humans evolved to follow such norms in the first place.

The results, published in the Proceedings of the National Academy of Sciences, show that the ability of humans to internalise social norms is expected to evolve under a wide range of conditions, helping to forge a kind of cooperation that becomes instinctive.

Researchers used computer simulations to model individual behaviour in group actions and underlying genetic machinery controlling such behaviour.

They worked from the premise that adherence to norms is socially reinforced by the approval of, and rewards to, individuals who follow them and by punishment of norm violators.

In the model, individuals make choices about participating in collective actions that require cooperation, and individuals who do not cooperate, or "free riders," can face consequences.

The model shows that encouraging peer punishment of free-riders is much more efficient in promulgating cooperation in collective actions than promoting participation itself.

The study predicts a significant genetic variation in the ability of humans to internalise norms.

Under some conditions populations are expected to have a relatively small frequency of "over-socialised" individuals who are willing to make extreme sacrifices for their groups.

Examples in today's society might be suicide bombers and other displays of extreme self-sacrificial behaviour for the perceived good of the group, researchers said.

Likewise, there are also "under-socialised" individuals - psychopaths - who are completely immune to any social norms.

"Every day human beings make choices among multiple options in how to respond to various social situations. Those choices are affected by many interacting factors, including social norms and values," said Sergey Gavrilets, a professor at the University of Tennessee.

"Understanding the effects of social norms could help us better understand human decision-making and better predict human actions in response to certain events or policies," Gavrilets.

Gavrilets also said the models could be helpful in social and economic policymaking.

"Generalising our models can lead to the development of better tools for predicting consequences of introducing certain social policies and institutions and in identifying the most efficient strategies for changing or optimising group behaviours," he said.

SOON, CLOTHES THAT GENERATE POWER FROM BODY'S MOTION

Lightweight, comfortable clothes that can generate power using body movements may soon become a reality, thanks to a new coating developed by scientists that turns fabrics into circuits.

Scientists at the University of Massachusetts Amherst in the US have invented a way to apply breathable, pliable, metal-free electrodes to fabric and off-the-shelf clothing so it feels good to the touch and also transports enough electricity to power small electronics.

“Such conducting textiles can be built up into sophisticated electronics. One such application is to harvest body motion energy and convert it into electricity in such a way that every time you move, it generates power,” said Trisha Andrew from University of Massachusetts Amherst.

Powering advanced fabrics that can monitor health data remotely are important to the military and increasingly valued by the health care industry, Andrew said.

Generating small electric currents through relative movement of layers is called triboelectric charging.

Materials can become electrically charged as they create friction by moving against a different material, like rubbing a comb on a sweater.

“By sandwiching layers of differently materials between two conducting electrodes, a few micro-watts of power can be generated when we move,” Andrew said.

The study published in the journal *Advanced Functional Materials* describes the vapour deposition method they use to coat fabrics with a conducting polymer, poly(3,4-ethylenedioxythiophene) also known as PEDOT, to make plain-woven, conducting fabrics that are resistant to stretching and wear and remain stable after washing and ironing.

The thickest coating they put down is about 500 nanometres, or about 1/10 the diameter of a human hair, which retains a fabric's hand feel.

The researchers tested electrical conductivity, fabric stability, chemical and mechanical stability of PEDOT films and textile parameter effects on conductivity for 14 fabrics, including five cottons with different weaves, linen and silk from a craft store.

“Our article describes the materials science needed to make these robust conductors. We show them to be stable to washing, rubbing, human sweat and a lot of wear and tear,” said Andrew.

PEDOT coating did not change the feel of any fabric as determined by touch with bare hands before and after coating.

The researchers said their invention overcomes the obstacle of power-generating electronics mounted on plastic or

cladded, veneer-like fibres that make garments heavier and/or less flexible than off-the-shelf clothing “no matter how thin or flexible these device arrays are.”

“There is strong motivation to use something that is already familiar, such as cotton/silk thread, fabrics and clothes, and imperceptibly adapting it to a new technological application,” Andrew said.

“This is a huge leap for consumer products, if you don't have to convince people to wear something different than what they are already wearing,” she said.

NASA ASTRONAUTS SUCCESSFULLY COMPLETE EMERGENCY SPACEWALK

Two NASA astronauts aboard the International Space Station (ISS) have successfully completed an emergency spacewalk to replace a failed data relay box that controls some of the key hardware on the orbital outpost.

Expedition 51 Commander Peggy Whitson and Flight Engineer Jack Fischer of NASA also installed a pair of antennas on the station on May 23 to enhance wireless communication for future spacewalks.

Spacewalkers have now spent a total of 1,250 hours and 41 minutes working outside the station during 201 spacewalks in support of assembly and maintenance of the orbiting laboratory.

This was the 10th spacewalk for Whitson, who moves into third place all-time for cumulative spacewalking time, and the second for Fischer.

A multiplexer-demultiplexer (MDM) data relay box on the S0 truss of the ISS had failed last week. The cause of the MDM failure is not known. ISS programme managers decided to press ahead with the spacewalk after a review of preparations and crew readiness on Sunday.

The data relay box is one of two systems housed in the truss that control the functionality of radiators, solar arrays, cooling loops and other station hardware.

The other MDM in the truss was functioning perfectly, providing uninterrupted telemetry routing to the station's systems. A similar MDM replacement spacewalk was conducted in April 2014 by Expedition 39 crewmembers Steve Swanson and Rick Mastracchio.

The crew has never been in any danger, and the MDM failure, believed to be internal to the box itself, has had no impact on station activities, NASA said.

X-RAYS HELP SOLVE MYSTERY OF FLOATING ROCKS

Scientists have used X-rays to solve the mystery behind how some rocks can float on water for years at a time.

A team at Lawrence Berkeley National Laboratory (Berkeley Lab) in the US scanned samples of lightweight, glassy and porous volcanic rocks known as pumice stones.

The surprisingly long-lived buoyancy of these rocks - which can form debris patches on the ocean known as pumice rafts that can travel for thousands of miles - can help scientists discover underwater volcano eruptions.

While scientists have known that pumice can float because of pockets of gas in its pores, it was unknown how those gases remain trapped inside the pumice for prolonged periods.

Researchers found that the gas-trapping processes that are in play in the pumice stones are due to surface tension, a chemical interaction between the water's surface and the air above it that acts like a thin skin. This allows some creatures, including insects and lizards, to actually walk on water.

"The question of floating pumice has been around the literature for a long time, and it had not been resolved," said Kristen E Fauria, a graduate student at University of California (UC), Berkeley in the US.

"It was originally thought that the pumice's porosity is essentially sealed," like a corked bottle floating in the sea, said Fauria, who led the study published in the journal *Earth and Planetary Science Letters*.

However pumice's pores are actually largely open and connected - more like an uncorked bottle.

To understand what is at work in these rocks, the team used wax to coat bits of water-exposed pumice.

They then used an X-ray imaging technique known as microtomography to study concentrations of water and gas - in detail measured in microns, or thousandths of a millimetre - within preheated and room-temperature pumice samples.

Researchers found that the gas-trapping processes that are in play in the pumice stones relates to surface tension.

"The process that is controlling this floating happens on the scale of human hair," Fauria said.

"Many of the pores are really, really small, like thin straws all wound up together. So surface tension really dominates," Fauria said.

The team also found that a mathematical formulation known as percolation theory, which helps to understand how a liquid enters a porous material, provides a good fit for the gas-trapping process in pumice.

Gas diffusion - which describes how gas molecules seek areas of lower concentration - explains the eventual loss of these gases that causes the stones to sink.

"There are two different processes: one that lets pumice float and one that makes it sink," and the X-ray studies helped to quantify these processes for the first time," said Michael Manga, professor at UC Berkeley.

EARLY EARTH MAY HAVE BEEN DONUT-SHAPED: STUDY

Our Earth may once have been a spinning, donut-shaped mass of hot, vapourised rock - called "synestia" - according to scientists who proposed the new type of planetary object.

Synestia is a spinning planetary object that forms as planet-sized objects smash into each other.

At one point early in its history, Earth was likely a synestia, said Sarah Stewart, scientist at the University of California Davis in the US.

Current theories of planet formation hold that rocky planets such as Earth, Mars and Venus formed early in the solar system when smaller objects smashed into each other.

These collisions were so violent that the resulting bodies melted and partially vapourised, eventually cooling and solidifying to the nearly spherical planets we know today.

In the new study, researchers modeled what happens when the Earth-sized rocky planets collide with other large objects with high energy and momentum.

"We looked at the statistics of giant impacts, and we found that they can form a completely new structure," Stewart said.

Researchers found that over a range of high temperatures and momenta, planet-sized bodies could form a new, much larger structure, an indented disk rather like a red blood cell or a donut with the center filled in.

The object is mostly vaporised rock, with no solid or liquid surface.

They have dubbed the new object a "synestia," from "syn" - meaning "together" - and "Estia," the Greek goddess of architecture and structures.

The key to synestia formation is that some of the structure's material goes into orbit.

In a spinning, solid sphere, every point from the core to the surface is rotating at the same rate.

However, in a giant impact, the material of the planet can become molten or gaseous and expands in volume.

If it gets big enough and is moving fast enough, parts of the object pass the velocity needed to keep a satellite in orbit, and that is when it forms a huge, disc-shaped synestia, according to the study.

Most planets likely experience collisions that could form a synestia at some point during their formation, Stewart said.

For an object like Earth, the synestia would not last very long - perhaps a hundred years - before it lost enough heat to condense back into a solid object.

However, synestia formed from larger or hotter objects such as gas giant planets or stars could potentially last much longer, she said.

The synestia structure also suggests new ways to think about lunar formation, researchers said.

The Moon is remarkably like Earth in composition, and most current theories about how the moon formed involve a giant impact that threw material into orbit.

However, such an impact could have instead formed a synestia from which the Earth and Moon both condensed, Stewart said.

No one has yet observed a synestia directly, but they might be found in other solar systems once astronomers start looking for them alongside rocky planets and gas giants, she said.

DEFORESTATION CAUSING INCREASE IN MALARIA CASES: STUDY

Human-induced deforestation may be causing an increase in malaria cases, according to a new study of 67 less-developed, malaria-endemic countries.

Nearly 130 million hectares of forest - an area almost equivalent in size to South Africa - have been lost since 1990, according to a recent report by the Food and Agriculture Organisation of the United Nations (UN).

Deforestation is not a natural phenomenon, but rather results predominantly from human activities, or anthropogenically, researchers said.

Researchers from Lehigh University in the US found that deforestation can impact malaria prevalence by several mechanisms, including increasing the amount of sunlight and standing water in some areas.

In general, increasing standing water and sunlight is favourable for most species of Anopheles mosquitoes which are the key vector of malaria transmission, researchers said.

“Human-induced changes to the natural environment can have a powerful impact on malaria rates,” said Kelly Austin from Lehigh University.

Researchers build upon evidence that patterns in climate change, deforestation, and other human-induced changes to the natural environment are amplifying malaria transmission.

They used an analytic research strategy that allowed them to look at the causes of deforestation, in order to have a broader focus on the upstream or human-induced causes of land-use change that impact malaria vulnerabilities.

Results suggested that rural population growth and specialisation in agriculture are two key influences on forest loss in developing nations.

Deforestation from agriculture comes in part from food that is exported to more-developed countries, researchers said.

“In this way, consumption habits in countries like the US can be linked to malaria rates in developing nations,” Austin said.

The study was published in the journal AIMS Environmental Science.

WORLD'S LARGEST AIRCRAFT COMPLETES TEST FLIGHT

The world's largest aircraft has successfully completed a test flight, bringing the massive helium-filled airship one step closer to commercial use.

The hybrid aircraft dubbed the Airlander 10 combines technology from airplanes, helicopters and airships.

It is designed to fly at altitudes of 6,100 meters for up to five days when manned.

With a length of 92 metres, it is the largest aircraft currently flying, 'Live Science' reported.

On May 10, the Airlander 10 flew for a total of 180 minutes to test the aircraft's handling, improved landing technology and more, according to Hybrid Air Vehicles, the British company that built the aircraft.

During the successful test flight in Cardington, UK, the Airlander 10 “handled superbly,” said Dave Burns, the Airlander 10's chief test pilot.

The flight test team was “very pleased” with its initial analysis of the Airlander 10, the company said.

“There will also be passenger variants for the ultimate flying experience and eventually Hybrid Air Vehicles will fulfil a crucial role in point-to-point cargo transportation to remote areas,” company officials said.

This was only the third flight of the Airlander 10. It first successfully flew in 2012 as part of the US Army's Long Endurance Multi-intelligence Vehicle programme.

The modified Airlander 10 made its maiden voyage in August last year, kicking off a flight test programme to assess the aircraft's performance and attempting to fly the airship farther away from its base in the UK.