

SCIENCE CENTRE NEWS LETTER

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SCIENCE CENTRE

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WHAT'S NEW IN SCIENCE?

ISRO deploys 36 Oneweb satellites in space

The Indian Space Research Organisation (ISRO) on 26 March 2023 launched 36 One Web satellites into space in a textbook mission. The spacecraft lifted off from the Satish Dhawan Space Centre in Sriharikota, Andhra Pradesh to Low Earth Orbit (LEO) with probes from the UK-based company. The 150-kilogram satellites were deployed in 12 planes, with each plane separated by four kilometres in altitude to prevent an inter-plane collision.

The One Web constellation is a network of satellites around the Earth that are aimed at providing broadband connectivity across the world. The UK Company is implementing a constellation of Low Earth Orbit (LEO) satellites.

The LVM-III (Launch Vehicle Mark- III) is the re-designated title of India's heaviest launch vehicle, Geosynchronous Launch Vehicle Mark-III (GSLV-



MkIII). The sole reason behind changing the name of the vehicle from GSLV to LVM is that the rocket will not deploy the satellite in a geosynchronous orbit. The One Web satellites operate in Low Earth Orbit at an altitude of 1,200 kilometres.

The three stages of the rocket performed nominally, taking the spacecraft to its designated orbit. This was the second launch of the LVM-III with the One Web satellites. The deployment of the satellite is to happen as the mission is 75 minutes long, one of the longest for the spacecraft.

The spacecraft began deploying the satellites after reaching an altitude of over 400 kilometres above Earth. The 36 satellites were deployed in five stages on their respective orbital planes after the shutdown of the cryo stage (cryo stage is a specimen stage that cools a specimen down to -180C or down to -260C, respectively with liquid nitrogen or liquid helium).

Courtesy - Ayurvedachary shree charakmuni school No.-149

SCIENTIST OF THE MONTH

P. Kunhikrishnan

P. Kunhikrishnan was born on 30 May 1961 in Payyanur, Kannur, Kerala. Kunhikrishnan completed Bachelor of Science in Mathematics from Payyanur College in 1981 and later completed B. Tech in Electronics and Communication Engineering from College of Engineering (CET) Trivendrum, Kerala in 1986.

Kunhikrishnan joined Indian Space Research Organization (ISRO) in 1986 after B. Tech. He was Director of System Reliability Entity at Vikram Sarabhai Space Centre (VSSC) and contributed to various launch vehicle missions starting from ASLV-D1 (Augmented Satellite Launch Vehicle). He was Associate Project Director for PSLV-C12 (Polar Satellite Launch Vehicle) and PSLV-C14, Project Director of PSLV-C15 to PSLV-C27 (from the year 2010 to 2015) and Deputy Director of VSSC for Mechanisms, Vehicle Integration and Testing (MVIT). As a Project Director, he could accomplish 13 consecutive successful PSLV missions including the launch of India's prestigious Mars Orbiter Mission (Mangalyaan) by PSLV-C25.



In 2015, he took over as the Director of Satish Dhawan Space Centre, Sriharikota, Andhra Pradesh, the spaceport of India. As Director, during 2015-2018, he was instrumental in transforming the spaceport of India into a World class facility by establishing and initiating

huge infrastructure to support multiple launches per year, catering to the futuristic demand. The 'visitor complex' at Sriharikota, that enables 10,000 visitors to witness satellite launches, was conceived and initiated by him during this period. In 2018, he took over as a Director of U. R. Rao Satellite Centre (URSC), Bengaluru.

He was honoured with the Astronautical Society of India (ASI) Award in 2011 and

ISRO Outstanding Achievement Award for distinguished service in ISRO in 2018. He won Eminent Engineer Award- 2020 by Institution of Engineers (India), Tamilnadu State Centre. He was member of space Commission (the Department of Space - is an Indian government department responsible for administration of the Indian space program), Government of India since February, 2020.

Courtesy - Ayurvedachary shree charakmuni school No.-149



Timings

Tuesday to Sunday
9.30 am to 4.30 pm

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SCIENCE FACTS MAY 2023

1 May	International Worker's Day.
1 May 1851	The Great Exhibition is opened in London by Queen Victoria.
1 May 1930	The Planet Pluto is officially named.
3 May	International Energy Day.
3 May 1892	English Physicist George Paget Thomson (Recognised for discovery of the wave properties of the electron by electron diffraction) was born.
3 May 1902	French Physicist Alfred Kastler (Won the Nobel Prize in Physics in 1966 for the discovery and development of optical methods for studying Hertzian Resonance in atoms) was born.
5 May 1921	American Physicist Arthur Leonard Schawlow (Co-inventor of the LASER) was born.
5 May 1961	The first piloted Mercury space craft "Freedom-7" launched by America.
6 May 1871	French Chemist Victor Grignard (Discoverer of the Grignard Reagent and Grignard Reaction) was born.
6 May 1929	American Chemist Paul Lauterbur (Worked to made the development of Magnetic Resonance Imaging MRI possible) was born.
7 May 1939	Canadian born Molecular Biologist Sidney Altman (Worked on the catalytic properties of RNA) was born.
11 May 1924	English Radio Astronomer Antony Hewish (Co-discoverer of Pulsars) was born.
11 May 1998	India conducted nuclear tests at the Pokhran range in Rajasthan Desert.
13 May 1857	Sir Ronald Ross (Inventor of medicine for Malaria) was born.
15 May 1859	French Physicist Pierre Curie (A pioneer in Crystallography, Magnetism, Piezoelectricity and Radioactivity) was born.
17 May 1749	Sir Edward Anthony Jenner (Inventor of smallpox vaccine) was born.
18 May	World AIDS Vaccine Day.
18 May	International Museum Day.
19 May 1910	Halley's Comet brushes the Earth with its tail.
19 May 1971	Soviet Union had sent "Mars-2" for journey to Planet Mars which was crashed at Mars's Land on 27 Nov, 1971.
21 May 1860	Dutch Inventor William Einthoven (Inventor of the first practical electrocardiograph ECG) was born.
24 May 1844	First telegraphic message was sent by well-known Scientist Samuel Morse.
30 May 1971	American launched space craft "Mariner-9" to Planet Mars.
31 May	World No Tobacco Day (by U.N.).
U. N. : United Nations	

SCIENTIFIC QUESTION

What is Lupus?

Lupus is a disease that occurs when body's immune system attacks its own tissues and organs (autoimmune disease). Inflammation caused by Lupus can affect many different body systems - including joints, skin, kidneys, blood cells, brain, heart and lungs.

Lupus can be difficult to diagnose because its signs and symptoms often mimic those of other ailments. The most distinctive sign of Lupus - a facial rash that resembles the wings of a butterfly unfolding across both cheeks - occurs in many but not all cases of Lupus.

Some people are born with a tendency toward developing lupus, which may be triggered by infections, certain drugs or even sunlight. There is no cure for Lupus, treatments can help control symptoms.

Symptoms: No two cases of Lupus are exactly alike.

Signs and symptoms may come on suddenly or develop slowly, symptoms may be mild or severe and may be temporary or permanent. Most people with Lupus have mild disease characterized by episodes - called flares - when signs and symptoms get worse for a while, then improve or even disappear completely for a time.

The signs and symptoms of Lupus that experienced will depend on which body systems are affected by the disease. The most common signs and symptoms includes following:

- Fatigue
- Fever
- Joint pain, stiffness and swelling
- Butterfly-shaped rash on the face that covers the cheeks and nose or rashes elsewhere on the body
- Skin lesions that appear or worsen with sun exposure
- Fingers and toes that turn white or blue when exposed to cold or during stressful periods
- Shortness of breath
- Chest pain
- Dry eyes
- Headaches, confusion and memory loss

Causes: Lupus occurs when immune system attacks healthy tissue in body. It's likely that Lupus results from a combination of genetics and environment.

The people with an inherited predisposition for Lupus may develop the disease when they come into contact with something in the environment that can trigger Lupus. However the cause of Lupus in most cases is unknown. Some potential triggers are as follows:

Sunlight: Exposure to the sun light may bring on Lupus skin lesions or trigger an internal response in susceptible people.

Infections: Having an infection can initiate Lupus or cause a relapse in some people.

Medications: Lupus can be triggered by certain types of blood pressure medications, anti-seizure medications (seizure is a sudden uncontrolled burst of electrical activity in the brain) and antibiotics. People who have drug-induced Lupus usually get better when they stop taking the

medication. Rarely, symptoms may persist even after the drug is stopped.

Risk factors: Factors that may increase your risk of Lupus include:

Age: Although Lupus affects people of all ages, its most often diagnosed between the ages of 15 and 45.

Race: Lupus is more common in African Americans, Hispanics (Hispanics refers to people, culture or countries related to Sapin) and Asian Americans.

Complications: Inflammation caused by Lupus can affect many areas of your body, which include following:

Kidneys: Lupus can cause serious kidney damage and kidney failure is one of the leading causes of death among people with Lupus.

Brain and central nervous system: If brain is affected by Lupus, you may experience headaches, dizziness, behaviour changes, vision problems and even strokes or seizures. Many people with Lupus experience memory problems and may have difficulty expressing their thoughts.

Blood and blood vessels: Lupus may lead to blood problems, including a reduced number of healthy red blood cells (anaemia) and an increased risk of bleeding or blood clotting. It can also cause inflammation of the blood vessels.

Lungs: Having Lupus increases chances of developing an inflammation of the chest cavity lining, this can make breathing painful. Bleeding into lungs and pneumonia also are possible to occur.

Heart: Lupus can cause inflammation of heart muscle, arteries or heart membrane. The risk of cardiovascular disease and heart attacks increases greatly as well.

Other types of complications include infection, cancer, bone tissue death, pregnancy complications.

Diagnosis: Diagnosing Lupus is difficult because signs and symptoms vary considerably from person to person. No one test can diagnose Lupus. The combination of blood and urine tests, signs and symptoms and physical examination findings leads to the diagnosis.

Laboratory tests includes complete blood count (measure the number of red blood cells, white blood cells, platelets and amount of haemoglobin), Erythrocyte sedimentation rate (determines the rate at which red blood cells settle to the bottom of a tube in an hour), Kidney and liver assessment (assess how well your kidneys and liver are functioning), Urinalysis (An examination of a sample of your urine may show an increased protein level or red blood cells in the urine), Anti Nuclear Antibody (ANA) test (A positive test for the presence of ANA) and Imaging tests includes chest X-ray and echocardiogram (produce real-time image of beating heart).

Treatment: The medications most commonly used to control Lupus includes non-steroidal anti-inflammatory drugs (NSAIDs) (used to treat pain, swelling and fever), anti malarial drugs (help to decrease the risk of Lupus flares), corticosteroids (decrease the inflammation of Lupus), immunosuppressant (helpful in serious case of Lupus) and biologics [a different type of medication, belimumab (benlysta) administered intravenously, also reduces Lupus symptoms in some people].



KNOW THE EXHIBIT

Health in Space – Psychological Issues

Although NASA (National Aeronautics and Space Administration) conducted an anonymous health care survey on its Astronauts and ultimately dismissed concerns who does excessive drinking, allegations were made in 2007 that drunken NASA Astronauts were permitted to fly on the space shuttle and a Russian Soyuz spacecraft in two separate incidents. This happened even though flight surgeons and other Astronauts allegedly brought their safety concerns to local managers.

At that time, NASA's policy prohibited drinking for 12 hours before Astronauts flew training jets. The policy was supposed to apply to space flights, too. To avoid any doubt, NASA made their “bottle to throttle” rule official after an independent panel reviewed the matter.

Psychological issues have also occurred in space. On the Skylab 4 mission, astronauts got so testy with mission control that they turned off their Radio and ignored NASA for a day. Researchers are now studying the potential effects of a longer more stressful deep space mission to Mars.

This Exhibit is situated at “Entering Space Gallery” between Fun Science Gallery and Power of Play Gallery at the first floor of Science Centre.



Astro Photography Exhibition

Surat Municipal Corporation had organized Astro Photography exhibition at first floor of Art Gallery, Science Centre Surat from 14/05/2023 to 23/05/2023 . In this exhibition, 78 photographs of 09 Astrophotographers on the subject of Astronomy were displayed.



Summer Camp May-2023

Surat Municipal Corporation, Science Centre Surat is going to organise Summer Camp May 2023. It will be held between Dt. 10/05/2023 to Dt. 20/05/2023. There are two group of 7 to 12 years and 13 to 17 years. The form can be downloaded from Surat Municipal Corporation's website. The interested students should register their names upto Dt. 05/05/2023 during 10:00 am to 4:00 pm at Science Centre Surat, City Light Road, Suart.

Group-A- 7 to 12 years Age Group

Sr. No.	Subject	Time	Days	Fees
A-1	Paper Art, Best out of Waste, Lamp Painting, Envelop Making, Cap Painting, etc.	10:00 am. To 12:00 pm	10 Days	Rs. 1200/-
A-2	Robotics	11:00 am. To 12:00 pm	10 Days	Rs. 1500/-

Group-B- 13to 17 years Age Group

Sr. No.	Subject	Time	Days	Fees
B-1	Basic Astronomy, Know your Planets, Know your Zodiac, Phases of Moon/Seasons, Nano Sun/ Mirror Ball, Telescope, Astronomy Software, Astronomy Journal and Quiz, Mobile Photography	10:00 am. To 12:00 pm	10 Days	Rs. 1400/-
B-2	Basic Physics, Experiments, Earth Quack Detector, Electric Bug, Free Energy Model, Clap Switch, Basic Aeronautics	10:00 am. To 12:00 pm	10 Days	Rs. 1400/-
B-3	Embroidery, Quelling, Paper Art	10:00 am. To 12:00 pm	10 Days	Rs. 1400/-
B-4	Model Rocket	10:00 am. To 12:00 pm	04 Days	Rs. 800/-
B-5	Robotics	11:00 am. To 12:00 pm	10 Days	Rs. 1500/-