

SCIENCE CENTRE NEWS LETTER

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SCIENCE CENTRE

WHAT'S NEW IN SCIENCE?

Three Param Rudra supercomputers developed in India to enhance weather, climate computing

Prime Minister Shri Narendra Modi had inaugurated the Param Rudra Supercomputing System, on 26th September 2024, marking a significant milestone in India's journey towards technological advancement and self-reliance. The state of the art facility, developed by the Centre for Development of Advanced Computing (C-DAC), represents a major boost to the country's high-performance computing capabilities.

Param Rudra, named after the Lord Shiva, is designed to tackle complex computational challenges across various scientific and engineering domains. Three Param Rudra supercomputers have been developed indigenously under the National Supercomputing Mission, at Rs 130 crores.

The three supercomputers have been deployed in Pune, Delhi, and Kolkata to support cutting-edge scientific research. Pune's Giant



Metre Radio Telescope (GMRT) will use the Supercomputer to study Fast Radio Bursts (FRBs) and other Astronomical events. In Delhi, the Inter-University Accelerator Centre (IUAC) will advance research in Material Science and

Atomic Physics. The S.N. Bose Centre in Kolkata will lead advanced studies in Physics, Cosmology and Earth Sciences.

Alongside Param Rudra, PM Modi also unveiled a specialised High-Performance Computing System dedicated to weather and climate research. This

system is poised to revolutionize India's meteorological forecasting capabilities, enabling more accurate predictions of weather patterns and climate trends.

The enhanced forecasting abilities will have far-reaching implications for agriculture, disaster management and urban planning.

Main Source :

<https://www.indiatoday.in/science/story/pm-modi-inaugurates-param-rudra-supercomputer-to-enhance-weather-climate-computing-2606952-2024-09-26>

SCIENTIST OF THE MONTH

Dr. Swaminathan Sivaram

Dr. Swaminathan Sivaram was born on 4 November 1946 in the South Indian State of Tamil Nadu. He did B.Sc (Bachelor of Science) in Chemistry from Madras Christian College, Chennai in 1965 and M.Sc (Master of Science) in Chemistry from the Indian Institute of Technology, Kanpur in 1967. He did Ph.D (Doctor of Philosophy) from Purdue University, US (United States) in 1972.

Dr. Swaminathan Sivaram is an Indian Polymer Chemist, Inventor, Institution builder and a former director of the National Chemical Laboratory, Pune. He is known for his pioneering work on Alkylation of tertiary Alkyl halides with Trialkylaluminum and Olefin Polymerization.



Dr. Swaminathan Sivaram received VASVIK Industrial Research Award in 1987. The Federation of Indian Chamber of Commerce and Industry (FICCI) awarded him their annual honour for Physical Sciences in 1996. He also received CRSI (Chemical Research Society of India) Silver Medal in 2002, Padma Shri Award in 2006 and the Material Scientist of the Year Award of the Materials Research Society of India in 2010.

Main Source and image:-

https://en.wikipedia.org/wiki/Swaminathan_Sivaram

SCIENCE FACTS NOVEMBER 2024



Timings

Tuesday to Sunday
& Public Holidays
9.30 am to 4.30 pm

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1 November 1950	:	American Physicist Robert B. Laughlin (Co-winner of the 1998 Nobel Prize in Physics for their explanation of the fractional quantum Hall effect) was born.
3 November 1893	:	American Biochemist Adward Adelbert Doisy (Co- winner of the 1943 Nobel Prize in Physiology or Medicine for their discovery of vitamin K) was born.
5 November 1854	:	French Chemist Paul Sabatier (Co- winner of the 1912 Nobel Prize in Chemistry for his work improving the hydrogenation of organic species in the presence of metals) was born.
7 November 1867	:	Polish Chemist and Physicist Maria Sklodowska- Curie (Was the first woman to win a Nobel Prize, the first person to win a Nobel Prize twice, and the only person to win a Nobel Prize in two scientific fields) was born.
8 November 1895	:	While experimenting with the electricity, Wilhelm Rontgen discovered the X-ray.
9 November 1897	:	British Chemist Ronald George Wreyford Norrish (Co-winner of the 1967 Nobel Prize in Chemistry for their study of extremely fast chemical reactions) was born.
9 November 1921	:	Albert Einstein was awarded the Nobel Prize in Physics for his work on the photoelectric effect.
10 November 1918	:	German Chemist Ernst Otto Fischer (Co-winner of the 1973 Nobel Prize in Chemistry for his work on Organometallic Compounds) was born.
12 November 1842	:	English Physicist John Strutt, 3 rd Baron Rayleigh (Winner of the 1904 Nobel Prize in Physics for his investigations of the densities of the most important gases and for his discovery of Argon in connection with these studies) was born.
14 November 1863	:	Flemish- American Chemist Leo Hendrik Beakeland (Inventor of the first Synthetic Plastic, Bakelite) was born.
17 November 1902	:	Hungarian Physicist Eugene Wigner (Winner of the 1963 Nobel Prize in Physics for his contributions to the theory of the atomic nucleus and the elementary particles, particularly through the discovery and application of fundamental symmetry principles) was born.
17 November 1922	:	American Biochemist Stanley Cohen (Co-winner of the 1986 Nobel Prize in Physiology or Medicine for the isolation of nerve growth factor and the discovery of epidermal growth factor) was born.
18 November 1897	:	British Physicist Patrick Blackett (Winner of the 1948 Nobel Prize in Physics for investigation of cosmic rays using his invention of the counter- controlled cloud chamber) was born.
18 November 1906	:	American Scientist George Wald (Co-winner of the 1967 Nobel Prize in Physiology or Medicine for his discoveries in the field of vision) was born.
19 November 1912	:	Romanian Cell Biologist George Emil Palade (Co-winner of the 1975 Nobel Prize in Physiology or Medicine for discoveries concerning the functional organization of the cell that were seminal events in the development of modern cell biology) was born.
19 November 1936	:	Taiwanese born Chemist Yuan T. Lee (Co-winner of the 1986 Nobel Prize in Chemistry for their contributions to the dynamics of chemical elementary processes) was born.
19 November 1998	:	The first module of the International Space Station , Zarya, was launched.
20 November 1886	:	Austrian Zoologist Karl von Frisch (Co-winner of the 1973 Nobel Prize in Physiology or Medicine for his achievements in comparing behavioral physiology and pioneering work in communication between insects) was born.
22 November 1904	:	French Physicist Louis Neel (Co-winner of the 1970 Nobel Prize in Physics for his pioneering studies of the magnetic properties of solids) was born.
23 November 1837	:	Dutch Physicist Johannes Diderk van der Waals (Winner of the 1910 Nobel Prize in Physics for his work on the equation of state for gases and liquids) was born.
28 November 1950	:	American Physicist Russell Alan Hulse (Co-winner of the 1993 Nobel Prize in Physics for the discovery of a new type of pulsar, a discovery that has opened up new possibilities for the study of gravitation) was born.

U.N. – United Nations

WHO – World Health Organization

UNESCO – United Nations Educational Scientific & Cultural Organization

Answers: 1. a 2. c 3. b 4. a 5. c

SCIENTIFIC QUESTION

Do fungi has intelligence?

Researchers at Tohoku University, Japan and Nagaoka College, Japan had a question in their mind when conducting a study to measure the decision-making processes in fungi that can organisms without a brain still show signs of intelligence?

It has been observed by the Researchers that fungi have memories. They learn and they can make decisions but there are differences between how fungi solve problems as compared to humans.

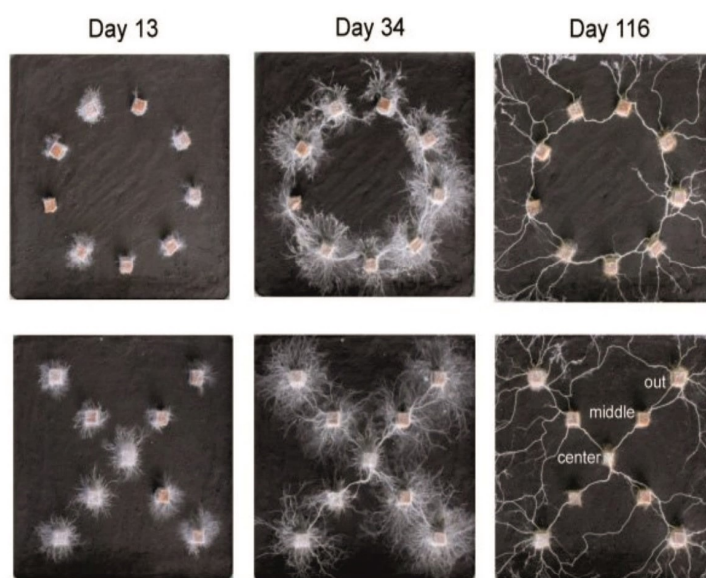
Fungi grow by releasing spores, which can germinate and form long, spidery threads underground (a mycelium). One can only see the tiny mushrooms on the surface without realizing that there's a vast network of interconnected mycelium beneath the ground. It is through this network that information can be shared, somewhat like neural connections in the brain.

The present study examined how a wood-decaying mycelial network responded to two different situations: wood blocks placed in a circle versus cross arrangement. If the fungi don't display decision-making skills, it would simply spread out from a central point without consideration for the position of the blocks but it was observed by the Researchers that for the

cross arrangement, the degree of connection was greater in the outermost four blocks. It was hypothesized that this was because the outermost blocks can serve as "outposts" for the mycelial network to embark in foraging expeditions, therefore more dense connections were required. In the circle arrangement, the degree of connection was the same at any given

block. However, the dead centre of the circle remained clear. It was proposed that the mycelial network did not see a benefit in overextending itself in an already well-populated area.

These findings suggest that the mycelial network was able to communicate information about its surroundings throughout the entire network, and change its direction of growth accordingly based on the shape. Thus it can be said that fungi has intelligence which helps it to recognize shapes.

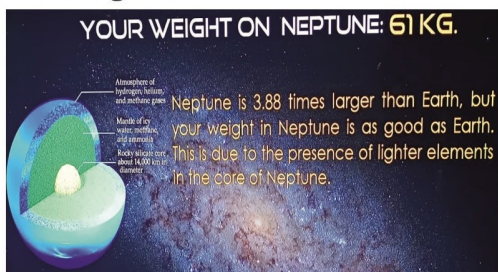


Main Source:

<https://www.sciencedaily.com/releases/2024/10/241009122809>.

KNOW THE ENTERING INTO SPACE GALLERY EXHIBIT

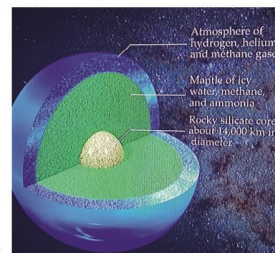
Your weight Vries



The weight of a person on the different Planet will be shown on screen for which the person has to stand on the platform of the Exhibit.

Neptune is 3.88 times larger than Earth but Person's weight in Neptune is as on Earth. This is due to presence of lighter elements in the core of Planet Neptune.

The blue colour of Planet Neptune is due to the absorption of red light by methane gas in the atmosphere. Neptune is not a Solid body. Based on a small inner core rock, a huge gas cloud revolves as Planet Neptune. The



largest Neptune's Moon, Triton was discovered just 17 days after Planet Neptune itself was discovered.

This exhibit is situated at "Entering Space Gallery" between Fun Science Gallery and Power of Play Gallery at the first floor of Science Centre.

SCIENCE PROJECT



Surat Municipal Corporation had organized "Science Fair-2024" at Art Gallery, Science Centre Surat on 16th and 17th August, 2024 for the students of Std. 8 to 12. L. P. Savani International School (GSEB) had participated in the Science Fair with their project on "Solar Waste Collector Boat" under the sub theme of "Indigenous Technologies to improve Human life"

The aim of the project was to help monitor for a wide range of quality issues in real time, unveiling the significant benefits of water recycling.

A Solar-Powered Water Trash Collecting Boat was an innovative solution designed to clean up water bodies by collecting floating debris. The boat runs on Solar Energy through the Solar Panels. A conveyor belt mechanism lifts garbage from the water's surface and deposits it into a trash bin on the boat.

Advantages:-

1. It collects wide variety of waste from water bodies and reduces human interference.
2. No external power supply is needed. The boat operates solely on renewable energy.



QUIZ

1. Human Papilloma Virus is related to which of the following diseases?
a. Prostate Cancer b. Cervical Cancer c. Lymphatic Filariasis d. Leukemia
2. What is the angular acceleration of a body moving with constant angular velocity?
a. Equal to the angular velocity b. 1 c. 0 d. Can't be determiner
3. What is the Chemical name of Quick lime?
a. Calcium Peroxide b. Calcium Oxide c. Calcium Dioxide d. Calcium Hydroxide
4. Why a small liquid drop is in Spherical shape?
a. Due to Surface tension b. Due to Low viscosity
c. Due to Hydrogen bonding d. Due to Low density
5. Which of the following Electromagnetic waves in the EM spectrum has the highest wave length?
a. X-rays b. Visible c. Infrared d. UV-rays

Source :-

<https://www.gktoday.in/quizbase/general-science-for-competitive-examinations>