

SCIENCE CENTRE NEWS LETTER

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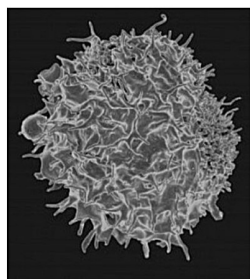
SCIENCE CENTRE

Volume 3, Issue 05

WHAT'S NEW IN SCIENCE

How to reprogram cells in our immune system

When the immune system is imbalanced, either due to overly-active cells or cells that suppress its function, it causes a wide range of diseases, from psoriasis to cancer. By manipulating the function of certain immune cells, called T cells, researchers could help restore the system's balance and create new treatments to target these diseases. Scientists at the Gladstone Institutes revealed, for the first time, a method to reprogram specific T cells. More precisely, they discovered how to turn pro-inflammatory cells that boost the immune system into anti-inflammatory cells that suppress it, and vice versa. The researchers studied two types of cells called effector T cells, which activate the immune system to defend our body against different pathogens and regulatory T cells, which help to control the immune system and prevent it from attacking healthy parts of its environment. "Our findings could have a significant impact on the treatment of autoimmune diseases, as well as on stem cell and immuno-oncology therapies," said



Gladstone Senior Investigator Sheng Ding, PhD, who is also a professor of pharmaceutical chemistry at the University of California, San Francisco. This new approach to reprogram T cells could have several medical applications. For instance, in autoimmune diseases effector T cells are overly activated and cause damage to the body. Converting these cells into regulatory T cells could help reduce the hyperactivity and return balance to the immune system, thus treating the root of the diseases. In addition, the study could improve therapies using stem cells. At least in theory, producing regulatory T cells could promote immune tolerance and prevent the body from rejecting newly-transplanted cells. Many cancers take control of regulatory T cells to suppress the immune system, creating an environment where tumors can grow without being detected. In such cases, the team's findings could be used to transform regulatory T cells into effector T cells to strengthen the immune system so it can better recognize and destroy cancer cells.

Courtesy : Shree Ram Ganesh Gadkari Primary School No.243

SCIENTIST OF THE MONTH

Asima Chatterjee

Asima Chatterjee was born on September 23, 1917 at Kolkata in West Bengal. She did her D.Sc. from Calcutta University. She did her postdoctoral research from the University of Wisconsin in U.S.A. during the year 1947-48. Asima Chatterjee contributed immensely to the fields of natural products, especially alkaloids, polyphenolics, terpenoids and coumarins derived from Indian medicinal plants. She has to her credit over 350 research papers. She worked as the Editor of the Journal of the Indian Chemical Society. She is also the author of the 'Bharater Banushadi'(wild medicinal plants of India)



and 'Sara Madhyamic Rasayana'. Professor Chatterjee was the recipient of the Nagarjuna Prize. She was nominated as the Member, Rajya Sabha for two terms in 1982, 1984. She received the Padma Bhushan in 1975, Sir C.V. Raman Award in 1985 and Shanti Swarup Bhatnagar Prize in 1961. She was elected 'Woman of the year' in 1975 by the Bengal chamber of commerce. She died on November 22nd, 2006.

Courtesy : Shree Ram Ganesh Gadkari Primary School No.243



Timings

Tuesday to Friday
9.30 am to 4.30 pm

Saturday - Sunday
& Public Holidays
11.00 am to 6.30 pm

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SCIENCE FACTS SEPTEMBER 2017

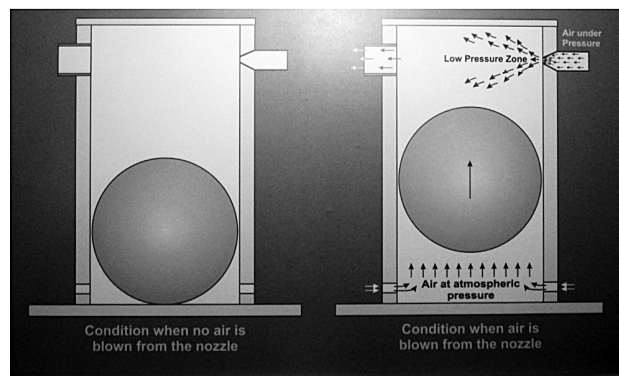
5th Sep 1962	India's first Vice President Dr. Sarvapalli Radhakrishnan was born on this day. (" Teacher's Day ")
6th Sep 1766	John Dalton (Discoverer of Law of partial pressure & Thermal Expansion) was born on this day.
8th Sep	"International Literacy Day". (UNESCO)
10th Sep 1869	Reverend Jon Scobie invented First Autorickshaw in Japan
10th Sep 1892	Arthur Holly Compton (Inventor of Compton effect) was born on this day.
12th Sep 1992	Mae Jemison, first black woman who went into the Space.
14th Sep 1959	Russian first Spacecraft "Luna-2" reached at the surface the moon
15th Sep 1830	World's first inter city passenger railway started between Liverpool and Manchester.
15th Sep 1916	First Tank ever used in Combat by British Army, during battle of the "Somme".
16th Sep	"International Day for the preservation of the Ozone Layer". (U.N.)
21st Sep	"International Day of Peace"(U.N.).
22nd Sep 1791	Michael Faraday (Discoverer of electromagnetic Induction) was born on this day.
23rd Sep	Winter equinox: On this day, Day and night becomes equal on the earth.
28th Sep	"World Rabies Day". (WHO)
29th Sep 1901	Enrico Alberto Fermi (Noble Prize winner in physics for his work on "Induced Radioactivity) was born on this day.
29th Sep	"World Heart Day". (WHO)
U. N. : United Nations	
WHO : World Health Organization	

Quiz Answers: 1) B 2) D 3) C 4) A 5) B

KNOW THE EXHIBIT AT FUN SCIENCE GALLERY

Bernoulli's Suction

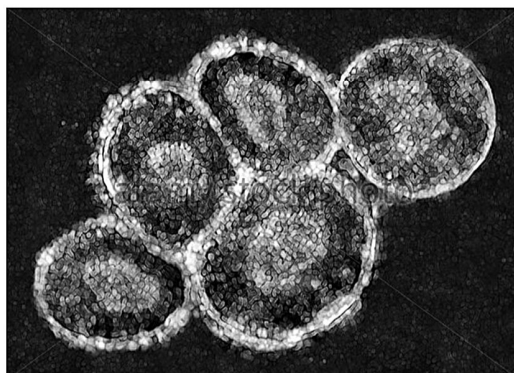
Press the switch to allow a jet of air to flow through the top end of the cylinder. Observe that the ball immediately rises up and continues to stay at that place as long as the air flows. The jet of air creates a low pressure at the top end of the cylinder due to Bernoulli's effect. This pressure gradient between the upper and lower ends of the cylinder makes the ball rise.



SCIENTIFIC QUESTION

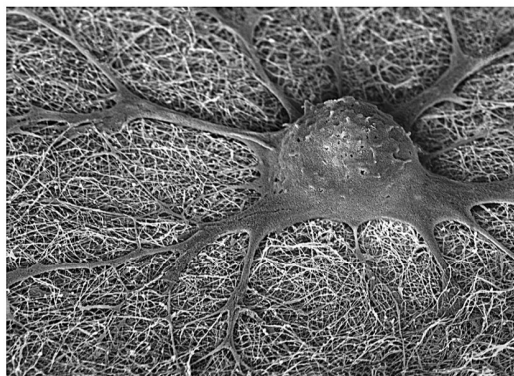
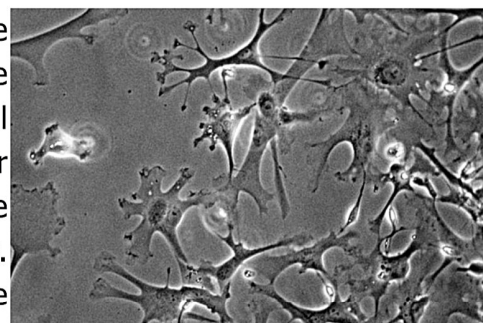
What are the Cells?

The basic structure of every living thing is composed of cells. According to the scientists, the cell is a unit, in which all life activity takes place. Each cell in plant or animal lives its own life and at the same time makes it possible for the living thing as a whole, to carry on its life activities. The living matter in the cell is the protoplasm which carries on all the processes necessary for life. It takes in food and oxygen, changes some of the food into living matters, gives out waste, repairs its worn-out parts, forms and reproduces itself. The simplest plants and animals consist of only one cell. In the higher form of living things, the cells are organized in groups of cells of a particular kind that perform one particular type of work which is called



tissue, like bone tissue, muscle tissue, etc. When several tissue combine to perform a special task, then it is called an other tissues. In our body, there are five important types of cells. Epithelial cells make up the

skin and the glands and the blood vessels. Muscle cells make up for three kinds of muscles. Brain, spinal cord and nerves are composed of nerve cells. Blood cells are found in the blood and lymph. Connective tissue cells make up



the framework tissues of the body. In short, the cell is the building block that makes up living things.

SCIENCE QUIZ

1) The wavelength of X-rays is of the order of

A) 10 micron B) 1 angstrom C) 1 cm D) 1m

2) Mesons are found in

A) Laser beam B) X-rays C) Gamma rays D) Cosmic rays

3) What is the wavelength of visible spectrum?

A) 8500-9800 angstrom B) 7800-8000 angstrom C) 3900-7600 angstrom D) 1300-3000 angstrom

4) Nuclear fission is caused by the impact of

A) Neutron B) Proton C) Deuteron D) Electron

5) How many colours the sunlight spectrum has?

A) Three B) Seven C) Four D) Five

'FLAG EXHIBITION'

Flag Exhibition was organized on the first floor of Sardar Vallabhai Patel Museum from 10th to 20th August, 2017. In this exhibition inception and history of Indian flag, its gradual development, photography of various National symbols along with details of different Countries from Australia, Brazil, China, Egypt to Zambia comprising their National flag, map, capital, currency and population were exhibited.



Science Project presented by Shree Ram Ganesh Gadkari Primary School No.243

Surat Municipal Corporation in collaboration with Surat Smart City Development Ltd. had Organized "Science Fair" at ground floor of Art Gallery, Science Centre, Surat on 21st and 22nd July 2017. "Shree Ram Ganesh Gadkari Primary School No.243" presented their project of "Jivan Rakshak Kavach". Which is as under: In this world nature disaster is a curse to villages and city. We all live on this planet so it's our responsibility to protect the environment. In our nation many states is facing the problem of flood. Terrible flood was occurred last year which had affected a lots of people and destroyed crops. Due to this many people died. Among those the number of children and women who don't know how to swim are the major affected ones.

To avoid/ minimize this kind of incidents in future school children prepared " Jivan Rakshak Kavach". In this project shirt type jacket is made by using thermocol. By wearing this jacket no one can drown. This jacket is simple and pollution free. By using this jacket people can protect themselves from flood. The man who does not know how to swim, he can also easily learn swimming.

