

SCIENCE CENTRE NEWS LETTER

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SCIENCE CENTRE

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WHAT'S NEW IN SCIENCE

Use of Bacteria to prevent cell from attack from chemical and antibodies

Biologist at UC San Diego have discovered that bacteria- often viewed as lowly, Solitary creatures are actually quite sophisticated in their social interactions and communicate with one another through similar electrical signalling mechanisms as neurons in the human brain.

A study published in on line publication of "Nature", the scientist have investigated that bacteria living in communities communicate with one another electrically through proteins called "ion channels"

Associate professor of molecular Biology at UC San Diego, Guroi Suel who headed this research project says that this discovery not only changed the way we think about bacteria, but also how we think about our brain. All of our senses, behaviour and intelligence emerge from electrical communications among neurons in the brain

mediated by ion channels. Now they have found that bacteria use similar ion channels to communicate and resolve metabolic stress. Their discovery



suggests that neurological disorders that are triggered by metabolic stress may have ancient bacterial origins, and could thus provide a new perspective on how to treat such conditions. Our understanding of electrical signalling in our brain is based on structural studies of bacterial ion channels but how bacteria use those ion channels was a mystery until this discovery. Prof Suel examined long range communication within biofilms- organized

communities containing millions of densely packed bacterial cells. They found that these communities of bacteria can form thin structures on surfaces- such as tartar that develops on teeth- that are highly resistant to chemical and antibodies. Prof Suel found that biofilms are able to resolve social conflicts within their communities of bacterial cell just like human societies.

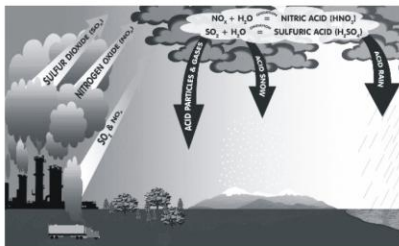
When a biofilm composed of hundreds of thousands of Bacillus subtilis bacterial cells grows to a certain size, the protective outer edge of cells, with unrestricted access to nutrients, periodically stopping growing to allow nutrients- specially glutamate, to flow to the sheltered centre of biofilm. In this way, the protected bacteria in the colony centre were kept alive and could survive attacks by chemicals and antibodies.

SCIENTIFIC QUESTION

What is Acid Rain?

Acid Rain is a result of air pollution. When any type of fuel is burnt lot's of different chemicals are produced. The smoke that comes from a fire or the fumes that come out of a car exhaust don't just contains the lots of invisible gases that can be even more harmful to our environment.

factories and cars all therefore all nitrogen oxides and with the tiny droplets form sulphuric acid rain from these very weak is known as 'Acid causes forestry



hastening the corrosion of many ancient buildings and sculptures.

Power stations burn fuels and gases (especially sulphur dioxide) react of water in clouds to and nitric acid. The clouds then falls as acid. Which is why it Rain'. Acid rain damage, as well as



Timings

Tuesday to Friday
9.30 am to 4.30 pm

Saturday - Sunday
& Public Holidays
9.30 am to 6.30 pm

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SCIENCE FACTS NOVEMBER 2015

3rd Nov 1957	Soviet Union launched an artificial Earth Satellite "Sputnik-2" which was the first satellite to carry a living organism i.e. A dog named 'Laika -1'.
3rd Nov 1960	America launched "Explorer 8" satellite into the space to discover atmospheric Composition of the Ionosphere.
5th Nov 1855	French Meteorologist Leon Teisserenc de Bort (Discoverer of Stratosphere) was born on this day.
6th November	International Day for preventing the Exploitation of the Environment in war and Armed conflict. (Recognised by U.N.)
7th Nov 1867	French Scientist Mary Curie (Discoverer of Radium) was born on this day.
7th Nov 1888	Indian Famous Scientist Chandrashekhar Raman (Discoverer of Raman Effect) was born on this day.
8th Nov 1922	South African Surgeon Christian Bernard (Who made first successful Heart Transplant) was born on this day.
9th Nov 1801	Gail Borden (Father of Modern Dairy Industry) was born on this day.
10th November	World Science Day for Peace & Development (by UNESCO)
12th Nov 1896	Dr. Salim Ali (Internationally honoured Indian Ornithologist known as "Birdman of India") was born on this day.
13th Nov 1893	American Bio-chemist Adverd A Doicy (Inventor of process to make Vitamin K1) was born on this day.
14th November	World Diabetes Day [by WHO]
14th Nov 1776	Henri Dutrochet (discoverer of process of Osmosis) was born on this day
14th Nov 1863	Birth date of Belgian Chemist Leo Baekeland (Inventor of Bakelite)
18th Nov 1897	British Physicist Petrik M.S.Bleckett (Discoverer of Nuclear Reaction) was born on this day
19th Nov 1997	Kalpana Chawala's (First Woman Astronaut of Indian Origin) first flight in space.
19th Nov 1912	Birth date of Cell Biologist George E Palade (Discoverer of Ribosomen)
20th November	Universal Children's Day. (by U.N.)
21th November	World Television Day. (by U.N.)
29th Nov 1803	Austrian Physicist Christian Doppler (Discoverer of Doppler effect Radar) was born on this day.
30th Nov 1858	Sir Jagdishchandra Bhagwanchandra Bose (Great Indian Scientist and Botanist) was born on this day.
30th Nov 1917	Sir Jagdishchandra Bose started "Bose Research Institute" for research on Plants and Animals at Calcutta.
U.N. United Nations, WHO World Health Organization, UNESCO United Nations Educational Scientific & Cultural Organization	

Science Quiz Answers : (1) D, (2) C, (3) B, (4) B, (5) A, (6) A.

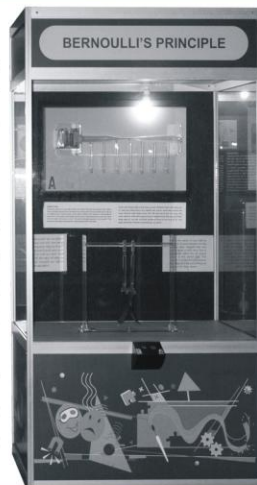
KNOW THE EXHIBITS AT FUN SCIENCE GALLERY

Bernoulli's Principle

[A] Press the switch on your left to allow air to flow through the Venturi tube. When the air passes through the narrower part of the tube, it moves faster since the net air outflow has to be the same as the net air in flow. This results in a decrease of pressure in that region as indicated by the drop in the liquid level at the open end of the U-tube. Since air is a fluid, the same principle applies to air as well.

This principle is responsible for aerodynamic lift in aircrafts.

[B] Press the switch on yours right to allow air to pass between the two curved flags. Observe that they move closer to each other. Due to



Bernoulli's effect the air moves faster in the narrow gap. This results in pressure drop between the flags and surrounding air pushes the flags closer.

SCIENTIST OF THE MONTH

Sir C V Raman

Chandrashekhara Venkata Raman, was born on November 7, 1888, in Tiruvanaikkaval Village, Tiruchchirappali district in Chennai (Madras), Tamil Nadu.

At the age of 11, he passed the matriculation examination with first rank. Two years later, he cleared the university inter examination with a first class first paving the way for his scholar-ship. He joined the famous presidency college of Chennai for his Graduation. In 1904, Raman passed Chennai University's BA examination from the Presidency College with a first class first in physics.

One day on his way to office Raman came across a board bearing the name 'Indian Association for Cultivation of Science'. Raman subsequently got permission to carry out his experiments there. He was thrilled to get a facility to conduct experiments and carry out research at his own convenience and time, three decades after the organization was established, Raman's first research paper was published in the famous magazine 'Proceedings of Royal Society', London. Meanwhile, on the basis of his research papers he was awarded the Woodburn Research Medal. This was the first honor he received from

outside the country. In 1916, England's science magazine 'Nature' praised this institute and Raman's research work in a detailed article.

In 1919 with the death of Amrut Lal Sircar, the honorary secretary of the association, Raman was elected as the new secretary. In 1921, Kolkata University honored him with an honorary doctorate degree. Now he became Dr. C V Raman.

His research on scattering of light led to the discovery of an effect known as the 'Raman Effect' for which he was awarded the Nobel Prize. In February, 1928, he announced the discovery of the historic 'Raman Effect'.

In 1930, the Nobel Prize for physics was awarded to Raman for this discovery. The British government in the country honored him with the title 'sir'.

During his lifetime, Raman conducted research on scattering of light, sound, colour, the physics of minerals diamond and crystal, besides research on colour of flowers, vision, etc.,

On November 21, 1970, he passed away at his dwelling at the Raman Research Institute.



SCIENCE QUIZ

1. Which device is used for measuring Electric current?

- A) Galvanometer B) Anemometer C) Volt meter D) Ammeter

2. Who was the first Person to walk on the Moon ?

- A) Willian Bentik B) Thomas Lederberg C) Neil Armstrong D) Thomas Armstrong

3. Full Form of DNA is ?

- A) Dual Nature Acid B) Deaxyribo Nucleic Acid C) Deoxyribo Nitrogen Acid D) Dualribo Nudeio Acid

4. What is the most abundant metal on Earth ?

- A) Iron B) Aluminium C) Lead D) Copper

5. What is the name of the process used by Plants to Convert sunlight into food ?

- A) Photo synthesis B) Photo Luminance C) Extinction D) None of These

6. What is the name of the largest ocean on Earth ?

- A) Pacific Ocean B) Indian Ocean C) Atlantic D) Southern Ocean

EXHIBITIONS AT SCIENCE CENTRE SURAT:

Gandhi Exhibition:

Science Centre Surat has organized Gandhi Exhibition at First Floor of Museum, Science Centre Surat from 3rd October to 18th October 2015. In this exhibition literature related to life of Gandhiji, Posters, Photographs and cloths and other things used by Gandhiji in his daily life were also displayed.



SCIENCE CENTRE

Science Centre forms the main part of the entire complex; it displays thematic galleries in the field of Science and Technology. The ground floor of Science Centre showcases 3D Theatre and Souvenir Shop. The first floor of Science Centre showcases Fun Science Exhibits and Second floor of Science Centre showcases Diamond Gallery where as Entering into space, Textile Gallery, Power of Play Gallery, Cosmos Gallery and Polar Science Gallery are under development.

3d Show	Tuesday to Friday (Time)	Saturday, Sunday & Holidays (Time)	
English	09:15, 11:20, 12:00, 02:40, 04:00	09:15, 11:20, 12:00, 02:40, 04:00	
Hindi	10:00, 10:40, 12:40, 01:20, 02:00, 03:20	10:00, 10:40, 12:40, 01:20, 02:00, 03:20, 04:40, 05:20, 06:00	
Science Centre + Planetarium + Museum + Diamond Gallery		Planetarium	
Above 18 Years	Rs. 100	Tuesday to Friday	
3 Years to 18 Years	Rs. 65	Saturday, Sunday & Public Holidays	
Science Centre + Museum + Diamond Gallery		09:30 to 10:20	English
Above 18 Years	Rs. 60	10:30 to 11:20	Gujarati
3 Years to 18 Years	Rs. 40	11:30 to 12:20	Gujarati
Science Centre + Planetarium + Museum + Diamond Gallery + 3D Show		12:30 to 01:20	English
Above 18 Years	Rs. 120	01:30 to 02:20	Hindi
3 Years to 18 Years	Rs. 80	02:30 to 03:20	hindi
Planetarium		03:30 to 04:20	Gujarati
Above 18 Years	Rs. 50		04:30 to 05:20 English
3 Years to 18 Years	Rs. 40		05:30 to 06:20 Gujarati
3D Show			
Above 18 Years	Rs. 60		
3 Years to 18 Years	Rs. 40		