



BIOILLUMINATI (JANUARY 2018)

Learning gives creativity, creativity leads to thinking,
thinking provides knowledge, and knowledge makes you
great.

Department of Life Science

Sri Sathya Sai College for Women, Bhopal

NEWS LETTER OF LIFE SCIENCE (JANUARY 2018)

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THANKS TO:

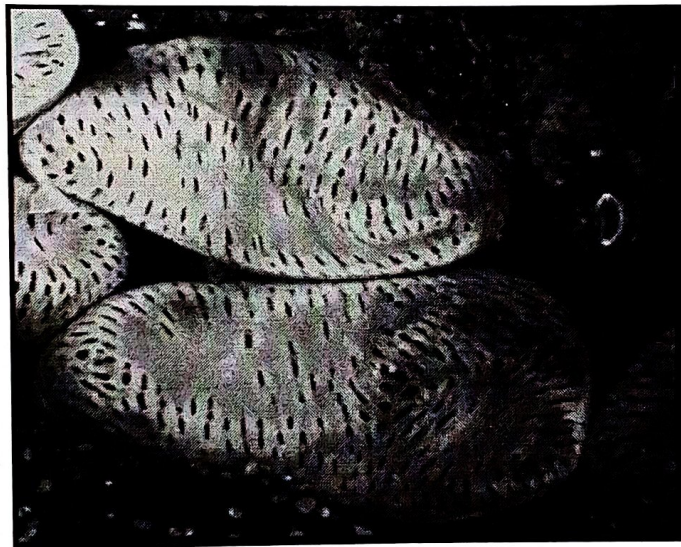
**ALL FACULTY MEMBERS OF BOTANY, ZOOLOGY,
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LIGHT DETERMINES THE GENES THAT FUNCTION IN PLANT GROWTH

Scientists show three genes are necessary for xylem differentiation in darkness but not in light. The xylem is essential for transporting water across the entire plant body. Its development is heavily regulated by VASCULAR-RELATED NAC-DOMAIN (VND) genes. Scientists report a new experimental system that shows three VND genes are necessary for xylem differentiation in cotyledons in darkness but not in light. The study gives clues on how environmental factors can be modified to stimulate plant growth.



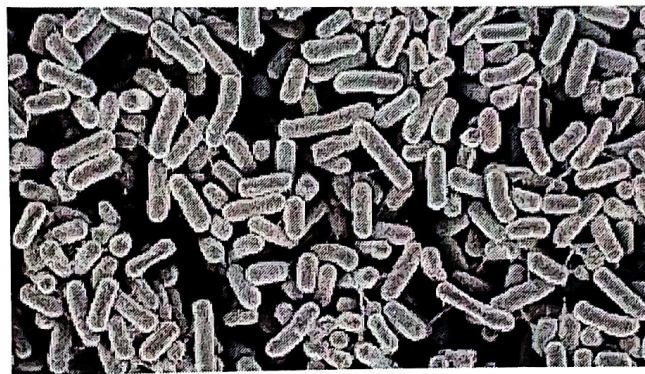
"VASCULAR-RELATED NAC-DOMAIN (VND) genes are responsible for xylem formation. The precise roles of different VND genes in xylem tissues of diverse organs are unknown. "VND1-VND2-VND3 triple mutants showed severe defects in xylem formation when cotyledons were grown in the dark. We found little effect when cotyledons were grown in the light," says Demura.

The different responses by the xylem suggest that VND4 to VND7 were compensatory for the loss of VND1-VND2-VND3 in light, but not in dark, indicating that environment has a profound effect on gene expression. This conclusion is consistent with other studies that have found VND expression changes with fungal infection or soil salinity.

IIT – KHARAGPUR STUDENT DEVELOPS PAPER BATTERY USING SEWAGE WATER BACTERIA

Ramya Veerubhotla, research scholar at IIT Kharagpur has developed a disposable and flexible battery made from paper that could generate power from the bacteria present in sewage water. The uniqueness of her innovation is that the device is made on a paper platform unlike other batteries, which are heavy. The battery is made using air cathode, and the anode can be prepared from any simple carbon based material.

“Usually Microbial Fuel Cells (MFCs) take a couple of days to start power production as the bacteria need to adjust to the environment. But for this device, the power production starts within 10 seconds,” said Ramya.



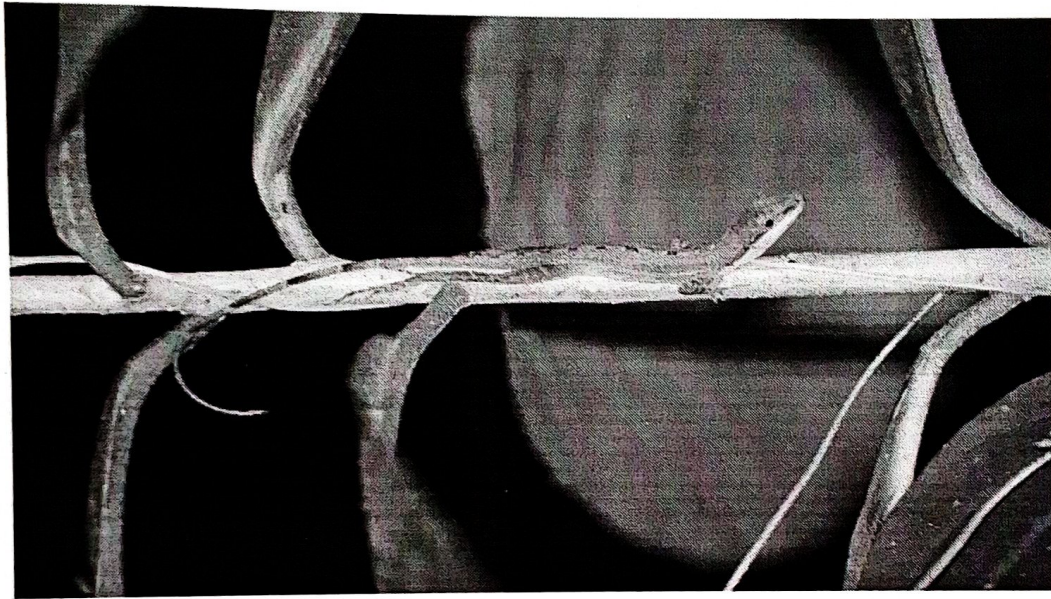
Ramya’s PhD supervisor, Professor Debabrata Das, an authority on MFCs, is confident that this invention would have tremendous use in bio-electric toilets. “One of the best advantages of the device is that it is 100% biodegradable and environment-friendly, which is not the case with chemical batteries.”

“The power generated from one cell is in the range of a few microwatts. More cells mean more power. It may be difficult to power household devices with this, but it can power certain electronic components. The device is flexible and can be stacked together. For more power, you can make more units, stack them and fold them in a compact shape.”

WHY ARE THERE SO MANY TYPES OF LIZARDS?

Researchers have sequenced the complete genetic code -- the genome -- of several vertebrate species from Panama. They found that changes in genes involved in the interbrain (the site of the pineal gland and other endocrine glands), for color vision, hormones and the colorful dewlap that males bob to attract females, may contribute to the formation of boundaries between species.

Genes regulating limb development also evolved especially quickly.

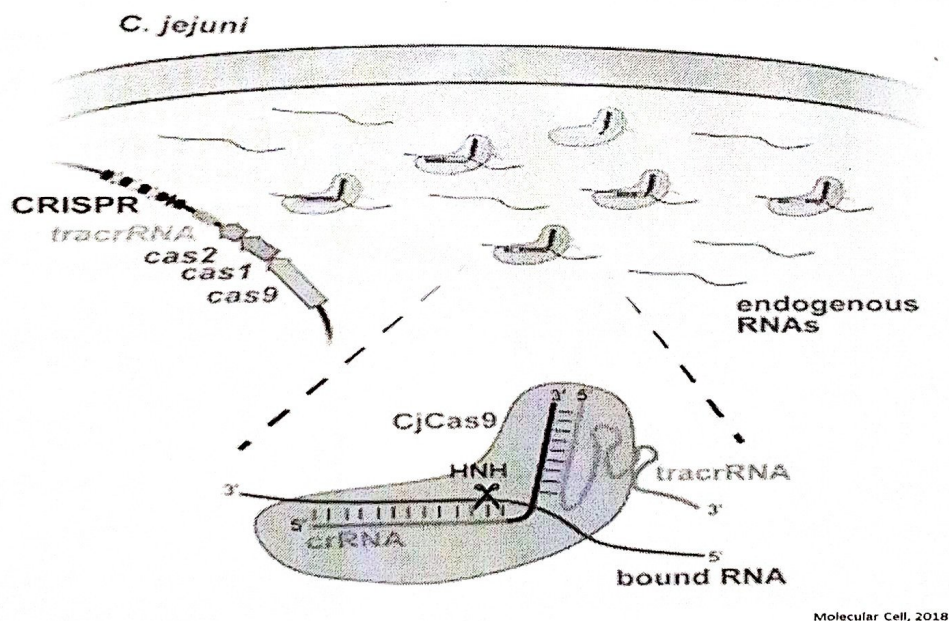


Lizards have special superpowers. While birds can regrow feathers and mammals can regrow skin, lizards can regenerate entire structures such as their tails. Despite these differences, all have evolved from the same ancestor as lizards. Today there are more than 400 species. Constructing a family tree for three lizard species collected in Panama at the Smithsonian Tropical Research Institute (STRI) and a fourth from the southeastern U.S., scientists at Arizona State University compared lizard genomes -- their entire DNA code -- to those of other animals.

Scientists estimate that there are 40 species of anole lizards living in Panama, compared to only one in the U.S. "By comparing these four anole lizard genomes, we're beginning to understand how one of the most diverse groups of vertebrates regenerate, develop and diversify,"

DNA SCISSORS CAN CUT RNA, TOO

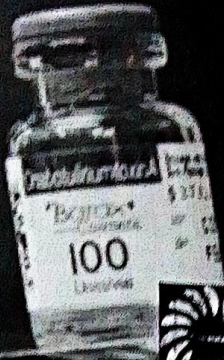
The bacterial immune system 'CRISPR-Cas9' is known to eliminate invading DNA. Scientists now discovered that it can also readily target RNA -- a result with potentially far-reaching ramifications. Our ability to change the content of genes at will -- whether to reverse genetic diseases or improve food and energy crops -- is undergoing a revolution. This revolution is being driven by "CRISPR-Cas9," a technology based on an immune system of bacteria, discovered only a few years ago. This immune system recognizes and cuts foreign genomic material (deoxyribonucleic acid, DNA) from invading viruses and thus protects the bacteria from being infected



The cutting is performed by the Cas9 protein that acts as a pair of scissors, while other parts of the system act as guides that instruct where Cas9 should cut the DNA. Cas9 protein is also capable of cutting RNA.

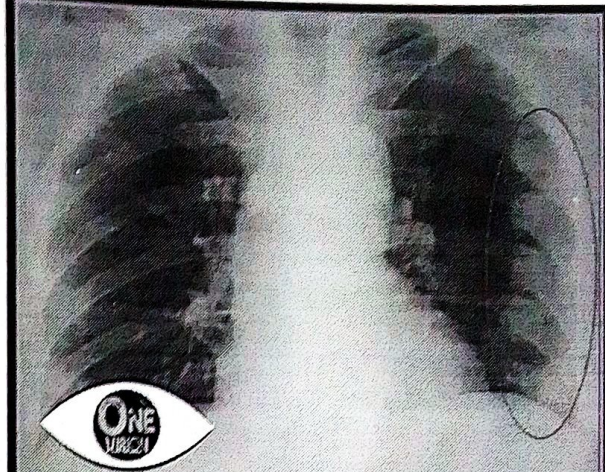
. The researchers discovered this molecular feat while looking at molecules that interact with the Cas9 in *Campylobacter*. These included numerous RNAs from the cell. Further analyses showed that Cas9 not only bound but could also cut the RNA in a similar way as it does with DNA -- and that it could be easily instructed to cut specific RNA

INTERESTING FACTS:

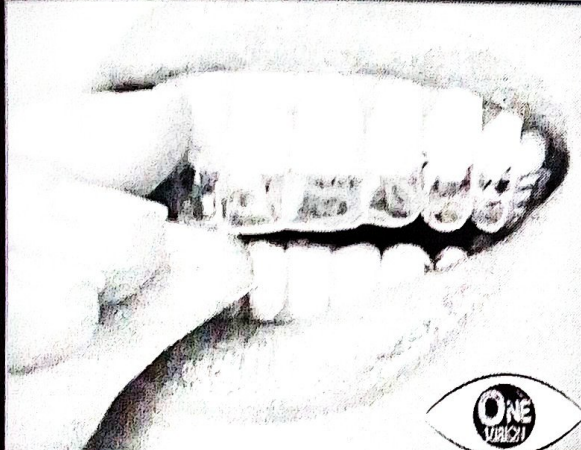


did you know

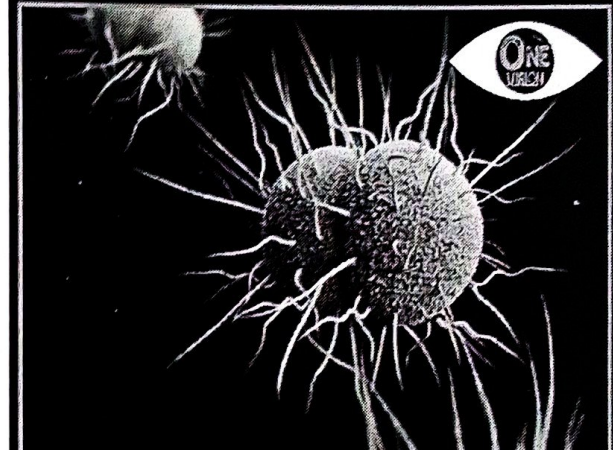
"Botox" is the world's Deadliest poison in the world. Just 4 grams of it can kill the entire population of "Earth".



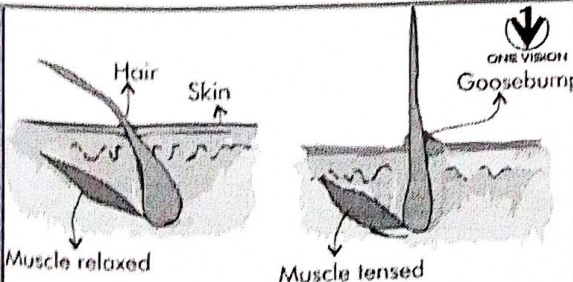
If you sneeze too hard, you can fracture a rib.



Teeth are the only part of human body which cannot heal themselves



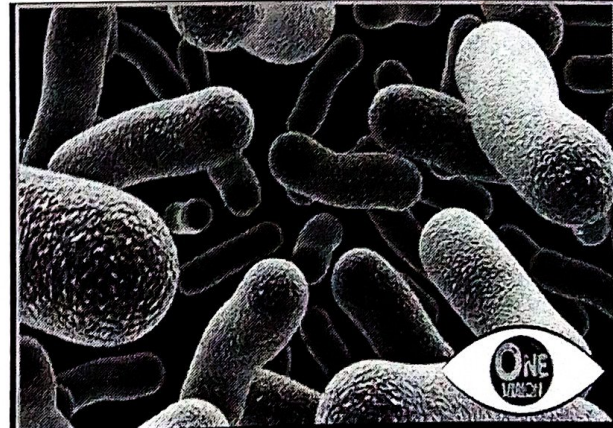
Gonorrhea bacteria- the strongest creature on earth.



DO YOU KNOW?

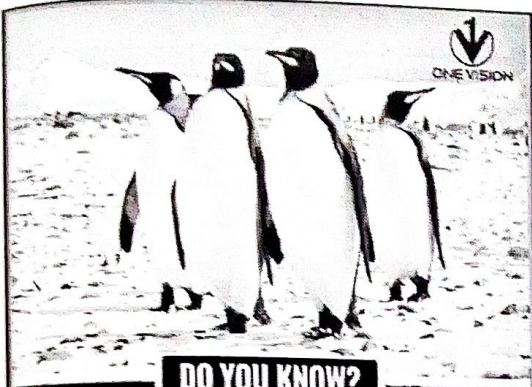
SCIENCE BEHIND GOOSEBUMPS

Our hair is attached with a single muscle to the skin. Whenever we are in a very cold environment or we have some strong emotional feeling, this muscle contracts and pulls the hair which appears straight and taut.



The number of bacteria in a person's mouth is equal to the number of people living on Earth, or even more.

INTERESTING FACTS:



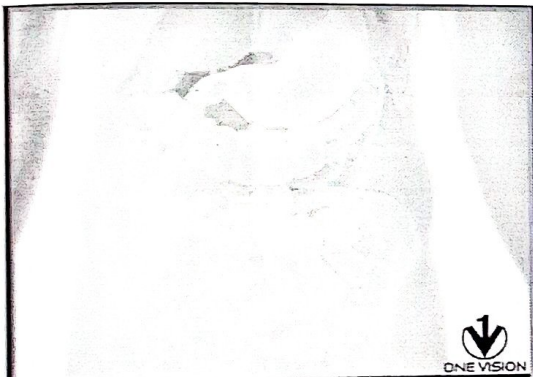
DO YOU KNOW?

Nearly three percent of the ice in Antarctic glaciers is penguin urine.

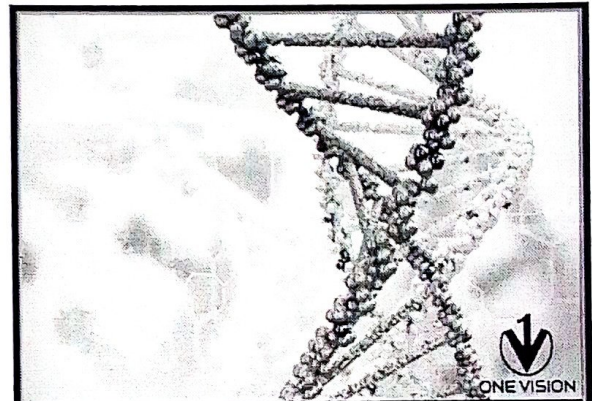


DO YOU KNOW?

Human saliva has a boiling point three times that of regular water.



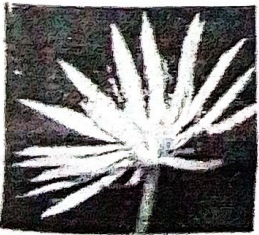
Your stomach acid is even strong enough to dissolve razor blades, the only reason the acid in your stomach doesn't eat right through your body is because the stomach cells are renewed faster than they are destroyed.



If uncoiled, the DNA in all the cells in your body would stretch 10 billion miles, from here to Pluto and back.

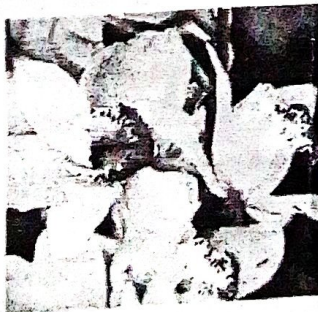
रात में खिलता है

श्रीलंका में उगने वाले कडुपुल नामक फूल को दुनिया का सबसे महंगा फूल माना जाता है। इसकी आज तक कोई कीमत तय नहीं की जा सकी है। रात में उगने वाला ये फूल कुछ घंटों के लिए ही खिलता है। इसे लेकर कई धार्मिक मान्यताएं भी हैं।



ये है दुनिया के कुछ महंगे फूल

1.5 करोड़ रुपए



शंजेन नोंगे ऑर्किड नामक यह फूल 4 से 5 साल में एक बार ही खिलता है। साइंटिस्ट ने इस ब्रीड को करीब 8 साल में तैयार किया था। 2005 में की गई एक नीलामी में इसे 1.5 करोड़ रुपए में बेचा गया था।

72 लाख रुपए



ऑर्किड, मून फ्लॉवर और 100 साल पुराने फिक्स से बने गुलदस्ते को कई शाही शादियों में इस्तेमाल किया जा चुका है। फिक्स यानी 100 साल पुराने एक पेड़ की जड़।

3.5 लाख रुपए

मलेशिया में पाया जाने वाला गोल्ड ऑफ किनाबासु ऑर्किड फूल 15 साल में एक बार उगता है।



3 लाख रुपए

इस टुलिप्स फूल की कीमत 3 लाख रुपए तक पहुंच जाती है।

