

TRENDING NEWS:

1 Fungus removes mercury from soil

Mercury has always played a part in the contamination of soil and water. From Minamata disease in Japan to loss of marine life, the toxic effects of mercury are plain to be seen. Scientists at the University of Maryland have devised a new method to remove mercury from the soil around plant roots and water. They employed a fungus called *Metarhizium robertsii* in their attempt. The fungus is easy to acquire, cheap, and efficient.



Crops in polluted soil may absorb toxic mercury

The main aim of the experiment was to stop plants from taking up mercury present in the soil. When a crop is planted in polluted soil, it can take up toxic substances from the soil. If it is a food crop, eating parts of the contaminated plant would pass on the toxic chemicals to human bodies. With the help of this fungus, a plant can grow normally in polluted soil without taking up any mercury. The genetic make-up of the fungus, along with the observation that it survives in mercury mines, is proof that it can detoxify mercury. The fungus can also guard plant roots against herbivorous insects.

2 Research unveils birthplace of gold-rich stars

All that glitters is not gold, but some that twinkle are! Some stars contain heavy metals like gold and platinum. Hundreds of these stars are present in the Milky Way. However, questions about where, when, and how these stars were formed always boggled scientists. The answers to these questions have been recently found in a computer simulation.



Neutron star mergers are sites where heavy metals, like gold, are synthesized

The simulation was produced using the ATERUI II supercomputer in the Center for Computational Science at the National Astronomical Observatory of Japan. A team of researchers from the University of Notre Dame and Tohoku University interpreted the data from these simulations to shed light on how these stars were formed. According to the simulation, small progenitor galaxies merged to form the Milky Way as it is today. In these progenitor galaxies, neutron stars fused. Gold and platinum are almost always formed during a merger between neutron stars. This is how “gold-rich” stars formed in the early Milky Way.

STEM Around Us

When were horses domesticated?

The lives of horses and humans have been interwoven for millennia. Since at least 2,000 B.C.E. horses have had a fond place within human culture, from transport and racing to warfare! While we know much about horses today, it wasn't until recently that we figured out how these majestic beasts were tamed.



Nokota horses are an important yet endangered breed of horses from the badlands of North Dakota.

After sifting through fossilized bones and teeth, paleontologists have worked out that horses have an ancestry that can be traced back nearly 50 million years to an animal called **Hyracotherium** – a hoofed, dog-sized creature. It probably wasn't until 4 to 4.5 million years ago that there were horses in North America similar to the ones we know now!

In their time on earth, horses have traveled all across the globe! Sometime between 35,000 and 50,000 years ago, we see a split between “wild” horses and the line that gives us the modern domestic horse. After much research comparing ancient DNA, scientists found out the horses we see today hailed from the “lower Volga-Don” region of Western Eurasia. Since then, many populations in different pockets of the world found ways to domesticate the horse and shape their evolution!

The story of domestication is only the start of the relationship between horses and humans. Human management of horses has had huge impacts on their genome. As certain breeds are more popular than others, selection has caused a drop in the diversity of genes that different horses carry. However, we also know that specific breeds have picked up genes that generate their best-selling characteristics!



STEM Challenge/ Science Experiment

How to Taste with Your Nose STEM Challenge:

NOTE - You will NOT be putting any food directly in your nose for this challenge. That could cause serious injury, not to mention the discomfort and embarrassing explanations.

The Challenge: Design an experiment to determine how important your sense of smell is to your ability to taste.

Materials: Jellybeans of different flavors. (You could use different foods, but be aware that their shape and texture might give away what they are. Jellybeans are good because they are all the same size and shape, with only the flavor being different).

Challenge Criteria: Develop a way to test how accurately you can identify jellybean flavors while eating normally, then while holding your nose to block your sense of smell. Remember, good science requires data! Make sure to write down your results as you go.

Reflection: Was it more difficult to identify flavors while holding your nose? Looking at a diagram of the nose and mouth, can you find an explanation for your results? How could this new knowledge help you when you have to eat a food you don't like very much?

Challenge extension: Use your method to test your friends and family, and see if they get the same results!



Did You Know?

Hawaii is moving closer to Alaska by 7.5cm every year. This is due to the movement of tectonic plates. Hawaii is at the center of the Pacific Plate.



Brain Teaser:

You're rummaging around your great-grandmother's attic when you find five short chains, each made of four gold links. It occurs to you that if you combined them all into one big loop of 20 links, you'd have an incredible necklace. So you bring it to a jeweler, who tells you the cost of making the necklace will be \$10 for each gold link that she has to break and then reseal.

What is the minimum cost required for making the chain?

Credits: Popular Mechanics

Answer to be published in the next edition

Previous edition answer: 888+88+8+8+8

Science Video:

Carnivorous plants can be thought of as mavericks of the plant kingdom. When faced with limited resources, these botanical marvels tend to bend the rules to come up with clever solutions! There are over 800 species of predatory plants all over the globe!

Many carnivorous plants, like the Venus flytrap, have evolved as a response to swamp-like habitats. These ecosystems often lack nitrogen—a key plant nutrient. With time, these plants adapted to attract and capture a nitrogen-rich meal: insects. When an insect finally lands on the plant, the jaws of the flytrap snap shut, trapping the unsuspecting critter for their nitrogen fix!

Some predatory plants have a way of first charming and then disarming their prey. While it may seem like the plant is offering a sweet treat, like nectar, carnivorous flora use this nectar as bait to snatch up their visitor.

These charms don't just work on small insects! The pitcher plant has managed to lure in larger creatures, like lizards, bats, and even rodents, by setting up a pitfall trap that is quite difficult to climb out of. Although they have evolved unique capturing mechanisms, scientists have found that these plants aren't very picky about their prey.

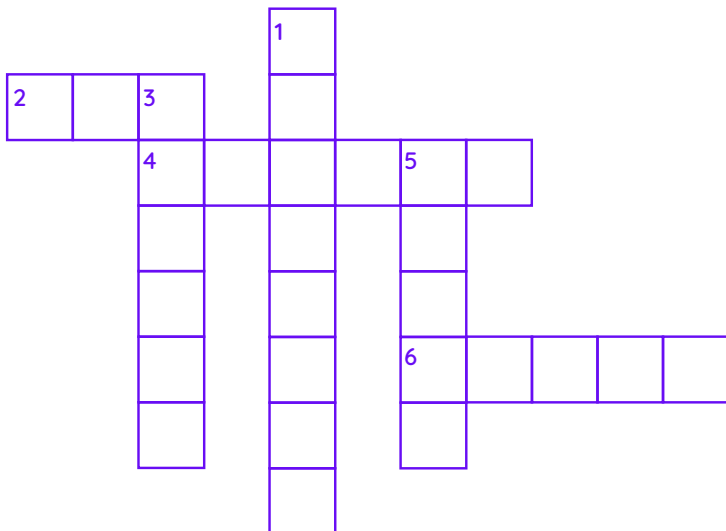
No matter how they choose to digest their food, predatory flora often highlight the many weird but wonderful ways plants function and evolve to relate to their habitats and each other!

Scan QR code to see the video

Credits: BBC



Can you solve a Crossword?



Across

- The International Space Station
- A unit of light intensity
- A dwarf planet in the Solar System

Down

- An animal that eats organisms of its own species
- A unit with only value, that doesn't show the direction
- The fluid in the human body that contains only white blood cells and plasma

3	>	2	4	5	1
4		1	5	3	2
1		5	2	4	3
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Previous edition
Futoshiki answer



Science in Depth

What Is Artificial Blood And How Does It Work?

Have you ever wondered what the world will look like in 50 years? What do you see? Maybe you are conceiving the next smartphone or a flying car. But, what about artificial blood?

Several scientists are working hard to create artificial blood. This is because many hospitals across the world do not have enough blood for patients during surgeries.

Did you know there are different surgeries? Not all of them require blood transfusion. Blood transfusion happens when doctors give you donated blood through a narrow tube in your vein.



Finger prick for blood testing

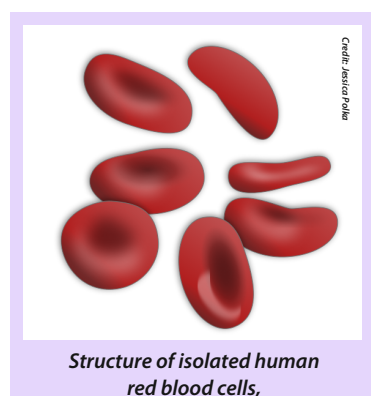
It is a life-saving process, especially when you have lost a lot of blood or for long surgeries.

Blood transfusion can also help if your body does not produce enough blood because of an illness. When your parents donate their blood, hospitals can store their blood only for 45 days. However, artificial blood could be stored much longer, approximately up to two years!

Before we look at artificial blood, what do you think blood is?

What is blood?

Your blood is actually a liquid that contains a mixture of cells. Here are two types of blood cells:
red blood cells and white blood cells.



Red blood cells have a specific protein in them called hemoglobin. Hemoglobin is red, which gives your blood the color red. This protein is very important, as it carries oxygen throughout your body.

Oxygen is an important gas in the air that is used

in your body to give you energy. Oxygen is converted to carbon dioxide in that process. When you breathe in, you take in oxygen, and when you breathe out, carbon dioxide comes out. So, without hemoglobin, you don't get oxygen. And without oxygen, you don't have energy, which could lead to dying. Therefore, red blood cells are very important.



Scan QR code to know more

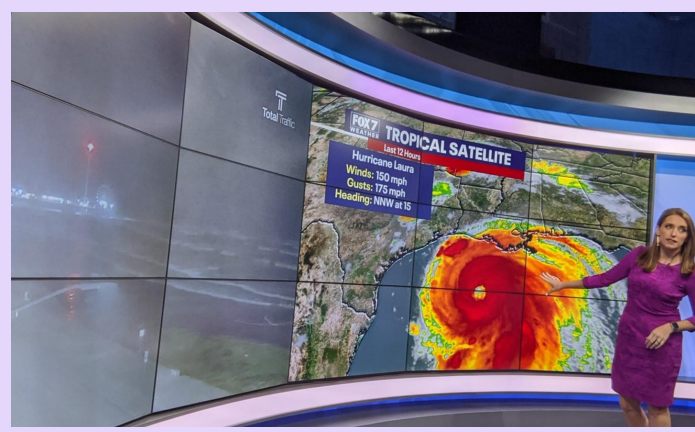


STEM Career:

What does a Meteorologist do? Watch Meteorologist Chelsea Andrews at Work

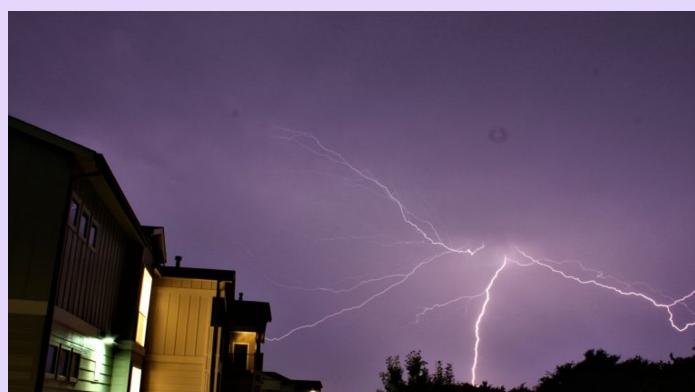
As a meteorologist, I create my own forecast and build the graphics you see on-air. To create a forecast, I check current conditions, look at several different computer models, and use my knowledge of Central Texas weather patterns to determine what the temperatures, wind speeds, and rain chances will likely be for the next several days.

I grew up outside of San Antonio, Texas. From a very young age, I was obsessed with the weather. I used to watch the evening news with my Grandma,



and my favorite part was always the weather forecast. At the time, I was actually afraid of storms but I was also fascinated by them. There's nothing like the moment before a storm rolls in, when the winds pick up, you can smell the rain in the air, and lightning streaks across the sky.

A big part of being a meteorologist is communication. During dangerous weather events, it's my job to deliver the forecast in a calm, clear manner so viewers know what hazards to expect and how to keep themselves safe. This picture was taken during the 2020 Hurricane Season as Hurricane Laura made landfall.



I love the weather both in and out of the TV station. When I'm not at work, one of my hobbies is storm photography. Recently, I've been trying to take great lightning photos. It takes a lot of patience and time, but the results are well worth the wait



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