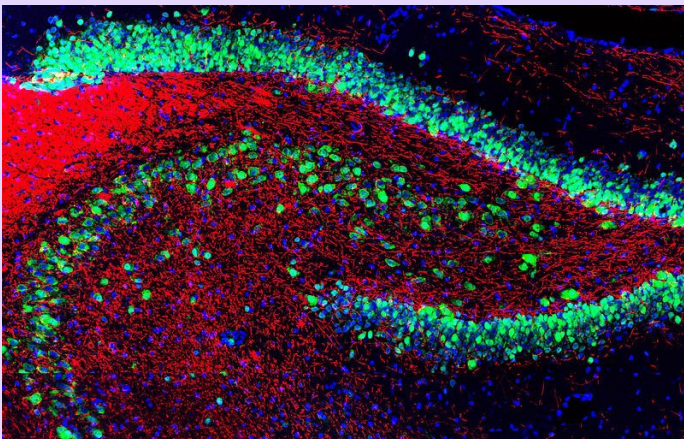


TRENDING NEWS:



Biology

1 Brain Cells Formed Together Work Together



*Fluorescent Staining of Cells in the Hippocampus – A Region of The Brain.
Credit: wikimedia/Gerry Shaw*

Scientists from NYU Grossman School of Medicine recently found that brain cells that formed together work together! The brain cells, called neurons, form in the brain before an individual's birth. Neurons formed on the same day are more likely to wire together to create neuronal circuits and store memories. The brain takes advantage of the order of formation of neurons, like Lego pieces, to place one memory on top of another. However, this process makes the developing brain vulnerable to damage from viral infections, toxins, or alcohol on certain days. Furthermore, the neurons might eventually fail together, leading to conditions like autism and Alzheimer's. Scientists say that this study may change how we approach disorders of the brain, through a lens of development rather than molecular biology or genetics.

Health

2 Blue Light Fuels Faster Aging

Humans are exposed to blue light, also known as high-energy visible (HEV) light, through natural and artificial sources.



*The Smartphone – A Source of Blue Light.
Credit: Wikimedia/TGSpot*

The sun is the source of natural blue light, while electronic devices and indoor lighting are sources of artificial blue light. A recent study has found that high exposure to blue light may speed up aging, as it observed rapid cell damage in flies. Since the cell signalling in flies and humans is the same, the study suggests that blue light may cause the same harm to humans. However, scientists involved in the study also claim that the possible harm blue light poses to human cells, even if proven, would be minimal compared to that of the flies. Yet, the scientists still advise people to be cautious and limit their exposure to blue light. The lesser blue light, the better!



Science Experiment: Build a Solar Water Filter

Materials needed:

- warm water
- plastic food wrap
- a small, slightly weighty object
- food coloring (optional)
- a large bowl
- a small cup (make sure it's shorter than the large bowl)

Instructions

1. Pour warm water into the large bowl, and add food coloring.
2. Put the empty small cup in the middle of the water.
3. Wrap the mouth of the large bowl with food wrap.
4. Place the small object on the wrap so that it is slightly depressed right above the small cup. The wrap shouldn't touch the rim of the cup.
5. Set the bowl under the sun and wait.

6. After a while, you should start seeing drops of water appear under the plastic wrap.
7. Note the color of the water collected in the small cup.

STEM Around Us

Partial sunglasses: Photochromic lenses



Credit: Wikimedia/Thuwaraga Vilvanathan

One of the most harmful components of sunlight is its UV rays. Apart from multiple skin diseases, UV rays can also cause serious damage to our eyes. Chronic exposure is known to decrease vision and induce cataracts. Reducing UV ray exposure is very important. One can do just that with the help of photochromic lenses. In the presence of UV light the lenses turn black like those of sunglasses, while in the absence of UV light the lenses go clear. A chemical called silver chloride absorbs UV rays and changes shape, which causes it to undergo a chemical reaction, darkening the glass. The darkened glass blocks UV rays. Without UV rays, the reaction does not occur. If the glasses were already darkened, a reverse reaction occurs that makes the glasses transparent again. Silver chloride starts to react within a minute, but takes a further 10 minutes to completely darken the glass. Although photochromic lenses are budget-friendly, their activity is affected by changes in temperature. Also, they are not dark enough for people facing severe light-related eye issues.



Science Video:

Fly Over a Martian Crater!

Mars is the fourth planet from the Sun in our solar system.

It is a terrestrial planet, having a thin atmosphere and a crust composed of elements similar to Earth. Additionally, its core consists of iron and nickel. Mars is well-known for the features on its surface, such as impact craters, valleys, dunes, and polar ice caps. As of now, a total of 94 million impact craters have been located on Mars. The impact craters on the planet were formed by objects crashing onto its surface at high velocity. Usually, these objects include asteroids or meteorites at speeds ranging up to many thousands of miles per hour. The solid objects immediately vaporize afterward, creating enormous shockwaves that melt and recrystallize the rocks. All that remains at the crash site is a big circular hole in the ground and mangled rocks. The Martian crater in this video is created from images by the HiRISE camera onboard the Mars Reconnaissance Orbiter. Specific textures can be seen around this crater in the form of radiating mounds, called araneiform terrain, by scientists. Araneiform terrain formation is an active seasonal process that occurs when carbon dioxide ice below the surface heats up and is released.



Scan QR code to see the video



Did You Know?

Welwitschia mirabilis is a bizarre plant found in the Namib desert of Africa. It is a perennial plant with only two leaves, each of which can grow up to 6 meters (almost 20 feet) long and reach a width of 170 cm (over 5 ½ feet).



Brain Teaser:

Statements:

All mangoes are golden in color. No golden-colored things are cheap.

Conclusions:

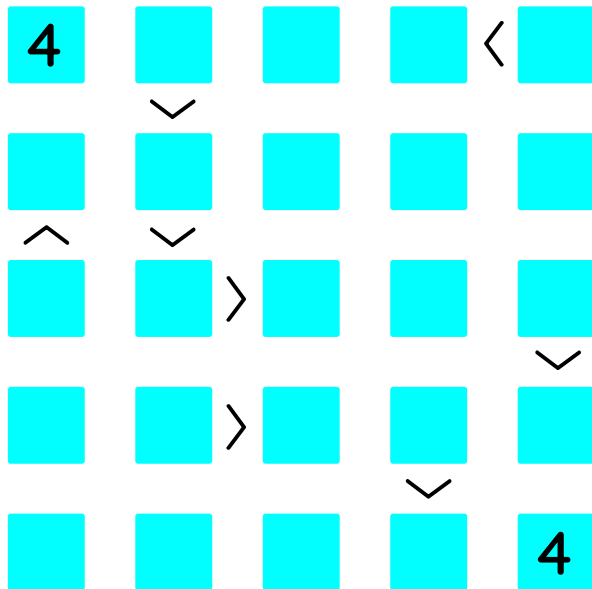
- I. All mangoes are cheap.
- II. Golden-colored mangoes are not cheap.

Which conclusion/s is/are correct?

Previous edition answer: His son

Can you solve a futoshiki?

1. Fill in the 5 x 5 grid with numbers between 1 to 5, such that no number is repeated twice in a row or column
2. Place numbers according to the greater than and lesser than signs wherever applicable.



Answer to be published in next edition

2	<	3	5	4	1	
1	5	2	<	3	4	
4	2	>	1	5	>	3
5	4	3	1	2		
3	1	4	>	2	<	5

Previous edition
Futoshiki answer



Science in Depth

Learn about the startling features hidden in the deep blue

Features of the Ocean Floor

The deep blue ocean covers an incredible 70% of the Earth's surface. It connects all the landmasses, is an important source of food, and it is still the way most goods are transported all around the world. Despite this, we only know about 20% of the ocean, with the vast majority being unmapped and unexplored.

The bottom of the ocean is a very difficult place to explore. The depth of the ocean ranges from very shallow near the coast and is mostly at an average of 3,688 meters (12,100 feet). Water is very dense. Anything on the ocean floor experiences an incredible amount of pressure. The deepest humans have ever dived is about 332 meters (1082 feet). Even machines have a lot of trouble dealing with the kind of pressure at the bottom of the ocean.



A modified submarine designed to withstand pressure and function as an underwater laboratory,
Credit: Wikimedia/Jacques Rougerie Architecte

Scan QR code to know more



STEM Career:

The First Computer
Programmer – Ada Lovelace

Ada Lovelace was born two centuries ago in London, England. Her father was the super famous poet Lord Byron. Though he was brilliant, he also had the reputation for being a "mad genius." He abandoned his family early on. Ada's mother was also incredibly smart, and she insisted her daughter get the best education possible. Ada had a team of private tutors who taught her mathematics and science. As it turned out, Ada was an exceptional math wizard from a young age. She was so skilled with numbers that people called her a human calculating machine!



When she was 18 years old, her world changed. She met Charles Babbage, a mathematics professor from Cambridge University. The two became instant buddies.

They would chat for hours about complex mathematical problems. They were quite the dynamic duo! Except that most people couldn't understand what they were talking about...

Babbage often rambled on about one of his fantastical ideas. He dreamt of creating a machine that could make calculations. It was called the 'Analytical Engine.' Babbage wrote papers and papers jam-packed with notes. He made some designs and started trying to build it.

Ada was fascinated. She believed the machine could do more than even Babbage imagined. She felt it could solve far more complicated calculations. Night after night, she wrote her own notes. She also predicted that one day these computing machines would be able to create multi-layered graphics and music.



Scan QR code to know more

ANGELA SAINI

Read Angela's story in the
Smore Summer
2022 Issue



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